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FORMER YUGOSLAV REPUBLIC OF MACEDONIA

Third Review

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Introduction

I.1 Physical context

The former Yugoslav Republic of Macedonia is a landlocked country in the middle of the southern Balkan Peninsula. The country has a land area of 25,713 km^2 and it is bordered by Serbia to the north (border length 232 km), Bulgaria to the east (165 km), Greece to the south (262 km) and Albania to the west (191 km).

The physical geography is defined by the central Vardar River valley and high mountain massifs along the borders: the Dinaric range in the western and central parts of the country and the Rhodope range in the east. The average altitude of the terrain is 850 m above the sea level but more than 30 per cent of the land area is situated above 1,000 m. There are 16 mountain peaks higher than 2,000 m. The highest point is the Golem Korab peak (2,753 m) situated in the north-western part of the country on the Albanian border, while the lowest point is situated on the Vardar River (44 m).

About two per cent of the land area is covered by water. The country has 35 large and small rivers, 3 natural lakes and 50 artificial lakes. The Vardar River, which bisects the entire country, passes through the capital Skopje and finally flows to the Aegean Sea is the longest and the most important river in the country. It has 301 km of its 388 km total length within the country's borders.

The country is located at the intersection of the African and Eurasian tectonic plates. The region is seismically active and has suffered various destructive earthquakes in the past.

The country is also at the junction of two main climatic zones between the Mediterranean and continental climates. Along the valleys of the Vardar and Strumica rivers the climate is temperate Mediterranean, characterized by long and dry summers and mild and rainy winters. The interior of the country has a moderate continental climate, with warm and dry summers followed by cold, wet and snowy winters.

Average annual precipitation varies from 500 mm in the eastern area to 1,700 mm in the western mountainous area. The temperature range also features wide fluctuations: maximum summer temperatures in the majority of the agricultural areas reach up to 40°C, while the lowest winter temperatures can drop to about -30°C. The average annual temperature is above +10°C. The warmest region in the country is Demir Kapija, while the capital, Skopje, has a 14°C annual temperature and 438 mm of precipitation.

I.2 Human context

In 2017, the country had 2.075 million inhabitants and the population density was 80.7 inhabitants per km^2, a value well below the average of 124 inhabitants per km^2 in the ECE Region. The territorial distribution of the population is uneven. Some 57.33 per cent of the population lives in urban areas, mainly in the five largest cities: in the capital Skopje (pop. 327,589), in Kumanovo (pop. 109,347), in Bitola (pop. 91,805), in Tetovo (pop. 91,988) and in Prilep (pop. 74,963).

The life expectancy has been on a slight but steady rise. In 2010 average life expectancy at birth was 74.63 years - 76.66 and 72.65 for women and men, respectively. In 2016 the life expectancy was 75.70 years for the total population and 77.75 for women and 73.71 for men. Infant mortality which had had a decreasing trend since 1995 hit its lowest level 7.60 per 1,000 live birth in 2010 and has since then fluctuated somewhat rising to 9.20 in 2017. From 2010 to 2017 the total fertility rate decreased from 1.6 to 1.4 children per woman, a figure just slightly under the average level for the ECE Region. This trend, combined with the decreasing birth rate from 11.80 per 1,000 in 2010 to 10.50 in 2017, has brought changes in the age structure of the population. As a result of these demographic changes country's population is aging, between 2010–2015, the share of the 0–14 age bracket out of the total population decreased from 18.58 per cent to 16.73 per cent, while the share of the over 65-age bracket increased from 11.67 per cent to 12.83 per cent. (table I.1)

The Human Development Index, calculated by the United Nations Development Programme (UNDP), combines indicators of life expectancy, educational attainment and income into a composite human development index. It

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is expressed as a value between 0 and 1, where the value 1 represents the best attainable human development. With the Index value of 0.757 in 2017 the country belonged to the high human development country group holding the 80th place out of 189 countries. The 2017 Index value for neighbouring Greece was 0.870 and its position 31st. Serbia had the 67th place with HDI of 0.787 while Albania was 68th with a HDI value of 0.785.

Table I.1: Demographic and health indices, 2010–2017

	2010	2011	2012	2013	2014	2015	2016	2017
Population (million)	2.055	2.059	2.061	2.064	2.067	2.070	2.072	2.075
Birth rate (per 1,000)	11.80	11.10	11.40	11.20	11.40	11.10	11.10	10.50
Total fertility rate	1.60	1.50	1.50	1.50	1.50	1.50	1.50	1.40
Life expectancy at birth (years, total)	74.63	74.82	75.02	75.21	75.38	75.55	75.70	..
Life expectancy at birth (years, male)	72.65	72.85	73.05	73.23	73.40	73.56	73.71	..
Life expectancy at birth (years, female)	76.66	76.84	77.03	77.23	77.42	77.59	77.75	..
Percentage of population (0–14 years)	22.28	17.58	17.31	17.10	16.95	16.83	16.73	..
Percentage of population (65+ years)	9.98	11.67	11.75	11.90	12.18	12.52	12.83	..
Mortality rate (per 1,000)	9.30	9.50	9.80	9.30	9.50	9.90	9.90	9.80
Infant mortality rate (per 1,000)	7.60	7.60	9.80	10.20	9.90	8.60	11.90	9.20

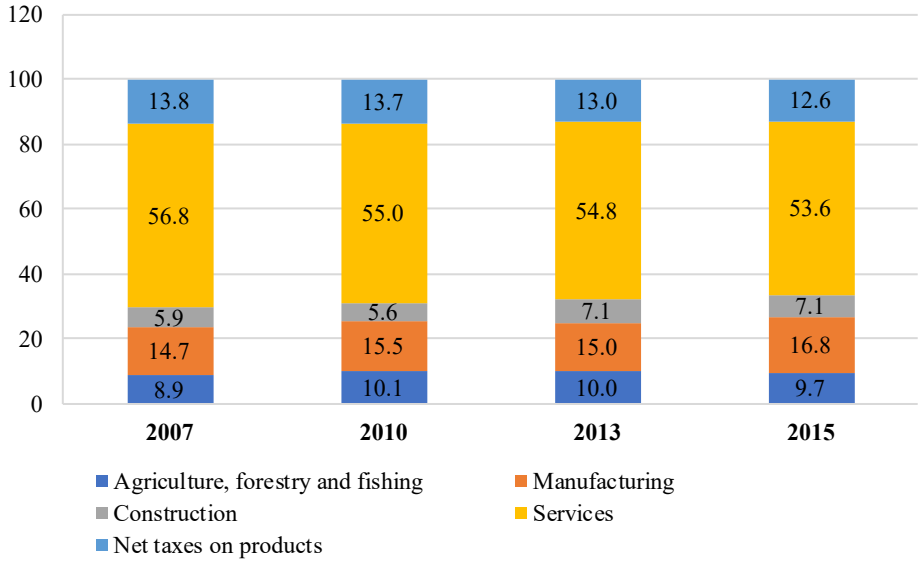
Source: National Statistical Office, August 2018.

I.3 Economic context

Economy

The former Yugoslav Republic of Macedonia is a small, open economy, well integrated into international trade. Its gross domestic product (GDP) in 2017 was US$11.33 billion, and the exports-to-GDP ratio reached to 55.11 per cent. Agricultural sector is still relatively large with its 11.13 per cent share of GDP in 2015. The industry which used to be the most important sectors in the past, produced 26.05 per cent of GDP while services made 62.81 per cent of the total GDP in 2015.

Figure I.1: GDP by sector in 2007, 2010, 2013 and 2015, percentage of total GDP



From the beginning of this century until 2008 the annual average growth of the economy was 4.31 per cent. During the first years of this century country's economy on average grew annually by 4.31 per cent but this continuous GDP growth and economic stability with low inflation rates came to sudden end with the international banking crisis of 2008 which caused the country to go into sudden and steep recession - GDP dropping from 5.47 per cent growth in 2008 to 0.36 per cent contraction in 2009. The GDP got back to the growth path in 2010 when the annual GDP growth rate jumped to 3.4 per cent. This upswing was cut short in 2012 when the country had two consecutive quarters of negative growth, largely as a result of the European debt crisis. However, this downturn was again short, and country exited recession already at the end of 2012 although the annual 2012 GDP was negative 0.50 per cent.

Growth returned in 2013 and lasted until 2016 but turned negative in the first half of 2017, as political uncertainty affected investment. In spite of the steady consumption level and growing investor confidence after the new Government took office in June 2017 the GDP remained slightly negative at the end of the year.

The 2015–2017 Global competitiveness report of the World Economic Forum ranked the former Yugoslav Republic of Macedonia to the 60th place out of the 140 reviewed countries.

The country has suffered of persistent high unemployment rate for many years. After 2010 when the unemployment rate was 32.1 per cent of the labour force the situation finally started slowly but continuously to improve. Helped by public investment and employment programmes the unemployment rate decreased to 22.4 per cent in 2017. However, at the same time the labour force participation rate fell to its lowest level since 2012.

In connection to the improved employment situation the amount of people living below the national poverty line has also diminished. In 2010 a little over one quarter, 27.00 per cent, of the population were living with income below the poverty line – in 2016 this has dropped to 21.90 per cent.

1.4 Political context

The country has been a member of the WTO since 2003, and an official candidate for EU membership since December 2005. The EU accession talks have been blocked by Greece due to a dispute over the name of the country, however the possibility to reach a settlement of the name dispute with Greece seemed to be closer than ever in 2018. In April 2018, the European Commission recommended the opening of official membership talks with the former Yugoslav Republic of Macedonia, stating that the country has made significant progress in implementing the reforms requested by the EU.

1.5 Social context

The former Yugoslav Republic of Macedonia ratified the Convention on the Elimination of All Forms of Discrimination against Women and its Optional Protocol in 1994. In 2017 the country ratified the Council of Europe's Istanbul Convention on Preventing and Combating violence against Women.

The country has adopted several laws and mechanisms to advance gender equality. The 2012 Law on Equal Opportunities of Women and Men obliges public institutions to ensure equal rights and opportunities for women and men and to integrate gender into their policies, strategies and budgets through specific measures to reduce gender inequality. There are several other instruments in place for attaining gender equality such as the National Action Plan for the Implementation of the Law on the Prevention and Protection Against Discrimination (2015–2020), National Equality and Non-Discrimination Strategy (2016–2020), and Strategy for introducing Gender Responsive Budgeting (2012–2017).

The female participation to working life is still disproportionate despite the significant legal changes that have taken place. In 2017 women made up only 33.2 per cent of the employed population and composed 64.4 per cent of the country's economically inactive population.

It seems that the electoral quotas have had an effect on the number of women elected in decision making positions. In the latest, 2017 elections, 38 female parliamentarians were elected to the Parliament constituting 32.5 per cent of legislators. However, in executive bodies, where quotas do not exist, women's representation has stayed low: Women hold only 15 per cent of ministerial posts and 4 per cent of mayoral posts.

The UNDP Gender Equality Index for 2017 placed the former Yugoslav Republic of Macedonia, with the score of 0.149, in the 35th place out of 189 countries. The World Economic Forum's Global Gender Gap Report 2017 ranked the country in 67th position out of 144 countries with score of 0.702.

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Table I.2: Selected economic indicators, 2010–2017

	2010	2011	2012	2013	2014	2015	2016	2017
GDP (% change over previous year)	3.4	2.3	- 0.5	2.9	3.6	3.8	2.9	0.02020
GDP in current prices (million denars)	437 296.0	464 186.0	466 703.0	501 891.0	527 631.0	558 240.0	598 881.0	619 788.0
GDP in current prices (US$ million)	9 407.2	10 494.6	9 745.3	10 817.7	11 362.3	10 051.7	10 745.8	11 337.8
GDP (constant 2010 US$ million)	9 407.2	9 627.3	9 583.4	9 863.7	10 221.7	10 614.4	10 924.7	10 926.9
GDP per capita current prises (US$)	4 542.9	5 064.0	4 698.7	5 211.5	5 469.2	4 834.1	5 163.3	5 442.6
GDP per capita (constant 2010 US$)	4 542.9	4 645.5	4 620.6	4 751.9	4 920.2	5 104.8	5 249.2	5 245.4
CPI (% change over the preceding year, annual average)	1.5	3.9	3.3	2.8	- 0.3	- 0.3	- 0.2	1.4
CPI (% change over the preceding year, end of period)	3.0	2.8	4.7	1.4	- 0.5	- 0.4	- 0.2	2.4
PPI (% change over the preceding year, annual average)	8.6	12.5	4.6	0.4	- 1.2	- 3.9	- 0.2	0.8
Registered unemployment (Percentage of labour force, end of period) National data	32.1	31.4	31.0	29.0	28.0	26.1	23.7	22.4
Current account balance (US$ million)	- 198.3	- 261.7	- 319.1	- 177.2	- 71.6	- 192.6	- 298.6	- 128.7
Current account balance (as percentage of GDP)	- 2.1	- 2.5	- 3.3	- 1.6	- 0.6	- 1.9	- 2.8	- 1.1
Net FDI inflows (US$ million)	206.9	473.9	165.5	305.0	261.4	230.3	349.4	254.2
Cumulative FDI (US$ million)								
Net FDI flows (as percentage of GDP)	2.2	4.5	1.7	2.8	2.3	2.3	3.2	2.2
Foreign exchange reserves (US$ million)	2 276.8	2 667.4	2 891.5	2 747.6	2 964.2	2 470.7	2 751.9	2 801.9
Gross external debt (US$ million)	5 452.4	6 271.0	6 817.8	7 194.4	7 286.6	6 873.0	7 607.0	8 878.9
Exports of goods and services (US$ million)	3 606.4	4 794.2	4 332.2	4 689.2	5 416.9	4 905.5	5 380.5	6 260.0
Imports of goods and services (US$ million)	5 463.4	6 934.6	6 522.5	6 665.7	7 380.0	6 536.7	7 000.5	7 833.6
Net exports of goods and services (US$ million)	- 1 857.0	- 2 140.4	- 2 190.3	- 1 976.4	- 1 963.1	- 1 631.2	- 1 620.0	- 1 573.6
Ratio of gross debt to exports (%)	151.2	130.8	157.4	153.4	134.5	140.1	141.4	141.8
Ratio of gross debt to GDP (%)	57.8	64.2	68.2	64.0	70.0	69.3	74.2	73.6
Exchange rates: annual averages (denar/US$)	46.5	44.2	47.9	46.4	46.4	55.5	55.7	54.7
Exchange rates: annual averages (denar/€)	61.5	61.5	61.5	61.6	61.6	61.6	61.6	61.6
Poverty headcount ratio at national poverty lines (% of population)	27.0	26.8	26.2	24.2	22.1	21.5	21.9	
Personal remittances, received (% of GDP)	4.1	4.1	4.0	3.5	3.2	3.1	2.7	2.8

Source: ECE database, World Bank database, National Bank of the former Yugoslav Republic of Macedonia

1.6 Political organization and institutions

The former Yugoslav Republic of Macedonia is a multi-party parliamentary democracy, its political system is based on the division of power in the executive, legislative and judicial branches. Administratively the country is organized into 80 municipalities; 10 of which constitute the City of Skopje, a distinct unit of local self-government.

Executive branch

Executive power of the former Yugoslav Republic of Macedonia is divided between the President and the Government. The presidency is largely a ceremonial post and the Prime Minister is the country's leading political figure and de facto chief executive.

The President is the head of State and represents the country at home and abroad. The President nominates a negotiator to form the government and he/she is also the commander in chief of the national armed forces. The President is elected through direct and general elections, by a majority-vote. The length of the President's term is five years which can be renewed once. The current president was elected in 2009 and re-elected in 2015.

The Government is constituted by the Prime Minister, 4 Deputy Prime Ministers and 21 others ministers among which 6 are currently without portfolios (table I.3). The Minister of Finance is also Deputy Prime Minister. The Prime Minister and the Government's Programme are approved by an absolute majority vote of the Assembly. The ministers are proposed by the Prime Minister and then elected by the Assembly. The Government is responsible for proposing legislation to the Assembly and drafting the budget proposal.

Table I.3: List of Ministries

Ministry of Defence
Ministry of Interior
Ministry of Foreign Affairs
Ministry of Finance
Ministry of Health
Ministry of Justice
Ministry of Transport and Communications
Ministry of Economy
Ministry of Agriculture, Forestry and Water Management
Ministry of Information Society and Administration
Ministry of Labour and Social Policy
Ministry of Education and Science
Ministry of Local Self-Government
Ministry of Culture
Ministry of Environment and Physical Planning
Ministers without portfolio
Minister without portfolio in charge of communications, accountability and transparency
Minister without portfolio in charge of Diaspora
Minister without portfolio in charge of foreign investments
Minister without portfolio in charge of the implementation of the Strategy for improvement of the situation of Roma
Minister without portfolio in charge of regulation for improving the investment climate for domestic enterprises
Minister without portfolio in charge of foreign investments

Source: the former Yugoslav Republic of Macedonia Government's website. Accessed on 5.9.2018.

Legislative branch

The country has a unicameral parliamentary system. The Parliament or Assembly, the "Sobranie" has 120 representatives elected, from party lists at general and direct elections, for four-year terms. The Assembly passes laws and resolutions, ratifies international agreements and amends the Constitution. The President, the Government, at least 30 members of Parliament or 150,000 citizens may also propose changes to the Constitution.

The Assembly appoints the judges of the Constitutional Court, the members of the Judicial Council, judges of the ordinary courts and the ombudsman. The last election took place in 2016, the next one will be held in 2020.

Judicial branch

The independent judicial system comprises 27 courts of the first instance, four courts of appeal, a Supreme Court, a Constitutional Court, an Administrative Court, and a Judicial Council.

The Supreme Court is the highest court in the country, responsible for overseeing the equal administration of laws by all courts and its competency covers the entire country. Its nine judges are appointed by the Judicial Council for an unlimited mandate term.

The Administrative Court is responsible for deciding on the legality of the administrative acts enacted by government, public authorities, municipalities and other public bodies and organizations. Its 18 judges are appointed by the Judicial Council.

The Constitutional Court is an independent body responsible for the protection of constitutional and legal rights; it decides on the conformity of laws with the Constitution and resolves legal disputes between the executive, legislative and judicial branches. The Court also decides on the answerability of the President of the Republic. Its nine judges are appointed by the Assembly and serve nine years, without the possibility of re-election.

The State Judicial Council governs the ethical conduct of judges, proposes the election or dismissal of judges to the Assembly and evaluates the work of Judges. The Council is composed of 15 members; the Minister of Justice and the President of the Supreme Court are automatically appointed as members. The Members serve for a period of six years, with the right to one re-election except the Minister of Justice and the President of the Supreme Court whose mandates end with the end of their other function.

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Map I.1 Map of the former Yugoslav Republic of Macedonia



Source: United Nations Cartographic Section, 2010.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

PART I: ENVIRONMENTAL GOVERNANCE AND FINANCING

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Chapter 1

LEGAL, POLICY AND INSTITUTIONAL FRAMEWORK

1.1 Legal framework and its implementation

Environmental laws

Since 2011, few new laws were adopted on environmental issues. The development of environmental legislation took place mostly through the adoption of amendments to existing laws and the development of subsidiary legislation. The overall motive for development of legislation in and beyond the environmental area is the approximation of national legislation with the European Union (EU) acquis. The preparation of new legislation takes place largely in the framework of projects funded by the EU and bilateral donors. The speed of approximation process has not been fast, but it has been commeasurable to the national capacities for implementation.

The environmental legislation is generally coherent. Since 2008–2009 the country uses the regulatory impact assessment (RIA) mechanism for new laws and amendments to laws that considers, among other aspects, the impact of new laws on the environment. In addition, the mechanism of intersectoral consultations, which are mandatory for laws, amendments to laws and acts of subsidiary legislation, supports integration of environmental considerations into sectoral legislation. The 2017 SIGMA-OECD Monitoring Report[1] notes room for improvement of both RIA and intersectoral consultations procedures.

Consolidated versions of laws and secondary legislation are not available to the public for free. This is a general concern which is also relevant for environmental legislation. The governmental Official Gazette (OG) provides free online access to legislative acts published in the previous years but not current year and does not include consolidated versions. The subscription to a privately-run online database which includes updated consolidated texts is for payment only. To increase accessibility of environmental legislation, the Ministry of Environment and Physical Planning publishes such legislation on its website but the scope of legislative acts published is limited to core environmental topics and the texts displayed are not always the latest versions.

Law on Environment

Since 2011, the 2005 Law on Environment was amended ten times. Most significant amendments referred to: procedure of strategic environmental assessment (SEA) (2011, 2013), issuing integrated environmental permits (2011), prevention and control of accidents with the presence of hazardous substances (2012), national system for the inventory of greenhouse gas emissions (2013), licensing for the treatment of refrigerants (2014) and organization of the State Environmental Inspectorate (2015).

Air

The 2004 Law on Ambient Air Quality was amended several times as part of the efforts to transpose the EU acquis. Most significant amendments were made in 2012 and referred to definitions of stationary and mobile sources, target values and critical levels of pollution, classification of zones and agglomerations, national planning documents on air quality and the conduct of emissions inventory. Subsidiary legislation in support of implementation of the Law has been enhanced through the adoption of several rulebooks, including the 2012 Rulebook on methodology, procedures, methods and measures for measurement of emissions from stationary sources, 2013 Rulebook on criteria, methods and procedures for assessment of air quality and two rulebooks on the content and procedure of preparation of strategic documents on air quality adopted in 2014. As of late 2018,

[1] OECD (2017), Monitoring Report: The Principles of Public Administration. The former Yugoslav Republic of Macedonia, November 2017.

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amendments to the Law referring to criteria of preparation of planning documents and manner of implementation of short-term measures were prepared.

The 2014 Law on Control of Emissions of Volatile Organic Compounds due to the Use of Petrol aimed at transposing the Directive 94/63/EC on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations and Directive 2009/126/EC on Stage II petrol vapour recovery during refuelling of motor vehicles at service stations. The Law established the standards for environment protection and control of the emissions of VOCs in petrol use, as well as deadlines for their achievement by operators of the terminals and petrol stations and mobile containers that transport gasoline.

Several rulebooks were adopted in 2015 to regulate the various aspects of managing the ozone depleting substances, such as reporting on ODS and training in proper handling, servicing, collection, recovery and recycling of ODS.

Climate change

Legislation in the area of climate change is limited to several articles in the Law on Environment. These articles cover planning documents on climate change, the GHG inventory preparation system and the development of projects for funding through the Clean Development Mechanism. The 2018 EU progress report points out the need for the country to transpose and start implementation of the EU climate acquis, particularly on emissions monitoring and reporting, EU Emissions Trading System and effort sharing. Weak capacity for implementation has so far been the main constraint for further development of the legislation on climate change.

Industrial pollution and PRTR

Proper implementation of legislation on permitting is still an issue. There are cases when installations work without a permit and without an environmental management plan. Two large combustion plants operate for years without an "A" type permit.

As of September 2018, a draft law on industrial emissions has been prepared and is in the process of consultations. The industry mostly wants to be given a larger period for implementing the requirements of the future law.

The 2011 Rulebook on the form, contents, methodology and manner of keeping a pollutant release and transfer register was amended in 2017 to include electronic online reporting. The PRTR requirements apply to the facilities with type "A" permit that had emissions exceeding the thresholds in the year for which they report. Enterprises reported for the first time in 2016 for 2015; reports were then submitted by 21 facilities. As of September 2018, not all reports for 2016 have yet been validated. In September 2018, the reports for 2017 (due May 2018) were largely not submitted.

According to the Ministry of Environment and Physical Planning, guidance documents to enable PRTR reporting are available, and the relevant trainings were organized. Nevertheless, enterprises do not report on time, largely due to technical problems. The Ministry does not track the use of the PRTR website, so it is not known how many visitors use the PRTR. The Ministry (in fact, Macedonian Environmental Information Centre) misses sufficient knowledge to perform data validation. There is an understanding that integration of data from IPPC permits and water permits with the PRTR reporting is needed but such integration is not yet the case.

Water

The 2008 Law on Waters regulates all aspects of water management, water use and prevention of water pollution. The changes to institutional responsibilities on water, introduced by the Law, were implemented in 2011. In 2012 the Law was amended with regard to the rules for awarding concessions in line with the 2012 Law on Concessions and Public Private Partnership. In 2016, the Law was amended to enable separate regulation of classification of surface water bodies and to clarify the procedure for issuing water permits.

The 2004 Law on Drinking Water Supply and Urban Wastewater Drainage covers supply of drinking water, drainage of urban wastewaters, drainage of storm waters and maintenance of water supply and sewerage systems.

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The 2011 amendments introduced the concept of a contract between the service provider (public communal enterprise) and the service user.

The 2016 Law on Water Services Pricing is a new law for the country. It regulates the manner of establishing prices of water services and prescribes the establishment of the pricing methodology. It describes the competences of the Energy Regulatory Commission with regard to determining and approving the tariffs as well as its powers on inspection and enforcement. The idea behind the Law is to ensure financial sustainability of water services, so that public communal enterprises could adequately finance the management of water supply and wastewater treatment services. The 2017 Methodology for determining tariffs for water services and the 2017 Rulebook on the manner and procedure for determining the tariff for water services and the regulatory tariff for water services adopted by the Energy Regulatory Commission provide further details on these aspects.

The 2015 Law on Water Economy adopted in place of 2003 law on the same subject regulates the management of hydrosystems, irrigation and drainage systems.

Soil

A draft law on soil protection was prepared in 2014 but it was not adopted, largely due to financial implications. There is no legislation to address historic pollution of soils.

Nature protection

The 2004 Law on Nature Protection has been amended several times to increase the approximation with the Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, the Directive 2009/147/EC on the conservation of wild birds and other directives. The Law requires re-proclamation of all protected areas. This process starts with preparation of a valorization study for a protected area, continues with proclamation and then preparation of a management plan. The subsidiary legislation governing the preparation of valorization study and management plan is in place.

As of September 2018, the re-proclamation of protected areas is ongoing and there have been numerous issues about it. Since 2015, the Mavrovo National Park for which the process of re-proclamation was not completed has been under attention of the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) due to Government's plans to construct hydropower in the park (Recommendation No. 184 (2015)). For the other national park, Galičica, where re-proclamation was completed in 2010, attempts were made, so far without success, to change the zoning in the national park to allow implementation of several development projects. Valorization studies need resources, including financial ones, therefore they have not been completed for all protected areas yet. Many protected areas, especially smaller ones, do not have a management authority. In fact, the area covered by protected areas slightly decreased from 232,496 ha^2 in 2012 to 229,719 ha^2 in 2017.

One of the deficiencies of the Law is that it includes the notion of potential sites that might be proclaimed in the future, but, no mechanism to grant interim protection exists, which does not allow the Ministry of Environment and Physical Planning to prevent economic activities or construction in those areas. A new law on nature is in procedure for adoption and will replace the 2004 Law on Nature Protection.

The 2014 Law on Mountain Trails is a new law that regulates the maintenance and use of mountain passes, including those in protected areas. The Law is an attempt to engage the "hosts" of mountain passes such as mountain or cycling sports clubs in their proper maintenance and protection.

In 2009–2014, the 2008 Law on GMOs has been supplemented by extensive subsidiary legislation. In 2013, through amendments to the 2010 Law on Food Safety, the former Yugoslav Republic of Macedonia banned the production, placing on the market and import of genetically modified food and feed until the country's accession to the EU. Information about enforcement of the ban is limited.

Forests

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The 2009 Law on Forests regulates both protection of forests and forest management. The Law requires the national strategy on forests to be adopted for 20 years (the current one is valid for 2006–2026). It also includes the requirements for the preparation of the national inventory of forest resources, however as of September 2018, no forest inventory exists. Despite of the requirements of the Law on Forests, illegal logging takes place. According to official data, illegal logging increased from 7,164 m^3 in 2008 to 25,230 m^3 in 2014, but a decrease has been observed in 2015 (22,054 m^3) and 2016 (18,662 m^3). Expert estimates for illegal logging activities are higher. Furthermore, owners of private forests report to have faced barriers from the State to log and sell their timber legally. Aligning the Law on Forests with the EU Timber Regulation (Regulation (EU) No 995/2010) is a task for the future.

Waste

The legal framework on waste management centered around the 2004 Law on Waste Management was enhanced with adoption of the 2009 Law on Management on Packaging and Packaging Waste, 2010 Law on management of batteries and accumulators and waste batteries and accumulators and 2012 Law on Management of Electric and Electronic equipment and Waste Electric and Electronic Equipment. However the actual implementation of extended producer responsibility does not go smoothly. There is a lack of proper infrastructure in the country for treatment of waste subject to the extended producer responsibility, so such waste needs to be exported. The producers are not eager to pay the related fees, and some escape both from making contracts with collective handlers and from paying the fee (chapter 10).

Chemicals

Most important steps for implementation of the 2010 Law on Chemicals included the approval by the Government of the List of substances of very high concern (2011 Rulebook) and the List of bans and restrictions of chemicals in terms of their use (2014 Rulebook). There is pa governmental portal (www.hemikalii.gov.mk) which provides information to companies and users on the introduction of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and implementation of Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulations. Challenges in implementation are mostly capacity related.

In 2013, the country banned the import and use of asbestos and asbestos containing material. Waste that contains asbestos is regulated by the 2004 Law on waste management and the 2006 Rulebook for handling asbestos waste and waste of asbestos-containing products. A separate cell at the Drisla landfill site in Skopje is intended for disposal and storage of asbestos waste. However, experts believe that asbestos waste is disposed off also in other landfills along with the other types of waste.

Noise

Implementation of the 2007 Law on Protection from Noise in the Environment has been particularly challenging. Already in 2011, the Government identified four agglomerations (City of Skopje, Kumanovo, Bitola and Tetovo municipalities), 13 major roads and one major railway (Tabanovci – Gevgelija) for which strategic noise maps and respective action plans are to be prepared. As of September 2018, no strategic noise maps are prepared, though some data collection for preparation of noise maps started. The Skopje airport does not reach the threshold of 50,000 movements/y, so does not yet require the preparation of a noise map.

Environmental crimes

In 2014, amendments were introduced to the chapter on crimes against the environment and nature in the 1996 Criminal Code. These included changes to several existing articles and introduction of some new articles such as production, trade or use of substances that deplete the ozone layer; unauthorized hunting, keeping and transfer of ownership of wild animals and birds; killing or destroying protected species of wild flora or fauna; unauthorized introduction of wild species in the nature; unauthorized trading, import or transport of wild flora or fauna.

Environment-related provisions in sectoral legislation

Spatial planning

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The 2014 Law on Spatial and Urban Planning and the 2004 Law on Implementation of Spatial Plan include the protection of environment and nature among principles of spatial and urban planning. The former details the requirements for SEA for spatial and urban plans. It also provides for a mechanism of issuing "conditions for space planning". These conditions are issued by the Ministry of Environment and Physical Planning; however the Ministry does not know whether the conditions are followed.

In 2014, amendments were adopted to the Law on Spatial and Urban Planning to simplify the administrative procedures for investments in renewable energy sources. The Law on Spatial and Urban Planning now stipulates that infrastructure projects (urban –design documentation) can be used for locations planned for constructing power plants. This is beneficial for the renewable energy investors, since this type of urban plan is simpler and can be approved in a shorter timeframe than the traditional urban plans.

Energy

The 2018 Law on Energy, replacing the 2011 law, covers the objectives of the energy policy, construction of energy facilities, the status of the Energy Regulatory Commission, regulation of electricity, natural gas and thermal energy markets, and the conditions for promotion of RES. The Law corrects the previous situation where small and medium enterprises and households were deprived of their right to purchase electricity and gas directly from the supplier of their choice. With regard to RES, in addition to existing system of feed-in tariffs, the new Law envisages the introduction of premiums as a measure to support RES development. Premiums will be applicable to most technologies and will be awarded on the basis of a tender procedure involving an auction.

As of September 2018, provisions on energy efficiency of the 2011 Law on Energy are still active but work is underway to develop a separate law on energy efficiency. In 2017, a draft law on biofuels and a national action plan on biofuels were developed.

Industry and mining

The 2012 Law on Minerals replaced the 2007 law on the same subject. The 2012 Law includes a clause on subsidiary application of several laws, including the Law on Environment. The novelty of the 2012 Law is that it includes the notion of technogenic minerals – minerals created in the process of energy and metallic mineral processing, including the extractive waste created in the course of exploitation. This new type of mineral resources is owned by the State and concessions can be granted for its exploration.

The 2012 Law describes the duties of the concession holder in relation to the rehabilitation and remediation of the land degraded as a result of mining activities. In the 2007 Law, the obligation of remediation existed but was less precise. According to the 2012 Law, the plan for remediation and the waste management plan are part of the mining project. The tool of financial guarantee sufficient to cover the costs of elimination of the harmful effects on the environment is envisaged by the Law but no solution has yet been found on the type and amount of financial guarantee and no subsidiary legislation has been developed on this issue. The former Yugoslav Republic of Macedonia has no experience with remediation, because no mines have so far been closed. When a concession finished, the Ministry has so far issued new concession to prolong the mining activities. Remediation activities in Radovic mine have started.

The 2013 Law for Industrial and Green Zones sets out the conditions of establishment and management of two types of zones. Industrial zones, which can be initiated by the Government or a local self-government unit (LSGU), are a continuation of the concept of free economic zones. They are meant to provide favourable conditions for starting industrial activities (e.g. building industrial infrastructure) in an empty area. So far two industrial zones were established in Veles and one in Bitola. The green zones are founded by the Government or a LSGU and envisage favourable conditions for a light and non-polluting industry e.g. processing of organic food or production of electricity from renewable sources. As of September 2018, no green zones were established. The Ministry of Economy recently drafted amendments to the Law to give subsidies for establishing green zones.

Protection of environment and nature is among the goals of the 2006 Law on Product Safety which applies to non-food products. Amendments introduced in 2016 strengthened the conformity assessment procedures under this Law.

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Agriculture

The 2010 Law on Agriculture and Rural Development is the major legal act regulating planning and implementation of agricultural and rural development policies and governmental support to agriculture.

The 2009 Law on Organic Production regulates the production, processing, labelling, authorization, certification and control of organic products. It has been supplemented by subsidiary legislation, specifying certain substances in line with the Regulation (EC) No. 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control. The Law is well known among farmers but there are problems with improper use of organic label. In addition, the procedures for the import of organic protective agents are considered cumbersome.

The 2007 Law on Plant Protection Products regulates product approval procedures for such products. While such procedure is led by the Ministry of Agriculture, Forestry and Water Economy, the Ministry of Environment and Physical Planning is involved in the process, along with the Ministry of Health. A new law has been drafted to replace the current one.

Transport

The 2008 Law on Public Roads redefined the road tolls, which were introduced already in the 1996 Law on the same subject. The toll is based on distance travelled and vehicle category. The van/truck category rate is 30 to 66 per cent higher than the rate for motorcycles and cars.

The road safety legislation is in place with the 2015 Law on Road Traffic Safety adopted in place of 2007 law on the same subject. However, enforcement of road safety rules is an issue. According to the 2015 Global status report on road safety, the WHO estimates road traffic fatality rate at 9.4 per 100,000 population in the former Yugoslav Republic of Macedonia, which is a better result than the average of 13.4 per 100,000 population in the European Region. However, in the same report the country has medium-level scores for enforcement of legislation on speed limits, drink-driving and motorcycle helmets. The legislation prohibits the use of hand-held mobile phone while driving but this prohibition is rarely complied with. Same holds true for the use of seat-belts, which is mandatory for both drivers and passengers.

Further directions for improving the transport legislation and introducing the environmental requirements are: the adoption of legislation on intelligent transport systems (ITS) and combined transport; introducing multimodal nodes into the legislation; and further improvement of legislation on dangerous goods transported by road.

Tourism

The 2004 Law on Tourism Activity includes the concept of ecological tourism which means tourism in areas with special natural features and protected areas but does not go further than that. The 2004 Law on Hospitality Activities regulates the activities of facilities for food and accommodation. The 2006 Rulebook on the minimum technical requirements for performing the catering activity prescribes in more detail the conditions that must be fulfilled by such facilities in terms of ensuring water supply, wastewater treatment and solid waste management.

The legislation does not include any environmental requirements and is not based on the principles of sustainable tourism. There are no requirements to collect information on environmental pressures from tourism sector, promote more efficient use of water and energy resources and minimize waste generation by tourism sector. Environmental knowledge requirements are not part of certification of tourism guides.

Health

The 2012 Law on Health Protection adopted in place of the 1991 law on the same subject includes environment-related health disorders in the scope of healthcare activities and health services. It recognizes the right of every citizen to information about the harmful factors of the environment which may have a negative impact on health.

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The 2007 Law on Medicinal Products and Medical Devices, among other matters, sets the rules for disposal of waste from medicinal products.

The prevalence of smoking in the former Yugoslav Republic of Macedonia is very high. According to WHO, in 2015, 41.5 per cent of adults (15 plus years old) used tobacco daily. The 1995 Law on Protection Against Smoking includes the ban on smoking in public places and the prohibitions related to advertising. The ban on smoking in public places has been gradually expanded over the years to include government and administration buildings, restaurants and cafes (except for adjacent terraces and summer gardens with an adequate air circulation), educational, medical, sport and some other facilities. However, in March 2018 the Law was amended to ease the ban. Restaurants and cafes were allowed to designate their terraces and gardens as smoking areas, while the requirement for adequate air circulation was removed. In practice, smoking in public places, especially restaurants, is largely tolerated, and no funds are allocated to enforce the ban.

Other relevant legal acts

The 2010 Law on Inspection Supervision brought changes to the system of inspectorates which were previously part of the relevant ministries. A new inspection council was established to supervise the various inspection bodies. In 2013, the amendments to the Law clarified that the inspectorates are bodies with legal personality within the ministries, have their own budgetary account as first-line budget users, and independently implement recruitment procedures. These changes were implemented in 2014 for several inspection bodies dealing with environment-related matters.

The 2009 Law on Intermunicipal Cooperation aims to encourage cooperation between two or more municipalities for more efficient performance of their tasks. The Law is criticized for making intermunicipal cooperation rely on good will rather than being obligatory. There are numerous agreements between municipalities based on this Law related to provision of services by one municipality to another on finance, internal audit or inspection. Cases of agreements between municipalities in environmental area are few. For example, in 2013, seven municipalities (Veles, Gradsko, Demir Kapija, Kavadarci, Negotino, Rosoman and Chashka) agreed to establish a joint department for energy efficiency.

In addition to the 2010 Law on Inspection Supervision, which has a general character, the former Yugoslav Republic of Macedonia has laws regulating thematic inspections, such as the 2009 Law on the State Agricultural Inspectorate or the 2010 Law on State Inspectorate for Local Self-Government. In 2015, a draft law on environmental inspection was prepared under the twinning project "Strengthening administrative capacities at the central and local level for the implementation of the environmental legislation".

The 2007 Law on Public Procurement includes the "environmental management standards" among the criteria for determining the qualification of operators. The application of this criterion is optional and in practice it has not been applied.

1.2 Policy framework

Development, implementation and reporting

The development of strategic documents on environment and sustainable development is very often financed through donations and international projects. The system of costing the strategic documents (i.e. identifying how much their implementation would cost and where the costs would come from) is insufficiently established. Many strategic documents remain drafts for years and some never make it to adoption despite a considerable effort placed in their development.

Implementation of strategic documents is entirely supported by donor and project funding. Periodic reporting on implementation is generally absent. Sometimes during the development of a new policy document, an evaluation of implementation of the previous one is conducted.

Development policy documents

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The policy framework for environment and sustainable development is centred around the 2010 National Strategy for Sustainable Development for the period 2010–2030 (NSSD) and the annually revised National Programme for the Adoption of the Acquis. There is no strategic document explicitly devoted to green economy.

National Strategy for Sustainable Development for the period 2010–2030

An implementation report for the 2010 NSSD was prepared in 2015. One of the key conclusions is that harmonization of the legislation with the EU acquis has been done in many areas relevant for sustainable development, accelerating the transition towards sustainable development, although the sectoral approach prevailed instead of an integrated approach inherent for sustainable development. According to the same implementation report, the work on a National Vision for Sustainable Development in the Context of Rio+20 and EU integration in 2012 greatly helped to raise awareness and commitment to sustainable development but systematized awareness raising activities on sustainable development were lacking.

As of September 2018, most of the seven strategic commitments of NSSD are still largely relevant. The first strategic commitment *(Ensuring EU accession)* remains the key issue for the country. Good progress was achieved with regard to the second commitment *(Raising awareness and commitment to sustainable development)* and third one *(Introducing E-government as the key sustainable development implementation tool)*. Less progress was achieved with regards to the fourth commitment *(Streamlining the public sector through organizational development and institutional strengthening based on the concepts and principles of sustainable development, including cross-cutting and integrated strategic and participatory work).* Regarding the seventh commitment *(Implementation of demonstration and pilot projects in the early phase of implementation of the NSSD)*, many of the 35 demonstration and pilot projects identified in the second annex to the NSSD have been implemented. Nevertheless, the piloting exercise was useful for the country in trying out new solutions and approaches. The available information is not sufficient to assess the progress with implementation of the fifth and sixth NSSD commitments (*Streamlining the banking, funding and financial infrastructure, so that investment and running costs are readily available for sustainable development projects and activities*; and *Streamlining the private sector so that the private sector is developing based on sustainable development principles*).

As of September 2018, the 2010 NSSD still lacks an action plan to implement it. The drafting of an action plan finished in 2015 but the plan was not adopted. In late 2015 it was envisaged to integrate the SDGs into the draft action plan for NSSD but this work has not been undertaken.

Undoubtedly, the NSSD is a framework document which clearly identifies priorities for the country. The NSSD does not "contradict" the 2030 Agenda for Sustainable Development adopted by the United Nations General Assembly in 2015 but does not comprehensively cover all the aspects of the 2030 Agenda. The summary list of 86 indicators of sustainable development included in the first annex to the NSSD was designed for the purposes of NSSD and is not aligned with the Global Indicator Framework.

National Programme for the Adoption of the Acquis

The NPAA includes short- and medium-term priorities for approximation of the national legislation with the EU acquis, including Chapter 27 – Environment. The NPAA is revised annually and adopted in December for upcoming year. As of September 2018, the NPAA 2018 was not adopted.

Environment policy documents

Second National Environmental Action Plan

A national environmental action plan (NEAP), to be prepared every six years, is supposed to be the centrepiece of the planning system in environmental field, as required by the Law on Environment. The NEAP should serve as a basis for the preparation of local environmental action plans (LEAPs). As of September 2018, no evaluation of implementation of the 2006 Second NEAP designed for the period 2006–2012 was conducted.

No third NEAP was developed as no funding was allocated for this purpose by the Ministry of Finance in response to repeated proposals from the Ministry of Environment and Physical Planning. Public officials in the Ministry

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of Environment and Physical Planning concur that if a third NEAP ever materializes, its structure should be changed and tailored to the needs of the EU accession process.

Strategy on Environment and Climate Change for the period 2014–2020

The 2018 Strategy on Environment and Climate Change for the period 2014–2020 was developed in 2014 but adopted only in January 2018. It includes an action plan with measures, outcomes and indicators but not the responsible authorities and financial resources. The Strategy is structured upon thematic issues of the Chapter 27 and for each issue describes the existing problems and objectives to be attained. In fact, the Strategy is more or less a substitute to a third NEAP. The drawback is that it is poorly known in sectoral ministries.

Air

The 2012 National Plan for Ambient Air Protection for the period 2013–2018 defines measures for air quality protection and improvement and identifies institutions responsible for their implementation and financial resources. Measures refer to air quality monitoring, reduction of emissions from industry, transport and agriculture and human health protection. There is no system for monitoring the implementation of each measure and no data are available at the Ministry of Environment and Physical Planning about the level of implementation.

The 2012 National Programme for the Gradual Reduction of the Quantities of Emissions of Certain Pollutants for the period 2012–2020 is a longer-term document that identifies measures for emission reduction of sulphur dioxide, nitrogen oxides, ammonia, VOCs, total suspended particulate matters and carbon monoxide. The Programme was revised for the period 2016–2030 due to new reduction commitments but the update was not finalized.

The 2017 National Emission Reduction Plan was prepared during 2015–2017 in accordance with country's commitments under the Energy Community. It covers all large combustion plants.

Key challenges for development of the policy documents on air protection and their implementation are related to insufficient staff at both central and local level and insufficient funding (e.g. from the planned funds in annual programme for air quality monitoring only 31–42 per cent are approved).

Climate change

The policy framework on climate change builds on the 2018 Strategy on Environment and Climate Change for the period 2014–2020, three national communications and two biennial reports submitted by the country under UNFCCC and the 2015 INDC. The country had a National Strategy for Clean Development Mechanism (CDM) for the first commitment period 2008–2012 under the Kyoto Protocol which defined the priority areas for CDM and potential CDM projects. In 2009–2014 the country registered seven CDM projects. As of September 2018, the Ministry of Environment and Physical Planning intends to develop a long-term strategy on climate action.

A 2013 Climate Change Communication Strategy and Action Plan was developed with an aim of engaging key stakeholders on the national and local level and raising their awareness on issues pertaining to climate change. It includes three levels of engagement with climate issues – the city, the workplace and the household. The report on implementation of the strategy and its action plan in 2013–2016 shows many achievements at all three levels but acknowledges that the system for monitoring of implementation is insufficiently developed. A new action plan was prepared for the period 2017–2020 to implement the Climate Change Communication Strategy.

Waste

The 2008 Strategy for Waste Management for the period 2008–2020 is still valid. The 2009 National Waste Management Plan for the period 2009–2015 is already over. No evaluation of its implementation was conducted. A new national waste management plan for the period 2018–2024 is prepared and is in the process of public consultation; no SEA procedure started yet. The former Yugoslav Republic of Macedonia also has two valid policy documents on specific waste streams: the 2011 Programme for Management of Packaging Waste and a 2013 Plan for Waste Management of Electrical and Electronic Equipment for the period 2013–2020. No reports on implementation of these documents were ever prepared. It is expected that the new national waste management

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plan for the period 2018–2024 will incorporate the chapters on packaging waste, waste from electrical and electronic equipment and waste batteries and accumulators.

In 2011, the Ministry of Environment and Physical Planning prepared a Plan for Closing of Non-Compliant Landfills where 54 priority action non-complaint landfills were identified. This plan largely remained a plan since no funding for closure of non-complaint landfills was available.

There is no policy document that would explicitly target the hotspots of historic pollution. In addition, the country has no policy document on asbestos and its elimination.

Most important achievements in the area of waste management include preparation of tender documentation for new waste management infrastructure and initiation of separate collection of electric equipment, batteries and accumulators and the packaging waste. The work ahead involves actual implementation of larger projects to improve waste management infrastructure and services. No progress was yet achieved on the end-of-life vehicles.

Water

The 2012 National Water Strategy is a long term planning document valid until 2042. It names integrated water resources management as the main goal of water management. It specifies the objectives in the areas of protection against floods and other harmful effects of water, water use by various sectors and protection of water, including the aspects of climate change. The document covers objectives to be achieved in terms of protection of natural sites of importance to water, including Natura 2000 sites. The programme of activities and measures that is part of the Strategy is not sufficiently detailed. Quantitative indicators are largely absent. No implementation reports were ever prepared.

The three main river basins are Vardar, Strumica and Crn Drim. The Juzna Morava basin occupies a very small part (0.17 per cent of the country's territory, map 9.1). In recent years, basin management plans were developed: Lake Prespa Management Plan (Lake Prespa is in the Drin basin); Bregalnica river basin management plan (Bregalnica is a tributary of Vardar); and Strumica river basin management plan. Work is underway to prepare the management plan for the Lake Ohrid, and another one for Vardar River. The plans for the lakes Ohrid and Prespa may be brought together to form the river basin management plan for Crn Drim. None of the RBMPs so far developed is adopted by the Government and for none of them the SEA has been done.

Nature protection

In 2018, the policy framework for nature protection was strengthened with the adoption of the National Strategy for Nature Conservation for the period 2017–2027 and the National Biodiversity Strategy and Action Plan for the period 2018–2023.

The seven objectives of the National Strategy for Nature Conservation refer to the protection and monitoring of biodiversity and landscape diversity; identification and monitoring of geodiversity (geology and geomorphology) and heritage; incorporation of nature protection into sectoral policies; use of traditional knowledge and innovation for nature conservation; improvement of legislative framework; education; and sustainable and effective models of funding for protection and sustainable use of nature. The action plan which is part of the National Strategy for Nature Conservation details the studies to be performed and documents to be prepared, including the red lists and red books which are planned to be adopted by 2024. Several measures aim at preparing the country for Natura 2000 through better description and understanding of potential areas for the Natura 2000 network.

The National Biodiversity Strategy and Action Plan for the period 2018–2023 includes the analysis of implementation of the 2004 Strategy and action plan in the period 2003–2013. It concludes that only 29 per cent of activities were realized, 26 per cent were partially realized and 44 per cent remained not realized. Major impediments for implementation included lack of financial resources; low prioritization of biodiversity conservation; lack of capacity in the Ministry of Environment and Physical Panning; insufficient co-ordination and cooperation between the departments in the Ministry, as well as with other relevant ministries; non-compliance with the legislation (illegal fishing, illegal logging, etc.); and slow procedures for proclamation of new protected areas. The strategic goals of the new Strategy include: (1) overcoming the root causes of loss of biodiversity through its integration across the whole society, (2) reducing direct and indirect pressures on

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biodiversity, (3) improving the status of biodiversity by conserving ecosystems, species and genetic diversity in order to increase the benefits of biodiversity and ecosystem services, and (4) improving the knowledge and availability of information on biodiversity.

Several species conservation action plans are in place.

Local level

In 2011, the former Yugoslav Republic of Macedonia was quite advanced in environmental planning at local level: 64 municipalities out of then 84 municipalities and the City of Skopje had developed LEAPs as per requirements of the Law on Environment, though some LEAPs were outdated and required revision. As of September 2018, the instrument of LEAPs is largely put aside although the Law on Environment still requires the adoption of LEAPs for a 6-year period and their regular update. A study on LEAPs was prepared and some work on updating the methodology for preparation of LEAPs took place in 2015–2016 but this was not followed by the preparation and adoption of new LEAPs. The Ministry of Environment and Physical Planning has no information as to how many LEAPs are currently valid. No LEAPs seem to have been developed since 2013.

Most common environment-related documents at municipal level are waste management plan for a LSGU (developed by most LSGUs). At regional level, regional waste management plans have been developed for seven out of eight regions.

Municipalities have competences over the development of short-term action plans for air protection. Furthermore, at the level of zones and agglomerations, municipalities should develop plans for improvement of air quality in zones and agglomeration where air quality is above the limit values. So far, only the municipalities of Tetovo, Bitola and Skopje have prepared short-term action plans for ambient air protection. The municipality of Bitola has developed and adopted an air quality programme (2013). Air quality plans for the agglomeration of Skopje and for Tetovo municipality were adopted in 2017. An ambient air quality plan for the Veles municipality was adopted in 2017.

The City of Skopje has been particularly active on energy efficiency. In 2011, the Sustainable Energy Action Plan (SEAP) until 2020 was adopted as the city joined the EU Covenant of Mayors. It has developed three 3-year programmes on energy efficiency (for 2012–2014, 2015–2017, and 2018–2020). The City of Skopje has also developed a climate change strategy "Resilient Skopje" in 2017 (chapter 7).

Sectoral development with a possible impact on environment

Spatial planning

The system of spatial planning builds on the 2004 Spatial Plan and also includes spatial plans for the regions, municipalities, other localities, protected areas, water bodies and important water springs. The 2004 Plan includes a section on the protection and improvement of environment, natural and historical heritage and development of tourism. Nevertheless, it faces serious criticism as it does not properly take into account the environmental requirements. In particular, it does not include future Natura 2000 and Emerald sites. As of September 2018, the Ministry of Environment and Physical Planning started the procedure to prepare the new plan.

Energy

The country heavily relies on fossil fuels (low-grade lignite and oil) and hydropower and is dependent on electricity imports. In 2010, it adopted three key documents for the energy sector: the 2010 Energy Development Strategy until 2030, originally drafted for the period 2008–2030; the 2010 Strategy for Improvement of Energy Efficiency by 2020; and the 2010 Strategy for utilization of RES until 2020, later detailed through several action plans.

The 2010 Energy Development Strategy until 2030 was followed by the 2013 Programme for Implementation of the Energy Development Strategy in the period 2013–2017. The 2010 Energy Development Strategy until 2030 faced major criticism because of the nuclear power plant scenario described as one of the options by the Strategy. Moreover, the Strategy was and still is criticised for excessive focus on hydropower and insufficient attention to

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other RES such as biomass. The 2018 Study by CEE Bankwatch *Financing for hydropower in protected areas in Southeast Europe: 2018 update* says 167 greenfield hydropower plants were built since 2005 or are still planned in the country, of which, 67 are in protected areas. As of September 2018, a new national energy development strategy is under development.

With regard to energy efficiency, both second and third national energy efficiency action plans were adopted with delays. The third National Energy Efficiency Action Plan for the period 2016–2018 adopted in 2017 provided for the target to have saved 9 per cent (148.72 ktoe) by 2018. This target has not been achieved. The Energy Efficiency Fund has not yet been set up. No energy service companies (ESCOs) have been established.

Under the Energy Community commitments to increase the share of RES, the country has a target of 28 per cent in gross final energy consumption in 2020. In April 2017 the Government amended the 2012 National Renewable Energy Action Plan to take into account lower biomass baseline data (17.2 per cent compared to the 21.2 per cent originally stated). In spite of this, the National Renewable Energy Action Plan does not allow the country to achieve the target of 28 per cent. It envisages achieving the 24 per cent share in 2020, whereas meeting the country's 28 per cent target is foreseen only in 2030. The preliminary data for 2016 indicate the 18.2 per cent share of RES in the gross final consumption, after 19.5 per cent and 19.6 per cent in 2015 and 2014, respectively.

Industry and mining

The key strategic document in the sector is 2009 Industrial Policy for the period 2009–2020. It focuses on five key areas, including the development of eco-friendly products and services. The later envisages measures to increase awareness of manufacturers and consumers on ecological production, measures on energy efficiency, greening the tax reform, support to development of certification of organic producers, development and commercialization of new ecological products and services, and green public procurement.

An assessment of the implementation of the Industrial Policy for the period 2009–2020 done in 2017 as part of the preparation of the new one points out at: low financial allocations for implementation of the document; weak reporting on implementation and weak monitoring of the use of public funds; overlaps with other strategies and action plans, and lack of a focused "industrial" agenda; need for supplementing the resources allocated for the Industrial Policy through donors/IFIs; importance of establishing good donor coordination and intergovernmental coordination mechanisms. As of September 2018, the industrial strategy with a focus on the manufacturing sector, accompanied by an action plan, has been drafted to replace the 2009 Industrial Policy. Green industry and green manufacturing are among the strategic objectives.

There is no strategic document on mining, despite that this sector has been actively developing in the past ten years, with numerous concessions given for geological exploration and exploitation, and despite the requirement to develop such national strategy in the 2012 Law on Minerals. No policy document addresses the reduction of environmental impacts from mining, despite high public concerns over the environmental impacts of new gold and copper mines. No study on the environmental impacts of the mining sector has been done.

Agriculture

The 2014 National Strategy for Agriculture and Rural Development for the period 2014–2020 covers wine production, gardening, crops and livestock, fisheries, apiculture and forestry. It recognizes the need for wider application of the agroecological approach in agricultural production through introducing good agricultural practices which protect the environment. The 2012 National Programme for Development of Agriculture and Rural Development for the period 2013–2017 and the 2018 National Programme for Development of Agriculture and Rural Development for the period 2018–2022 are instruments to implement the National Strategy. They include targeted measures, such as e.g. subsidies to farmers for drop irrigation and for digging wells in groundwater to manage water efficiently.

The current (second) National Plan for Organic Production covers the period 2013–2020. The evaluation of implementation of the first plan covering the period 2008–2011 was conducted when the second one was prepared. The first plan had a target to increase arable area under organic crops to 2 per cent of total arable agricultural land. This target was not achieved. In fact, in 2016 the country had 0.63 per cent of arable area under organic production (3,239.88 ha), and in 2018 this share is still less than 1 per cent. The second plan includes a

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target for 2020 to achieve 4 per cent of arable land under organic production in the total arable agricultural land and 4 per cent of organic livestock (including beekeeping and fisheries) of the total livestock.

Organic production is not rapidly developing due to a number of factors. State extension services are provided by the Government, including with regard to organic farming, but have so far not been able to effectively promote organic farming. Farmers receive support (subsidies) to introduce organic production but not many apply for such subsidies. Farmers are not aware of plant protection products that are allowed in organic production and such products are not available on the market. The Ministry of Agriculture, Forestry and Water Economy intends to promote the use of such products for both organic and conventional crops. Although some campaigns were conducted, awareness of the population on the benefits of organic production remains insufficient. Promotion of organic agriculture also faces a capacity issue: as of September 2018, only three staff deal with organic agriculture in the Ministry.

No separate strategy on irrigation and drainage exists. Some issues related to development of irrigation are tackled in the National Strategy for Agriculture and Rural Development for the period 2014–2020.

Forestry

The 2006 Strategy for Sustainable Development of Forestry, valid until 2026, covers forests, forestry, non-timber forest products and game management and addresses planning, information, enforcement, education and training and research. No reports on implementation of the Strategy were prepared, however experts believe almost nothing was implemented.

One of the key measures of the Strategy which was not implemented is the establishment of an Agency for Forests and Hunting. Another key measure – to increase the forest covered areas through afforestation of bare grounds – has been a challenge. The land area covered by forests increased from 36.9 per cent in 2009 to 38.9 per cent in 2017. However while in late 1980s artificial afforestation was applied to 5,000-6,000 ha/y, this number dropped to 2,106 ha in 2006 – the first year of implementation of the Strategy and went as low as 1,044 ha in 2016 (and of these, only 244 ha were afforested in forests on bare grounds).

Barriers for implementation of the Strategy are partially related to the availability of data. No national forest inventory exists. Forest health monitoring does not work properly, since there are issues with continuity of information on the same monitored plots. The country is well known for its non-timber forest products, but data on quantity and value of removed products are not available. Collectors of such products are not trained to harvest sustainably.

Among the successes in implementation of the Strategy has been the introduction and development of forest certification. In 2018, the national forest certification system was granted endorsement for the first time under the Programme for the Endorsement of Forest Certification (PEFC).

Transport

The National Strategy for the Aviation Development for the period 2013–2018 includes chapters on the protection of the environment, and on environmental sustainability. These chapters describe the necessary adjustments for environmental protection from the expected increase of the volume of air transport. They address noise monitoring and reduction of noise, waste management and wastewater treatment. As of September 2018, there is an ongoing project for the preparation of new national strategy for the aviation development for the period 2021–2030.

The National Transport Strategy for the period 2007–2017 had important objectives in the areas of connectivity, transport safety, accessibility and mobility, environmental sustainability, and financing and investments. A review of its implementation was conducted during the development of the draft of the new National Transport Strategy for the period 2018–2030. The review includes almost no information on implementation of the objective on environmental sustainability. The environment-related measures under the objective on accessibility and mobility (e.g. promotion of different public transport modes and reducing the need for individual car travel by ensuring that the proper transport service is given to and from residential areas) have not been implemented.

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No city in the country has introduced ITS, however as part of implementation of the Strategy, technical documentation was prepared on the introduction of ITS along the Corridor X. In addition, in 2014 a feasibility study was prepared on multimodal connectivity to analyze opportunities for developing multimodal nodes across the country. Five multimodal nodes were identified, and one of them (Trubarevo, near Skopje) was strongly recommended for further development.

The draft of the new national transport strategy for the period 2018–2030 is prepared but not yet adopted. The goals of the new strategy include, among others, developing multimodal transport and improving the sustainability of the environment. SEA has been completed for the draft.

Tourism

In 2016, the share of tourism in GDP was 1.5 per cent. Foreign tourists mostly spend their time in lake area (42.36 per cent of nights spent in 2016).

The country has no valid long-term strategy on tourism development. It used to have a 2009 Tourism Development Strategy for the period 2009–2013 which was extended to 2015. In 2016 a draft tourism strategy for the period 2016–2021 was prepared; however it was never adopted. In order to stimulate investments in tourism, the document envisages the establishment of special tourist development zones, of which seven zones are located on the lakes (one on the Lake Dojran, four on the Lake Ohrid and two on the Lake Prespa) and one in the mountain region. Currently, the Ministry of Economy is updating the draft for another round of consultations with other ministries.

There are annual governmental support programmes for tourism development managed by the Ministry of Economy and the Agency for promotion and support of tourism. The funding for 2018 Tourism Promotion and Support Programme is about €2.64 million that is to be spent on promotional activities, marketing, international cooperation and tourism support activities such as making new mountain hiking trails, new mountain run trails, development of sports climbing, arrangement of paragliding flying sites, etc. These activities very much rely on the country's nature and environment. However, a targeted strategy to guide efforts to promote eco-tourism or tourism in protected areas is absent. No assessment to evaluate the environmental pressures from tourism activities was conducted.

Health

The key document for environment and health is the national Health 2020 Strategy, adopted in 2017. This document is aligned with the SDGs. In the area of environment and health its sets three strategic goals: all health-related factors included in environmental policies; health and welfare protection from environmental risks arising from climate change, air, water, soil, chemicals, asbestos, etc.; and reduction of all kinds of environment-related health inequalities. A related strategic goal is prevention of non-communicable diseases from modifiable risk factors, including smoking, improper nutrition, overweight and obesity, and physical inactivity.

In 2015, the Ministry of Health with support of the WHO developed an action plan for health and environment (first with the time horizon until 2020, and later with the time horizon until 2030 to align it to the SDGs). The draft was finalized in early 2016, but never adopted. It is considered that adoption was blocked due to financial implications, and there is an understanding that one may need to reduce the ambition by prioritizing some measures to enable the plan be adopted and financed. A smaller-scale action plan on environmental health developed on the basis of the national Health 2020 Strategy was finalized January 2017 but as of late 2018 is not adopted.

The Strategy for Health Sector Adaptation to Climate Change, accompanied by an Action Plan for 2011–2015 was developed in 2008–2009 as part of the WHO Seven Country Initiative. Its implementation is positively assessed by various stakeholders. The country established a functional early warning system for heat waves and for cold waves. Population awareness on heat waves and measures to be taken has greatly increased.

The governmental funding for implementation of policy documents and implementation is allocated through annual budgetary programmes, such as e.g. Programme for Systematic Surveillance over Pupils and Students in

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2018 or National Program for Public Health in 2018. The Ministry of Health publishes reports about implementation of these programmes on its website.

The National Program for Public Health in 2017 envisaged the adoption and promotion of the national programme for the elimination of asbestos-related diseases developed with support of the WHO during 2016 and the preparation of a national action plan for the elimination of asbestos-related diseases. However, the national programme was not adopted.

1.3 Strategic environmental assessment

Scope and responsibilities

The SEA tool has been introduced in the country in late 2007. In the country, SEA applies to strategies, plans and programs (hereinafter: planning documents); it does not apply to policies and legislation. The country became a party to the Protocol on SEA in 2013.

The legal framework for SEA is provided by chapter X of the Law on Environment and several acts of subsidiary legislation. Responsibility for conducting the SEA procedure is with the ministry (for national level planning document) or municipality (for local level planning document) that develops a planning document. The Ministry of Environment and Physical Planning has a role of a control mechanism. It reviews the decision of the authority proposing the planning document to conduct or not the SEA procedure and reviews the scope of SEA proposed in a decision to conduct SEA. It also conducts the evaluation of the SEA report.

The areas where SEA is required are agriculture, forestry, fisheries, energy, industry, mining industry, transport, regional development, telecommunications, waste management, water management, tourism, spatial and urban planning and land use. Planning documents in these areas are subject to SEA if they set a framework for future development of projects that are subject to EIA. SEA is implemented for all planning documents governing the management of protected areas, declared as protected areas by law, or that are likely to have effects on those areas.

Formally, the country has a combined approach to screening: it uses both a list of planning documents requiring screening and a case-by-case screening. Planning documents requiring implementation of SEA are listed in the 2007 Regulation on the strategies, plans and programs, including changes to those strategies, plans and programs, for which the procedure for assessment of their impact on the environment and on the life and health of people is mandatory. SEA is also to be implemented for planning documents not listed in this Regulation if the planning document sets a framework for future development of projects that are subject to EIA and/or is likely to have significant effects on the environment. For this case the criteria have been defined in the 2007 Regulation on the criteria on the basis of which the decision as to whether a given planning document is likely to have a significant effect on the environment and human health shall be issued.

In 2011, amendments to the Law on Environment made scoping an obligatory step of SEA.

Implementation and capacity

In 2012, the Unit for SEA in the Ministry of Environment and Physical Planning was transferred from the Department of Sustainable Development and Investments to the Department of Physical Planning. Prior to 2014, one person dealt with SEA issues in the Ministry; since 2014 two staff are in charge of SEA. These human resources are not enough taking into account the number of SEA dossiers reviewed by the Ministry – in average 384 per year in the period 2011–2017 (table 1.1). The decrease in the total number of SEA dossiers is attributed to decrease in dossiers received from the local level.

Table 1.1: Strategic environmental assessment dossiers received by the Ministry of Environment and Physical Planning, 2011–2017, number

	2011	2012	2013	2014	2015	2016	2017
Total dossiers received from LSGUs and central government bodies	488	483	430	373	430	259	226

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of which:							
Suggesting that SEA procedure is needed	266	195	152	98	129	80	70
Suggesting that SEA procedure is not needed	215	235	268	274	294	179	154
of which:							
SEA procedure requested by the Ministry	..	24	46	15	6	6	4
Incomplete dossiers	7	53	10	1	7	..	2

Source: Ministry of Environment and Physical Planning, 2018.

SEA for national level planning documents

The number of national planning documents undergoing a SEA has increased since 2013–2014. Nevertheless, a reality check evidences that there are national planning documents prepared by sectoral ministries and adopted without a SEA procedure. Some examples include the National plan for organic production for the period 2013–2020; National tourism strategy for the period 2009–2013 and National Strategy for Aviation Development for the period 2013–2018. Another systemic issue is that ministries start the SEA procedure as the last step, after the draft planning document is cleared through the ministerial consultations. This allows them to tick the box that the SEA procedure was conducted but does not fulfil the very purpose of the procedure to examine all possible options. There are several examples when a draft planning document has been submitted several times for interministerial consultations but the SEA for that document was not initiated.

The systemic problems with implementation of SEA have been at roots of the cases involving the former Yugoslav Republic of Macedonia in the Standing Committee of the Bern Convention with regard to the Mavrovo National Park and the World Heritage Committee with regard to the Natural and Cultural Heritage of the Ohrid region. In the latter case, the World Heritage Committee requested the former Yugoslav Republic of Macedonia to undertake an SEA that would comprehensively assess the cumulative impacts of all infrastructure and development plans and other major projects on the World Heritage property (2017 Decision: 41 COM 7B.34)

No activities to raise awareness of the SEA requirements among sectoral ministries take place. When SEA is prepared for national level planning documents this usually takes place as part of a project that envisages preparation of a strategic document.

SEA for local level planning documents

The vast majority of SEA dossiers received by the Ministry of Environment and Spatial Planning come from the local level and are in the area of urban planning. At local level the capacity to prepare SEA documentation is low.

Cases when municipalities try to bypass the SEA procedure and announce their decision not to do a SEA, whereas the Ministry requests them to change the decision are not frequent - this happened in average for 6.2 per cent of SEA dossiers received by the Ministry in 2011–2017.

The statistics on planning documents adopted at local level without a SEA procedure is not available. Another observation is that municipal authorities tend to do "unnecessary" SEAs in order to give preparation of SEA reports through contracts to certain experts and companies.

Despite the decrease observed since 2011, the Ministry of Environment and Spatial Planning considers the number of SEAs initiated at the local level to be too high. One of the reasons is that the screening does not work well. The criteria for screening are defined in the 2007 Regulation on the criteria on the basis of which the decision as to whether a given planning document is likely to have a significant effect on the environment and human health shall be issued but the Regulation is not used in practice, neither by the Ministry nor at the local level.

Nevertheless, since the number of national planning documents undergoing a SEA procedure increased during the past years, a decreasing trend in the total number of SEA dossiers received by the Ministry in 2011–2017 (table 1.1) indicates a decrease in the number of dossiers received from LSGUs and may be an evidence of improved understanding of the SEA requirements and procedure at local level.

Capacity

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A number of workshops and trainings on SEA were organized by the project "Strengthening the administrative capacities on central and local level for SEA" (2010–2011), supported by the Netherlands. Within the project, an Internet portal on SEA was established, in order to enhance public participation and provide assistance in implementation of SEA. The website operated for several years after the project completion but is no longer available. No other trainings on SEA at national or local level were organized.

The quality of SEA reports remains an issue. Preparation of SEA report is a licensed activity and about 40-50 people possess such a license. The problem of quality of SEA reports is partially connected with insufficient involvement of sectoral departments of the Ministry of Environment and Physical Planning in the evaluation of SEA reports.

Public participation

Public participation in SEA is regulated by the Law on Environment and the 2008 Regulation on public participation in the process of preparation of environmental regulations and other acts as well as environmental plans and programmes.

There is no public participation in screening and scoping as such, but NGOs and other parties concerned may file a complaint against the decision not to undertake an SEA procedure adopted by the body proposing a planning document. When the SEA takes place, the body preparing the planning document shall publish on its website the information on the draft planning document, the draft SEA report and information on the location where the draft planning document may be reviewed. This is to be followed by consultations on the draft SEA report and public hearings. The body developing the planning document shall prepare a report on the public consultations based on the outcomes of public hearing and opinions received through the public consultation process.

In practice, the country faces systemic issues with proper public participation in SEA. SEA reports and texts of draft planning documents under SEA procedure are not easy to find on the websites of relevant authorities if you do not know exactly where to look. Another common issue is that the SEA procedure, and public participation as part of it, often start when the planning document is at advanced stage of decision-making process rather than at an early stage. For example, in August 2011, the Ministry of Environment and Physical Planning published a draft National Water Strategy. Following the pressure from NGOs that no SEA was conducted, on 30 September 2011 the Ministry adopted a decision on the implementation of the SEA. The notification informing the public that the SEA report has been prepared and published on the website of the Ministry was posted a week later, on 7 October 2011. The SEA report was made up in a rush and greatly resembled the already existing SEA report for the 2010 Strategy on Energy Development until 2030.

Monitoring and follow-up

The Law on Environment includes a requirement for monitoring the effects of implementation of planning documents. However monitoring and follow up are not done in practice. Sectoral ministries and municipal authorities are not aware of such requirement. The Ministry of Environment and Physical Planning has no capacity to proactively solicit monitoring and follow up.

Transboundary context

The Law on Environment prescribes the procedure for transboundary SEA, which is further detailed in the 2010 Rulebook on the manner of carrying out transboundary consultations. Practical experience with transboundary consultations in very limited:

- In 2013, the former Yugoslav Republic of Macedonia acted as party of origin when it notified Albania of the Urbanistic plan for Touristic Development zone Ljubanishta 1, Municipality of Ohrid.
- In 2014, the former Yugoslav Republic of Macedonia notified Greece and Albania of the proposed amendments to the Management Plan of the Galičica National Park. Greece did not respond but Albania came to public hearings.

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- In 2016, the former Yugoslav Republic of Macedonia as an affected party was invited by Albania as a party of origin for consultations on the Gas Master Plan Project of Albania but did not actually participate in the consultations.

1.4 Sustainable development goals

Institutional set-up

The Cabinet of the Deputy Prime Minister in charge of Economic Affairs is responsible for sustainable development policies and for coordination of implementation and monitoring of the SDGs. This office assigns the role of the political-level body mandated to guide implementation of the SDGs to the National Council on Sustainable Development. The Council has last convened in 2015.

SDGs in national policy framework

In December 2015 the Cabinet of the Deputy Prime Minister in charge of Economic Affairs requested assistance of the United Nations Country Team to update the 2010 National Strategy for Sustainable Development by mainstreaming the SDGs there. A Rapid Gap Assessment was prepared during 2016 through a multi-stakeholder consultation process. Reportedly, the document includes a mapping of the national policy documents against the SDGs and is accompanied by recommendations on actions to be taken for each SDG. The document was not adopted due to political crises in the country. It is not available to the public, ministries and stakeholders. As of September 2018, the Cabinet of the Deputy Prime Minister in charge of Economic Affairs intends to update the Rapid Gap Assessment, strengthen the National Council for Sustainable Development and establish a working group for each SDG. There are also plans to prepare a voluntary national review for the high level political forum in 2019 or 2020.

As of September 2018, the SDGs are not mentioned in any adopted strategic document at national level. No specific effort to mainstream the SDGs into sectoral policy documents was applied.

The Government has not conducted any assessment of costs of implementation of SDGs. The Cabinet of the Deputy Prime Minister in charge of Economic Affairs intends to undertake an assessment of costs and prioritization of the goals and targets.

Indicators

No assessment of the availability of global SDG indicators was completed in the former Yugoslav Republic of Macedonia. The State Statistical Office (SSO) reports to be working on such assessment. The availability of some global SDG indicators was analyzed as part of the preparation of draft action plan on environment and health in early 2016. In 2018 SSO published a book "Sustainable Development" with a compilation of sustainability-related data; some global SDG indicators are covered in this book.

Awareness and ownership

In September 2018, awareness of the SDGs in the Ministry of Environment and Physical Planning and the sectoral ministries is insufficient. Government officials have heard about the SDGs but are sure that their institution is not doing anything specific on the SDGs and are convinced that specific instructions should come from the Cabinet of the Deputy Prime Minister in charge of Economic Affairs. The ownership of the goals is low. Awareness of the SDGs among local government authorities is low. It is much better among civil society organizations.

1.5 Institutional framework for environment and sustainable development

Ministry of Environment and Physical Planning

Tasks and functions

The Ministry of Environment and Physical Planning is responsible for monitoring the condition of the environment; protection of water, soil, flora, fauna, air and ozone layer against pollution; protection against noise,

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radiation, protection of the biodiversity, national parks and protected areas; restoration of the polluted areas of the environment; proposing measures for treatment of solid waste; spatial planning; spatial information system; supervision within its competence; and other activities. The Ministry's Strategic Plan for the period 2016–2018, specifies the tasks of the Ministry, including the alignment of legislation with EU acquis, supervision and coordination of work of LSGUs, international cooperation, management of climate change-related issues and raising public awareness and involving the public in decision-making on environmental issues,

Changes in organizational structure

Since 2011, the institutional structure of the Ministry saw few changes. The only major change has been the separation of the State Environment Inspectorate from the Ministry in 2014. The establishment of an Environment Agency (or Environmental Protection Agency) by merging the Administration for the Environment, the State Environment Inspectorate and the Office for Spatial Information System did not materialize. Administration for the Environment and the Office for Spatial Information System are still part of the Ministry's structure (figure 1.1).

While the Administration for the Environment is an entity under the Ministry, headed by a Director of the Administration, in reality the departments within the Administration for the Environment do not differ much from the departments which are part of the Ministry and in fact function as structural units of the Ministry.

The other key change has taken place in 2011 when significant responsibilities in water area have been transferred to the Ministry of Environment and Physical Planning. The Ministry is now in charge of planning and management of waters, including the drafting of legislation and implementation of policy documents, water permitting, managing the water program and implementation of river basin management. These new responsibilities resulted in reorganization of the Department for Water of the Administration for the Environment. The Department for Water also took over the management of the Gjavato- Lake Dojran Hydrosystem, which was previously managed by a separate legal entity.

Staffing issues

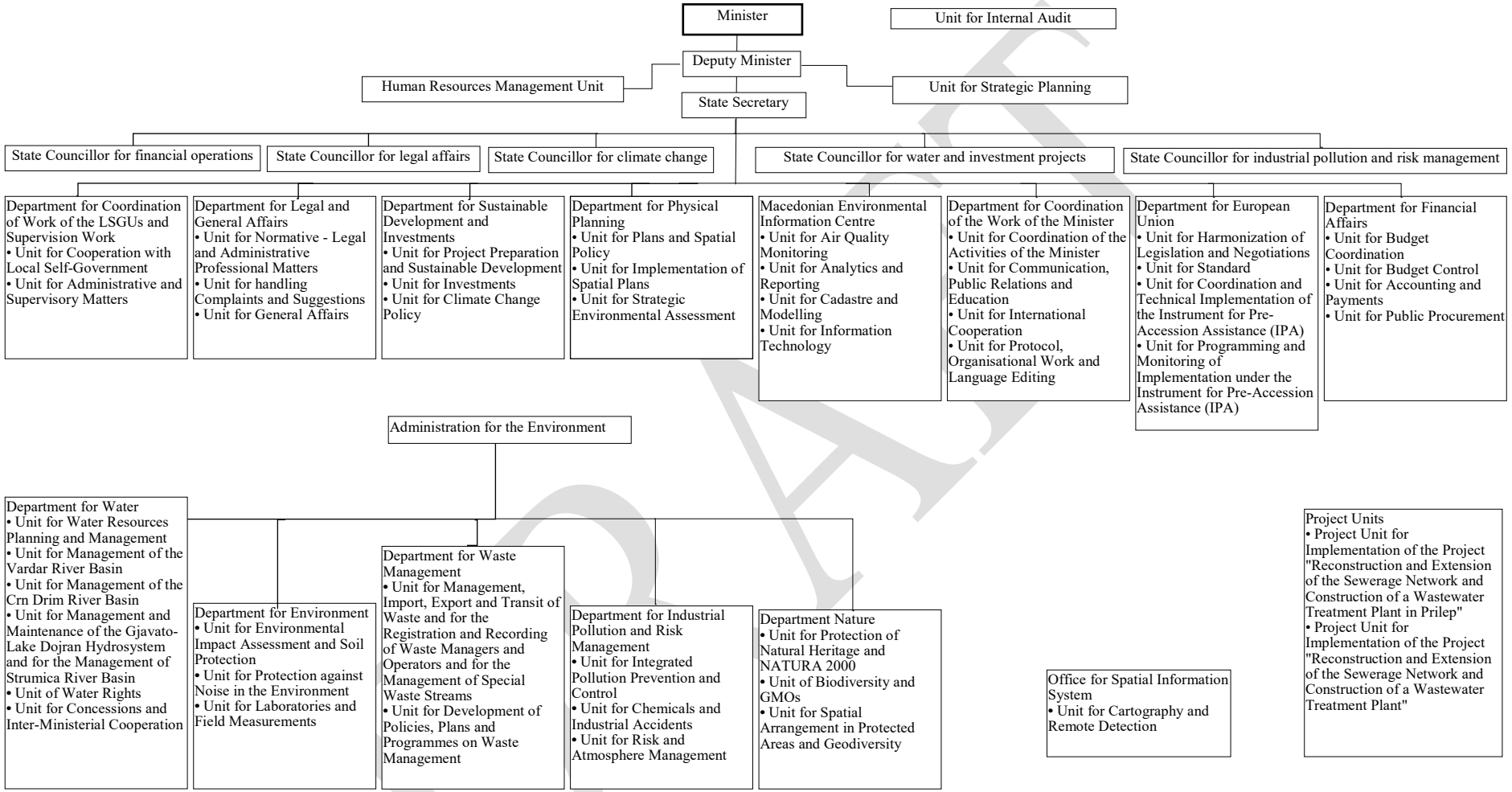
In September 2018, 278 civil servants and technical staff work in the Ministry against the 310 posts systematized (i.e. described and approved). The approved budget limits the actual number of occupied posts. However, a more serious concern is that people working in the Ministry often deal with other tasks than their posts envisage or accomplish only part of their tasks. For example, in 2017 the Soil Unit of the Department for Environment was transformed in the Unit for EIA and Soil Protection in the same Department, and the only person seating in this unit deals with EIA entirely, as the workload does not allow working on soil. Formally, the Department on Water has a Unit for Management and Maintenance of the Gjavato- Lake Dojran Hydrosystem and for the Management of Strumica River Basin, but the entire unit of 16 people deals with the hydrosystem only, rather than Strumica basin management. In the Department for Cooperation with LSGUs and Supervision Work, 5 out of 7 staff deal with waste permitting and not with the core responsibilities of the Department.

Organizational culture

There is no policy at the Ministry of Environment and Physical Planning to lead the environmental protection efforts by its own example. No efforts are applied to reduce use of paper and generation of waste in the Ministry's building, be energy and water efficient and carbon neutral. The Ministry coordinates the implementation of numerous projects, but green procurement is not practiced for the purchase of goods and services in the framework of those projects.

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Figure 1.1: Structure of the Ministry of Environment and Physical Planning



Source: Ministry of Environment and Physical Planning, 2018.

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Key environment-related structural units of the Ministry

The Department for EU is the main vehicle to coordinate efforts of the Ministry in approximation of the environmental acquis. It has a Unit for Harmonisation of Legislation and Negotiations, the Unit for Standards and two Instrument for Pre-Accession Assistance (IPA) units. The Unit for Standards ensures communication between the Ministry and the Standardization Institute on the development of standards in environmental area. The Unit for Standards is also in charge of promoting the eco-management and audit scheme (EMAS) but attention to this area of work has been insufficient. The IPA Coordinator is part of the Department for EU, as also the RIA Coordinator. The Department for EU was enlarged in the number of staff when the IPA Department (previously separate) was brought to this Department but the number of people who work on EU integration issues and harmonization of legislation has actually decreased. Only two lawyers work in the Department for EU. The staffing situation is clearly not enough vis-à-vis the tasks, especially considering that the screening process for the former Yugoslav Republic of Macedonia is tentatively expected to start in mid-2019.

In the Department for Sustainable Development and Investments most people work on investments. Apart from preparation of related inputs to policy documents, the Department does not work on sustainable development issues as this mandate has been assigned to the Cabinet of the Deputy Prime Minister in charge of Economic Cooperation. The Department works with projects financed through the annual environmental investment programme (formed from the funds collected from tax on vehicle registration), which are selected from the project proposals developed by municipalities and other stakeholders. The Department also coordinates the implementation of projects funded by the Government of Switzerland. In addition, the Department coordinates the implementation of projects funded by the central government.

In the Department for Coordination of Work of the LSGUs and Supervision Work, only 2 staff work on supervision of and coordination of LSGUs' activities. This work is undertaken on the basis of an annual supervision plan. Such plan usually covers 10 municipalities, where the Ministry checks legal matters related to environmental protection, human resources working for environmental protection, issuance of environmental elaborates, implementation of waste management and the work of public enterprises. A separate report for each municipality is prepared with recommendations for improvement. The Department does not organize regular consultations with municipalities. Other 5 staff in this Department work on waste permitting for three types of permits (treatment and storage of waste; collection and transport of non-hazardous waste; collection and transport of hazardous waste). They receive applications for waste permits, check the documentation, receive the expert opinion of the Department for Waste and prepare waste permit for consideration by the Cabinet of Ministers. There is an understanding that waste permitting is consuming too much time and effort and does not allow the Department to focus on its core task – supervision and coordination. In addition, the Department services the Misdemeanour Commission and the Mediation Commission of the Ministry.

The Department for Physical Planning deals with implementation of policies in the area of spatial planning. In particular, it coordinates the procedure of development of spatial plans, carries out the procedure for their adoption and monitors their implementation. In 2012, the Unit for SEA was transferred to this Department.

The Macedonian Environmental Information Centre (MEIC) is a structural unit within the Ministry. Its task is to collect, process, regularly update and disseminate information on the state of environment (air, water, soil, noise, waste, nature, protected areas, etc.). MEIC runs the state automatic monitoring network on air but also collects data and information from other sources and deals with systematization, analysis, processing and presentation of data and information on the environment. MEIC prepares annual reports on the quality of the environment and produces every four years the State-of-the-Environment Report (chapter 4). It is responsible for environmental reporting by the country at international level (e.g., EEA, ECE, EUROSTAT, WHO).

The Department for Water (part of Administration for the Environment) prepares policies and legislation on water, implements the river basin management approach and water permitting. The Department issues permits for water use, permits for discharge of wastewater and permits for abstraction of sand and gravel from riverbeds. The country does not have the traditional river basin authorities. Rather, three units of the Department for Water play the role of river basin authorities. These are the Unit for the management of Vardar River Basin (based in Skopje), Unit for the management of Crn Drim River Basin (based in Ohrid) and Unit for Management and Maintenance of the Gjavato- Lake Dojran Hydrosystem and for the Management of Strumica River Basin

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(technical staff in charge of the hydrosystem and based in the field). These units are meant to deal with development and implementation of river basin management plans but in fact they do water permitting.

The Department for Nature (part of the Administration for the Environment) is responsible for development of policies and legislation and their implementation in the field of biodiversity and landscape diversity, protected areas, natural heritage and GMOs. The Department issues four types of permits: CITES permit; permit for scientific research; permit for keeping wild animals in captivity; and permit for extraction of wild plants, fungi and animals from nature outside forests (in forests, this permit is issued by Macedonian Forests).

The Department for Industrial Pollution and Risk Management (part of the Administration for the Environment) is responsible for development of policies and legislation and their implementation in fields of: integrated pollution prevention and control, certain groups of chemicals (ozone depleting substances, persistent organic pollutants, mercury), prevention of and preparedness to industrial accidents and the management of hotspots of historic pollution. Its Unit for Integrated Pollution Prevention and Control issues: type "A" permits; type "B" permits for installations in protected areas; and type "B" permits for those municipalities that do not have sufficient experience and capacity to issue type "B" permits. This unit also receives annual self-monitoring reports and checks their quality. In addition to the Unit for Chemicals and Industrial Accidents in this Department there is also an outside-the-Ministry Ozon and POPs Unit dealing with implementation of international commitments in this area.

The Department for Environment (part of the Administration for the Environment) has three units: Unit for EIA and Soil Protection; Unit for Noise; and Unit for Laboratories and Field Measurements. In 2014–2017 one staff worked on soil issues in the soil unit that was merged with the EIA unit. Now this one staff formally works on soil and EIA but in fact does only EIAs. Currently, there are some project activities related to desertification where soil issues are raised, but otherwise nobody in the Ministry works specifically on soil issues. Four staff work on EIAs. The Unit for Noise was established in 2014. The head of the Unit for Noise is the only staff dealing with noise issues. In reality, this staff does EIAs and collects data for preparing strategic noise maps.

The Department for Waste (part of the Administration for the Environment) develops policy and legislation on waste (except agricultural and radioactive waste), pursues international cooperation on waste, prepares projects and coordinates their implementation, works with municipalities and public communal enterprises. Due to the low capacity of the Department for Waste, major role in waste permitting is played by the Department for Coordination of Work of the LSGUs and Supervision Work (under the Ministry). Still, some of the permits, for example, for collective schemes and for export/import/transit of waste, are issued by the Department for Waste independently.

There are two IPA project units established within the Ministry. They deal with reconstruction and extension of the sewerage network and construction of WWTPs.

State Environmental Inspectorate

In 2014, the State Environmental Inspectorate (SEI) became a separate legal entity with its own budget. Its Director is appointed by the Government, and this is a political appointment. Compared to 2008 when it had 22 civil servants of whom 19 were inspectors, its staffing situation did not improve. In September 2018, 24 people work in SEI, of whom 17 are inspectors (2 nature inspectors, 1 water inspector and 14 environmental inspectors).

With separation of SEI from the Ministry, the former Yugoslav Republic of Macedonia formally separated inspection from policy making and regulatory activities in environmental field. However, this separation has not been done as in most other countries where a state inspection authority is not only separate from the ministries but is also bringing together all kinds of inspections (environmental, sanitary, tax, fiscal, agriculture, etc.) which gives the opportunity for inspectors to benefit from common infrastructure, equipment and legal support and strengthens their joint response to violations. In the former Yugoslav Republic of Macedonia, the SEI, the State Agriculture Inspectorate, State Forestry and Hunting Inspectorate and other inspectorates are all separate from each other. The Inspection Council coordinates the work of 14 state inspectorates, including SEI, and several other bodies.

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SEI has been strengthened through the twinning project "Strengthening administrative capacities at the central and local level for the implementation of the environmental legislation" (2015–2016), although it is difficult to assess to what extent the materials drafted by the project are used in practice. The project helped improve planning and reporting on inspectors' work. SEI has a website (as of September 2018, not updated since 2015) and produces annual reports on its activities (but reports for 2015–2017 are not available on its website).

The negative side of separation of SEI from the Ministry is the weaken link between SEI and the Ministry. The inspectors receive permits issued by the Ministry and are consulted on permit applications but do not send the inspection reports to the Ministry. The Ministry receives annual self-monitoring reports from the operators but does not send them to SEI. SEI is consulted on drafts of laws and regulations developed by the Ministry but its actual influence on decision-making is limited.

Sectoral ministries

Ministry of Agriculture, Forestry and Water Economy

The Ministry of Agriculture, Forestry and Water Economy is responsible for development and implementation of policies on agricultural development (including organic production), protection of cattle and crops from diseases, plant protection, agricultural land management, rural development, forestry (including use and management of forests, afforestation, reforestation and forest protection), hunting and irrigation and drainage.

Since 2011, the only water-related responsibilities remaining with the Ministry of Agriculture, Forestry and Water Economy relate to irrigation and drainage. No permits on water are issued by the Ministry of Agriculture, Forestry and Water Economy. The Ministry of Agriculture, Forestry and Water Economy and the State Agricultural Inspectorate have no inspection-related responsibilities on water.

The State Agricultural Inspectorate (a separate legal entity within the Ministry) controls implementation of laws and regulations on agriculture, organic production, plant protection, phyto-sanitary protection, fishing and rural development.

The State Forestry and Hunting Inspectorate (a separate legal entity within the Ministry) controls the implementation of laws regarding forests, reproductive material from forests and hunting. It has one hunting inspector and 13–14 forestry inspectors.

The National Hydrometeorological Service, a body under the Ministry with the status of a separate legal entity, works on weather forecasting, meteorology and climatology, and hydrological monitoring.

Ministry of Health

The Ministry of Health is responsible for public health policy. Its relevant areas of responsibility include quality of water used for drinking, chemicals management and medical waste management.

The Institute of Public Health has a department of environmental health. It gathers data from the 10 centres for public health, monitors and evaluates the environmental health risks, identifies the priority issues and potential risk to the health conditions at national level and informs the Ministry of Health. It works on food safety, water safety and sanitation, nutrition monitoring, occupational medicine and other issues.

Other ministries

The relevant responsibilities of the Ministry of Economy include the development and implementation of policies and legislation in the areas of energy, fuel quality, vehicle fleet, groundwater and minerals, industry and tourism. Although the Ministry of Economy has overall responsibilities for the industry sector, the hotspots of historic pollution are the domain of the Ministry of Environment and Physical Planning.

The Ministry of Transport and Communications is in charge of development of policies and legislation on all types of transport (road, railways, and aviation) and related infrastructure. It also supports the municipal authorities to develop cycling, improve transport management and public transportation. The Ministry also has

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large responsibilities in field of communal affairs and infrastructure: it supports municipalities in the development of water supply, sewage systems, collection and treatment of wastewater.

The Ministry of Local Self-Government is responsible for decentralization policy and building a functional local self-government system, at the same time promoting a balanced regional development. The Bureau for Regional Development, a body within the Ministry with the status of a separate legal entity, works on planning documents for regional development. In addition, it coordinates the allocation of funds for promoting of equitable regional development to LSGUs for building the infrastructure (roads, water supply, schools, health institutions and tourism development).

The Ministry of Education and Science is in charge of policies for developing education and educational system, science and innovation. It covers primary, secondary and higher education.

Others

The Cabinet of the Deputy Prime Minister in charge of Economic Affairs is responsible for sustainable development policies. It facilitates the work of the National Council on Sustainable Development. It is in charge of coordination of implementation and monitoring of the SDGs. It is also the national designated authority for the Green Climate Fund. The Cabinet is also focal point for Bern convention.

The Secretariat for European Affairs, led by the Deputy Prime Minister in charge of European Affairs, has horizontal coordination functions related to the issues associated with the preparation process for EU membership. It is responsible for coordinating the preparation of the NPAA.

The State Statistical Office is under the Government and not subordinated to any Ministry. In its Department of Environmental and Agricultural Statistics two staff work on environmental issues.

The Inspection Council is a separate state body, established in 2014. The Inspection Council consists of a President and six members coming from various thematic fields. One member comes from the field of environmental protection and human health and one other – from the field of agriculture, forestry, veterinary and food safety. Its mission is to coordinate the work of inspectorates and monitor the efficiency of their work. It also deals with the training of inspectors.

The Energy Agency operates since 2007 to support implementation of the energy policy through preparation of studies, plans and programs with a focus on energy efficiency and renewable energy sources. It coordinates financial support for projects in the domain of energy efficiency and renewable energy sources and does awareness raising and training in these two areas.

The Energy Regulatory Commission works on setting prices and regulated tariffs for electricity and gas supply, district heating and water services.

The Standardization Institute deals with implementation of the standardization process in the country, preparation, adoption, publication of the national standards and acceptance of international standards.

The national parks function as self-financed public institutions: Public Institution Mavrovo National Park, Public Institution Pelister National Park and Public Institution Galičica National Park. They are responsible for administering and managing the national parks. This includes monitoring and direct protection of the national park, implementation of management practices stipulated in the management plan, scientific research and other activities. The national park administrations do not receive governmental funding and currently depend on revenues generated by such economic activity as timber harvesting. However some are moving to other funding mechanisms.

The Public Enterprise "Macedonian Forests" manages public forests, operates some hunting grounds, produces planting material and maintains tree nurseries. Most of the pasture land is managed by the Public Enterprise "Macedonian Pastures". Both coordinate their activities with the Ministry of Agriculture, Forestry and Water Economy.

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The Association of the Units of Local Self-Government (ZELS) is a non-profit organization whose members are all 80 municipalities and the City of Skopje. ZELS does lobbying and advocacy to improve the operation and defend the interests of LGSUs. It provides training and capacity building to municipal authorities and offers electronic systems (servers, software, and maintenance) to municipalities.

Local level and vertical coordination

At subnational level, there are 81 LGSUs: 80 municipalities and the City of Skopje as a separate LSGU. The country is divided into eight regions for planning purposes, but the regional level of governance does not exist.

Institutions

The municipal councils (representative bodies) usually have commissions responsible for environment along with some other areas, e.g. urban planning or communal affairs.

Municipal administrations (executive bodies) have sectors responsible for environmental issues along with other issues. For example, in the administration of Tetovo municipality, the Department for Communal Affairs, Environment and Nature Protection (30 staff) has a unit for environmental protection with 4 staff positions. However, in small municipalities nobody works on environmental issues.

Municipal administrations also have the inspection authorities. For example, the Department for Inspections (Municipal Inspectorate) in the administration of Tetovo municipality has three units, of which one is the Unit for Municipal Inspection, Traffic, Road and Living Environment. In this unit there are three local authorized environmental inspectors. Situation in smaller municipalities is different; only about 50 per cent of all municipalities have appointed local authorized environmental inspectors.

Local authorized environmental inspectors check installations with "B" type permit and operators who work based on environmental elaborates. These inspectors cover waste, water, air, noise and soil issues. Unlike SEI inspectors that are licensed for 6 years, the local authorized environmental inspectors are not licensed. One of the key issues is that the local authorized environmental inspectors have to be "universal", in other words be experts in air, waste, soil, etc. and lawyers at the same time. Such combination of professional skills is a rare case.

The appointment of local authorized environmental inspectors is done by the mayor. SEI has no say in appointment of local authorized environmental inspectors and exercises neither expert supervision, no administrative supervision over them. One of the changes envisaged by the draft law on environmental inspection is to make local inspectors subject to the expert supervision by SEI.

The local authorized environmental inspectors have been involved in some training by SEI but there are no evidences to suggest that they use the manuals and checklists which were developed by SEI as part of the Twinning project "Strengthening administrative capacities at the central and local level for the implementation of the environmental legislation" (2015–2016).

Another issue pertaining to local authorized environmental inspectors is that only two laws (Law on Noise and Law on Waste Management) envisage that the payments initiated by local authorized environmental inspectors go to municipalities; in all other cases they go to central budget. In these circumstances, local authorized environmental inspectors are less motivated to detect violations of other laws.

Competences

The 2002 Law on Local Self-Government outlines the following environment-related competences of LSGUs:

- Protection of the environment and nature, including measures for protection and prevention of pollution of water, air, land, nature protection, protection against noise and non-ionizing radiation;
- Health care, including health surveillance over risks of environmental factors;
- Communal activities, including
    - Drinking water supply;
    - Delivery of industrial water;

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- Drainage and treatment of wastewater and storm waters;
- Maintenance of public hygiene;
- Collection, transport and treatment of municipal solid waste (MSW) and industrial waste;
- Maintenance and use of parks, green spaces and recreational areas;
- Regulation, maintenance and use of river beds in urban areas.

In addition, environmental-related competences of LSGUs are defined in other laws. Under the Law on Environment, the competences of municipalities include:

- Issuing environmental elaborates and "B" type permits and providing opinion on applications for "A" type permits;
- Introducing compulsory measures to address exceeded emission levels and/or pollution in case the pollution is restricted to the territory of the LSGU;
- Promoting development of education and public awareness on environmental issues;
- Preparing and adopting LEAPs every 6 years, implementing LEAPs;
- Implementing SEA procedure for planning documents for which SEA is compulsory and screening in case SEA is not compulsory;
- Applying for funds from the annual Programme for Environmental Investments;
- Carrying out authorized environmental inspections using local inspectors.

There are a number of responsibilities of municipalities under the Law on Waste Management, including the adoption of waste management planning documents, implementation of a regional approach to waste management, establishing public utility companies for collection and treatment of municipal and non-hazardous waste, monitoring and reporting on waste, etc. Under the Law on Ambient Air Quality, the LSGUs are to prepare 5-year plans for ambient air quality improvement and short-term action plans for ambient air protection when critical thresholds are exceeded. Under the Law on Waters, municipalities have responsibilities to provide water supply, ensure protection of sources of drinking water and provide for collection, disposal and treatment of wastewater. They are also responsible for protection against floods and other harmful effects of water in urban areas. Other environment-related laws also include responsibilities of LSGUs.

The legislation includes many optional (non-mandatory) competences of LSGUs: for example, under the Law on Environment municipalities may establish local monitoring networks and may prepare a state of environment report for their territory. However, examples of such activities are absent. The City of Skopje used to perform local measurements of air quality at one location in the centre of the city but the equipment was removed from that location due to construction activities (chapter 8).

Capacity

Although the decentralization process started back in 2002, municipalities face significant difficulties with implementation of their environmental-related competences. For example, the issuing of "B" type permits is a major responsibility of LSGU but many municipalities, even the large ones, for years have not been able to do that. The process of decentralization has not been accompanied with proper training and enhancing of capacity at local level. Municipalities interact with Ministry of Environment and Physical Planning but the provision of guidance and assistance is at insufficient level.

The Government recognizes the existing difficulties and had adopted two documents aimed at increasing capacity for implementation of environment-related responsibilities at local level. The 2009 Plan for Institutional Development of the National and Local Environmental Management Capacity for the period 2009–2014 was poorly implemented due to the lack of financial resources and no implementation report was prepared. The 2017 Programme for Reform and Strengthening of the Administrative Capacities for the Implementation of the Environmental Legislation at the Local Level was adopted more recently as another attempt to address the challenges encountered. As of September 2018, the programme is largely not known both within the Ministry of Environment and Physical Planning and at local level.

Participation of LSGUs in decision-making

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Mechanisms for participation of LSGUs in policy- and decision-making on environment are available but the main obstacle is resources and capacity. For these reasons, such participation largely takes place through ZELS and through direct lobbying by large municipalities. The Ministry of Environment and Physical Planning is in contact with municipalities applying for/participating in specific projects. It is also in direct contact with ZELS. However regular consultations and meetings with LSGUs on environmental policy issues are not practiced.

Horizontal coordination

National level

An important instrument for horizontal coordination, including on environment and sustainable development issues, is intersectoral consultation. Intersectoral consultation with concerned institutions, bodies and organizations is obligatory prior to submitting the different documents for adoption to the Government. Such consultation is required for all documents (laws and subsidiary legislation); for laws and amendments to the laws, it comes after the RIA procedure. While clear rules for intersectoral consultation procedure are in place, the 2017 SIGMA-OECD Monitoring Report notes that the regulations do not set minimum durations for consultation. In addition, ministries are not required to present an overview of the comments received during interministerial consultations or to explain how the comments were taken forward. The Report concludes that the rules for interministerial consultation are only partially followed.

Another instrument for horizontal coordination is interministerial working groups that are often established for drafting a specific document, i.e. prior to intersectoral consultations. For example, in 2018, a working group functions under the Ministry of Economy for drafting the law on energy efficiency. It includes representatives of ministries and donors, and the Energy Community representatives also participate.

The Government established a number of intergovernmental bodies to enhance horizontal coordination on environment and sustainable development. Some interministerial councils and committees incorporate other stakeholders (NGOs, business, academia) along with governmental officials, however the membership of those stakeholders is usually less numerous and not equal to that of governmental officials. There are also issue with the regularity of meetings and efficiency of work of such bodies. Some interministerial bodies, prescribed by the legislation have never been established (e.g. the National Council on Forests envisaged by the Law on Forests).

Daily coordination between various authorities relies on relations between individual staff and in many cases functions well. For example, there is no coordination body on environmental health but cooperation takes place through formal and informal contacts. Mechanisms for coordination between the various actors involved in developing water supply, sewerage networks and wastewater treatment infrastructure (Ministry of Environment and Physical Planning, the Ministry of Transport and Communications and the Ministry of Local Self-Government) are in place: these ministries are part of each other project steering committees. However there is no evidence that the parallel efforts of each ministry are part of an overall single strategic vision of how the sewerage and wastewater treatment infrastructure should be developed. Coordination between the Ministry of Environment and Physical Planning and the Ministry of Local Self-Government in assisting the LSGUs to implement their environment-related competences is insufficient.

The country's current position vis-à-vis target 17.14 of the 2030 Agenda for Sustainable Development is described in box 1.1.

Box 1.1: Target 17.14 of the 2030 Agenda for Sustainable Development

Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
Target 17.14: Enhance policy coherence for sustainable development

This target covers one of the systemic issues for the achievement of SDGs. It addresses how the country works across policy sectors and coordinates the sectors to achieve joint objectives of sustainable development. It also addresses to what extent policies in various sectors are coherent and aligned with sustainable development.

The coherency among policy documents in the former Yugoslav Republic of Macedonia is medium. The issues with the country's policy framework on environment and sustainable development are not about coherency. Policy documents are adopted with significant delays, or never adopted despite significant efforts undertaken to develop them. There is little evidence that the policy documents are used and followed since regular reporting about their implementation is not practiced.

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The SEA instrument which is a tool to ensure stronger and coherent integration of environmental and green economy aspects into sectoral policies does not yet function smoothly, as there are cases when sectoral documents escape SEA.

The global indicator for target 17.14 refers to existence in the countries of mechanisms to enhance policy coherence for sustainable development. The former Yugoslav Republic of Macedonia has established several mechanisms for horizontal coordination on environment and sustainable development issues at the national level, including intersectoral consultations on draft documents and the work of various intergovernmental coordination bodies.

The National Council for Sustainable Development was established in 2010 as an advisory body of the Government. It is chaired by the Deputy Prime Minister in charge of Economic Affairs and includes representatives from various ministries, the Parliament, academia, the Economic Chamber and an NGO. In 2012, a technical working group was established to support the activities of the Council. The Council has a wide mandate, which allows it to discuss all issues and problems related to sustainable development. First meeting of the Council took place in 2012. The fifth meeting took place in November 2015. Since then the Council did not convene.

The Working Group for Chapter 27 (one of the NPAA working groups) is serviced by the Ministry of Environment and Physical Planning. Apart from various ministries, only ZELS is part of this Working Group. Subgroups are established, and heads of subgroups meet on a monthly basis. In addition, in 2014 a Sector Working Group for Environment and Climate Action under the chairmanship of the Deputy Prime Minister for EU integration was established. It discusses programme documents for IPA and policy documents. The group includes ministries, two NGOs and some donors.

The National Committee on Climate Change includes representatives of various ministries and other state bodies, academic institutions and NGOs, however there are issues with proper representation of the ministries involved as most ministries lack designated people in charge of climate change.

There are two coordination bodies on chemical issues. The Interministerial Body on Chemicals, established around 2012 under the Law on Chemicals, is serviced by the Ministry of Health. It includes representatives of several ministries and an association of chemicals industry. The Committee for SAICM Implementation is serviced by the Ministry of Environment and Physical Planning. It was established in 2006 for the SAICM project that prepared an Action Plan for SAICM Implementation for the period 2010–2015. The same body prepared a Stockholm Convention NIP update in 2012–2014 and the Minamata Initial Assessment in 2011–2016.

Strengthening policy coherence for sustainable development in the country requires strengthening the planning system in terms of efficiency of efforts placed in the development and adoption of strategic documents and the improved use of the SEA instrument. It also requires enhancing the horizontal coordination mechanisms by ensuring regular meetings of existing interministerial committees and councils, making meeting reports of such interministerial committees and councils publicly available and increasing stakeholder participation in such interministerial committees and councils.

Local level

Eight Inter-Municipal Waste Management Boards have been established in accordance with 2012 amendments to the Law on Waste Management to facilitate intermunicipal cooperation and approval and implementation of regional waste management plans. The cases when 2–3 municipalities cooperate on waste issues are rare. Effective incentives for intermunicipal cooperation are not there.

Training of staff

An annual training programme approved by the Ministry of Information Society and Administration is prepared with input from the Ministry of Environment and Physical Planning. The programme outlines the needs for general trainings, as well as specialized ones (those on environmental issues). However the programme is poorly financed and no resources for specialized training are provided.

General trainings are not frequent, e.g., staff of the Ministry of Environment and Physical Planning participated to only two general trainings in 2018. Ministry's staff is encouraged to use distance learning and electronic training but no information is available on the numbers of staff to have undertaken such trainings. Specialized trainings on environmental issues are project based. There are no resources at the Ministry of Environment and Physical Planning for specialized trainings. In practice, Ministry's staff that is involved in international cooperation develops their capacity and knowledge in respective areas when working on the projects and participating in the meetings.

There is no system for training and professional development of government officials of other ministries on environmental issues. Such training takes place only as part of project activities. For example, an ongoing Regional Implementation of Paris Agreement Project focuses on training of staff in the Ministry of Environment

and Physical Planning and other ministries on climate change issues. Previously trainings on climate change issues were organized through ECRAN/RENA.

1.6 Assessment, conclusions and recommendations

Assessment

The former Yugoslav Republic of Macedonia continued efforts to approximate the national legislation with the EU environmental acquis. Since 2011, few new laws were adopted on environmental issues but extensive subsidiary legislation was developed to detail the requirements of the previously adopted laws. The country struggled with implementation of the existing legislation, in particular on permitting, extended producer responsibility and waste management, protected areas and noise. No serious efforts were yet applied to transpose the climate change acquis. Overall, the speed of the approximation process in the environmental area has not been fast, but it has been commensurate with the national capacities for implementation.

The integration of environmental requirements into sectoral legislation has seen some progress but remains insufficient in energy, industry, agriculture, transport and health sectors. It is limited in the spatial planning, mining and tourism sectors. The mechanism for intersectoral consultations preceding the adoption of laws, amendments to laws and subsidiary legislation is in place. However, it is not clear to what extent the Ministry of Environment and Physical Planning uses this mechanism to advance the environmental agenda of the economic sectors.

Strategic planning in the former Yugoslav Republic of Macedonia suffers from the delayed adoption of strategic documents and a persistent lack of reporting on implementation. Some policy documents are never adopted despite significant efforts to develop them. The central pillars of the national policy framework are the 2010 National Strategy for Sustainable Development for the period 2010–2030 and the annually revised National Programme for the Adoption of the Acquis. As of September 2018, the SDGs of the 2030 Agenda for Sustainable Development are not mentioned in any strategic document adopted at the national level.

Planning in the environmental field is supposed to rely on a national environmental action plan (NEAP). However, the 2006 Second NEAP designed for the period 2006–2012 was not followed by the development of a third NEAP. The Strategy on Environment and Climate Change for the period 2014–2020, developed in 2014 and adopted in January 2018, is poorly known in sectoral ministries.

Integration of environmental requirements into sectoral policies has started but did not yet reach an adequate level. The 2004 Spatial Plan and the 2010 Energy Development Strategy until 2030 face criticism for poorly reflecting environmental considerations. While existing documents in the forestry, transport, agriculture and health sectors do include environmental considerations, the level of implementation of their environment-related objectives has been insufficient. Furthermore, the country continued to struggle with proper implementation of strategic environmental assessment.

In terms of institutional changes, the major change since 2011 has been the separation of the State Environment Inspectorate from the Ministry of Environment and Physical Planning in 2014. An environmental protection agency has not been established.

Conclusions and recommendations

<u>SDGs implementation and follow up</u>

The country formally has an institutional framework for coordination of SDGs implementation and monitoring, centred on the National Council on Sustainable Development supported by the Cabinet of the Deputy Prime Minister in charge of Economic Affairs. However, this institutional framework is not active. The National Council has last convened in 2015. A Rapid Gap Assessment was prepared in 2016 through a multi-stakeholder consultation process but the document was not adopted and is not publicly available. As of September 2018, the Cabinet of the Deputy Prime Minister in charge of Economic Affairs intends to update the Rapid Gap Assessment, strengthen the National Council and establish a working group for each SDG. As of September 2018, the SDGs

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are not mentioned in any adopted strategic document at national level. No assessment of the availability of global SDG indicators was completed. Awareness of the SDGs among governmental officials is insufficient.

Recommendation 1.1:
The Government should:

(a) Revitalize the National Council for Sustainable Development and ensure its active role to guide efforts to achieve the Sustainable Development Goals (SDGs) and in the monitoring of progress towards them;
(b) Proceed with setting up aspirational and measurable national targets through a participatory and transparent process;
(c) Ensure the production of indicators to measure progress towards achievement of the SDGs;
(d) Ensure the preparation of reports presenting the results of monitoring of progress towards achievement of the SDGs;
(e) Ensure that the SDGs are integrated into future planning documents;
(f) Raise awareness of the SDGs among central and local government authorities.

Strategic Environmental Assessment

The number of national planning documents undergoing an SEA has increased since 2013–2014. However, some national planning documents are prepared by sectoral ministries and adopted without an SEA procedure despite the legal requirement to conduct one. No activities to raise awareness of the SEA requirements among sectoral ministries are conducted. There are no statistics on planning documents adopted at local level without an SEA. Though the number of SEA dossiers received by the Ministry of Environment and Physical Planning from LSGUs has decreased over the period 2011–2017, it remains high, which suggests that screening does not work well. The criteria for screening are defined in subsidiary legislation but are not used in practice. The quality of SEA reports also remains an issue. Poor quality is partially explained by insufficient involvement of sectoral departments of the Ministry of Environment and Physical Planning in the evaluation by the Ministry of SEA reports. There are problems with the implementation of the public participation requirements in the SEA procedure. Although the Law on Environment includes a requirement to monitor the effects of the implementation of planning documents, no monitoring and follow up have ever been done in practice.

No regular training and capacity building on SEA at national and local level takes place. Nevertheless, proper implementation of SEA is crucial for achievement by the country of target 17.14 (Enhance policy coherence for sustainable development) of the 2030 Agenda for Sustainable Development.

Recommendation 1.2:
The Government should ensure:

(a) That all documents subject to strategic environmental assessment (SEA) undergo an SEA;
(b) That authorities proposing planning documents observe all stages and requirements of the SEA process, including monitoring, follow-up and public participation;
(c) The improvement of screening procedures by raising awareness and encouraging the use of the criteria to determine which planning documents are subject to SEA;
(d) The improvement of the quality of SEA reports, in particular through securing sufficient expertise for the evaluation of environmental effects;
(e) Training and capacity-building on SEA.

Transboundary Strategic Environmental Assessment

By ratifying the Protocol on Strategic Environmental Assessment in 2013, the former Yugoslav Republic of Macedonia demonstrated its commitment to a fully-fledged and efficient use of the SEA instrument, in line with the best international practice. This implies proper conduct of transboundary consultations as part of the SEA procedure. However, the country's practical experience with transboundary consultations is very limited.

Recommendation 1.3:
The Ministry of Environment and Physical Planning should:

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(a) *Solicit the support of international organizations and donors in organizing a pilot transboundary SEA;*
(b) *Establish bilateral practical cooperation with neighbouring counties on SEA issues, such as establishing working groups.*

Approximation process

The institutional capacities for the approximation of environmental legislation are rather low. Although formally the Department for EU of the Ministry of Environment and Physical Planning was enlarged in 2011 with an increase in the number of staff, when the IPA Department was brought to this Department, in fact the number of people who work on EU integration issues and harmonization of legislation has decreased. The staffing situation is clearly not adequate vis-à-vis the tasks to be accomplished. As of September 2018, the Ministry did not start preparation for the screening process, tentatively expected to commence in mid-2019.

Recommendation 1.4:
The Ministry of Environment and Physical Planning should:

(a) *Reorganize, as necessary, and strengthen the relevant main departments, including the Department for European Union, in the Ministry of Environment and Physical Planning, with required capacity for the European Union approximation process;*
(b) *Ensure careful planning and allocation of tasks in the process of approximation to the European Union acquis;*
(c) *Start preparation for the screening process to optimize tasks for policy planning and for implementation of relevant primary and secondary legislation.*

Mining and protection of soil

The mining sector has been actively developed over the past ten years but no study on the environmental impacts of the mining sector has been done. No policy document addresses environmental impacts from mining, despite high public concern about the environmental impacts of new mines.

The country has no practical experience in remediation of land that is degraded by mining. The 2012 Law on Minerals envisages the tool of a financial guarantee sufficient to cover the cost of the elimination of the harmful effects on the environment. However, no solution has yet been found on the type and amount of financial guarantee and no subsidiary legislation has been developed on this issue.

There is no policy document that explicitly targets the hotspots of historic pollution from mining and industry.

A draft law on soil protection was prepared in 2014 but it was not adopted, largely due to its financial implications.

Recommendation 1.5:
The Ministry of Economy and the Ministry of Environment and Physical Planning should:

(a) *Undertake a study on the environmental impacts of the mining sector;*
(b) *Develop a policy document to address environmental impacts from mining;*
(c) *Seek support from other countries and international organizations to identify good practices on rehabilitation and remediation of land degraded by mining activities;*
(d) *Develop subsidiary legislation on financial guarantees to cover the costs of rehabilitation and remediation;*
(e) *Develop a policy document to address historic pollution from mining and industry;*
(f) *Prepare the law on soil protection and promote its adoption.*

Greening the Ministry of Environment and Physical Planning

In many countries, national environmental authorities take the lead and show opportunities for functioning in an environmental friendly way to other governmental bodies and non-governmental stakeholders. In the former Yugoslav Republic of Macedonia, the Ministry of Environment and Physical Planning does not have a policy to lead environmental protection efforts by its own example. No efforts are applied to reduce the use of paper and

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the generation of waste in the Ministry's building or be energy and water efficient and carbon neutral. Green procurement is not practiced for the purchase of goods and services in the framework of projects whose implementation is coordinated by the Ministry.

Recommendation 1.6:
The Ministry of Environment and Physical Planning should:

(a) Develop and implement policies for greening the activities of the Ministry, in particular with regard to water and energy efficiency, waste management and carbon neutrality;
(b) Introduce green criteria for public procurement for projects under the umbrella of the Ministry;
(c) Promote the greening of activities of other governmental institutions.

Environment-related responsibilities at local level

Municipalities face significant difficulties with the implementation of their environmental-related competences. They interact with the Ministry of Environment and Physical Planning, but the provision of guidance and assistance is at an insufficient level. The Ministry does not conduct regular consultations and meetings with LSGUs on environmental policy issues. Although some training is provided by the Ministry of Local Self-Government and ZELS, no regular programmes exist for training of LSGUs on environmental issues. Coordination between the Ministry of Environment and Physical Planning and the Ministry of Local Self-Government in assisting the LSGUs to implement their environment-related competences is insufficient.

The Department for Coordination of Work of the LSGU and Supervision Work in the Ministry of Environment and Physical Planning has significant responsibilities on waste permitting. Only two staff (out of seven) in this Department work on the supervision and coordination of LSGUs' activities. Waste permitting is consuming too much time and effort and does not allow the Department to focus on its core task – supervision and coordination.

Recommendation 1.7:
The Ministry of Environment and Physical Planning should intensify efforts to assist municipalities in the implementation of their environment-related competences, including by:

(a) Enabling all seven staff in the Department for Coordination of Work of the Local Self-Government Units and Supervision Work to provide support and guidance to Local Self-Government Units and transferring the waste permitting responsibilities to the Department for Waste in the Administration for the Environment, while strengthening the capacity of the Department for Waste;
(b) Providing training to municipalities on environmental issues;
(c) Establishing, together with the Ministry of Local Self-Government, Ministry of Economy, Ministry of Transport and Communications and Association of Local Self-Government Units (ZELS), a working group on land and environment for matters related to budget planning for several issues in waste, water and air protection.

Training of staff

The system for regular training of staff of the Ministry of Environment and Physical Planning is in place but it does not function properly. An annual training programme outlines the needs for general and specialized trainings. However, the programme is poorly financed and no resources for specialized training are provided. Specialized training courses on environmental issues are entirely project based. There is no system of training and professional development on environmental issues for staff in sectoral ministries.

Recommendation 1.8:
The Government should:

(a) Ensure the training of staff in the Ministry of Environment and Physical Planning, in particular by allocation of adequate resources to enable specialized training in line with needs;
(b) Establish training schemes on environmental issues for civil servants in sectoral ministries.

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Chapter 2

REGULATORY AND COMPLIANCE ASSURANCE MECHANISMS

2.1 Permitting and licensing, including public participation

Single media (water and waste) permitting and integrated environmental permitting (IEP) (air, water and waste) are developed and implemented in the country. There is no legal requirement for single air emission permits. Thus, air permitting has started as part of the integrated environmental permitting in 2006. Wastewater discharge and waste permits for installations which are included in legally binding lists are covered by the integrated environmental permitting. Permit for water abstraction (water use) has to be issued separately, prior to the issuance of a single or an IEP.

Integrated environmental permitting

Companies are required to have an IEP describing obligations such as emission limit values for emissions to air and water, as well as solid waste management procedures, a deadline for adjustments to an operational plan to comply with legislation and reporting obligations.

There are two types of IEP: A-type and B-type. The lists of the installations for which A-type permit and B-type permit are required to be issued are provided in Annex I and Annex II of the 2005 Decree on the determination of the activities of the installations for which environmental permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued. According to the legally binding lists the A-type permit installations and processes are not only those included in Annex I of the EU Directive 96/61/EC concerning integrated pollution prevention and control (IPPC Directive) but include for example stationary asphalt producing facilities, concrete plants and mining facilities. The B-type permit installations and processes are of lower capacity but the procedure to be followed is the same as for A-type installations. No inventory of the existing installations subject to IEP has been prepared so it is not known how many working installations in the country are required to obtain A-type permit or B-type permit. The competent authority for the issuance of A-type permits is the Ministry of Environment and Physical Planning. The Department for Industrial Pollution and Risk Management of the Ministry of Environment and Physical Planning is responsible for the preparation of the A-type permits. The competent authorities for the issuance of B-type permits are the municipalities and the City of Skopje administration.

Public access to an application for A-type permit and the right of the public to present written opinion is provided in the Law on Environment. This law determines the possibility of organizing public hearing under the request of the public concerned when permit for adjustment with an operational plan is going to be issued. According to environmental civil society organizations (CSOs), the announcement about the IEP procedure in the media is usually in a place which is not always obvious and that the public debate is very technical because often a non-technical summary is missing.

The calendar for existing installations to submit applications for obtaining A-type and B-type permits was defined in the Law on Environment – 2006–2009, according to the type of activity. The legally binding deadline for issuing A-type and B-type permits was 1 April 2014. The law provides the possibility that for existing installations, a permit for adjustment with an operational plan is issued as a condition for the continued operation of the installation until the conditions to obtain IEP are fulfilled. This is valid for both types. The adjustment to the operational plan consists of a description for each process likely to cause pollution, a set of objectives, actions, expected results and investment required to make the process and the whole installation compliant with the emission limit values. The operators may also apply for a prolongation of the deadline (2014) if they justify that they are not ready to obtain an IEP. Therefore, the final deadline for issuance of an IEP for existing installations is 1 April 2019. In fact, this approach has delayed and even postponed the implementation of the legal requirements towards the integrated environmental permitting.

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According to the Law on Environment the A-type permit is based on the application of the best available techniques (BAT). A Scientific and Technical Commission on BAT has been established to prepare guidelines with regard to the application of BAT in each industrial sector. In 2012, four national reference documents on BAT have been submitted to the Ministry of Environment and Physical Planning. The BAT requirements are not included in A-type permit although requested by law. Only the operators of installations subject to A-type permit are obliged to refer to the relevant BAT in their application.

The total number of issued IEPs was 380 (at November 2018), of which 156 IEPs (of which 145 A-type permits and 11 B-type permits) were issued by the Ministry of Environment and Physical Planning and 224 B-type permits by the municipalities and the City of Skopje administration (table 2.1). Formally, the Ministry of Environment and Physical Planning does not issue B-type permits except for protected areas. The Ministry has issued 11 B-permits (table 2.1) to support municipalities, which were not able to do so.

Table 2.1: Integrated permits issued, 2008–2018, number

		B-type permit issued	
Year	A-type permit issued by the Ministry	Ministry	Municipalities and City of Skopje
2008	2	0	7
2009	7	1	11
2010	6	0	21
2011	11	1	38
2012	8	0	20
2013	19	2	29
2014	42	4	40
2015	12	0	9
2016	7	0	15
2017	21	3	20
2018	10	0	14
Total	**145**	**11**	**224**

Source: Ministry of Environment and Physical Planning, 2018.

As of November 2018, the Ministry of Environment and Physical Planning is processing applications for permit for adjustment with an operational plan submitted by 165 operators. There is a further list of 68 installations having submitted applications for permit for adjustment with an operational plan but where neither A-type nor B-type permit has been issued due to various reasons, e.g., incomplete documentation. The applications for larger emitters, such as energy production and metal industry, are not yet processed, and emission limit values to air and water for stationary sources are outdated. A draft permit for Thermal Power Plant (TPP) Bitola has been prepared. A draft law on industrial emissions transposing the requirements of the Directive 2010/75/EU on industrial emissions is expected to be adopted and enter into force in 2019.

Single media permitting

Water

The water use (water abstraction) permit is based on the provisions of the 2008 Law on Waters. The Law defines the request for water use permit, lists activities and works requiring a permit and describes the procedure to be carried out for the issuance of water use permit.

In the period 2011–2016, a total 240 water use permits for surface waters were issued for a range of economic activities, such as hydropower plants, fish breeding units, water supply, irrigation, food processing and gravel separation (table 2.2). The number of the issued permits varies from 11 to 52 per year, the peak year for permits was 2015 when 73 permits were issued.

There is a clear upward tendency in the annual number of permits issued for groundwater issued over the years, with 7 permits in 2011–2012, rising to 59 in 2015 and peaking in 2016 with 68. These permits were issued mainly for the following facilities: water bottling, spa treatment, irrigation, animal farming, manufacturing, food processing, water supply, sand separation, and heating.

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The validity of the water use permit varies from 2 to 10 years, depending on the type of the water resources management facility (on an exceptional basis, prescribed by law, from 12 to 20 years).

Table 2.2: Water permits issued, 2011–2016, number

Year	Water abstraction/use		Wastewater discharge
	Surface water	Groundwater	
2011	11	7	21
2012	38	7	37
2013	51	37	49
2014	52	75	69
2015	73	59	117
2016	15	68	21
Total	**240**	**253**	**314**

Source: Ministry of Environment and Physical Planning, 2018.

The wastewater discharge permit is issued for activities and works listed in the Law on Waters for which neither an A-type permit, nor B-type permit for an installation in protected area, is required. The conditions and the manner for the issuance of wastewater discharge permit are relevant to B-type permit (except B-type permit for installations in protected areas).

The annual number steadily increased: from 21 in 2011 to 117 in 2015 (table 2.1). In 2016 the number was reduced again to 21. The validity of the permit varies from 2 to 10 years depending on the type of facility (on an exceptional basis it could be 20–23 years).

Public participation in water permitting is prescribed in the Law on Waters, including announcement of the application for water permit in the media and ensuring public access to the information. The public has the right to submit its opinion on the application within a set deadline after the announcement.

The municipalities and the City of Skopje have the right and the obligation to present a written opinion within 15 days after they receive the application for the permit.

The water permits (water use and wastewater discharge permits) should be issued in accordance with the river basin management plans but at this stage these plans are still under preparation.

The use of water, including groundwater is regulated also by the award of a concession for water. The Ministry of Environment and Physical Planning is the administrative body, authorized to receive any request for an award of a concession for water use. After review and evaluation of a request the Ministry of Environment and Physical Planning submits a proposal for an award of a concession to be approved by the Government.

The relationship between a concession and a water use permit is provided in the Law on Waters. The conditions listed in the water use permit should follow also the elements pursuant to the Law on Concessions and Public Private Partnership. The number of concessioners with signed agreements for water use for energy production in small hydro power plants for the period 2015–2016 was 24–25 per year. The duration of the concession for hydro power plants is depending on the power for generating electricity and it varies from 30 years to 70 years (for hydro power plants generating over 20 MW).

Waste

The permitting of the waste management activities is based on the provisions of the 2004 Law on Waste Management. The permitting started in 2005. The application for permit must be accompanied among other documents, with a decision on EIA or an approval of elaborate and must include the measures defined in the EIA study or in the approved elaborate for environmental protection. Single waste permitting is requested for collection and transport of municipal solid, non-hazardous and hazardous waste. For waste treatment installations included in the legally binding lists of the integrated environmental permitting either A- or B-type permit is issued. Table 2.2 shows the number of the issued waste permits for the period 2011–2017.

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Table 2.2: Waste permits issued, number

Permit type	2011–2017
Collection and transport of municipal solid and non-hazardous waste	206
Collection and transport of hazardous waste (incl. medical waste)	22
Waste treatment	242
Disposal of waste electric and electronic equipment, waste batteries and accumulators, and waste oil	32

Source: Ministry of Environment and Physical Planning, 2018.

The number of the issued permits for export, transit and import of hazardous waste is about 300 per year.

The validity of all types of waste permit is five years; those for export, transit and import of waste are annual permits.

Legal entities in charge of hazardous waste management, treatment and/or disposal are required to undergo an EIA procedure and obtain A-type permit or to undergo a procedure for approval of an elaborate and obtain a permit prior the start of their activity. According to the 2005 IPPC Ordinance every installation for landfilling, recycling or incineration of hazardous waste, incineration of municipal solid waste and landfilling for non-hazardous waste not listed in Annex I of the IPPC Ordinance is required to obtain a B-type permit.

Fauna and flora

The 2004 Law on Nature Protection regulates the permitting of natural resources. There are two types of permits for the use of natural resources (a) Permit for collection of endangered and protected wild species of plants, fungi and animals and their parts; and (b) CITES permit for international trade in wild flora and fauna species and CITES Certificate (re-export).

In the period 2011–2017, the number of permits issued for collection of the affected and protected wild species of plants, fungi and animals and their parts is on average 80 per year. The peak was 2017 when 114 were issued. The number of CITES permits varies over the period from 28 to 83, with the peak being in 2016 – 106.

The 2009 Law on Hunting provides for the award of concession for game in the hunting area. The procedure follows the requirements of this law but also the requirements of the Law on Concessions and Public Private Partnership. The proposal for a concession award is prepared by the Ministry of Agriculture, Forestry and Water Economy and submitted to the Government for approval. The concession validity is at least 10 years.

The 2008 Law on Fishery and Aquaculture regulates fisheries in the country by awarding concessions for fish catching following the requirements of the Law on Concessions and Public Private Partnership. The proposal for an award of a concession is prepared by the Ministry of Agriculture, Forestry and Water Economy and it is submitted to the Government for approval. Concession validity is six years.

The Law on Fishery and Aquaculture requires the issuance of a permit for recreational fish catching, based on an awarded concession. The permit is issued only after a water use permit is issued and if there is a decision for approval of an elaborate by the Ministry of Environment and Physical Planning. Since 2008 when the Law on Fishery and Aquaculture was enforced, the number of the issued permits per year varies from 60 to 100.

Use of underground resources, including groundwater and mineral resources

The use of mineral resources is regulated by the 2007 Law on Minerals. The first step in the process to obtain a permit for exploitation of minerals and carrying out mining activities is the award of a concession for exploitation of minerals. The Ministry of Economy is the relevant authority to receive any request of an interested entity for concession for exploitation of minerals. The procedure for awarding a concession is provided in this law, but the provisions of the Law on Concessions and Public Private Partnership are also required to be followed. After review and evaluation of any request the Ministry of Economy submits a proposal for an award of concession to be approved by the Government. The concession validity is up to 30 years.

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The request for a permit for exploitation of minerals is presented by the concessionaire. The Law on Minerals provides that a decision on approval of the EIA study or the approval of an elaborate must be attached to the request. According to data provided by the Ministry of Economy, the total number of concessioners with signed agreements for exploitation of minerals and use of groundwater and mineral water is 356 (until 17.10.2018).

Ozone depleting substances

The Law on Environment requires the obtaining of a permit in case of import or export of ozone depleting substances (ODS). There is no ODS production in the country. The total consumption of ODS in 2016 was 94.7 per cent lower than the quantity registered in 2005.

Radioactive sources

The permits for activities (practice) with ionizing radiation sources are required by the Law on Ionizing Radiation Protection and Radiation Safety. The permits are three types of activities (practice) with ionizing radiation sources: import, export and transit. The validity of a permit is 1 to 5 years depending on the type of the ionizing source and the conditions for its use.

The permitting regime has started in 2014. The total number of issued permits for the period 2014–September 2018 is 355. On average, the number issued annually is 57, except for the starting year 2014 when 14 were issued.

Licensing

Fauna and flora

According to the provisions of the Law on Nature Protection the Ministry of Environment and Physical Planning issues licenses for scientific research on natural heritage.

Forests

The provisions in the 2009 Law on Forests refer to the issuance of license for carrying out scientific research in the forests. A consent for cutting trees in forest areas is given based on the results of research done by licensed persons.

Use of underground resources

The Law on Minerals requires that legal entities registered in the Central Register for preparation of geological documentation, conducting and supervision of geological explorations should hold a license for the registered activities. The conditions and the procedure for the issuance of a license are determined in the law.

The process was started by the end of 2014. The number of issued licenses for legal entities in 2015 was 28.

2.2 Environmental impact assessment

Domestic context

Gaps in the regulation and challenges for implementation

The EIA process is regulated by the Law on Environment and by eight secondary legislative acts. The steps of the EIA procedure (notification, screening, scoping, preparation of the EIA study, quality assessment, public access to documentation and information, public hearing, issuing and appeal of the decision) and the licensing of the experts preparing the EIA documentation are defined in such a detailed manner in the law and in the secondary legislation (ordinances, decrees and rulebooks) that duplications and complexity of the legal texts are unavoidable. Best examples for over regulated process are the requirements to be fulfilled by the administration when evaluating the EIA study and the requirements to be met by the experts who are applying to obtain a license. The burden on the state administration carrying out the EIA procedure, as well as on the investors, the municipalities and the public concerned is heavy.

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The Law on Environment provides also for the legal effect of the EIA decision, namely the issuance of the EIA decision prior to the issuance of a permit or decision for implementation of the planned activity subject to EIA. Practice shows that implementation of this legal requirement is weak, e.g. the EIA procedure starts when the planned activity is at an advanced stage of planning or the construction stage has started.

The Law on Environment provides for public access to the EIA documentation and the need of holding public debate/public hearing. However, effective public participation in the EIA procedure is facing some issues due to:

- Delayed public announcement of the planned activity subject to EIA;
- Imprecise recording of the public consultation and public debate;
- No mechanism is in place to prove how public opinions have been considered or the reasons for their rejection in the final decision.

Linkages with other procedures to facilitate investment process in the country are missing in the EIA legislation, e.g. interactions with the SEA, with the Appropriate Assessment, required for evaluating the impact on biodiversity (habitats), or a possible combined procedure with the issuance of IEP.

The competent authority for performing the EIA procedure is the Ministry of Environment and Physical Planning. Within the Ministry the administrative body, solely involved in the EIA implementation is the Unit for EIA and Soil Protection within the Department for Environment, part of the Administration for the Environment. The Unit comprises a head and two experts of which one works also as a soil expert. The unit is also tasked with the processing of elaborates for environmental protection. The unit covers the EIA procedure for the whole country, but the municipalities and the City of Skopje are obliged to provide all necessary data and enable public access to information and public consultation within the EIA procedure. Implementation of the EIA procedure began in 2007–2008 (Table 2.3). In the period 2012–2018 the EIA procedure has been implemented at a good level considering the understaffed EIA Unit at the Ministry of Environment and Physical Planning and the work load (in average 8 EIAs and about 207 elaborates per year).

Table 2.3: EIA and environmental elaborates, 2012–September 2018, number

Year	Notification of investment intention	EIA studies submitted	Decisions on elaborates
2012	12	11	0
2013	10	9	0
2014	5	8	354
2015	11	5	414
2016	6	10	326
2017	18	6	357
2018	6	9	0
Total	**68**	**58**	**1 451**

Source: Ministry of Environment and Physical Planning, 2018.

The number of the notifications for intention varies during the period 2012–September 2018. The need for an EIA is identified on case-by-case based on analysing the investment's specifications, size and location in line with the criteria included in the Rulebook. If the Ministry decides that no EIA is needed, it does not issue a decision that no EIA is required but informs the applicant that an environmental elaborate is needed. If the Ministry decides that an EIA is needed, it informs the applicant of this and starts the required procedures.

The Unit for EIA and Soil Protection organizes the decision making. A special commission (EIA Commission) composed of representatives of the different units within the Administration for the Environment examines the EIA documentation and prepares a draft decision for the approval of the EIA study. The decision-making is limited: except the Order for establishing the EIA Commission, this step is not sufficiently documented, e.g. usually the members of the commission do not present their opinion in writing; the proposed decision does not reflect the public comments. The validity of such decision is two years.

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The mechanism for control and monitoring of the implementation of the decision does not work. SEI environmental inspectors verify whether the conditions and mitigation measures proposed in the study have been implemented. but the Unit for EIA and Soil Protection does not receive any feedback from the inspections.

Elaborate for environmental protection

According to the Law on Environment an elaborate for environmental protection has to be submitted by the investor to the competent authorities. There are two 2009 Decrees defining lists of activities for which an elaborate has to be prepared: one of competence of the Ministry, the other – of competence of the municipalities and the City of Skopje. There are no clear thresholds determining the competences, except the capacity for some installations, such as intensive breeding of animals. The scope of the activities for which an elaborate must be developed practically covers all industrial sectors, such as energy, metallurgy, chemistry, light industry (food, furniture, textile, shoes etc.), also bakeries, garages and washing cars places are included.

The decision issued by the competent authorities is for acceptance or non-acceptance. The decision for approval of the elaborate is a precondition for launching the relevant planned activity. The total number of decisions on elaborates issued by the Ministry of Environment and Physical Planning for the period 2012–September 2018, is large at 1,451 (table 2.3). The Ministry does not keep records of the decisions issued by the municipalities or the City of Skopje.

The environmental inspectors from SEI or local authorised environmental inspectors supervise the implementation of the conditions set out in the elaborate and the decision.

The EIA and the elaborate for environmental protection are separate processes: an elaborate has to be prepared for all activities for which no EIA is requested. At the same time there is an overlap between the lists of the activities for which EIA must be prepared and the lists of activities requiring the presentation of an elaborate, e.g. both types of lists include activities from energy and mining sectors, heavy industry (metallurgy, chemistry), as well as waste treatment activities. The requirements for the content of the EIA study and the elaborate for environmental protection are similar – the content of the latter presents simplified EIA study. However, the procedures are different: the EIA procedure includes public involvement and considers public opinion in the decision making, while the elaborate for environmental protection is approved by the competent authorities without public participation.

Transboundary context

The provisions for carrying out EIA in a transboundary context are clearly defined in the Law on Environment. Since 2011, the Ministry of Environment and Physical Planning has started three EIA procedures in a transboundary context as a Party of Origin sending notification letter to the Affected Party (Albania, Bulgaria, Greece). None of these procedures has been completed for various reasons. For example, as Party of Origin, the Ministry of Environment and Physical Planning has sent a notification letter for the planned construction of the hydropower plant Lukovo pole to Albania and Greece as Affected Parties. Both countries have expressed their interest to take part in the EIA procedure, but the investor has given up the intention to implement the project.

2.3 Environmental standards

Emission standards

There are no legally binding standards for releases into water. The 2010 Rulebook on the limit values of permissible levels of emissions and types of polluting substances in waste gases and vapours released from stationary sources into the air sets standards for emissions into air, which are in accordance with the Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants, Directive 1999/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations and Directive 2000/76/EC on the incineration of waste. The European practice is to ground the application of emission standards in air and water on the conclusions of the referent documents on BAT (as defined by the EU Directive 2010/75/EU on industrial emissions).

Ambient quality standards

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The 2005 Decree on limit and target values for levels and type of pollutants in the ambient air, alert and information thresholds, deadlines for achieving limit and target values and long-term objectives for specific pollutants prescribes the air quality limit values and the upper and lower assessment thresholds of the air polluting substances: SO_2, NO, NOx, PM_{10}, $PM_{2.5}$, CO, benzene, heavy metals, as well as the alert and the information threshold for ozone. All methods for measuring the concentrations of the air pollutants are based on European standards adopted as national standards. The 2006 Rulebook on criteria, methods and procedures for assessment of the ambient air quality introduces upper and lower assessment thresholds. The Rulebook has been amended in 2013 in order to be harmonised with the Directive 2008/50/EC on ambient air quality and cleaner air for Europe and Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

The water quality standards are defined by the 1999 Ordinance on water classification. It includes the detailed description of five classes of all waters, the indicators for their characteristics, as well as the limit values or MAC of the indicators. The national categorization of the surface and underground waters is based on these standards.

The noise standards are defined by the Ordinance on the pollution limits of noise levels in the environment. Subject to the Ordinance is the implementation of the noise indicators (allowable levels of noise during the day, the evening and the night), as well as the methods for measuring and evaluating noise level in the environment.

2.4 Compliance assurance mechanisms

Self-monitoring and reporting

The Law on Environment places an obligation on operators holding IEP or permits for adjustment with an operational plan to install and use self-monitoring equipment and to report periodically to the state environmental authorities.

Some installations with significant air emissions (energy sector – TPPs) have installed self-monitoring equipment, but they do not submit the self-monitoring results to the authorities because the IEP for these installations has not been issued yet. Otherwise, facilities with A-type permit submit an annual report on emissions from the installation for the previous year by 31 March of the following year to the Ministry of Environment and Physical Planning. These reports are submitted to the Industrial Pollution and Risk Management Department. and data are used mainly for calculating the annual fee for pollution.

The reports sent by the operators holding an IEP are not used for the national reporting under the Pollutant Release and Transfer Register (PRTR) nor are they used by the State Environmental Inspectorate (SEI) as a basis for inspection and control on the implementation of the IEP. In fact, the operators are requested to provide relevant data for the PRTR reporting separately.

Citizen monitoring

The country has no experience with citizen monitoring so far although there are cases when there is pressure by the public to monitor impacts of certain environmental pollution or the damage to nature, e.g. construction of hydro power plants in protected areas, construction of gas pipeline on the bottom of Lake Ohrid.

Environmental audit

The Environmental Management and Audit Scheme (EMAS) can be applied. There are no activities to date.

The Unit for Standards within the Department for EU of the Ministry of Environment and Physical Planning is responsible for such matters and must cooperate with other relevant bodies to encourage the companies to implement EMAS.

Inspections, including joint inspections

<u>Environmental</u>

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The competent authority for inspection on environment at central level is SEI where the supervision is performed by state environmental inspectors, state inspectors for nature protection and water management inspectors. As of November 2018, there are 14 environmental inspectors and one inspector for nature protection. SEI is in charge of conducting inspections and adopting enforcement measures for the purpose of protection from: a) air pollution; b) water pollution; c) soil degradation and pollution; d) harmful noise and ionizing radiation; and of biodiversity, of geo-diversity and natural resources within and outside the protected areas: national parks, monuments of nature, forest park, ornithological reserves.

The Law on Environment introduced for the first time the terms "authorized inspectors for environment of the municipality", "authorized inspectors of environment of the City of Skopje" and "authorized inspectors of environment of the municipalities of the City of Skopje" and provided the basic provisions for their work. The supervision of the work performance of local self-government units (LSGUs) in environment area is regulated by the law.

Municipalities, including the City of Skopje, should have appointed at least 1 authorised inspector. Not all municipalities have done it. In the municipalities without authorised inspectors, inspections are carried out by municipal or other inspectors. In some municipalities the same staff carry out inspections, issue B-type permits and approve environmental elaborates.

The inspections are three types: planned, follow-up and unplanned. There is no uniform system of environmental inspection at central and local level in the planning of inspection or in monitoring its implementation. Differences exist in terms of the obligations and in terms of inspection at central and local level. SEI prepares an annual working programme and four quarterly plans. Their implementation is monitored in accordance with the obligations arising from the inspection.

For the LSGUs there is an obligation to prepare a programme for inspection whose supervision is not subject to the Law on Inspection Supervision, and this matter is not precisely regulated in the Law on Environment.

Subject of a follow-up inspection is the implementation of the conditions set in environmental permits, decisions on EIA and environmental elaborates. SEI supervises installations holding A-type permit, and B-type permit if they are located within a protected area. SEI is responsible for compliance checking of single media permits on water, waste, nature protection as well as decisions on environmental elaborates and on EIA studies.

The authorized inspectors for environment in the municipalities and the City of Skopje are responsible for inspection at the local (municipal) level of the B-type permits and the approved environmental elaborates. They have number of delegated responsibilities in the supervision of waste management activities, e.g. control of issued waste permits and closure of old landfills.

An unplanned inspection is carried out usually after a signal or complaint by the public concerned, but it might be requested by the Government (Council of Ministers) or by the Inspection Council. According to SEI, the degree of interference of IC in the daily work of the SEI inspectors, by requesting all kinds of unplanned inspections almost on a daily basis, is such that it prevents the implementation of the inspections found in their planning documents, and thus effective control of the most environmentally relevant facilities. In the last two years there is a tendency towards a decrease of the number of unplanned inspections prescribed by the Inspection Council.

In the period 2014–2017, SEI has performed inspections (Table 2.4. The number of the inspections carried out by SEI in last years, averages 2,500–3,000 inspections annually (planned, follow-up and unplanned). All inspections are documented with prepared minutes with conclusions. The peak was in year 2015 with 3,617 inspections, probably because all existing installations in the country were required to have A-type or B-type permits or permit for adjustment with an operational plan by 2014.

Table 2.4: Results of SEI inspection, 2014–2017, number

Type s	2014	2015	2016	2017	Total
Minutes with conclusions	3 091	3 617	2 387	2 451	**11 546**

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Decisions	394	584	274	278	**1 530**
Misdemeanour charges	72	29	23	24	**148**
Criminal charges	0	1	0	1	**2**
Conclusions for procedure termination	614	1 884	1 261	82	**3 841**

Source: SEI, 2018.

The average annual number of decisions of the state environmental inspectors from 2014 to 2017 was quite stable – 270–350, with the exception of the same year, 2015, when the number was 584. The misdemeanour proceedings follow a similar trend with an annual average of about 25, with the peak in year 2014 – 72.

One result of inspections - conclusions for procedure termination, varies greatly in number. The reason for the peak in 2015 is that all previous finalized inspections with conclusions for procedure termination had to be recorded following the requirements of the Law on Inspection Supervision.

SEI prepares an annual report and quarterly reports for inspection. Not all these documents are publicly accessible – the latest version of the reports put on the SEI web site is of year 2015.

Forests

The scope of the inspections in the forestry area includes supervision of the implementation of the forestry management plans, e.g. status of planting, protection and cutting of trees, as well as the implementation of the license for research activities in the forests. The inspections in the hunting are aimed at supervision on the implementation of the awarded concession for game and on the status of the hunting areas. The activities of the State Inspectorate for Forestry and Hunting are defined in annual and monthly work programmes and the inspectors submit annual and monthly reports on their implementation. Depending on a case, the work of the state inspectors on forestry and on hunting may have to be supported by the police.

Fisheries

The inspections related to fisheries are aimed at the implementation of the awarded concession for fish catching and fish health. Reports of these inspections are presented every three months.

Sanitary-epidemiological

The sanitary and health inspections linked to the area of the environment are aimed at supervision on the quality of drinking and bathing waters, on the levels and the impact of urban noise on human health, on the impact of polluted ambient air on human health, as well as on the organization and collecting of medical waste (only within hospital buildings), and on toy safety, on the quality of bathing waters.

The inspections are planned, follow-up and unplanned. The state sanitary and health inspectors work according to annual programmes, the inspection reports are sent usually to the Director of the Inspectorate and sometimes depending on the case – to the Minister of Health.

Industrial safety

The field of application of the technical inspections linked to the area of the environment is the supervision of the work of products and buildings having an explosive atmosphere; the work of electric products and electric equipment, as well as the exploitation of mineral resources and mining activities. Following the general practice, the work of the state technical inspectors is determined by an annual programme. Annual reports on its implementation are submitted to the Government through the Minister of Economy.

Joint inspections

There is a common practice of organizing joint inspection with SEI inspectors and authorised inspectors for environment at local level in case of supervision of an installation with A-type permit.

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In 2017 joint inspections have been carried out with the police, the customs, the State Inspectorate on Transport and SEI to control the international transport of hazardous waste and report to Europol on the results.

Non-compliance response

Non-compliance is documented in result of inspection when the conditions of environmental permits have not been implemented or other legal requirements have not been fulfilled. Enforcement mechanisms to ensure compliance with environment and nature legislation used by SEI are: preparation of minutes with certain conclusions which the inspected operators should follow; prescription of submission of elaborates on environmental protection or notification for intention to the competent authority; prescription of remediation measures; defining a new deadline for achieving compliance which does not contradict the legally binding deadlines, and imposition of penalties and fines.

Administrative measures

Administrative measures have to be undertaken when it is documented as a result of an inspection that the conclusions or the prescriptions of the state inspectors have not been followed or when violation of environmental legislation is registered after signals/complaints of the public concerned. The public concerned should be informed about the findings and notes from the inspection. Most of the signals/complaints are addressed at local level and are within the competence of the local environmental inspectors, for example, noise, communal waste, green area, odour. The administrative measures consist of: imposition of penalties and fines; issuing of decisions for ordering/prohibiting specific activity(ies); and submission of a request for initiation of misdemeanour proceedings.

In the period 2014–2017, SEI has produced 148 misdemeanour charges (Table 2.4) The existing conditions under which the charges are calculated, makes this measure not effective towards prevention of non-compliance and remediation of pollution. Charges are not based per ton of polluting emissions but per polluting number, type, scale and area in ha occupied by an installation, the low limits of the penalty (1,000–9,000 denars/polluting number) as well as the possibility to pay half reduced charge if it is payed within the prescribed deadline of eight days.

In the same period (2014–2017), 100 per cent of the inspections carried out by SEI produced minutes with conclusions and the total number of written decisions directed to the operators for undertaking certain actions was 1,530. These numbers prove that the state environmental inspectors have put a lot of efforts to discipline the operators and to change their behaviour towards the implementation of environmental legislation.

Criminal measures

According to SEI, in the period 2014–2017, only two cases in the water and waste sectors have been registered as criminal (Table 2.4).

The 2018 publication of the State Statistical Office ("Perpetrators of criminal offences in 2017") presents crimes against environment and nature in total number, as follows: devastation of forests – 7; unlawful hunting – 13; unlawful fishing – 28; and torturing animals – 25. The majority of the criminal cases were in the forestry sector. They were processed by the State Forest and Hunting Inspectorate.

The measures undertaken by the state inspectors are decisions. In most of the crimes related to unlawful fishing and torturing animals the decision is for complaint dismissed; in the rest of the crimes when the perpetrators were known the decision is indictment.

From 2011 until 2017, a total of 1,514 environmental crimes were reported, including 461 by unknown perpetrators (table 2.5). In 2017 out of 151 reported crimes, 43 were reported by the victims (individual suffering damage), 4 by other individuals, 4 by victims (business entities suffering damage), 9 by inspection, 88 by the Ministry of Internal Affairs, 1 by the public prosecutor office and 1 other. The duration of the procedure from receiving a complaint to indictment for environmental cases in 2017 varied, with the majority (30 cases) lasting 2–4 months, followed by 29 cases lasting for up to 1 month and 21 cases lasting 1–2 months. It took 6–12 months for 19 cases, over 1 year for 16 and 4–6 months for 13.

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Table 2.5: Criminal offences against the environment and nature for the period 2010–2017, number

	Total		
	Total reported crimes	Indictment	Unknown perpetrators
Total	**1 514**	**576**	**461**
Pollution of the environment and nature	**26**	**4**	**9**
Illegal exploitation of mineral resources	**24**	**8**	**0**
Usurpation of real property	**200**	**105**	**0**
Destruction of forests	**109**	**19**	**66**
Unauthorized hunting, keeping and sale of wild animals and birds	**7**	**7**	**0**
Illegal hunting	**209**	**106**	**45**
Illegal fishing	**77**	**35**	**28**
Torturing animals	**113**	**47**	**32**
Bringing dangerous materials into the country	**2**	**1**	**1**
Unauthorized procurement and possession of nuclear materials	**4**	**0**	**3**
Other	**743**	**244**	**277**

Source: State Statistical Office, 2018.

As of September 2018, there is no register of public complaints received and petitions on environmental matters submitted to the State Environmental Inspectorate. Reportedly, there are about 10 complaints received from the public each year. Often complaints are made by telephone and mostly relate to waste management and air pollution. The inspectorate responds to the complaints received within eight days, including by providing the minutes from the inspection.

2.5 Environmental liability, insurance and compensation

No practical cases have been identified where the requirements of liability for environmental damage as a result of an existing activity or for immediate threat for environmental damage as a result of a planned activity are established. There is no publicly available list of operators that falls within the scope of these requirements.

There are no legal obligations about environmental insurances and no evidence of a practice.

2.6 Voluntary compliance promotion instruments

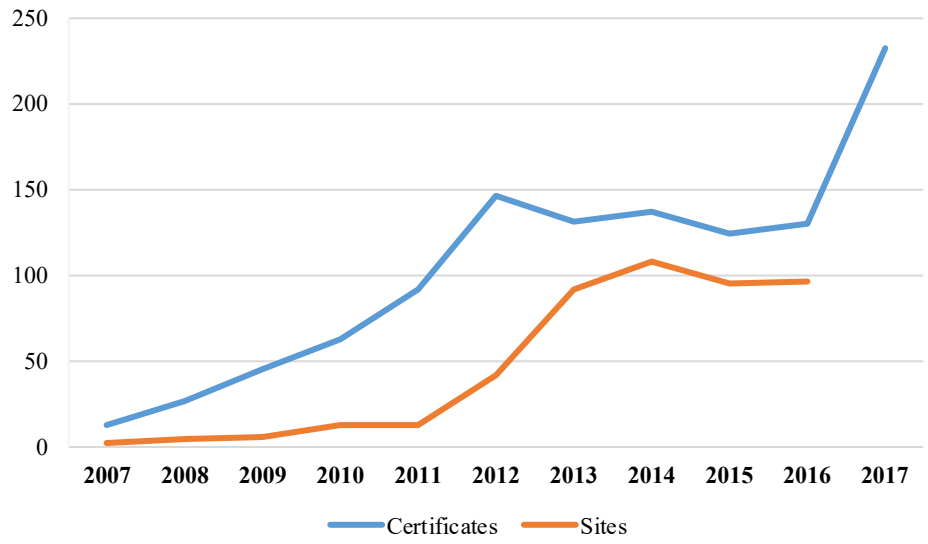
EMS

Companies show a steady interest to the ISO 14001 certification. The average number per year is about 130 and there is a peak in 2017 when 232 certificates have been obtained (figure 2.1).

The Economic Chamber states that all its members have been certified by ISO 14001. The Ministry of Environment and Physical Planning still encourages companies to be certified to ISO 14001 as well as to similar standards.

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Figure 2.1: ISO 14001 certificates and sites, 2007–2017, number



Source: ISO Survey 2017, International Organization for Standardization, 2018.
Note: 2017 Data for sites are not available.

Labelling

The Law on Environment sets the requirements for the award of eco-label. The competent authority is the Ministry of Environment and Physical Planning where the Department for Standards within the Department for EU is responsible for the preparation of tools for implementing activities related to eco-labelling.

In the period 2011–2018, no new national criteria for eco-label award have been prepared and adopted. The plan according to which three national criteria have to be adopted per year was stopped due to lack of financing of the work of the Commission on Eco-labelling. The eight standards were adopted during the period 2008–2010. They are outdated and not in compliance with the changes made in the relevant EU requirements. No eco-label has been awarded yet.

Corporate social responsibility

The Ministry of Economy coordinates Corporate Social Responsibility (CSR) policy. The Ministry of Economy is proposing to prepare a midterm strategy for CSR 2019–2023. For the last 11 years the Ministry of Economy has organized an annual National Award for the best CSR practices to encourage companies to report regarding CSR. The Economic Chamber states that its members are participating in the CSR initiative. There is no official record and data for CSR practices.

Voluntary environmental reporting by companies

The Law on Environment provides for voluntary agreements to be concluded between the companies/operators with environmental authorities. This type of agreement could include voluntary reporting on environmental issues. No voluntary environmental reporting is happening signalling the lack of voluntary agreement.

The EMAS implementation makes also possible voluntary environmental reporting. Although, as mentioned in the EMAS section, there are no companies in the country implementing EMAS.

Sustainable development goals and targets relevant for the chapter

The current status of the country vis-à-vis target 12.6 of the 2030 Agenda for Sustainable Development is described in box 2.1.

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Box 2.1: Target: 12.6 of the 2030 Agenda for Sustainable Development

Goal 12: Ensure sustainable consumption and production patterns
Target 12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

Several voluntary compliance instruments can encourage companies in putting in place sustainable practices. The Law on Environment provides for a range of those including the Environmental Management System under the ISO 14001 and its alternative the Eco Audit Scheme (EMAS), the Eco-label award, and voluntary environmental reporting. The Ministry of Environment and Physical Planning encourages companies to be certified by ISO 14000 series including through incentives

The Ministry of Environment and Physical Planning is the responsible body for promoting EMAS. The Ministry has been preparing national requirements for companies' application for Eco-label, but the activities were put on halt and no any Eco-label has been yet awarded. There is no evidence about voluntary environmental reporting by companies in the country.

The Ministry of Economy is coordinating the policy and practice in support to the Corporate Social Responsibility (CSR) uptake. A midterm strategy on stimulating the CSR for the period 2019–2023 is under preparation. For the last 11 years, the Ministry has organized annual national award event on companies' best CSR practices according to five categories, one of them dedicated to environmental protection. According to a publication of the Ministry* in the period from 2008 to 2014 small and medium-size enterprises and large companies have reported their social responsible practices presenting about 460 applications. The American Chamber of Commerce in the country maintains a database of companies "giving back". This online database contains information on CSR programmes and projects carried out by companies in the country starting from 2015. Within the Government institutions there are no records on CSR practices enabling exchange of experience and dissemination of good case examples.

According to the Economic Chamber in the period 2011–2018 most of its members have been certified to ISO 14001 and all of its members of the Chamber are involved in CSR practice.

There is no information about companies publishing sustainability reports. No work has been done on defining minimum requirements for companies' sustainability reports.

The Government should introduce a standard or the collection of statistics in consultation with the business sector to be able to fulfil monitoring and reporting requirements with regards to indicator 12.6.1 (Number of companies publishing sustainability reports).

* http://www.southsouthworld.org/blog/46-solution/305/introducing-the-corporate-social-responsibility-in-the-former-yugoslav-republic-of-macedonia

2.7 Legal, policy and institutional framework

Legal framework

In April 2011 the Law on Inspection Supervision was enforced.

Since 2011, changes which concern environmental permitting, licensing, concessions, inspections, compliance assurance and reporting occurred in the legislation.

Under the Law on Environment, the B-type permit procedure was streamlined and the responsibilities of the local authorities issuing B-type permit were clarified. Public participation is regulated in the procedure of issuing the permit for adjustment with an operational plan. Deadlines in the inspections and reporting back in case of citizen's complaint or signals are defined, as well as the content of the elaborate for environmental protection and the keeping of records of the decisions on approved elaborates. Requirements for the licensing of the EIA experts and for the publicly accessible list of experts and for the preparation of quarterly plans and reports and for an annual plan and report on the inspections were

Under the Law on Waters, the procedure for obtaining water permit was set up. The content of the permit for excavation of sand, gravel and stone from the water shed/banks was defined and the award of concession for water abstraction for hydropower generation was regulated.

The Law on Waste management determines the requirement for export and import of hazardous waste and provides the definitions of the permit for collection and transport of municipal solid and non-hazardous waste and for the permit for waste treatment.

The Law on Nature Protection streamlines the issuance of the CITES permits and certificates by determining deadlines and setting up the procedure for appeal;

The Law on Minerals defines the requirements for the application for an award of concession for exploitation of mineral resources, which among other documents is supported by an EIA study or environmental elaborate.

In the period 2016–2017 a draft law on industrial emissions was prepared under a Twinning project with the purpose to transpose the Directive 2010/75/EU on industrial emissions. The draft is in a process of consultations before adoption. If adopted, among other positive results the draft law will oblige the permitting authorities to define emission limit values (in air and water) in the A-type permit based on the BAT conclusions.

In 2016 a draft law on environmental inspections was prepared under a Twinning project. The draft is in a process of consultations before adoption. The draft is aimed at better coordination of the inspections at central and local level on environment and nature protection, including better quality of planning and reporting on inspections. At the same time existing provisions in the Law on Environment, the Law on Inspection Supervision and the Law on Self-Government which are regulating the environmental inspections and the responsibilities of SEI and the authorised inspectors for environment, are brought in a detailed manner.

In general, the laws are supported by ordinances, decrees and rulebooks. The country has a complete set of legislation regarding regulatory and enforcement mechanisms, but some aspects of the legislation are partially or not implemented.

Policy framework

The regulatory and compliance assurance mechanisms are tools for implementation of the legislation and because of this they usually are not subject to strategic level documents, such as policies, programmes and strategies. These mechanisms can be included in the action plans as a measure for achievement of certain goal. As of November 2018, there are no such action plans.

Institutional framework

The Administration for the Environment is the body within the Ministry of Environment and Physical Planning involved in implementation of environmental legislation. The Administration consists of five departments: Environment, Nature, Water, Waste and Industrial Pollution and Risk Management which are responsible for EIA and elaborates for environmental protection proceedings; issuing single media and integrated environmental permits, as well as for concessions for water and licensing.

Other ministries or central administrative bodies with responsibilities in environmental permitting, concessions and licensing related to environment, are: Ministry of Agriculture, Forestry and Water Economy (issuing permits for fish catching and cutting trees, preparing proposals for concessions for game in hunting areas, –issuing license for scientific research in the forests; Ministry of Economy (preparing proposals for concession for use of mineral resources, issuing a license for preparation of geological documentation, conducting and supervision of geological explorations); and Radiation Safety Directorate (issuing permits for ionizing radiation protection).

The State Environment Inspectorate is responsible for the enforcement of environmental legislation at central level. Since 2014, it is a separate body with own budget responsible for environmental inspection supervision. Its Director is the only person with a political function appointed by the Government. There are two heads (Head of Department for Water Supply Supervision and Head for Regional Unit – Polog region); 13 state environmental inspectors and one state inspector for nature protection within SEI. The inspectors are located in five regional departments: Skopje, Polog, Southwest and Pelagonia, Southeast, Vardar-Southeast.

Other enforcement authorities in areas relating to environment are: the State Sanitary and Health Inspectorate, the State Inspectorate for Forestry and Hunting, the State Inspectorate of Agriculture the Food and Veterinary Agency and the State Technical Inspectorate.

In 2014 the Inspection Council was established. Its members are elected from the following areas: a) supervision of the market, employment conditions and security and health conditions in the working places; b) environment

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and protection of public health; c) construction, urbanism and transportation; d) agriculture, forestry, veterinary medicine and food safety; e) education, science and culture; and f) administration.

LSGUs perform all activities on environment at local level. Local authorities issue local regulations on wastewater and waste and B-type permits. They control the implementation of the permits, propose the establishment of stricter emissions limit values in a given zone, decide the locations of municipal non-compliant landfills, supervise collection and transport of waste, finance and supervise dumpsites closures. Only few municipalities have established or designated divisions for environment. In many cases, the same person plans, manages and inspects all environment issues in the municipality.

The Association of the Local Self-Government Units (ZELS) promotes and encourages cooperation and information sharing among its members. As of November 2018, it maintains 15 networks in different areas. The priority field of work for ZELS is training of the staff of the municipalities and the City of Skopje, e.g. training on elaborates for environmental protection, support for the issuance of IEPs, as well as development of electronic selling assets.

The Standardization Institute is responsible for the preparation and adoption of national standards, including environmental standards. The Ministry of Environment and Physical Planning is participating in the work of most technical committees at the Institute.

The Economic Chamber contributes to a better exchange of information between the business/companies and the governmental institutions. The Chamber encourages its members to develop voluntary arrangements with environmental authorities such as: EMAS, Eco-labelling and EMS.

Coordination with institutions responsible for environmental protection at national, regional and local levels

The Ministry of Environment and Physical Planning has good coordination with the Ministry of Health (sanitary and health aspects), the Ministry of Economy (exploitation of mineral resources) and the Ministry of Agriculture, Forestry and Water Economy (use of natural resources) within the EIA procedure.

The Department for Coordination of Work of the LSGUs and Supervision Work of the Ministry of Environment and Physical Planning is responsible for supervision of the work on the environmental of the municipalities and the City of Skopje. According to the annual plan 10 municipalities per year are considered for supervision. The work is carried out by a Supervisory Commission, which is established at the beginning of each year. The report contains the conclusions of the work performance in five directions: organization of work (human resources); approval of elaborates; B-type permit issuing; control on waste collection; cooperation with state inspectors. There is daily communication with LSGUs which appear for consultations. The Department organizes meetings with representatives from Ministry's departments upon request of LSGUs.

The coordination of the SEI staff with the authorized environmental inspectors at local level is performed by phone or by meetings on-site. Joint inspections of SEI and local authorised environmental inspectors are carried out when there is a signal or complaint about pollution caused by A-type installations or B-type installation in protected area.

Public registers

Public registers contribute significantly to promote transparency and accessibility of the regulatory mechanisms (permits, licenses, concessions). The Ministry of Environment and Physical Planning maintains public registers of waste permits, permits for use of natural resources and CITES permits but there are not updated regularly (last records are of 2017). There are no publicly available data about water permitting and integrated environmental permits; data about concessions for water use for energy production are available for the period 2015–2016. Data about current EIA procedures and recently approved elaborates for environmental protection presented on the website of the Ministry are at satisfactory level but public registers do not exist. There is a publicly available detailed list of the licensed EIA experts.

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The Ministry of Economy maintains public registers of the concessioners with signed agreements for exploitation of minerals and use of groundwater and mineral water and of issued licenses for preparation of geological documentation.

The Ministry of Agriculture, Forestry and Water Economy does not provide public access to data about concessions on game in hunting areas or on fish catching. Public register of permits for cutting trees does not exist

International cooperation on compliance and enforcement

The Project Ref: EuropeAid/134079/D/SER/MK "Strengthening capacities for implementation of environmental legislation at local level" (duration January 2015–July 2016) presented detailed analysis of the competences of the LSGUs in the implementation of environmental legislation in the country. Trainings and working meetings have been organized between the Ministry of Environment and Physical Planning staff and the concerned municipalities and the City of Skopje. The project provided conclusions and recommendations to the Ministry of Environment and Physical Planning, ZELS and the municipalities, involved in the project.

The Twinning project MK 11/IB/EN/01/R "Strengthening the administrative capacities on central and local level for transposition and implementing new Industrial Emission Directive 2010/75/EU (IED)", duration end of 2015–April 2017, delivered drafts of primary and secondary legislation in accordance with IED, capacity building on central and local level, assessment of the economic impact of the implementation of IED.

Since 2011, the SEI staff is part of EU funded projects (on single media and integrated environmental permits). The SEI was the main Beneficiary of the Twinning Project MK 10/IPA/EN/01/14 "Strengthening the administrative capacities at central and local level for implementation and enforcement of the environmental acquis", duration January 2015–July 2016. There were concrete achievements from this project, namely: guides for environmental inspectors and operators, and check lists specific to some industrial activities have been prepared; a draft new law on inspection of environment has been produced; series of site inspections, incl. joint inspections have been implemented with a focus on issues related to integrated environmental permitting, air and water quality.

Since May 2006 SEI is member of EU Network for the Implementation and Enforcement of Environmental Law; it also is taking part in Themis network, International Network for Environmental Compliance and Enforcement, Balkan Environmental Regulatory Compliance and Enforcement Network, Regional Environmental Network for Accession, Environmental Compliance and Enforcement Network for Accession, European Network of Prosecutors for the Environment, Interpol, and Europol.

2.8. Assessment, conclusions and recommendations

Assessment

The legislation for and implementation of single environmental permitting in general are well in place.

The Minister of Environment and Physical Planning signs single media permits as well as integrated environmental permits (A-type permit and B-type permit in protected areas). It also signs the decisions for approval of EIA studies and elaborates for environmental protection. Such practice is in contradiction to good practice in environmental governance and limits access to justice in the environmental decision-making, as there is no possibility for a preliminary appeal before turning to the courts.

Since 2011, visible progress has been made in IEP issuance. Before 2011 the total number of IEPs issued by the Ministry of Environment and Physical Planning was only 16 A-type permits and 39 B-type ones across all LSGUs. In the period 2011–2018 the respective numbers are 140 and 180. These numbers reflect the efforts made by the Unit for Integrated Pollution Prevention and Control at the Ministry of Environment and Physical Planning to compensate for delays at the municipal level and to help municipalities with the issuance of B-type permits. Even though the Ministry of Environment and Physical Planning oversees the issuing of all B-type permits, there is a lack of systematic communication and support from the central to local level.

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Since 2011, significant changes in the institutional framework for inspections occurred: in May 2014, SEI became an independent legal body with a separate budget; in the same year an Inspection Council was established with the main task to coordinate the work of the different inspectorates in the country. In the period 2015–2016 a Twinning Project aimed at strengthening the administrative capacities at central and local level for enforcement was implemented. Despite these actions there is no visible progress made in the organization of the inspections, for example, there is no evidence of the application of relevant best practices for control of the issued A-type and B-type permits. The reports of the inspections are not publicly available or are outdated. Also, enforcement capacity does not keep up with the pace at which legislation and rulebooks are being enacted. The draft law on environmental inspection, which was developed under the Twinning Project, has not been adopted.

LSGUs have a number of legal responsibilities to protect the environment. They often suffer from a lack of capacity and resources to comply with their many responsibilities in implementing environmental legislation. This is due partly to staff shortages and partly to the lack of capacity building. The administrative capacity to process the applications for B-type permits and monitor their implementation is still limited. A good start was made in good practice in inter-municipal cooperation in the environment area during the implementation of the project "Strengthening capacities for implementation of environmental legislation at local level".

Since 2011 no voluntary environmental arrangements were concluded.

Conclusions and recommendations

Institutional strengthening regarding implementation of environmental legislation

The Ministry of Environment and Physical Planning hosts services linked to implementation of legislation such as environmental permitting (single and integrated), EIA and environmental elaborates proceedings, environmental monitoring and reporting. Keeping these functions within the Ministry does not allow separation of policy formulation from implementation. This practice is in contradiction with good practice in environmental governance and it is limiting access to justice in environmental decision-making.

Recommendation 2.1:
The Ministry of Environment and Physical Planning should propose to the Government the reorganization of the Administration for the Environment and the Macedonian Environmental Information Centre into an executive environmental agency, which should focus on the implementation of environmental legislation, ensure environmental data collection, monitoring, assessment and reporting, address nature conservation and provide expert support to the Government.

Environmental Impact Assessment

The legislation on EIA and elaborates for environmental protection does not provide for a clear EIA screening process, a key step in the overall EIA process. Also, the EIA legislation does not distinguish between the role of EIA, which is required under EU legislation, and the role of elaborates which is not required. The decision-making process is not clearly set out in the legislation and so access to justice is not provided for in a clear and transparent manner. The list of activities does not follow the Annexes of the relevant EU EIA Directives and at the same time the listed activities do not refer to national classification of activities.

Recommendation 2.2:
The Ministry of Environment and Physical Planning should undertake the necessary steps to streamline the environmental impact assessment (EIA) process and increase its efficiency for the public administration, investors and the public by:

(a) Bringing the list of activities included in national legislation into compliance with the list of activities laid down in annexes of the Convention on Environmental Impact Assessment in a Transboundary Context and relevant European Union EIA directives, and aligning the screening process with these directives, notably in terms of clarity and transparency;
(b) Ensuring a reasonable timeframe and opportunities for public participation, with a minimum of 30 days for public comments on EIA studies, which may, where appropriate, be extended as necessary, taking into account, among other matters, the nature, complexity and size of the proposed activity;

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(c) Revising the legislation on elaborates for environmental protection by limiting them to small activities outside the scope of the activities subject to EIA and giving responsibility for issuing approval of decisions for elaborates to Local Self-Government Units;
(d) Providing training and methodological support under institutional strengthening projects to the staff of the Unit for Environmental Impact Assessment and Soil Protection, and to the local authorities.

Integrated environmental permitting

Since 2011, the Ministry of Environment and Physical Planning has put significant efforts in the issuance of the A- and B-type permits in the country. Still, the current process of integrated environmental permitting is not implemented according to the relevant EU Directives. A draft law on industrial emissions aimed at the transposition and implementation of the Directive 2010/75/EU on industrial emissions has not been adopted. A public register of the issued permits does not exist. There is no procedure in place that can be used to make the EU BAT conclusions binding and applicable.

The self-monitoring reports submitted each year by the operators of the permitted installations are not validated by SEI and are not used for the national PRTR.

Recommendation 2.3:
To develop further integrated environmental permitting, the Ministry of Environment and Physical Planning should:

(a) Promote the adoption of the draft law on industrial emissions;
(b) Revise the list of installations requiring an A-type permit and bring it into compliance with the list of installations laid down in Annex I of Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (Industrial Emissions Directive);
(c) Prepare proposals for simplifying and clarifying the legislation between B-type permit and sectoral permit requirements, especially in water and waste management;
(d) Abolish the practice of issuing "permit for adjustment with an operational plan" and provide industrial activities that cannot immediately comply with the integrated environmental permitting requirements a transition period defined in the integrated permit;
(e) Change the rules on reporting by operators with permitted installations to make reporting a useful tool;
(f) Ensure that data and information in the reports are validated by the controlling authorities and made publicly available according to the requirements of Pollutant Release and Transfer Register reporting.

SEI and authorized inspectors for environment

Since 2011, the SEI staff have worked independently from the Ministry of Environment and Physical Planning, as do all inspectorates in the country. Also, SEI has taken part in many institutional strengthening projects. The draft law on environmental inspection, which was developed under the Twinning Project "Strengthening the administrative capacities at central and local level for implementation and enforcement of the environmental acquis", has not been adopted.

Recommendation 2.4:
The State Environmental Inspectorate should:

(a) Start the implementation of the outcomes of the European Union-funded projects, especially of the Twinning Project for which it was the main beneficiary, and organize training and methodological support for the authorized inspectors of the environment at local level;
(b) Promote the adoption of the draft law on environmental inspection.

Voluntary arrangements for environment

No significant progress has been made since 2011 on the establishment of voluntary compliance promotion instruments on the environment.

Recommendation 2.5:

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The Ministry of Environment and Physical Planning should:

(a) Prioritize work on the European Union Ecolabel and Eco-Management and Audit Scheme (EMAS);
(b) Continue to promote the EMAS and ISO 14001 in collaboration with the Economic Chamber.

Corporate Social Responsibility

Corporate Social Responsibility, including reporting regarding this practice, is the key indicator to assess progress in the implementation of Target 12.6 of the Sustainable Development Goals. At present, the only initiative to encourage CSR practice is undertaken by the Ministry of Economy in organizing an annual National Award for the best CSR practices.

Recommendation 2.6:
The Ministry of Economy, in cooperation with the Ministry of Environment and Physical Planning, should promote Corporate Social Responsibility practices and encourage companies to integrate sustainability information into their reporting.

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Chapter 3

GREENING THE ECONOMY

3.1 Greening the system of charges and taxes

Charges and fees related to pollutants

Air pollution

The former Yugoslav Republic of Macedonia does not apply air pollution charges that have the measured or estimated emissions of polluting substances as tax base.

Rather, emissions of industrial facilities are regulated by issuance of integrated environmental permits that specify emission limit values (ELVs) in terms of concentrations of polluting substances (chapter 2). The annual fee for the holding of an A- and B-type permit includes as one of the components a flat charge per type of pollutant, which ranges from 4,000 denars (€64) for dust to 9,000 denars (€144), for example, for asbestos and heavy metals. This basic charge rate is subject to a penalty in case the company has exceeded the ELV during the past year. For each percentage point of exceeding the ELV for a given pollutant there is a corresponding percentage point increase in the charge rate. Given that the base charge rates are already low, this implies that there are no effective financial incentives for improving environmental performance; the main effect of this permit fee is to generate government revenue as a compensation for services provided.

Water pollution

The discharge of wastewater into surface and ground water is subject to a discharge permit and payment of a pollution charge. Payers are legal entities and natural persons that either do not have a facility for wastewater treatment and/or discharge untreated wastewaters and polluting substances into a receiving water. The latter is the case of most water supply companies in the country.

According to the legislation, the pollution charge comprises:

- A fixed charge, which is set at 1 per cent of the tariff of the public water service company for sewerage and wastewater treatment; and
- A variable charge, the level of which depends on the pollution load of discharged wastewater, as regulated in the permit, and which is to be used as the basis for determining the units of noxiousness that have to be paid. The annual rate per unit of noxiousness is set at 0.4 per cent of the average salary in the country.

The variable charge is more in line with the polluter pays principle, but only the fixed charge rate has been implemented. This reflects inter alia the pervasive lack of adequate wastewater treatment plants in the country and adequate monitoring capacities. The fixed charge, moreover, is very low given the low level of sewerage tariffs. In Skopje, the fixed component of the pollution charge amounts to only some 2 eurocents per m^3.

Revenues collected from the fixed component of the water pollution charge are collected by the public water companies; they appear as a separate item on the water bill. Revenues have to be transferred into a separate treasury account; the charges are earmarked for financing water sector development. Given that the fixed component is not designed as a charge per m^3, the direct consequence is that the higher the sewerage (and wastewater treatment) tariff the more the final water consumer has to pay, independently of the quality of water discharged. However, the main rationale for a water pollution charge is to recover the costs of adequate wastewater treatment for discharge of polluted wastewater and create incentives for pollution abatement.

Payments for discharge of polluting substances into water by industrial facilities subject to type A and B integrated environmental permits are charged in the same way as for air pollutants, i.e. only by type of polluting substances. Charge rates range from 3,000 denars (€48) for suspended solids to 9,000 denars (€144) for cyanides

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and other substances. These permits and related payments do not apply to the water utilities, most of which do not operate a wastewater treatment plant but do discharge polluted wastewater. The pollution charges are separate from the tariff for wastewater treatment by water utilities. The pollution charges under the Law on Waters are controlled by the State Inspectorate for Environment and are included in the water bill, presented separately and are not part of any water services tariff.

Excise duties and transport-related charges

Excise duties

Energy products (engine fuels and heating fuels) are subject to a specific excise duty (table 3.1). Among the motor fuels, there is a significant differentiation of excise rates in favour of diesel compared to unleaded petrol, although the rate on diesel was raised by 24.8 per cent effective 1 January 2018. At the same time, the excise rate for gasoil used as heating fuel nearly doubled. Other excise rates remained unchanged. The excise duty rate on unleaded petrol is close to the EU minimum rate, but rates on other motor fuels are well below this benchmark. In contrast, excise duty rates for heating fuels are above EU minimum rates, notably gas oil.

Table 3.1: Excise duty rates on energy products

		Excise duty rates		EU MR
Product	**Unit**	**Denar**	**€**	**€**
Motor fuels				
Unleaded petrol	1 000 litres	21 692.00	352.77	359
Leaded petrol	1 000 litres	24 396.00	396.75	421
Gasoil (diesel)	1 000 litres	15 121.00	245.90	330
Kerosene	1 000 kg	9 000.00	146.37	330
Liquefied petroleum gas	1 000 kg	4 900.00	79.69	125
Heating fuels				
Gasoil	1 000 litres	6 136.00	99.70	21
Kerosene	1 000 kg	1 800.00	29.27	21
Liquefied petroleum gas	1 000 kg	4 900.00	79.69	41
Petroleum coke	GJ	84.60	1.38	0.15 / 0.3

Source: Ministry of Finance, Customs Administration.
www.customs.gov.mk/index.php/en/biznis-zaednica-mk–2/akcizi/mineralni-masla
Note: Exchange rate: denar/€ = 61.49 (April 2018). EU MR = EU minimum rates

The excise duty on passenger cars is determined as a percentage of the market or customs value of the vehicle. The excise duty rate increases with the monetary value of the cars. Rates range from zero per cent for car with a value up to €3,000 to 18 per cent for cars with a value exceeding €30,000. Most imported second-hand cars fall into the zero-tax price range. The tax base does not establish a link with environmentally relevant indicators such as CO_2 emissions per kilometre, the engine capacity of each passenger car, the age of the vehicle or the fuel type. The past decade has seen, in fact, quite some significant changes about the emission standards to be observed by imported cars (box 3.1).

Box 3.1: Passenger car emission standards

The 2008 Law on Vehicles limited import of new motor vehicles to those that complied with the Euro 4 emission standard. At the same, the import of second-hand cars that complied with the Euro 3 standard was also permitted. Used vehicles that did not comply with the Euro 3 standard had to undergo a type-approval (homologation) process before they could be registered.

During 2010, the Government allowed the temporary import of used vehicles that met Euro 1 and Euro 2 standards. This was largely motivated by the need to replace heavily polluting old cars from socialist times and for social policy reasons. In December 2014, against the backdrop of deteriorating urban air pollution, import of used vehicles was restricted to those that complied with at least the Euro 3 standard. From July 2015, the minimum emission standard for used vehicles was raised to Euro 4 and for new vehicles to Euro 5.

Vehicle registration fee

Owners of motor vehicles have to pay an annual vehicle registration fee. The fee depends on technical characteristics of the vehicle, but leaves out environmentally relevant indicators, such as CO_2 emissions and fuel type. In the case of passenger motor vehicles, the fee varies with the maximum motor power (in kW) and ranges from 70 denars (€1.15) to 210 denars (€3.25). Electric passenger cars are exempted from the fee. The revenues collected from this fee are earmarked for the Ministry of Environment and Physical Planning and are to be used for financing of environmental projects.

Road user tax

At the time of the annual vehicle registration, owners of motor vehicles have also to pay a "road tax" charge for use of public roads. The amount of the fee depends on the type of vehicle (passenger cars, motorcycles, buses, trucks) and technical characteristics. Fees were raised most recently in July 2014.

The fee for passenger cars depends on the engine capacity (cc); it varies from 1,040 denars (€16.9) for vehicles up to 900 cc to 5,780 denars (€94.0) for vehicles with more than 3,150 cc. This constitutes a significant increase compared to the previous levels, when the fee for passenger cars ranged from 730 denars (€11.9) for vehicles up to 900 cc to 4,050 denars (€65.8) for vehicles with more than 3,150 cc.

Road tolls

Toll rates depend on the specific section (there are nine) of the highways used as well as on the vehicle category. Toll fees collected corresponded to some 0.5 per cent of GDP in recent years. These revenues are earmarked together with the "road tax" for financing the construction and maintenance of public roads. Set at an adequate level, road tolls together with vehicle registration fees, the road tax and fuel taxes can create price signals that encourage the use of public transport.

Property tax

Legal entities and natural persons that own real estate, viz. land (agricultural, construction, forests, and pastures) and buildings (residential and non-residential) are liable to pay an annual property tax. Also, users of real estate owned by the state and the municipality have to pay this tax. The tax base is the market value of the real estate, which is determined based on a methodology (Methodology for determining the market value of real estate) established by the Government. This is a local tax and the corresponding municipal councils set the basic tax rates, which have to be within a range of 0.1 to 0.2 per cent depending on the type of property.

Tax rates for property tax on agricultural land not used for agricultural production can be increased from three to five times in relation to the basic rates. The revenues collected are allocated to the municipal budgets.

Fees for use of natural resources

Water abstraction charges

Water abstraction charges are differentiated by types of use; they are not differentiated by source (ground or surface water). Charges are not volumetric but linked to the price of products and services produced. This implies that the distribution of the financial burden between the various types of water use depends on the size of the charge base. Thus, the charge of water abstracted for public water supply is set at 2 per cent of the end user water supply tariff of the corresponding water supply company.

This is in line with the "user pays principle", which passes the costs of water abstraction on to the final consumer. The levy is, however, too small to have a significant effect on water consumption, but the main intent of water abstraction is not to affect water demand but rather mobilize funds for water resources management. For hydropower stations the charge rate is 1 per cent of the electricity generation tariff per kWh. For mineral water bottling, fish and water bird breeding and washing of sand and gravel, the water abstraction charge rate is a small percentage of the final sales price of these products (table 3.2). Revenues from water abstraction charges are collected by the corresponding service providers and/or entities that sell the related final products and have to be paid into a separate treasury account. Revenue from the charges is earmarked for financing various water

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resources-related purposes. Funds that have not been used during the current budgetary year, however, are transferred in full to the Treasury. There is no published information on the total amount of financial resources collected and the extent to which they allow the recovery of costs of water resources management.

Table 3.2: Charges for water abstraction, per cent

Water use	Charge rate
Public water supply	2 per cent of water supply tariff per m^3
Irrigation	2 per cent of water supply tariff per m^3
Hydropower	1 per cent of the electricity generation tariff per kWh
Thermal power	0.5 per cent of the electricity generation tariff per kWh
Thermal power from geothermal waters	7 denars (€ 0.11) per m^3
Water bottling for commercial purposes	0.5 per cent of the sales price
Fish and waterbird breeding	3 per cent of the sales price per kg
Washing of sand, gravel and stones	2 per cent of the sales price per m^3
Production of food and beverages	2 per cent of end user water supply tariff per m^3

Source: Law on Waters.
Note: Public water supply and irrigation are charged by the public water companies

Fees for use of forest products

Of the total state-owned forest area, 90 per cent is for economic use; the remaining 10 per cent is classified as protected areas.

The volume of annual timber harvesting is based on felling quotas fixed in forest management plans that are subject to approval by the Ministry of Agriculture, Forestry and Water Economy. Most of the wood products sold are fuel wood (some 75 per cent in recent years) used for energy production (heating) mainly by households. According to a survey by the State Statistical Office in 2015 of the total number of households, 62 per cent consume fuel wood as the primary source of heat. Fuelwood also accounts for the lion's share of total revenues from wood production by the Public Enterprise Macedonian Forests *PEMF.

Sales are mainly based on annual contracts with clients, but public tenders have also been used. Part of the timber harvesting is outsourced to private companies, which is an important cost factor for PEMF. There is, moreover, an annual quota for felling of fuelwood for the local population in low-grade forest.

The collection of non-wood forest products (NWFP) for commercial purposes is mainly outsourced to third parties (companies and the local population) based on contractual arrangements. Main products are fungi (such as boletus, chanterelles); lichens (evernia, centrania); berries (blackberries, blueberries, cranberries) and medicinal and aromatic plants (adonis, gentiana, hypericum, juniper). Raw and processed NWFPs are traded on the local and national markets and exported, primarily to the regional (Balkan) and broader European markets.

Hunting in state-owned forests is taking place in some 200 hunting grounds. They are mainly managed by private hunting associations based on concessions allocated via public tenders. These concessions are granted for a period of 10 years and can be renewed. PEMF itself operates four hunting grounds, but total revenues are relatively small estimated at 3 million denars (€50,000) for 2018, which is even below the operating expenditures involved.

PEMF operates on a self-financing basis, that is, any profits made can be used for investments in the forest sector infrastructure. In principle, it has to transfer 3 per cent of profits, if any, to the Ministry of Agriculture, Forestry and Water Economy, but these funds are then "recycled" to PEMF for forest reproduction activities. However, the financial position of PEMF has not been strong in recent years, partly reflecting inefficiencies such as overmanning. It could not pay private companies engaged in timber harvesting but had to arrange for payment in kind, i.e. by handing over a large volume of wood harvested instead.

Fees for use of forest resources are also one of the financing sources for protected areas (national parks) besides entry fees. These use fees are like those applied by PEMF and revenues are earmarked for the financing of nature management works in the area where they were collected.

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Charges for exploitation of mineral resources

Concessions for exploration and exploitation of mineral resources are awarded based on a public tender. The concessionaire has to pay fees, which are set by the Government. The fee for an exploration concession ranges from 60,000–120,000 denars (€960–1,920) depending on the type of mineral ore. The fee for an exploitation concession has two parts: (i) a fixed annual fee, depending on the type of mineral, which ranges from 100,000–240,000 denars (€1,600–5,440) per square kilometre of land under concession; and (ii) a fee (royalty) for the quantities of minerals exploited.

For metallic minerals, the charge rate is 2 per cent of the market value per ton as set at the London Metals Exchange.

For precious and semi-precious stones, the charge rate is 5 per cent of the market value. For decorative stones, the charge rate depends on the type of stone (e.g., marble €15 per m^3; granite €9 per m^3). The royalties for non-metallic minerals are mainly in the range from €0.15 to €14.6 per ton. For minerals (sand and gravel) for the construction industry, the fee is 9 denars (€0.15) per ton. Most of the coal (lignite) reserves are being managed by state-owned electricity generation companies with no clear separation of accounts.

The funds collected from these concession fees are shared between the central government (22 per cent) and the local government(s) (78 per cent) on whose territory these activities are carried out. A proportion (4 per cent) of the revenues allocated to the central government budget, must be used for the re-cultivation and return in useful condition of the degraded areas where the geological exploration and exploitations of minerals have been conducted.

Tariffs for utility services

Tariffs for municipal waste management

Municipalities are responsible for organizing the collection, transportation and disposal of municipal waste. The operation of waste services has been delegated to public enterprises, which are owned by the municipalities. Tariffs for collection, transport and disposal of waste are set at the level of municipal councils based on proposals by the management of the waste company. The tariff structure distinguishes, in general, two customer categories, viz. natural persons (private households) and legal entities (enterprises, public institutions.).

The charge base for waste tariffs varies among municipalities. In urban municipalities, the dominant charge rate for households is defined as denar/per m^2 of the living space of apartments/houses; but some municipalities apply a fee rate based on the number of persons living in a household. In rural areas, a flat monthly fee per household has to be paid. Legal entities pay mainly a charge per m^2 of their premises; some pay a charge depending on volumes of waste collected. The general feature is for household tariffs to be relatively low, reflecting the fact that, in general, municipalities seem to treat household waste collection as a social service that has to be subsidized. Consequently, these tariffs are not cost reflective. This is partly offset by the relatively high charge rates for legal entities, which are a kind of cross-subsidy designed to help offsetting the revenue losses associated with the low charges paid by households. Waste companies, in general, also operate municipal landfills but there is no separate tariff for disposal of waste at these sites. This implies that the costs of managing landfills, including necessary investments, should be covered by the charges for waste collection and transport. However, this is not the case. Consequently, nearly all of these landfills are sub-standard as regards the need to prevent or reduce as far as possible negative effects on the environment and on human health.

Bill collection rates at the household level are, in general, quite low (on average at some 50 per cent). Perhaps for socio-political reasons and lack of political will, payment of bills is not enforced. This is, besides the low charge rates, another reason for the low level of cost recovery in the municipal waste sector. Low willingness to pay of households may partly reflect the low quality of waste services provided. Another factor is that the use of road containers for waste collection does not allow excluding households that do not pay from access to waste services. Efforts by the Government to provide guidance to municipalities on how to set cost reflective tariffs, based on a tariff methodology that entered into force in 2014, have not been successful. It is not known which, if any, municipality has followed the guidance. Waste tariffs that are, on average, not cost reflective entail that resources for investments to upgrade the waste sector infrastructure are lacking, which, in turn, leads to deterioration in the

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quality of waste services and cumulative increases in investment gaps. In the absence of cost reflective tariffs also foreign donors will not be willing to provide loans to help finance investments because such projects would not be viable. Progress in the regionalization of waste management facilities designed to generate economies of scale has been sluggish (chapter 10).

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis target 8.4 of the 2030 Agenda for Sustainable Development is described in box 3.2.

Box 3.2: Material consumption and waste management – achieving target 8.4 of the 2030 Agenda for Sustainable Development

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10 Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead

As of November 2018, the former Yugoslav Republic of Macedonia does not produce data needed to compile SDG indicators 8.4.1 (Material footprint, material footprint per capita, and material footprint per GDP) and 8.4.2 (Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP) although raw material extraction, such as mineral resources, plays an important role in the domestic economy. However, in the waste management sector targets related to material resource productivity have been established within the framework of the Extended Producer Responsibility policy. The rationale is to create incentives for producers to prevent waste at the production stage, take environmental considerations into account at the product design stage and support public recycling and materials management goals. To illustrate, the country has set targets for the recovery and recycling for packaging waste, and for recovery or reuse of end-of-life vehicles. Other products for which manufacturers shall become responsible for managing the waste streams are tyres, oils and textiles.

The former Yugoslav Republic of Macedonia should ensure the data availability to compile indicators 8.4.1 and 8.4.2 to measure progress towards the achievement of target 8.4.

Tariffs for water supply and sewerage services

Drinking water supply, wastewater collection and wastewater treatment are the responsibility of municipalities.

The public utilities managing these services are owned by the municipalities, which decide the annual budget and are responsible for investments. Until 2017, tariffs for these services were decided by municipal councils based on proposals by the public utility companies. Although the utility companies based their tariff proposals on the principle of full cost recovery, the approved tariffs mostly fell short of this objective due to political and social reasons. There were also significant cross-subsidies to households, which benefitted from much lower tariffs than legal entities. In the event, average tariffs just covered operating and maintenance costs. The financing of investments for the much-needed upgrading and modernization of the water distribution networks and the building of wastewater treatment plants relied fully on funding from the central and municipality budgets as well as loans and grants from foreign donors, all of which were in limited supply. Upgrading and modernizing the water and wastewater treatment infrastructure has become a major priority given that most of the infrastructure was installed more than 50 years ago.

The provision of water supply and sewerage services has been characterized by significant inefficiencies reflected in very high nonrevenue water (about 60 per cent), which is in approximately equal parts due to technical losses (such as leakages) and commercial losses (such as inefficient bill collection and metering inaccuracies). Against the background of high unemployment, urban municipalities have also used their utility companies for providing jobs, with the consequence of over-manning.

For average income households, tariffs for expenditures on water services (water supply and sewerage) have been affordable. Urban households with an average income spent 1.7 per cent on water supply and sewerage services in 2008, which is below the common threshold of 3 per cent used in Europe. However, the situation is different for household in the lowest-income quintile, where this share amounted to 6 per cent. There is a shortage of information on social policy measures to assist these low-income households.

Against this background, the Government (with financial support from the EU), initiated a reform of the economic regulation of the water sector designed to strengthen the application of full cost recovery tariffs in order to ensure the financial sustainability of the sector, and, related to that, facilitate the substantial investments needed for upgrading and modernization of the water sector infrastructure. Cost-reflective tariffs are generally seen as a *conditio sine qua non* for financing higher investments and associated higher operational expenditures, while taking into account the need for water prices to remain affordable for the population.

A first step towards tariff reform was to move the responsibility for setting water prices away from the municipal councils to the Energy Regulatory Commission (ERC) in 2017. In the same year, ERC established tariffs in accordance with the full cost recovery methodology for a first group of 30 public utilities, which each provide services to more than 10,000 population equivalent. These tariffs entered into force at the beginning of 2018. For the remaining water utilities that provide services to less than 10,000 population equivalent, new tariffs should be determined before the end of 2018 and shall enter into force at the beginning of 2019. If the water supply company and the municipalities are unable to reach an agreement on the tariffs, ERC has the final say.

ERC has not set tariffs that are specific for customer groups (households; and the group of other customers) but rather average volumetric tariffs per $m^3$for water supply; wastewater collection; and wastewater treatment. At the same time, ERC has determined minimum and maximum amounts for these average tariffs. This provides some scope for water utilities and municipal councils to differentiate between tariffs for individual households and those for other customers subject to the constraint of meeting the regulated revenue target. The regulatory period is three years, that is, ERC has also set the tariff for 2019 and 2020. The general feature is for a progressive increase in tariffs over this period. The average of the water supply tariffs for the 30 water utilities amounts to 27.53 denars (€0.44) in 2018, up from 26.32 denars (€0.42), an increase by 4.6 per cent compared to 2017. Table 3.3 allows comparing actual average tariffs for 2017 for eight municipalities with the regulated tariffs for 2018 set by ERC.

Table 3.3: Average tariffs for water supply, sewerage and wastewater treatment of selected municipalities, denars/m^3

Municipality		2017	2018	2018 Allowed tariff range	
		Actual	Regulated	Minimum	Maximum
Berovo	Water supply	30.87	32.57	31.77	33.36
	Sewerage	9.36	6.45	5.91	8.98
	Wastewater treatment	0.00	12.59	12.55	12.62
Gevgelija	Water supply	17.53	17.57	17.97	18.08
	Sewerage	7.12	3.84	3.64	4.03
	Wastewater treatment	0.00	12.24	7.14	17.33
Strunica	Water supply	32.37	39.96	36.58	43.34
	Sewerage	10.43	10.40	9.68	11.12
	Wastewater treatment	0.00	12.83	6.33	19.34
Radovis	Water supply	26.74	28.22	27.96	28.49
	Sewerage	3.30	5.68	4.38	6.99
	Wastewater treatment	0.00	14.90	13.34	16.46
Bitola	Water supply	31.02	34.41	32.78	36.05
	Sewerage	11.70	15.11	13.28	16.94
	Wastewater treatment	10.96	6.61	6.54	6.68
Resen	Water supply	24.85	30.82	30.46	31.18
	Sewerage	4.89	5.20	5.17	5.24
	Wastewater treatment	11.70	11.63	11.56	11.70
Skopje	Water supply	20.00	21.50	20.11	22.88
	Sewerage	11.39	11.18	10.44	11.92
	Wastewater treatment	0.00	2.27	2.04	2.50
Illinden	Water supply	30.95	30.41	29.46	31.35

Sewerage	12.51	10.30	8.70	11.90
Wastewater treatment	0.00	8.90	7.58	10.22

Source: Energy Regulatory Commission, 2018.
Notes: Average tariffs for households and legal entities.

Electricity tariffs

Energy policy has been very closely related to EU energy policy via the Energy Community to which the former Yugoslav Republic of Macedonia and other South-eastern European countries are Contracting Parties. The main thrust of the associated obligations has been in breaking up vertically integrated structures and improving competitiveness *via* market liberalization. This involves also the distinction between two main final customer categories for the purchase of electricity, viz. (i) tariff consumers, for whom the price is strictly regulated and (ii) eligible consumers, for whom prices are set by the market. Market liberalization started in 2008 for eight high-voltage consumers, which have to purchase their electricity on the open market. For all other customers (mainly households and small and medium-sized companies) tariffs continued to be regulated by the Energy Regulatory Commission (ERC). The Government plans to achieve a full liberalization of the electricity market, which would notably give customers the *possibility* to freely choose their supplier as of 1 April 2014, were initially postponed until 1 July 2020. This reflected concerns about the risk of price shocks, notably for households. Further market liberalization was instead phased in gradually, starting in 2014, by providing each year a certain group of smaller non-household consumers (mainly industry) with the option to become eligible to choose their electricity suppliers. Under this plan, private households and any remaining small non-household consumers were to be eligible as of 1 July 2020. However, the 2018 Law on Energy brings forward to the beginning of 2019 the date from which these customers can switch their supplier – and move away from regulated tariffs. At the beginning of 2018, the percentage of total electricity consumption covered by the open electricity market, i.e. the share of the liberalized market, was around 47 per cent.

In the past, the regulated electricity market was characterized by significant subsidization and market distortions at all stages of the electricity production process that kept tariffs below market clearing levels. The only customers not paying subsidized tariffs were the large industrial consumers. At the end-user stage, there was, moreover, significant cross-subsidization of household tariffs by tariffs for non-household consumers. As a social policy, electricity subsidies are inefficient, since the richer households, which use most of the electricity, benefit most from the subsidies. In addition, keeping electricity tariffs below market clearing levels discourages domestic and foreign investment in the sector.

The gradual phasing in of market liberalization has, however, lead to decreases in electricity costs for newly eligible non-household consumers due also to the fact that market prices were lower than regulated tariffs, which also reflects the benefit of no longer having to cross-subsidize other tariff consumers. Tariff reform in recent years has entailed regulated industrial tariffs becoming more cost-reflective, but there are still cross-subsidies, albeit declining, from the reduced group of non-household customers to private households. In 2017, ERC adopted a decision by which a cheap household electricity tariff was introduced for two hours a day, which led to reduced revenue and profits of EVN, a private distribution system operator and supplier of 98 per cent of all tariff customers. The low-price policy raises demand for electricity rather than creating incentives for energy savings. This likely constitutes also an important barrier for switching to gas for heating. The commitment to fully liberalize the market by 2019 implies, however, the phasing out of subsidies and rising end-user prices for non-household customers and private households that continue to prefer regulated tariffs.

EVN has been quite successful in reducing non-technical distribution losses related to theft from the grid. As a result of measures to educate customers on payment options, and to streamline invoice deliveries, EVN has managed to improve bill collection from a rate of 75 per cent in 2006 (when it took over the network) to more than 95 per cent. Technical distribution losses have been reduced to 14 per cent of electricity generated.

The prospect of rising household tariffs calls for accompanying measures, viz. increases in targeted social assistance to poorer households to ensure that a limited supply of electricity for essential needs is affordable. As of November 2018, the Government offers monthly financial subsidies amounting to 1,500 denars (€24) to households belonging to a social protection scheme. So far, the notion of vulnerable consumers is not defined in the Law on Energy. Some principles of customer protection are defined in the Rules for the Supply of Electricity adopted by ERC.

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Feed-in tariffs for renewable energy sources

Investments in renewable energy projects have been supported since 2012 with feed-in tariffs (FITs) for small hydropower plants (HPP), photovoltaic (PV) installations, wind farms, and power plants using biogas and biomass. The country has also set a limit on total installed capacity of each of these technologies that is eligible for feed-in-tariffs, except for small HPPs. FITs are determined by ERC and are valid for 20 years for small HPP and wind farms and 15 years for other technologies. The tariffs offered for each kilowatt-hour have been differentiated by technology type, project size in terms of installed capacity and other factors.

The feed-in tariff for wind power has been set at 8.9 €ct/kWh. For PV installations the tariff is 16 €ct/kWh for installations up to 50 kW and 12 €ct/kWh for installed capacity above 50 kW. The tariff for small HPPs depends on the quantity of delivered electricity and ranges from 4.5 €ct/kWh to 12.0 €ct/kWh. In the case of biogas and biomass, preferential tariffs are granted only to thermal power plants (TPPs). For TPPs using biomass, the tariff depends on the share of fossil fuels in total energy value. If this share does not exceed 15 per cent the tariff is 15€ct /kWh; for higher shares a special formula applies. In a similar vein, the tariff for TPPs using biogas amounts to 18 €ct per kWh if the share of fossil fuels in total energy values of the used fuels does not exceed 10 per cent. If the share of fossil fuels in total energy value of the fuel is between 10 and 20 per cent, the feed-in tariffs are calculated according a special formula. Overall, investments in renewables projects have been relatively modest so far; the effectively installed capacity amounted to 37 MW for wind and 17 MW for solar energy in 2016.

The main rationale for a long-term fixed feed-in tariff is that it creates greater investment security and greater predictability of future cash flows once projects operate. FITs also encourage technologies at different stages of maturity, including emerging technologies. FITs can lead to near-term upward pressure on electricity prices**,** particularly if they lead to rapid growth in emerging (i.e., higher-cost) renewable energy technologies. On the other hand, FITs are not "market-oriented" because the payment levels offered for the electricity generated do not depend on market price signals. Also, FITs do not encourage direct price competition between project developers.

Against this background, the Government has developed plans for the introduction of market-oriented mechanisms for the promotion of renewable energy sources (RES), viz. feed-in premiums and auctions for bidding on the amount of the feed-in premium, as stipulated in the 2018 Law on Energy. These would be operated in parallel with the already existing FITs. However, the necessary secondary legislation is lacking. Feed-in premiums offer a premium on top of the electricity price in wholesale (spot) markets, where generating companies are trading electricity. If the market prices were above an established reference level, then no premium would be paid. This approach would require establishing a competitive trading platform for daily trading of electricity generated. It would encourage competition among renewable energy producers and between them and conventional generators. In that way, producers would be encouraged to invest in the efficiency of their RES plants and lower their costs. This may ensure cost-effective achievement of the 2020 renewable energy target based on the decline in costs of renewable energy technologies witnessed in past years. Such an approach may not be very attractive to wind and solar PV farms, because of the lingering uncertainty (wind speeds; solar irradiation) at what time they can supply electricity into the grid.

3.2 Greening the subsidies system

Fossil fuel subsidies

The country relies heavily on fossil fuels (low-grade lignite and oil) for electricity generation. In 2015, coal-based power generation accounted for 62 per cent of total annual electricity generation. IMF estimates suggest that prices paid by consumers (households and enterprises) for fossil fuels are broadly in line with low domestic supply costs, i.e. direct subsidies to end-users are negligible. But the low-priced supply of fossil fuels does not reflect the costs of environmental damages, i.e. mainly adverse impacts on health from local air pollution and contributions to global warming, which are tantamount to sizeable fossil fuel subsidies. In a recent study, the IMF estimates that these implicit subsidies corresponded to 18.5 per cent of GDP in 2015. Such estimates are inevitably surrounded by a large margin of uncertainty and should therefore be regarded with caution; but they suggest, nevertheless, that this type of fossil fuel subsidy is quite large in the country.

Investment incentives

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Amendments to the Profit Tax Law introduced a flat tax rate of 10 per cent on company profits. Although the Law entered into force at the beginning of 2015 it applies to profits generated during 2014 as well. However, the Law provides that the tax base for calculating profits in a current year can be reduced by the amount of investments in tangible assets (such as machinery and equipment, including green technologies) financed out of the profits generated in the previous year. This provision is designed to expand business activities. Before this amendment, starting 2009, legal business entities were obliged to pay profit taxes only on distributed profits and non-deductible expenses. Before 2009, the Law stipulated that business profits invested for the protection of the environment were exempted from payment of profit tax. However, there is no information on the extent to which this provision was used.

Since 2014 the Government has operated a subsidy programme for the promotion of renewable energy sources and improvements of energy efficiency in households. The total budget amounts to 50 million denars (€0.8 million) in 2018. The programme reimburses part of the expenses (i) for the purchase and installation of solar thermal collector systems; (ii) replacement of old windows with PVC and aluminium frames; and (iii) switching to furnaces that use pellets as energy source.

In 2016, Skopje operated a similar programme designed to stimulate households to use renewable solar energy sources for heating of their homes, as well as introducing a support scheme for purchasing pellet stoves designed to reduce air pollution. The funds for implementation of this activity were secured by the city budget, amounting to 5.89 million denars (€94,000). In 2017, a similar programme, which covered also administrative buildings, had a budget of 13.5 million denars (€0.22 million). In addition, Skopje launched a small programme designed to support the purchase of private bicycles, which had a budget of 20 million denars (€0.32 million) with the general objective to offer alternative means of transportation to citizens.

Value added tax

The standard VAT rate applied to most goods and services is 18 per cent. A reduced rate of 5 per cent applies *inter alia* to the supply of solar heating systems and their components; agricultural equipment, seeds and planting materials for production of agricultural crops, fertilizers and materials for plant protection; drinking water supply from public systems; and communal and waste disposal services. Effective beginning of 2017, the purchase of pellets and pellet stoves are also subject to a reduced VAT rate of 5 per cent.

3.3 Evaluation of the impact of country's efforts in greening the tax, tariff and subsidies systems

Economic instruments, such as taxes, user charges and subsidies, aim at changing behaviour of economic agents, including private households, towards the environment and the use of natural resources via their impact on price structures. Instruments such as pollution charges, are often contrasted to "command-and-control" measures that set pollution limits and define allowable technologies, but both tools can also operate effectively in tandem.

The polluter pays principle is enshrined in many environmental laws, but in practice it is not implemented. There are no pollution charges imposed on emissions of air pollutants from stationary sources; the discharge of polluting substances in wastewater discharges by industry is only subject to a minimal fee which is not based on the effective discharge of polluting substances. In a similar vein, excise duties on passenger cars and registration fees are not taking into account emissions of CO_2 and other pollutants, such as NOx. In general, natural resource charges are rather low. There are also no taxes imposed on coal mining activities. User charges for water supply and sewerage and municipal waste collection have been too low for covering more than operating and maintenance costs, if even that. Electricity tariffs, under the impact of progressive market liberalization, have become more cost reflective, but there are still elements of subsidies at the level of private households. In summary, economic instruments have been a blunt policy tool with hardly any impact on the behaviour of businesses and households to encourage sustainable consumption.

Against this background, the tax burden and associated revenues related to environmental taxes has remained relatively low. Environmental taxes accounted for 6.38 per cent of total general government revenues in 2015 (table 3.4). Energy taxes, which include taxes on transport fuel, had by far the highest share (64.6 per cent) of overall tax revenue, followed by transport taxes (34.5 per cent) in 2015. Revenues from pollution taxes declined sharply after 2010 to attain a share of 0.9 per cent of total general government revenues in 2015. There were no

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revenues collected (or reported by the recipients) from resource taxes, which include charges for water abstraction, fees for use of biological resources (timber) and extraction of minerals.

Table 3.4: Environmental tax revenues, 2014–2016, million denars

	2014	2015	2016
Energy	5 987.50	6 521.30	7 208.60
Transport	2 941.95	3 631.80	3 862.70
Pollution	116.35	99.10	104.80
Resource	0.00	0.00	0.00
Total	**9 045.80**	**10 252.20**	**11 175.70**
Total in € million	**144.73**	**164.04**	**178.81**
Total as per cent of GDP	**1.71**	**1.83**	**1.87**
Total as per cent of GG revenue	**6.23**	**6.38**	**6.61**

Source: State Statistical Office; Eurostat.
Note: GG = General Government. The amount of resource taxes is too small to appear on the table.

3.4 Investing in environmental protection and green economy

Expenditures on environment protection are financed by a number of different funding sources depending also on the environmental domain. The main general funding sources are the state budget and loans and grants from other countries and international financial institutions. There is no national environmental fund with a variety of earmarked revenues. To some extent, payments for water use related fees are earmarked for financing water sector management.

The Ministry of Environment and Physical Planning receives a share of earmarked revenues from vehicle registration fees. The forestry sector is mostly self-financed, through the sale of timber and primary wood processing. Protected areas (national parks) depend to a large extent on own generated revenues such as entrance fees and payments for collection of wood and non-wood forest resources. Investments in municipal utilities (waste and water) are dependent on government budget resources and foreign funds. Private sector investments are financed from own resources and loans, but there is no information on the total resources spent on environmental protection.

Implementation costs for environment-related strategies, programmes and plans

Environmental investments are carried out by several entities in the former Yugoslav Republic of Macedonia, such as Ministry of Environment and Physical Planning, Ministry of Transport and Communications, Ministry of Local Self-Government, Ministry of Agriculture, Forestry and Water Economy, and Ministry of Economy in the domain of energy efficiency. Investments are also carried out on the local level by municipalities and public enterprises, public institutions national parks, as well as by the business sector. The country has developed a range of strategic documents for various environmental domains (chapter 1) but many of them do not deal with the issue of financing of investments.

The National Environmental Investment Strategy for the period 2009–2013 was developed to gauge broadly the financial resources required to achieve compliance with EU environmental legislation in the major environmental domains. It concluded that by far the largest investments were needed in the areas of integrated pollution and control, wastewater and waste management. The Strategy also suggested establishing an inter-ministerial taskforce to address the lack of coordination and streamline investment activities, but such a taskforce has not been established. Wastewater treatment and waste management are still ranked high on the Government's priority list, to which low energy efficiency has been added.

The financial resources for investment in environmental infrastructure and technology to achieve compliance with the EU environmental and climate change *acquis* were estimated in the 2008 National Strategy for Environmental Approximation to amount to €2.3 billion (at 2006 prices). About half of these costs are associated with the industrial pollution sector, which includes all the major measures taken by industry to reduce its environmental impact, viz. emissions to air and water and to abate noise etc. The other major sectors in terms of "adjustment costs" are the water quality and waste management sectors. These are the three sectors that require

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substantial programmes of capital investment either by industry or in municipal infrastructure. Implementation of these projects in water and waste management require also substantial support from donors and efficient use of resources.

The 2009 National Waste Management Plan for the period 2009–2015 estimated the investment needs for the upgrading and modernization of the public waste management infrastructure at some €82 million, of which €51 million would be required for creating two new regional landfills, the upgrading of the Drisla landfill in Skopje and closure and remediation of existing non-compliant landfills and dumpsites. Financing sources identified included central and local government funds and international sources, as well as a gradual shift to full cost recovery waste tariffs. The Plan has expired and a draft national waste management plan for the period 2018–2024 was at the stage of public consultation at December 2018 and consultations were on-going on the draft with other sectors; its SEA was expected in Spring 2019. The 2008 Strategy for Waste Management for the period 2008–2020 does not contain estimates concerning investment plans.

As regards the water sector, the 2012 National Water Strategy estimated investment needs for post 2011 at 15.2 billion denars (€0.24 billion), of which 12.9 billion denars (€0.21 billion) for wastewater treatment. Financing sources for the latter were not identified. Other estimates of investment need to be compliant with the wastewater collection and treatment standards of the EU are considerably higher in the range of 31–40 billion denars (€500–600 million) of which €177 million for wastewater treatment plants and the remaining €326 million for wastewater sewerage.

The second Energy Efficiency Action Plan until 2015 identified investments for energy efficiency measures across major sectors of the economy for the period 2013–2015 amounting to 11.2 billion denars (€178.5 million) to be financed by public and private sources. The third National Energy Efficiency Action Plan for the period 2016–2018 identifies investments amounting to €125.6 million over these three years, of which €71.6 million in the residential buildings sector. Both, the second and third action plans indicate that (a small) part of the required funds will be contributed from an energy efficiency fund, but it has not yet been established.

Green public procurement

Public procurement is a major economic factor in the country (box 3.3). The value of concluded public contracts amounted to 30 per cent of the state budget and corresponded to 10 per cent of GDP in 2016. The rules for preparation of tender documentation, such as technical specifications, make explicit reference to the need to include the impact on the environment as well as specifications and performance requirements that are part of European and multinational "eco-labels". And among the criteria for determining the qualification of economic operators is also the observation of environmental management standards, such as EMAS. The role that those factors have played in the procurement process is difficult to gauge. The central contract award criterion is the lowest price rather than the economically most advantageous bid, which would consider factors such as the overall life costs for equipment being purchased. Annual reports for 2015 and 2016 published by the Public Procurement Board make no reference to green procurement.

Box 3.3: Promoting Green Public Procurement – achieving target 12.7 of the 2030 Agenda for Sustainable Development

Goal 12: Ensure sustainable consumption and production patterns
Target 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities

For achieving target 12.7 the former Yugoslav Republic of Macedonia committed to promote sustainable public procurement practices, in accordance with national policies and priorities, including by implementing sustainable public procurement policies and actions plans.

The Government may reap additional financial benefits by not automatically choosing the lowest-price bid but, rather, considering the full life-cycle costs of products to be purchased. Green procurement policies can effectively support the country's transition towards circular economy.

There seems to be scope for using public procurement for the promotion of environmentally friendly goods and services such as clean and energy-efficient road transport vehicles.

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The Innovation Strategy for 2012–2020 refers to public procurement as a demand side measure to support domestic technological innovations, by introducing functional requirements rather than detailed specifications in procurement practices. However, there is no information on any related projects.

The Government should incorporate sustainability criteria in the public procurement policy and stimulate domestic innovation through functional specifications of products.

Expenditures on environmental protection

Government sector

Information on environmental protection expenditures for the aggregate government sector is published in the annual budgets based on the international Classification of Functions of Government (COFOG). Up to 2017, these data were covering the central government only. Environmental protection expenditures had an average share of 0.7 per cent in total central government during 2013–2017. Budget plans for general government (i.e. including local government) point to a decline of this share to 0.4 per cent for 2018. There is no separate information on aggregate environmental expenditures at the local self-government level. On average, Government environment expenditures corresponded to only some 0.2 per cent of GDP during 2013–2018 (table 3.5).

Table 3.5: Government environmental protection expenditure, 2013–2018

	2013	2014	2015	2016	2017	2018
Per cent of total Government expenditures	0.68	0.77	0.63	0.53	0.69	0.40
Per cent of GDP	0.19	0.20	0.18	0.15	0.19	0.14

Source: Ministry of Finance, Annual budgets of 2013 to 2018. Expenditures based on classification of functions of government (COFOG).
Note: 2013–2017: central government budget expenditures; 2018: general government expenditures.

The budget of the Ministry of Environment and Physical Planning includes, besides the basic government budget allocation for financing of current expenditures, also a special fund of earmarked revenues from vehicle registration fees for financing of projects in addition to donor funds. The budget of the Ministry (including donor funds) had a share of 0.4 per cent in total central government expenditures during 2013–2018 (table 3.6).

Table 3.6: Budget of the Ministry of Environment Protection and Physical Planning, 2014–2018, million denars

Revenue sources	2014	2015	2016	2017	2018
Basic government budget	460.68	474.93	473.00	438.96	522.75
Special fund	122.80	122.80	122.80	122.80	98.00
Own revenues	10.00	10.00	10.00	10.00	6.00
Donor funds	50.00	50.00	64.97	54.37	44.55
Total budget	**643.48**	**657.73**	**670.77**	**626.13**	**671.30**
Total (€ million)	**10.30**	**10.52**	**10.73**	**10.02**	**10.74**
Total as per cent of total central government expenditures	**0.38**	**0.36**	**0.36**	**0.32**	**0.35**

Source: Ministry of Environment and Physical Planning and Ministry of Finance (https://finance.gov.mk/en/node/6915)
Note: Special fund: allocation of revenues from fees for registration of motor vehicles.
Own revenues: fees for analysis conducted by laboratories of the Ministry of Environment and Physical Planning.
Exchange rate: 1 denar = €0.016.

Total economy

Statistics on environmental expenditures in the total economy by type of expenditure, major environmental domain and major economic sectors are available for the years since 2013.

After a sharp decline between 2013 and 2015, expenditures, both current and investment outlays, recovered in 2016 and 2017, when they corresponded to 1.6 per cent of GDP (table 3.7). For comparison, the EU–28 average

is estimated at 2.1 per cent for 2017. During 2013–2017, the average share of investments (52 per cent) was only slightly higher than the share of current expenditures (48 per cent).

Investment expenditures by environmental domain are dominated by four sectors: waste management (average share of 40.6 per cent during 2013–2017); wastewater management (23.1), water supply (15.8) and air protection (12.7). Together these four sectors accounted for 92.2 per cent of all environmental investment expenditures during 2013–2017 (table 3.8).

Table 3.7: Total economy environment protection expenditures, 2013–2017, million denars

	2013	2014	2015	2016	2017
Current expenditures	3 527.16	3 677.67	2 764.93	4 425.86	3 059.07
Investments	4 028.89	2 944.37	1 689.90	5 353.09	6 979.13
Total	**7 556.05**	**6 622.04**	**4 454.83**	**9 778.95**	**10 038.20**
Total (€ million)	**120.90**	**105.95**	**71.28**	**156.46**	**160.61**
Total as per cent of GDP	**1.51**	**1.26**	**0.80**	**1.63**	**1.62**

Source: State Statistical Office, 2018.

Table 3.8: Environmental protection investments, by environmental domain, 2013–2016

	Million denars					Share (per cent)
	2013	2014	2015	2016	2017	2013–2017
Waste management	1 424.20	239.56	234.04	873.59	5 745.36	40.56
Wastewater management	286.16	510.05	316.03	3 122.63	618.74	23.12
Circulating water supply	1 365.61	1 170.90	256.46	324.31	202.25	15.81
Air protection	737.51	740.95	553.55	530.40	112.78	12.74
Protection of soil, and ground and surface water	83.62	21.13	17.67	77.66	11.23	1.01
Protection of forests	0.16	1.48	0.05	0.12	0.68	0.01
Protection of biodiversity and landscape	34.06	67.48	219.26	206.80	118.18	3.08
Hunting and fishery	0.05	0.00	0.00	0.00	0.42	0.00
Noise abatement	55.26	121.18	28.79	9.48	14.75	1.09
Research and development activities	24.34	33.60	53.81	196.40	145.76	2.16
Monitoring and control equipment	17.92	38.04	10.24	11.69	8.99	0.41
Total	**4 028.89**	**2 944.37**	**1 689.90**	**5 353.09**	**6 979.13**	100.00
Total (€ million)	**64.46**	**47.11**	**27.04**	**85.65**	**111.67**	
Total as per cent of GDP	**0.80**	**0.56**	**0.30**	**0.89**	**1.13**	

Source: State Statistical Office, 2018.

Public-private partnerships in support to green economy

The role of PPPs in the former Yugoslav Republic of Macedonia in the municipal utility sector is still relatively small. This reflects, at least, partly the lack of cost reflective tariffs for the operation of these services but also the required administrative capacity for the planning and evaluation of PPP projects is missing. A public register of awarded PPP contracts, which is maintained by the Ministry of Economy since 2013, provides only some basic information on 28 contracts awarded (box 3.4).[2] The majority of these mainly small-scale projects have been arranged at the municipal government level including local public enterprises. They cover the sectors transport, municipal utilities (waste only), energy and governmental (administrative) buildings. Among them are a single concession for collection and transport of waste (municipality of Gjorce-Petrov – Skopje); and three projects (Cair, Ohrid and Nikole municipalities) for reconstruction, modernization and maintenance of public lighting, with one aim being to reduce energy consumption. The list includes, moreover, eight contracts for construction of small HPPs for production of renewable energy. However, not all PPP arrangements have been included in the register maintained by the Ministry of Economy.

In 2011, Skopje signed a contract with a foreign private investor for the reconstruction and management of the landfill "Drisla" which holds 80 per cent of the capital of the landfill company; the city of Skopje holds the

[2] http://www.economy.gov.mk/page/javno-privatno-partnerstvo (accessed on 9 October 2018)

remaining 20 per cent. In early 2017, the Government announced a tender for a 30-year PPP for the construction of a gas distribution network linking the municipalities in Skopje and in the western and eastern districts to the primary gas network. The estimated project value is €150 million. However, a contract has not yet been concluded.

Box 3.4: The benefits and cost of PPPs – achieving targets 9.1 and 17.17 of the 2030 Agenda for Sustainable Development

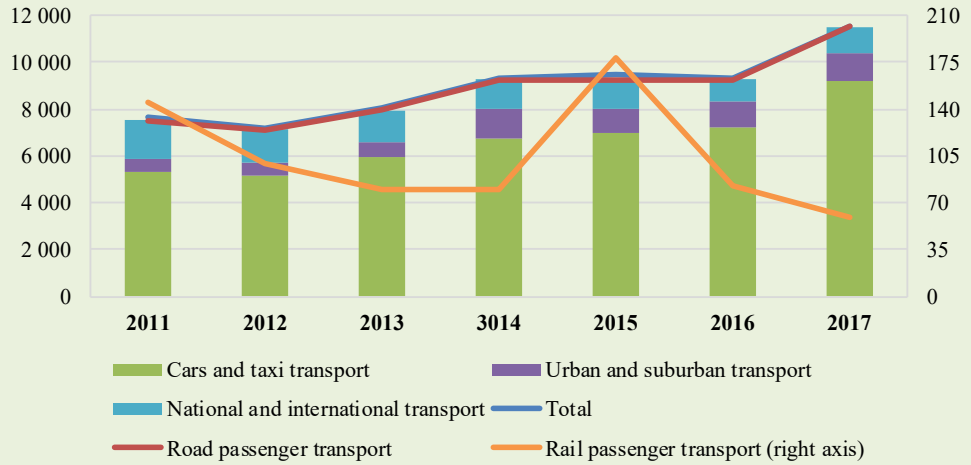
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

The country does not measure the indicator 9.1.1 (Proportion of the rural population who live within 2 km of an all-season road). However, the total length of local roads increased by 4.65 per cent in the period 2011–2017 bringing rural population closer to main roads.

The country provides data for the indicator 9.1.2 (Passenger and freight volumes, by mode of transport). It committed to achieve target 9.1 by developing its infrastructure to support economic development and the human well-being making it affordable and equitably accessible for all. Passengers transport increased by 50.6 per cent in the period of 2011–2017 (figure 3.1). This increase is reflected by an increase of road passenger transport of 52.7 per cent while rail passenger transport decreased by 59.3 per cent. However, in absolute value, the share of rail decreased from 1.9 per cent in 2011 to 0.5 per cent in 2017. The Passenger urban and suburban transport doubled in the same period and the passenger car and taxi transport increased by 1.5 times. The volume of freight transport increased by 31 per cent in the period 2011–2017, however, the quantity of goods transport carried in road transport increased by 37.99 per cent whereas in rail freight transport it decreased by 42.17 per cent (figure 3.2). Regarding the contribution of transport to CO_2-eq, the share of transport is expected to increase slightly, but to stay under 10 per cent of contributions to the total of GHG emissions.

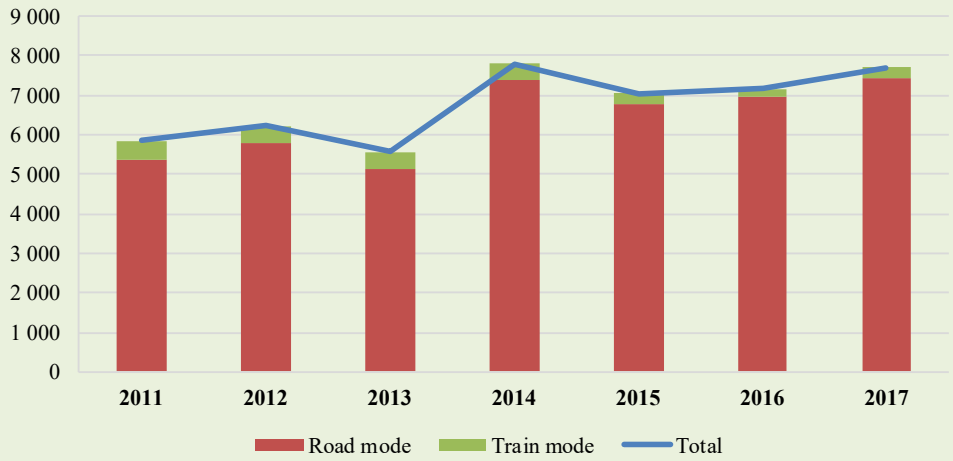
When developing spatial plans, the country should ensure that all season roads infrastructure connects rural population within 2 km.

Figure 3.1: Passenger transport, 2011–2017, passenger-km



Source: State Statistical Office.

Figure 3.2: Freight transport, 2011–2017, tonne-km



Source: State Statistical Office.

Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
Target 17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships
Indicator 17.17.1 Amount of United States dollars committed to (a) public-private partnerships and (b) civil society partnerships

Public-private partnerships are a tool that governments have at their disposal to facilitate the financing, design, construction and operation of infrastructure projects. At the local government level this pertains notably to the involvement of private investors in the provision of municipal infrastructure services such as solid waste management, water supply and sewerage, electricity, and urban passenger transport. Target 17.17 calls for efforts to "Encourage and promote effective public, public-private and civil society partnerships building on the experience and resourcing strategies of partnerships. This is complemented by target 9.1.

PPPs can have several benefits such as overcoming existing public-sector financing and resources constraints for building, operation and maintenance of infrastructure, transfer of skills and improvements in efficiency of operations.

However, PPPs are not a magic wand; projects have to be well designed and implemented in a balanced regulatory environment. It is also important to specify clearly the incentives and performance requirements expected from the private sector in contracts. It also needs to be considered that financial participation of the private sector will only be available if the projects are expected to generate an adequate return on investment, which has to be reflected in prices of services for customers or financed by the government through subsidies.

The Government should develop the necessary institutional capacity for the creation, management and evaluation of PPPs with the general aim to ensure that people have access to quality, affordable public services.

Foreign direct investments

The former Yugoslav Republic of Macedonia has been offering a number of generous tax and financial incentives in order to attract foreign investors, many of which are located in one of the 15 technological industrial development zones. Regulatory and other reforms have made it easier for companies to do business. This is reflected in the 2018 World Bank Doing Business report, which places the country at rank 11 out of 190 economies. Foreign direct investment (FDI) inflows have, however, remained relatively moderate; they corresponded to an annual average of 2.7 per cent of GDP during 2009–2017. This could reflect factors such as the need to improve infrastructure and the lack of availability of skilled labour. Also, the lack of Government capacity appears to play a role. In addition, the country does not score well as regards corruption. The 2017 Corruption Perception Index of Transparency International puts the country at 107th place out of 180 economies, one of the lowest in Europe.

Mergers and acquisitions, which often involve only a transfer of ownership or corporate reorganization without major changes in operations and productive capacities and technologies, accounted for the bulk (61.4 per cent) of the FDI stock at *the end of 2017*. Greenfield investments, where the parent company builds its operations in a foreign country from the ground up, including the construction of new production facilities, accounted for 38.6

per cent of total FDI stock. The large bulk of FDI went to the services sector (45 per cent) and the manufacturing sector (36 per cent). The energy sector accounted for another 8 per cent; the shares of agriculture (1 per cent) and mining and quarrying (2.5 per cent) are rather small.

Foreign direct investment is generally seen to be associated with positive effects on the economic performance of the host country via factors such as the transfer of new technology and know-how, development of human resources and integration in international markets. From an environmental policy perspective, it would be important to know whether and to what extent FDI is contributing to green(er) growth. There are manifold factors such as the activity of the enterprise, choice of production methods, and type of energy and other inputs required through which FDI has an impact on environmental outcomes. Environmental impacts include *inter alia* changes in emissions of pollutants, including GHG emissions, as well as effects on the physical environment, i.e. water resources, land, forests, biodiversity, and air and water quality (box 3.5).

A specific example of "green FDI" in the country is the installation and expansion of a manufacturing facility (Johnson Matthay) in the chemical sector for the production of emission control catalysts, designed *inter alia* to reduce emissions of NOx from diesel engines. The demand for these catalysts has increased considerably, associated with the tighter emissions control legislation that came into effect in the EU from January 2014. The facility has created a total of 650 (green) jobs.

Box 3.5: Defining and measuring green FDI

Gauging the magnitude of green FDI requires an internationally agreed definition of green FDI, which is not the case. In 2011, OECD proposed a definition of "green FDI" that distinguishes (i) FDI in the environmental goods and services sectors; and (ii) FDI that is associated with use of cleaner and more energy-efficient technologies in industrial sectors than applied in the host country ("compliance plus") with associated improvements in environmental performance. Such environmentally-favourable FDI flows will tend to be mainly associated with greenfield investments as compared to mergers and acquisitions, which can simply be a transfer of ownership or corporate reorganization with little or no positive effect on operations and productive capacities.

Measuring FDI based on this definition faces the challenge that internationally harmonized and reliable statistics on production processes and environmental performance associated with FDI at the enterprise level are missing. Based on a number of assumptions, rough estimates suggest that the first component of green FDI corresponded to 2.8 per cent of world FDI flows in 2005–2007, while the second component, which is approximated by using the concept of environmentally-relevant FDI, corresponded 41 per cent of world FDI flows in 2005–2007. The estimates of green FDI, should, however, be taken *cum grano salis* as they are based on exploratory work and imperfect statistics that illustrate the manifold challenges that exist in measuring green FDI

Sources:
Golub, S.S., Kauffmann, C., and Yeres, P. (2011). Defining and Measuring Green FDI, OECD Working Papers on International Investment, Available at http://www.oecd-ilibrary.org/content/workingpaper/5kg58j1cvcvk-en
Golub, S. S., C. Kauffmann and P. Yeres (2011), "Defining and Measuring Green FDI: An Exploratory Review of Existing Work and Evidence", OECD Working Papers on International Investment, 2011/02, OECD Publishing. http://dx.doi.org/10.1787/5kg58j1cvcvk-en

Foreign assistance

The country, as a candidate country for EU membership, has been receiving funds under the EU Instrument for Pre-Accession Assistance (IPA). The funding allocation under IPA 1 (2007–2013) did not have an explicit environmental component but supported a number of projects designed to develop the municipal environmental infrastructure (sewerage and wastewater treatment; waste management) as part of the Regional Development Component. The funding allocation under IPA 2 (2014–2018) identified "environment and climate action" as one of five priority areas. Funds are being deployed within the framework of a Multi-Annual Sectoral Operational Programme for Environment and Climate Action. The main areas for financing projects include the development of the municipal sewerage and wastewater treatment sector and the waste management sector. Funds for national co-financing are mainly planned within the budget of the Ministry of Finance, except for environment-related projects under the Instrument for Pre-Accession Assistance in Rural Development, where co-financing is planned within the Agency for Financial Support in Agriculture and Rural Development.

The EU has provided the lion's share of donor assistance during the past decade. Multilateral donors include OSCE and the United Nations. The main lenders of funds for various environment related projects include the European Bank for Reconstruction and Development, the European Investment Bank and the World Bank.

In addition, significant bilateral support is provided by a number of EU member States (Austria, France, Germany, Italy, the Netherlands, Sweden, the United Kingdom and others). Other large bilateral donors include Switzerland and the United States of America.

The National IPA Coordinator and the Secretariat for European Affairs of the Ministry of Environment and Physical Planning are supporting donor coordination. Regular meetings of relevant stakeholders take place in the context of the annual/multi-annual IPA programming exercise.

Other green economy initiatives

The country does not participate in the Batumi Initiative on Green Economy (BIG-E) launched in 2016 by ministers in the ECE region to operationalize until 2030 the Pan-European Strategic Framework for Greening the Economy. Joining BIG-E would entail identifying and voluntarily committing actions under one or several focus areas of the Strategic Framework, for instance to incentivize green investments and trade or green consumption habits to advance the transition to an inclusive green economy.

The country would benefit from promoting its green economy actions on the Green Growth Knowledge Platform and sharing its experience with other BIG-E stakeholders. The country could encourage its business community to join BIG-E, which could be done independently or by means of PPPs. The main benefit from participating in the BIG-E initiative is that each committed action is linked to specific SDG targets to which it also contributes. Hence the country would speed up its transition to green economy and simultaneously support with practical action the achievement of several SDGs.

3.5 Green markets

Little use has been made of certification of green products (goods and services), which would allow supporting pro-environmental marketing strategies. The main exception since 2006 has been the certification of national agricultural producers that provide products under organic management since 2006. In 2018, moreover, the national forest certification system was endorsed by the international Programme for the Endorsement of Forest Certifi*cation* (PEFC), which is dedicated to promoting sustainable forest management.

Information on domestic products that are compliant with European and other international standards for green products is lacking.

3.6 Green jobs

Green economy strategies see environmental sustainability as a major potential economic opportunity, a driver of investment, economic growth and green job creation. A generic definition of green jobs distinguishes two main groups of jobs: (i) jobs in companies that produce goods or provide services that the benefit the environment or conserve natural resources; and (ii) jobs in activities that involve making production processes of a company more environmentally friendly or lead to a reduced use of natural resources. This definition, which is employed by, for example, the US Bureau of Labor Statistics, corresponds also to the ILO definition of green jobs, though the ILO adds an additional criterion, namely that these jobs have at the same time to be "decent jobs".

A comprehensive or even partial statistical survey of the current number of green jobs in the former Yugoslav Republic of Macedonia does not exist (box 3.6). There is a significant participation of the informal (green) sector (individuals and families mainly from the Roma community) in the waste collection sector in the country. This is basically a form of waste valorisation, notably by picking and selecting recyclable materials from waste containers for commercial sale at both formal and informal markets. It is estimated that about 80 per cent of the recycled packaging waste in the country is collected and selected by the informal waste collection sector. On average, some 3,000 persons are engaged in informal waste picking daily.

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It has been estimated, moreover, that there is potential for creation of some 6,200 jobs by 2035 by implementing energy efficiency measures in the building sector and increasing low-carbon energy supply (RESs and gas). The largest contribution (around 4,000 jobs) is related to the upgrading of energy efficiency standards for buildings. Another study has been broaching the significant barriers related to the creation of green jobs in the country, which are part and parcel of structural rigidities in the overall labour market.

Box 3.6: The informal sector – achieving target 8.3 of the 2030 Agenda for Sustainable Development

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

One of the challenges facing the labour market in the country is the persistence of a large informal sector, which had a share of 18.1 per cent in total employment in 2017. Among employed young persons (age group 15–24), some 30 per cent are working in the informal sector, with broadly similar proportions for men and women. The large size of the informal sector has adverse consequence for the overall economic performance due to the inefficiency of the informal sector, loss of tax revenues, limited access of workers to social protection and the high vulnerability of persons when they lose their job. To the extent that workers in the informal sector also receive social benefits, they also add to the fiscal burden on the state.

Combatting this grey economy requires a holistic policy approach that combines strict enforcement of labour market and tax and social security regulations with incentives in the tax and social benefit system and the pursuit of active labour market measures for upgrading the skills of workers. One of the major causes for the large informal sector may be the relatively high tax burden that is put on labour income, including social security contributions, which makes it costly for firms to hire workers, notably low-income and skilled workers. At the same time, existing social benefits and entitlement thresholds may make it less advantageous for workers to leave the informal sector. The Government launched an action plan for the reduction of the informal economy in 2014, but it is focusing mainly on repressive measures.

The Government should:

(a) Review the tax and social benefits system with a view to reduce and eliminate existing disincentives that prevent firms from hiring more workers and for workers to find it more beneficial to move from the informal into the formal sector;
(a) Improve the targeting of the existing active labour market policies.

3.7 Legal, policy and institutional framework

Legal and policy framework

Air pollution charges

The legal base for payments of charges for emissions of air pollutants from stationary and other sources is the 2005 Law on Environment. The amounts of payments are set in various secondary legislation such as the 2010 Decree on the level of charges payable by operators of installations with A-type and B-type permits (Integrated environmental permits).

Water pollution charges

The Law on Waters regulates payments for discharge of pollutants in wastewater. Payments related to discharge of water polluting substances based on A-type and B-type permits are regulated in the 2010 Decree.

Excise duties

The excise duties imposed on energy products and import of motor vehicles are regulated by the 2001 Law on Excise Duties.

Charges related to motor vehicles

The fees for imports of used cars and the annual registration fees for motor vehicles are regulated in the Law on Environment and the Law on Vehicles.

Charges for use of roads

The fee for use of public roads is regulated by the 2008 Law on Public Roads. Charge rates are set in the 2009 Decision on the amount and method of payment of the fee for public roads use for motor vehicles and their trailers and the 2014 Amendment to the Decision on the amount and method of payment of the fee for public roads used by motor vehicles and trailers: amendment of the rules on the visa and the manner of payment for use of public roads for motor vehicles and trailers.

Special fees for road use (tolls) are established in the Law on Public Roads. Details concerning toll rates are set by the Government in the 2009 Decision on the amount and method of charging the special fee for public roads use (toll).

Property tax

The legal base of the property tax is the 2004 Law on Property Taxes. This is a municipal tax.

Fees for use of forest products

The 2009 Law on Forests regulates forest management activities (cultivation, use and protection).

Mineral resources exploitation

The 2012 Law on Minerals as *lex specialis* governs the awarding of concessions for exploration and exploitation of different types of minerals. Fees for concessions are set in the 2014 Tariff list for determining the amount of fees for issuing permits and concessions for performing detailed geological explorations and concessions for exploitation of mineral resources.

Water abstraction charges

The Law on Waters regulates payments for water abstraction for different water user categories.

Municipal utility services

The legal framework for the provision of municipal utility services includes notably the 2001 Law on Local Self-Government and the 2004 Law on City of Skopje as well as the 1997 Municipal Utility Activities Act.

The 2004 Law on Waste Management constitutes a cover regulation act and provides general rules applying to main issues on non-hazardous and hazardous waste and on special waste streams. Tariffs for waste collection and disposal are set by the municipal councils based on proposals by their public enterprises. Guidance for tariff setting has been provided in the 2013 Methodology for calculation of the price for collection, transportation and disposal of wastes issued by the Ministry of Environment and Physical Planning.

Until 2017, tariffs for water supply and sewerage services were set by the municipal councils. The regulatory framework was set by the Law on Waters and the 2004 Law on Drinking Water Supply and Urban Wastewater Drainage.

Effective beginning of 2018, tariffs for water supply, sewerage and wastewater treatment are set by the Energy Regulatory Commission (ERC).

The main regulatory tool for setting prices for water tariffs is the 2016 Law on Water Services Pricing. Tariff setting is based on:

- 2017 Methodology for determining tariffs for water service;

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- 2017 Rulebook on the manner and procedure for determining the tariff for water service and the regulatory tariff for aviation service adopted by the Energy Regulatory Commission.

Electricity tariffs and feed-in tariffs for RES

Tariffs at all stages of electricity production and distribution are regulated by ERC based on corresponding tariff methodologies. ERC also sets feed-in tariffs and capacity caps for the various types of renewables technologies:

- Decree on Electricity Feed-in Tariffs;
- Rulebooks on the method and procedure for establishing and approving the use of feed-in tariffs for purchase of electricity produced from various RESs;
- Decision for total installed capacity of preferential generators for RESs.

Government budget

The preparation, adoption, execution and reporting of the Budget of the central government and of the budgets of the municipalities is regulated by the (organic) 2005 Budget Law, which was last amended in 2012. The Law on Financing of Local Self-Government Units also regulates the public finances of the municipalities. Municipal sources of revenue are established by the 2004 Local Authority Financing Act. These include own revenues, shared tax revenues and intergovernmental transfers (grants). Loans can be taken up subject to approval by the central government.

Public procurement

Public procurement is regulated by the 2007 Law on Public Procurement.

Public-private partnerships

The conditions and procedures for granting, implementing and terminating concessions and the conclusion of the agreements for the establishment of PPPs are regulated by the 2012 Law on Concessions and Public Private Partnerships and the Law on Public Procurement. However, the Law has not been implemented.

Institutional framework

The Ministry of Environment and Physical Planning is responsible for the definition of environmental policy, including the setting of fees for permits that regulate activities associated with emissions of air pollutants and the discharge of polluting substances in wastewater.

The Ministry of Agriculture, Forestry and Water Management is responsible for the design and implementation of sustainable management of forest resources. The economic exploitation of forests is managed by "Makedonski sumi", the Public Enterprise Macedonian Forests (PEMF). The Government regulates the sales prices for all the related products. In a way, PEMF has a kind of monopoly as a producer and wholesale-cum-retail seller of forest products.

The Ministry of Economy is the competent body for energy policy, including measures for improving energy efficiency. Also, the mining industry is primarily administered by the Ministry of Economy, but the Ministry of Environment and Physical Planning is also significantly involved about issuing permits for mining activities. The Ministry of Economy is also in charge of PPPs with the general objective being to promote the development of an efficient system of PPPs. But the administrative capacity for dealing with PPPs at both the central and local government level is largely lacking. A PPP Council and a Registry of Concessions foreseen by the legislation have not been established.

The Energy Regulatory Commission (ERC) sets energy tariffs and, since 2018, also the tariffs for water supply, sewerage and wastewater treatment services.

The Ministry of Internal Affairs is responsible for vehicle registration and inspections.

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The Public Enterprise for Road Services, which is not part of the government budget, is an independent public institution for the management of state roads, including planning, construction, rehabilitation, maintenance and protection of public roads. It is also mandated to organize the toll collection system for use of highways.

All taxes and fees are set by the Government. The annual government budget, including allocations to the Ministry of Environment and Physical Planning, is prepared by the Government and approved by the National Assembly. The General Government budget consists of the central government budget and the budgets of 81 local government units (LGUs). On average, more than 60 per cent of LGU expenditure is financed from central government grants. The Ministry of Finance manages the Treasury Single Account, which receives all revenues, and from which all payments are made on behalf of budget users at central and local government levels. The Public Procurement Bureau within the Ministry of Finance administers public procurement.

The organization of municipal utility services (such as waste collection and disposal; water supply and sewerage) is the responsibility of LGUs. These determine also the charges for waste services and, until 2017, tariffs for water supply and sewerage services.

3.8 Assessment, conclusions and recommendations

Assessment

The use of economic instruments in environmental protection has been substantially enhanced and deepened during the past decade. In energy taxes, excise duties are applied to all energy products used for transport and heating with the major exception of electricity and coal. Excise duty rates were increased with the general aim to approach the benchmark of EU minimum rates.

The country levies user charges for water abstraction and extraction of minerals. In the area of municipal utility services, the absence of cost reflective tariffs for water and waste services has led to operational difficulties of waste and water companies due to lack of sufficient funds for maintenance, repair and new investments. But as from 2018, the regulation of water tariffs has been delegated to the Energy Regulatory Commission with the mandate to establish the principle of full costs recovery to produce water services.

There are pressures on local government units to adopt similar policies for waste collection and disposal tariffs. The potential benefits from public-private partnerships in the provision of municipal utility services and the financing of the associated infrastructure have still to be explored. In the energy sector, electricity tariffs have approached cost reflective levels and cross-subsidies from business entities to households have been reduced.

Most of the electricity market is now liberalized. The role of renewable energy sources in total electricity supply has been promoted with an effective system of feed-in tariffs. Efforts are on-going to improve energy efficiency with a system of government subsidies.

Environmental expenditures are financed mainly from the general budget; only little use has been made of earmarked revenue from environmental taxes (water abstraction) and charges (vehicle registration fees). Available funds for environmental investments, notably in municipal infrastructure, have been supported by significant foreign financial assistance from diverse multilateral and bilateral sources, with a leading role of the EU during recent years.

Conclusions and recommendations

Pollution abatement incentives

The polluter pays principle is enshrined in legislative acts, but it is not effectively applied. The main instrument to address air and water pollution is regulation (command and control) combined with prescription of best technologies. The flat charge rates per type of polluting substances integrated in permit fees do not create any incentives for firms to adopt cleaner technologies. Effective financial incentives in the form of environmental taxes are missing.

Recommendation 3.1:

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The Government should complement the existing regulatory framework for integrated pollution prevention and control permitting procedures for air and water pollution with effective financial incentives to stimulate pollution abatement.

User pays principle

The user pays principle has been strengthened with the recent tariff reform in the water supply, sewerage and wastewater treatment sector and the transfer of tariff setting authority away from the municipal governments to ERC. However, cost reflective user fees are still missing in the municipal waste sector although they are required for the upgrading and modernization of the waste management sector. Potential economies of scale from regionalization of waste management have not yet been exploited. Bill collection rates at the household level are in general quite low. Measures to ensure high rates of waste service fee bill collection, such as integrating the waste service fee into the local property tax; adopting adequate types of "pay-as-you-throw" schemes, and by raising awareness of solid waste issues among the population, are lacking.

Recommendation 3.2:
The Government, in consultation with local authorities and other stakeholders, should:

(a) Review available policies and measures for overcoming the current obstacles to implementation of cost reflective waste tariffs for collection of waste and its disposal on landfills, while taking into account the need to protect poor and vulnerable groups in the population, and advancing the regionalization of waste services;
(b) Implement measures that are effectively raising bill collection rates for waste service fees.

Road transport

Road transport is a major source of air pollution in the country. Motor vehicles are subject to excise duties and other charges; pump prices of motor fuels include also excise duties. There is scope to strengthen the potential environmental effectiveness of these charges.

Recommendation 3.3:
The Government should:

(a) Adjust excise duties on motor fuels to move towards European Union minimum rates and eliminate the differentiation between rates on diesel and petrol, following a broad, participatory, multi-stakeholder discussion;
(b) Reform the vehicle registration tax and the excise duty on imports of passenger motor cars by taking into account environmentally relevant factors such as emission standards, including CO_2, the age of the vehicle and type of motor fuel.

Green procurement

Government procurement is a major economic force in the country. However, the use of public procurement to support environmental protection has been quite limited given the focus on the lowest price bid.

Recommendation 3.4:
The Government should make more use of green procurement, building on international experience of how to integrate environmental considerations into public tenders, including by setting credible standards for what constitutes green products and services, such as eco-labels.

Greening investments

Government environmental expenditure has been constrained by limited fiscal space. The business sector will, in any case, be the major source for mobilizing funds for the transition to the green economy. The tax system provides generous incentives for business investments. However, these incentives are not discriminating between green investment and other investments. The country does not participate in the Batumi Initiative on Green Economy (BIG-E), which operationalizes the 2016 Pan-European Strategic Framework for Greening the

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Economy based on voluntary commitments in areas such as the greening of investments which are part and parcel of sustainable development.

Recommendation 3.5:
The Government should:

(a) Create a favourable policy framework for attracting green investment and innovation, including for nature-based solutions;
(b) Join the 2016 Batumi Initiative on Green Economy (BIG-E).

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Chapter 4

ENVIRONMENTAL MONITORING AND INFORMATION

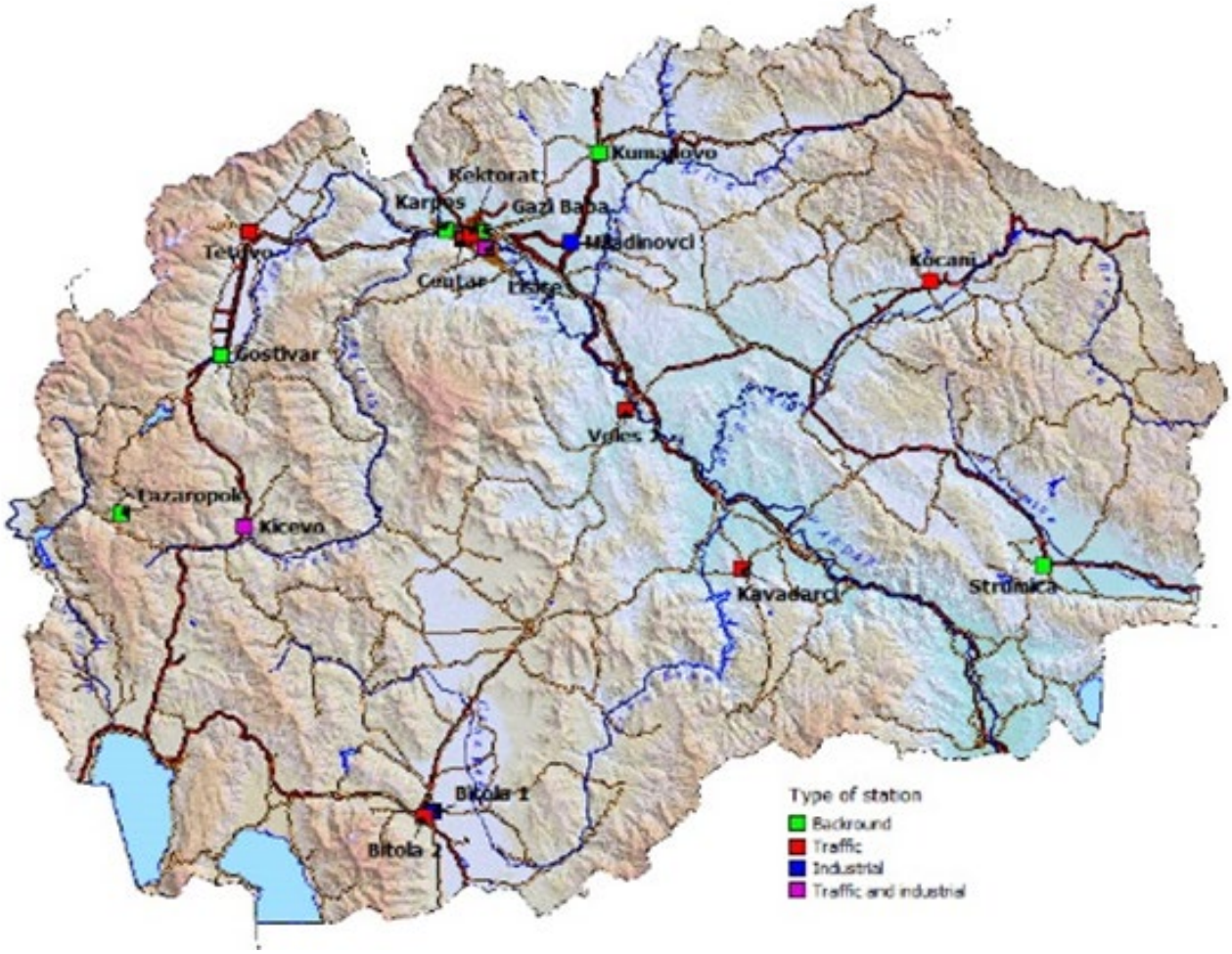
4.1 Environmental monitoring

Monitoring networks

Air

Since 2011, the number of automatic air quality monitoring stations has increased from 15 to 17 fixed stations (map 4.1). Two new stations – Centar and Karposh – were installed and made operational by the end of 2011. These two stations, located in Skopje, are the first stations installed with instrumentation to monitor fine particles ($PM_{2.5}$). Together with 1 additional mobile station, these stations form the state automatic monitoring system for ambient air quality, which is operated by MEIC.

Map 4.1: State automatic monitoring system for ambient air quality



Source: Ministry of Environment and Physical Planning, 2018.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The air quality monitoring stations provide continuous monitoring of the following parameters: SO_2, NO-NOx-NO_2, O_3, CO, PM_{10}, $PM_{2.5}$ and BTEX (benzene, toluene, ethylbenzene, o-xylene, p-xylene). Not all stations

monitor all these parameters (table 8.1), though. For example, only four stations (Karpos, Centar and Rektorat in Skope, and Miladinovci next to the oil refinery) have instruments to monitor BTEX.

At November 2018, the BTEX instruments are not operational due to insufficient maintenance capacity but these should be operational again as soon as possible. Polycyclic aromatic hydrocarbons (PAHs) are only measured occasionally when there is enough budget. The same happens for heavy metals, also measured occasionally, usually through subcontracts under the scope of specific projects, since the Ministry of Environment and Physical Planning does not have the laboratorial capacity for these parameters. As an example, a new project under development foresees a BTEX and PAHs campaign, among other activities such as the installation of 1 new monitoring station and the upgrading of the Bitola-1 station.

Volatile organic compounds (VOCs) are only measured under the scope of specific projects, such as in the case of a twinning project that run between 2010 and 2012 under which VOCs were measured. Otherwise, VOCs are not regularly measured at any station.

The following meteorological parameters are also measured at all stations: temperature, humidity, pressure, wind direction, wind speed, and global radiation. Nonetheless the meteorological sensors in the air quality monitoring stations are in some cases 15 years old or more, are not calibrated, and there is no capacity in Ministry of Environment and Physical Planning to calibrate them. As such, the Ministry of Environment and Physical Planning does not rely on the meteorological data collected by the state automatic monitoring system for ambient air quality. When meteorological data are needed, the Ministry of Environment and Physical Planning relies on data collected by the Hydrometeorological Service (HMS).

Some of the air quality monitoring instruments in place are older than 12 or 15 years. In 2017, a complete replacement was done of all the instruments in Tetovo station, and the existing instruments for NO_X, PM_{10} and Ozone in Kumanovo and Bitola 2 were also replaced with new instruments. Furthermore, instruments for monitoring $PM_{2.5}$ concentrations were installed in all these three monitoring stations. These replacements were carried out under the scope of an IPA funded project.

During January 2018 the air quality monitoring station that used to be located in Mrshevci was relocated to Gostivar, and the former Veles-1 station was relocated to Strumica. The mobile monitoring station was set up in the municipality of Butel in Skopje, and this station will monitor the air quality for a period of one year.

A new technical cooperation project for the "Development and implementation of a Health Index for Air Pollution" financed by the IPA Cross-Border Cooperation Program between the former Yugoslav Republic of Macedonia and Greece for the period 2014–2020 was started in August 2018. A series of monitoring activities are planned under the scope of this project including a local inventory of air emissions for Gevgelija and Bitola; indicative measurements of the composition of particulate matter (PM) (heavy metals and PAHs) in Bitola; procurement of one monitoring station for ambient air quality to be set up in the border area of Gevgelija; and procurement of measuring instruments for the existing station in Bitola.

The development and implementation of a monitoring plan for heavy metals, VOCs and PAHs is also foreseen under the scope of another technical cooperation project financed by the IPA 2 program of the European Union.

Another air quality monitoring network is operated in 10 cities by the regional centres of public health (CPH) under the Ministry of Health. CPH in Skopje measures SO_2, black smoke, suspended particles, CO and lead, and the Institute of Public Health also monitors lead, cadmium, iron, manganese, copper, zinc, cobalt, nickel, chromium and strontium in suspended particles. CPH in Veles measures SO_2, black smoke, suspended particles, cadmium, lead and zinc. CPHs in Kumanovo, Kocani, Tetovo, Bitola, Ohrid, Prilep and Štip all monitor suspended particles. CPH in Kumanovo also monitors lead, cadmium and zinc.

In 2011, the City of Skopje installed an automatic air quality monitoring station in the city centre, measuring the following parameters: SO_2, NO_2, CO and PM_{10} (chapter 9). The station was installed in January 2011 under the framework of the project "Skopje breath"[3] along with an outdoor information panel to provide the public with

[3] https://zivotnasredina.skopje.gov.mk/proekti/skopje-dishe-utopija-ili-realnost/

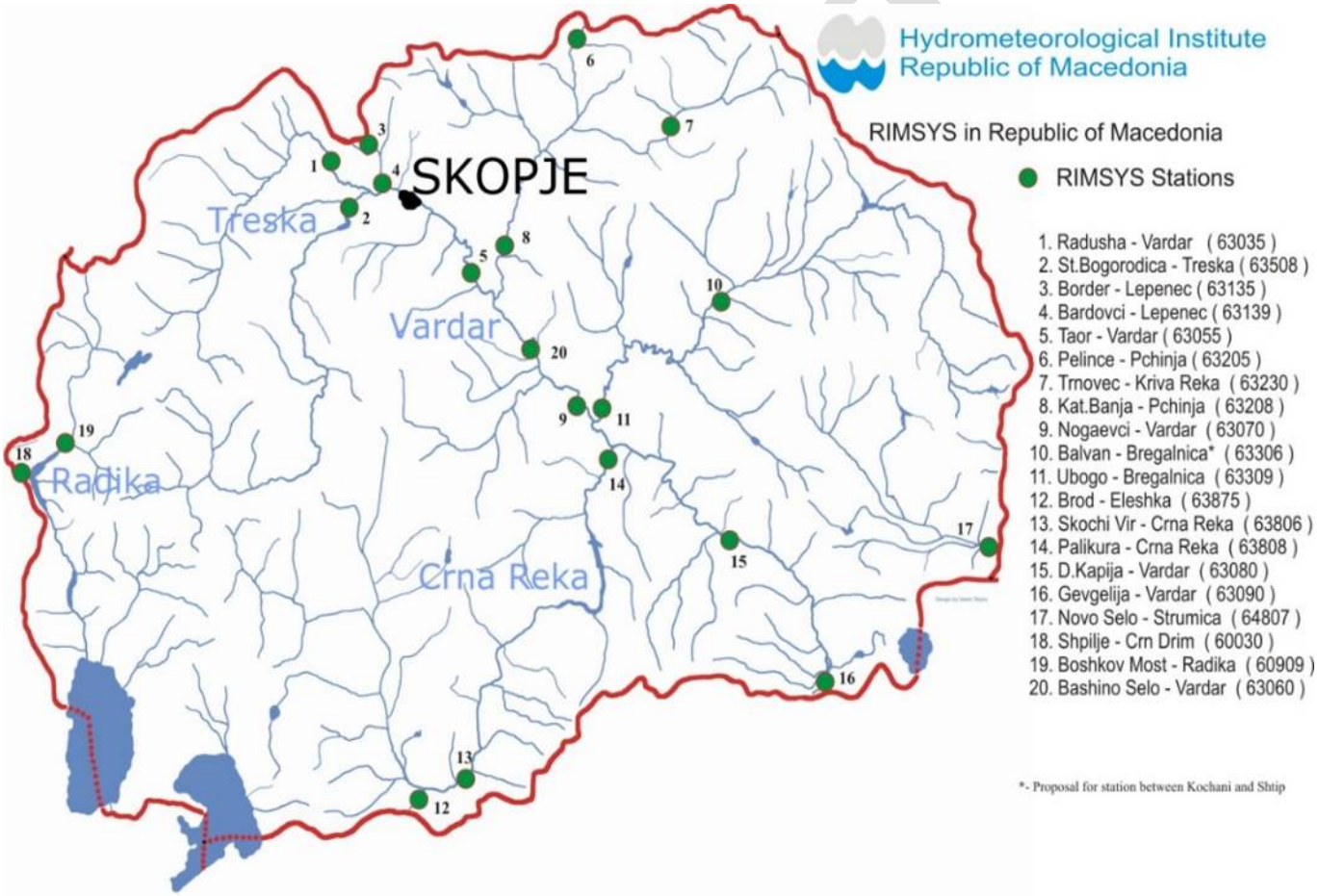
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timely and accurate information about the current state of the ambient air quality in the central city area. Due to construction activities initiated in 2012 in the vicinity of the station, the Skopje municipal authority decided to remove the station and since then it has not been active. Skopje municipal authority plans to relocate the station to the immediate vicinity of Gradskot Park and reactivate still in 2018.

Surface water

The surface water quality monitoring network comprises 20 sampling points, 17 of which are located inside the Vardar River Basin, one point in the Strumica River Basin, and two other sampling points in the Crn Drim River Basin (map 4.2). Monitoring of physico-chemical parameters and heavy metals is carried out on a monthly basis in all 20 points, while biological parameters according to the Water Framework Directive were monitored in 2018 for the first time, every six months.

Map 4.2: River monitoring system stations



Source: HMS, 2018.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The parameters monitored in these 20 sampling points are: odour, colour, air temperature, water temperature, dissolved oxygen (DO), saturation, the five day biochemical oxygen demand (BOD_5), chemical oxygen demand (COD), NO_3, NO_2, NH_4, PO_4, alkalinity, turbidity, conductivity, redox potential, CO_2, suspended matters, hardness (total, carbonate, non-carbonate), Chloride, SO_4, Ca, Mg, K, Na, and heavy metals (Fe, Mn, Pb, Zn, Cr, Co, Cd, Ni, and Cu).

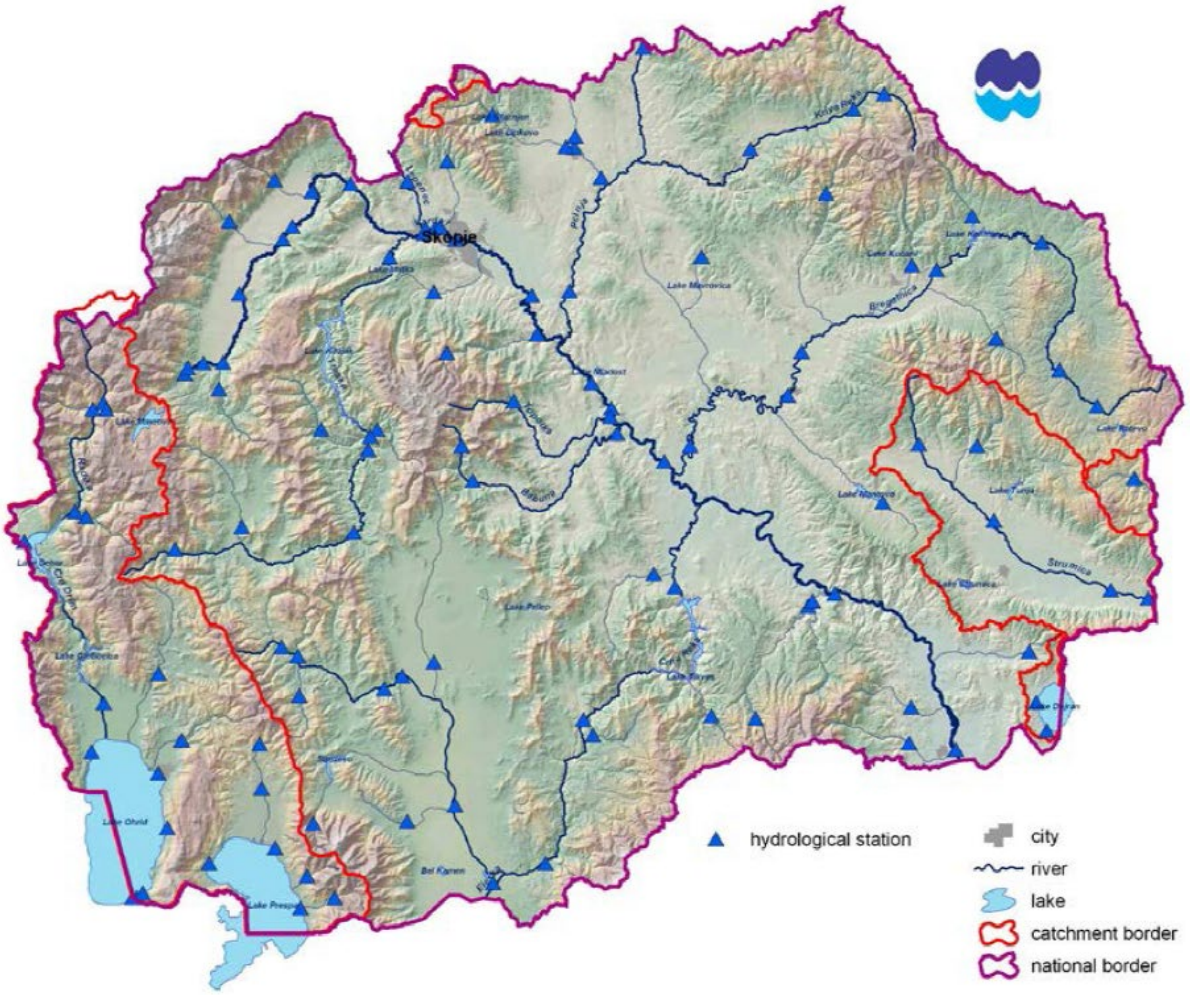
Out of the list of 'priority substances and certain other pollutants, HMS analyses only the following heavy metals: cadmium, lead and nickel. This is due to the lack of appropriate and modern laboratory equipment. With regard to biological quality elements, benthic invertebrate fauna, phytobenthos and phytoplankton are monitored twice a year since 2018 in accordance with the national legislation. Sampling of these quality elements is fully in accordance with the EU Water Framework Directive requirements started in 2018 two times per year. The other

two biological quality elements (macrophytes and fish) are not yet subjected to routine monitoring. Metrics for classification of the biological elements have been established but reference conditions are still not yet established. The HMS laboratory also is not capacitated to monitor surface water quality according to the full requirements of the water-related legislation EU Water Framework Directive.

The network of monitoring surface water also comprises 110 hydrological stations (map 4.3). Almost half of these stations are not operational due to inadequate maintenance and lack of financial resources. At November 2018, only 65 stations are still in operation.

These stations are supposed to enable hydrological observations and basic measurements, including surface water level, water temperature, suspended sediments (although this section is not operational since 2010). They also are expected to enable direct measurements of hydrological parameters such as water discharge, water velocity, and river bed cross-sections. Nonetheless, the budget for regular operation and maintenance of hydrological stations is limited and does not allow the appropriate replacement of broken instruments, nor the cleaning of wells and cross-sections.

Map 4.3: Hydrological network stations for surface water



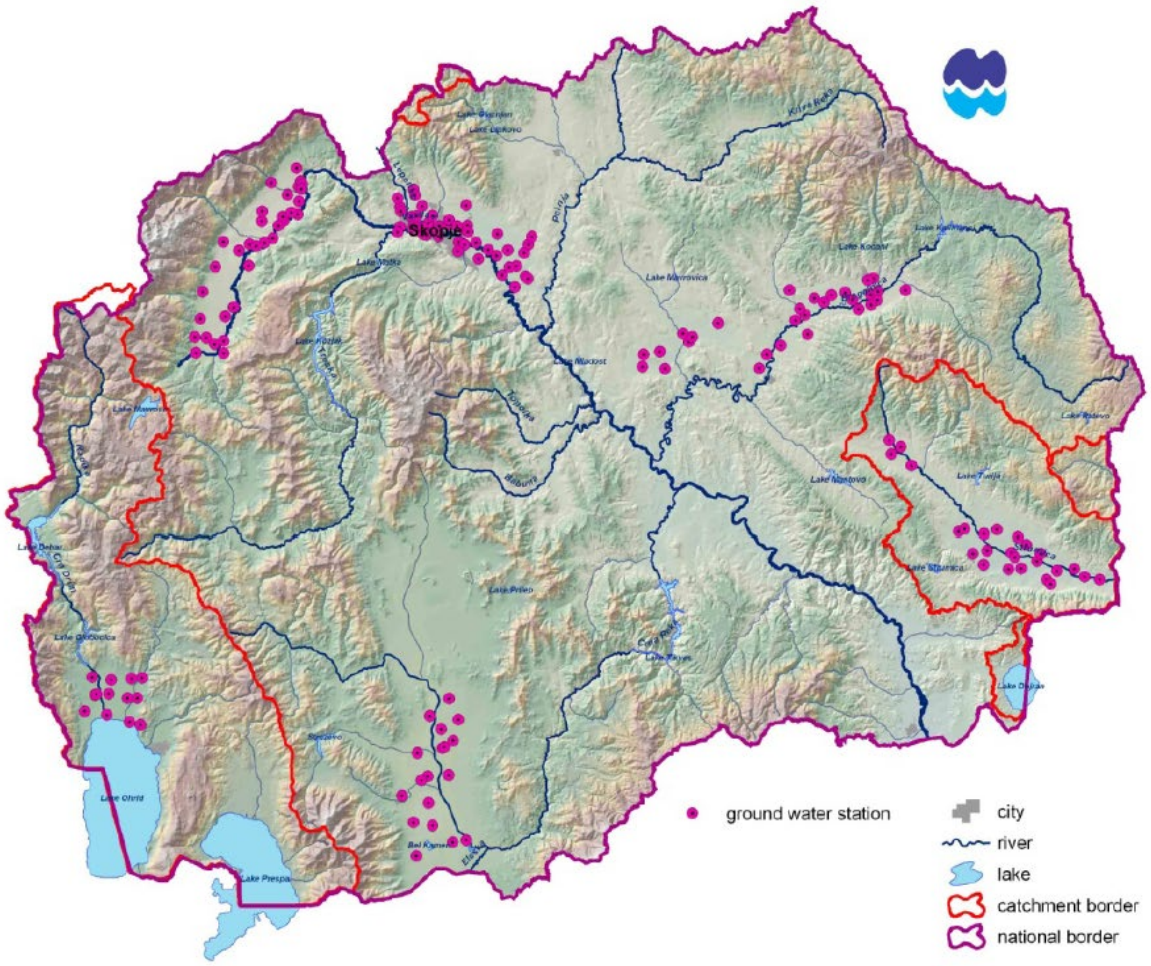
Source: JRC and HMS, 2018.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

At November 2018, the Hydrobiological Institute in Ohrid has no active monitoring projects and therefore is not carrying out any surface water monitoring activities. But monitoring activities are expected to be initiated in Lake Ohrid under the scope of a GEF funded project covering the Drin River Basin.

Groundwater

The groundwater monitoring network comprises 115 groundwater stations located across the country. However only 38 of these stations are operational, while remaining stations are not operational due to insufficient maintenance (map 4.4). These stations are supposed to enable hydrological observations and basic measurements, including groundwater level and water temperature but as at November 2018, no groundwater monitoring activities are being carried out due to lack of funds.

Map 4.4: Hydrological network stations for groundwater monitoring



Source: JRC and HMS, 2018.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

In Skopje and Tetovo, the Public Enterprise on Water Supply and Sewerage - Skopje monitors groundwater quality since 2010 at both Skopje and Tetovo groundwater fields and delivers annually data to the Ministry of Environment and Physical Planning.

The City of Skopje also works together with the Public Enterprise on Water Supply and Sewerage - Skopje, with HMS and with the Institute of Public Health to regularly monitor the City's groundwater sources through a network of piezometers. The City of Skopje makes the results of these regular monitoring activities publicly available at its website, together with the results of past one-off monitoring campaigns.

Drinking and bathing water quality

The 10 regional centres of public health carry out basic bacteriological and physicochemical analyses according to the frequency and parameters stipulated in the 2008 Rulebook on Water Safety, while the Institute of Public Health performs periodic physicochemical, bacteriological, parasitological, and radiological analyses according to EU Water Framework Directive requirements. Every three months the Institute of Public Health assesses the performance of the regional centres of public health in monitoring drinking water quality.

Since 2008 the Institute of Public Health has been using specific sanitary inspection forms developed taking into account WHO requirements.

The Institute of Public Health checks 10 water treatment plants, visiting each station once a year to assess its status according to the respective sanitary inspection form. Inspection reports are transmitted to the Ministry of Health, food and veterinary agencies, and public water supply companies. These water treatment plants have internal laboratories, with the exception of Ohrid water treatment plant which uses the laboratory of the respective regional centre for public health. Periodicity of drinking water quality monitoring depends on the number of people served by each drinking water station.

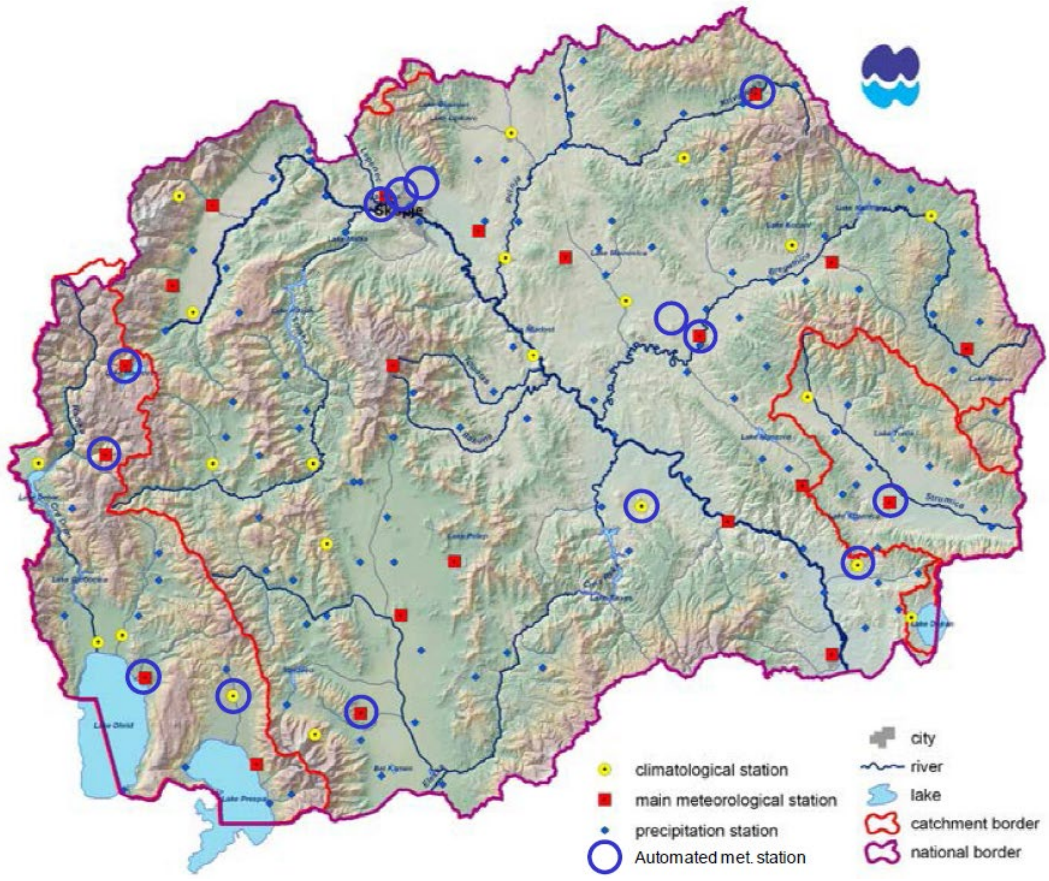
Monitoring of individual or community wells in rural villages is carried out by the regional centres of public health in accordance with the annual public health programme.

Overall, the drinking and bathing water quality monitoring network ensures the proper monitoring of the quality of these water resources, but opportunities remain for improving information sharing between CPHs and for making drinking and bathing water quality available to the public in a more effective way. A new software on water safety has been under development by the Institute of Public Health to address these issues but has not yet been completed due to lack of funding.

Atmospheric precipitation and snow cover

The atmospheric precipitation and snow cover monitoring network is operated by HMS (map 4.5). The number of operational precipitation stations has been continuously decreasing due to lack of funds. The current number and spatial distribution of meteorological observation stations is not sufficient, and there is particular lack of meteorological stations in the higher altitudes.

Map 4.5: Meteorological network



Source: JRC and HMS, 2018.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The two existing radar stations are old, have maintenance problems, and the lack of spare parts and of lack of new radar engineers limits hydrology applications.

The state network of meteorological stations with professional observers comprises 18 stations where the following parameters are monitored 24/7: atmospheric precipitation/rainfall (type, quantity and intensity), snow cover (height and density of snow), air temperature (minimum, maximum), soil temperature, relative humidity of the air, wind (direction and speed), atmospheric pressure, evaporation from water surface, sunshine duration, observed clouds, visibility, condition of soil and meteorological phenomena.

The network of climatological stations with part-time/freelance observers comprises seven operational stations. The following parameters are monitored three times a day (at 7:00, 14:00 and 21:00): atmospheric precipitation/rainfall, height of snow, air temperature (minimum and maximum), wet thermometer, wind (direction and speed), observed cloudiness, condition of soil and meteorological phenomena.

In addition, a network of 42 automatic meteorological stations is in place to monitor the amount of precipitation, temperature, relative humidity at 2 m height, air pressure and wind (direction and speed), but only a number of these are operational due to lack of maintenance.

There is also a network of freelance observers to monitor the amount of rainfall and height of snow at 94 locations. Measurements are taken once a day at 7:00, and recorded data forms are conveyed to HMS once a month.

Soil

As of November 2018, no systematic soil monitoring was being carried out in the country,

The City of Skopje carried out a series of soil monitoring campaigns in the Skopje region focusing on heavy metals pollution. These activities were concluded in 2012, and the results made publicly available at the website of the City of Skopje.

Noise and vibration

The status of the noise monitoring network remains unchanged since 2011. Out of 10 regional centres for public health, three operate a noise monitoring network in the following cities: Bitola (8 measurement points), Kicevo (at 8 points), Kumanovo (10 points) and Skopje (14 points). Bitola CPH monitors noise in both Bitola and Kicevo, and the Kumanovo and Skopje CPHs undertake noise monitoring activities in the respective cities. All these noise monitoring activities are funded under the National Public Health Program of the Ministry of Health.

Noise monitoring activities take place twice a year, in spring and in autumn. Noise measurement points in each city are evenly distributed in four-degree areas for protection and measurements. The noise monitoring methodology is harmonized and standardized, determining the following noise indicators: Lday, Lnight, Lden.

Municipalities are also responsible for noise monitoring and for the production of noise maps, but comprehensive city-wide noise maps have not yet been produced. Although the City of Skopje has the necessary noise monitoring equipment and the noise mapping software, it does not have enough trained resources to systematically monitor noise or develop noise maps. It conducts periodically indicative measurements of traffic noise, mostly under the scope of specific projects and is planning to start noise mapping activities in 2019. Results of noise monitoring activities are made publicly available at the website of the City of Skopje.

There is no monitoring of vibrations nor are available data on environmental exposure to vibrations.

Radioactivity

The status of the radiation monitoring network remains unchanged since 2011. Continuous measurements of the gamma background are conducted at 12 automatic meteorological stations. Every three months, precipitation samples are collected manually at three other stations to calculate aggregate beta activity. Two other stations collect drinking water samples every month, and surface water samples (from rivers, lakes, and draw wells) are

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also collected monthly at three other stations so as to monitor ionizing radiation in water resources. The main challenges for the radiation monitoring network are related to servicing and maintenance capacity, notably the maintenance of the network of automatic stations monitoring gamma radiation.

Four sample collection stations collect samples of aerosols monthly. Randomly selected soil samples are collected every six months. Radiation contamination is monitored in food through randomly selected samples every six months, except for milk which is monitored monthly. Livestock food/fodder is monitored annually at five locations, and passive indoor radon monitoring is carried out annually at schools within the country.

All collected samples are sent to the Institute of Public Health for laboratory analysis.

Biodiversity

There has not been until recently a systematic approach to monitoring biodiversity, with most data reporting activities under MEA obligations and under nationally designated areas being carried out on project basis and/or dependent on international projects. In practice, specific biodiversity monitoring activities are carried out only under the scope of different projects.

Administrations of protected areas carry out only partial biodiversity monitoring activities, depending on resources available. Also, there are some gaps in reporting protected areas monitoring results to the Ministry of Environment and Physical Planning, which mostly receives monitoring data from the three national parks: Pelister, Mavrovo and Galičica.

Since 2010, the administration of Galičica National Park has been carrying out activities aimed at monitoring forest plant communities and habitats, herbaceous plant communities and habitats, as well as plant and animal species. But most monitoring activities take place under the scope of specific projects or situations. For example, in Pelister National Park, the revitalization of the old Molika forest is monitored by monitoring the course of the molybdenum renewal process.

Winter census of the waterfowl in the three natural lakes, as well as in some artificial lakes and fishponds, is not carried out on a continuous basis, being dependent on projects and financing. Nonetheless waterfowl monitoring activities have been increasing in the past few years. Hunting associations and hunting concessionaires undertake game monitoring activities.

As for CSOs such as the Macedonian Ecological Society (MES), these usually carry out voluntary monitoring activities in specific areas of interest, usually in the framework of specific projects. MES promotes a variety of biodiversity monitoring activities, fully funded by projects. Notably, MES has been assuring long-term monitoring of important species such as vultures continuously monitored since 2003 under the scope of the Vineyards Protection Project, and the Balkan lynx continuously monitored since 2006 within the framework of the Program for Recovery of the Balkan Lynx, an international programme funded by the MAVA Foundation that has been running since 2016 in several Balkan countries, involving a variety of national organizations. MES has also developed its own biodiversity monitoring database and publishes annual reports of its activities on its website. These are available in both Macedonian and English languages, the latest edition available online being from 2016.

A National Biodiversity Information System was established in 2011 at the Ministry of Environment and Physical Planning under the scope of an UNDP project. It includes a national biodiversity database and is supposed to be made publicly accessible at the Ministry of Environment and Physical Planning website, but it is currently not operational nor assuring appropriate management of biodiversity data.

A draft national biodiversity monitoring programme is expected to be prepared, together with monitoring protocols for 20 habitats, 20 species and 20 birds of EU interest, including an assessment of the conservation status harmonized with the requirements of the Habitats and Birds directives (chapter 11).

Forests

No forest inventory has been carried out to date in the country. As of November 2018, only a ground inventory

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for forestry planning is available.

Under an annual contract with the Ministry of Agriculture, Forestry and Water Management, the Faculty of Forestry of the Ss. Cyril and Methodius University in Skopje carries out forest health monitoring activities. It provides an annual report on the state of health of forest resources in the country to the Department of Protection of Forest and Wood of the Ministry, but there are issues with continuity and quality of reports for some forests plots. These annual reports have been produced every year during the period of 2011–2018.

At November 2018, none of the forest monitoring information or forest data collected is publicly available.

There is an overall insufficient human, technical and financial capacity to ensure a comprehensive monitoring of forest resources. Any plans or activities aimed at addressing existing gaps and improving the current system, such as the development of a forest information management system and a forest inventory, depend on the availability of funds from international cooperation projects. As in other monitoring networks dependent of international projects, this situation results in little capacity to maintaining project outputs in post-project phases.

Waste

The Ministry of Environment and Physical Planning collects waste related data from various sources (operators, municipalities, waste management companies, handlers of waste streams) by waste typology (hazardous and non-hazardous waste, packaging waste, waste batteries and accumulators, and end of life vehicles).

MEIC collects reports from municipalities on municipal solid waste generation and management. However, only around one third of all municipalities provided reports in the last round, despite the legal obligation to do so.

Analytical laboratories

The Ministry of Environment and Physical Planning operates two laboratories: the Central Environmental Laboratory and the Air Quality Calibration Laboratory. Neither of these laboratories are accredited under the ISO/IEC 17025 standard on "General requirements for the competence of testing and calibration laboratories".

The Central Environmental Laboratory reportedly carries out analyses of wastewater, soil, emissions from stationary sources, ambient noise, and microclimatic conditions. These are carried out according to the respective rulebooks. The Laboratory is certified according to ISO 9001 and is preparing the necessary documentation for accreditation according to ISO/IEC 17025.

The Air Quality Calibration Laboratory is responsible for calibrating the measuring instruments in the State automatic monitoring system for ambient air quality. The Laboratory checks its calibration standards through inter-laboratory comparisons in collaboration with an accredited laboratory in Germany. Insufficient funds have been preventing the necessary actions for accreditation of the calibration laboratory, and its current capacity to maintain and service the air quality monitoring network is insufficient.

The Institute of Public Health operates several accredited reference laboratories including the Laboratory of Sanitary Microbiology, the Laboratory for Food Quality Control, the Laboratory for Water Quality Control, the Laboratory for Contaminants and Eco-toxicology, the Laboratory for Radioecology, and the Laboratory for Ionizing Radiation.

4.2 Availability of information on environment and sustainable development

Data reporting by enterprises

The Department of Industrial Pollution and Risk Management under the Ministry of Environment and Physical Planning is responsible for prescribing self-monitoring and reporting procedures, including reporting frequency, of enterprises covered by integrated environmental permits.

As of November 2018, the number of enterprises covered by integrated environmental permits is 396. Depending on their classification (A or B type), 160 of these 396 installations have permits issued by the Ministry of

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Environment and Physical Planning, while the remaining 236 have permits issues by the respective municipalities. Of 160 installations, 120 are regularly reporting to the Ministry of Environment and Physical Planning.

In the case of air emission, all companies with installed power superior than 50 MW have to report monthly to the Ministry of Environment and Physical Planning, while all others are reporting in accordance with conditions prescribed in their environmental permits. Also, companies with more than 50 MW of installed power should have their own automatic air quality monitoring system, but, only the cement manufacturing company carries out automatic monitoring and reporting. The steel company also has automatic monitoring systems in some locations. The refinery has been closed since 2015 but while in operation it also had an automatic self-monitoring system for air emissions.

Two electricity power plants, including one that only operates a few months per year, are also supposed to have automatic self-monitoring of air emissions but these are not in place. The electricity power plant, which operates few months per year during the winter period, has an internal automatic self-monitoring of air-emissions. The electricity power plants and heat plants companies, which do not have automated monitoring, are contracting accredited laboratories to measure emissions once per month and are sending monthly reports to MEIC.

As of November 2018, there is no database being kept by the Ministry of Environment and Physical Planning on data reported by enterprises under IPCC requirements. Nonetheless, relevant air emissions and PRTR data are available at the Ministry of Environment and Physical Planning, collected under different reporting schemes. This has been resulting in some situations of double and triple reporting (permits, on air admissions from fixed sources, and on PRTR).

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis target 12.6 of the 2030 Agenda for Sustainable Development is described in box 2.1.

Statistical data

The State Statistical Office (SSO) collects statistical environmental data through regular surveys with different periodicities (annual, biennial and ad hoc), and through administrative data. According to the 5-year Statistical Programme for 2018–2022, the statistical environmental data collected cover the following three topics: environment (waste and hazardous substances, water), physical environmental accounts (material flows), and monetary environmental accounts (costs/expenditures, and taxes) (table 4.1).

Table 4.1: Statistical environmental data

Statistical surveys	Periodicity	Data collected
Municipal waste	Annual	Municipal waste generated by types and amounts, waste treatment, and waste disposal (active landfills)
Waste from economic activities	Every two years	Waste generated and stored, waste received, waste recovered and disposed, and waste delivered
Exploitation and protection of water against pollution in industry	Annual	Water supply, water use, and water treatment and discharge
Public water supply and sewerage	Annual	Water abstracted and supplied, water supply network and equipment, wastewater discharge and sewerage network, and wastewater treatment
Land irrigation and drainage, flood protection and river regulation	Annual	Areas and facilities flooded by surface and ground water, protection against floods and river regulation, land drainage, sources, facilities and devices for irrigation, irrigated area, water used for irrigation and yield from irrigated areas
Surface water quality	Annual	Physical-chemical analysis of surface waters reported by HMS
Surface water	Annual	Watercourses and lakes reported by HMS
Meteorological measurements and observations	Annual	Measurement data and observations of air temperature, precipitation reported by HMS
Environmental protection expenditures	Annual	Expenditures for purchasing and maintenance of material fixed assets, sources of financing of expenditures for purchasing and maintenance of material fixed assets with ecological use, and payments and fees for performed services for environmental protection

Source: State Statistical Office.

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Material flow accounts are produced by SSO covering the production of metals and non-metals, coal production, fish catches, crop production, number of livestock, number of wild animals, energy consumption, and import and export in physical units.

Finally, administrative data are used to calculate environmental taxes per economic activity, including excise taxes on fuels and transport, pollution and resource taxes. As for environmental goods and services accounts, these have been produced (but not published) under the scope of a twining project. Under a new IPA project there are plans for the development of air emission accounts.

Environmental statistics are published by SSO under the following annual publications:

- Sustainable Development
- Statistical Yearbook
- Macedonia in Figures
- Regions of the Republic of Macedonia

In addition, since 2007 a publication dedicated only to environmental statistics is published every two years, jointly with the Ministry of Environment and Physical Planning.

Finally, all environmental statistics produced by SSO are made publicly available online on the SSO website.

Databases

Air pollutants emission inventory

An air pollutant emission inventory was created in 2005 and is maintained by MEIC, as part of the European Monitoring and Evaluation Programme under the scope of the implementation of the Convention on Long-Range Transboundary Air Pollution. For the 2005, 2006, 2007, 2009 inventory years, the Ministry of Environment and Physical Planning updated the air pollutant emission data only for the three main sectors according to the Selected Nomenclature for Sources of Air Pollution, without submitting an informative inventory report (IIR). In 2010 and 2012 the Ministry engaged a consulting company to prepare a complete air pollutant emission inventory and IIRs for the 2008 and 2010 reporting years.

The air pollutant emission inventory for 2011 was extended in 2013 when for the first time the inventory covered the following pollutants: $PM_{2.5}$, PM_{10}, dioxins and furans. In 2015 an emission inventory was developed for the whole period between 1990 and 2013 for all pollutants and in 2016 an IIR was prepared and reported to the Convention on Long-Range Transboundary Air Pollution. Since 2016, complete national inventories and IIRs are prepared by the Ministry of Environment and Physical Planning and reported on regular base. The emission inventory and IIRs are publicly available online.

Cadastre of Air Polluters and Pollutants

A Cadastre of Air Polluters and Pollutants identifies polluters along with information on their location, on the technological processes involved, on the amount and type of pollution, and on electricity consumption. The Cadastre is not publicly available but relevant data and information therein can be provided by the Ministry of Environment and Physical Planning to public upon request under the scope of the Law on Free Access to Information of Public Character. Instructions and templates for submitting information requests are provided at the website of the Ministry of Environment and Physical Planning.

Cadastre of Wastewater

The Cadastre of Wastewater contains data on activities and facilities which pose or may pose risks to the environment, covering industries and public enterprises. The Cadastre is not publicly available but relevant data and information therein can be provided by the Ministry of Environment and Physical Planning to the public upon request under the scope of the Law on Free Access to Information of Public Character. Instructions and templates for submitting information requests are provided at the website of the Ministry of Environment and Physical Planning.

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National Air Quality Information System

The National Air Quality Information System is a database and portal dedicated to the collection, management, analysis and dissemination of data and information on air quality. It was developed under a twinning IPA project. As a part of the twinning project, an air quality portal was developed by MEIC for disseminating near-to-real data collected through the state automatic monitoring system for ambient air quality.

Pollutant Release and Transfer Registers

The country ratified the Protocol on Pollutant Release and Transfer Registers (PRTR) in 2010 and in 2013 adopted the Rulebook for the development of the PRTR. MEIC runs the PRTR database, which includes data covering PRTR installations. As of November 2018, only 2015–2016 data are available; data for 2017 are still being collected and is undergoing a validation process, after which it will also be made publicly available. As of November 2018, no statistics on the national PRTR are being made publicly available.

To facilitate reporting and to make PRTR information publicly available the Ministry of Environment and Physical Planning has created a national PRTR web portal and guidance for installations to use an online PRTR reporting tool that is accessible through the portal. Out of about 80 PRTR installations, in 2016 only 21 reported for year 2015 using the online PRTR reporting tool. There are also additional gaps in submitting PRTR information, and some installations require Ministry of Environment and Physical Planning to follow-up on compliance.

The Ministry of Environment and Physical Planning has been promoting awareness raising and capacity building activities to address the low PRTR reporting rate. In 2015 and 2016, several workshops were organized in 2015 in Gostivar, Skopje and Štip and in 2016 in Skopje to promote the engagement of civil society in the PRTR process. The Ministry of Environment and Physical Planning also developed in 2017 a short PRTR brochure targeting the public and civil society organizations. The brochure describes the PRTR process, the obligations of public authorities regarding the establishment and operation of the PRTR, the obligations of operators, as well as the rights and roles of the public and CSOs in accordance with the reporting requirements under the ECE Protocol on Pollutant Release and Transfer Registers (PRTRs) and E-PRTR reporting.

Several capacity-building projects were or are being implemented by REC in cooperation with ECE supporting the establishment and advancement of Pollutant Release and Transfer Registers (2015–2017). The European Environment Agency has implemented since 2010 a project on the European Pollutant Release and Transfer Register (E-PRTR) as a priority data flow. In 2017–2018, the country participates in a subregional project funded by the Quick Step Programme of the Strategic Approach to International Chemicals Management (SAICM) aimed at strengthening capacities for the development of the national PRTR and supporting SAICM implementation. Within the project, a regional workshop was held in Skopje on 17–19 December 2018 to stress the importance of reporting and further promote the Protocol on PRTRs and guidelines for emission estimations are developed by the Ministry of Environmental and Physical Planning to further support industry to prepare and report on-line according to the national PRTR requirements.

Water databases

MEIC has established a database containing data on both water quality and quantity. The database contains data collected from institutions monitoring water resources. The water monitoring data are publicly available through the websites of the Ministry of Environment and Physical Planning and HMS. In addition, the Water Department developed the Water Information System in support to its work on future decisions on water permitting system and to facilitate informing other relevant institutions.

Environmental indicators and their use

The country has adopted 74 national environmental indicators along the following 13 themes: air quality; biodiversity; climate change; soil; waste; water; agriculture; energy; fisheries; transport; health; tourism; and environmental protection expenditures, in line with the European Environment Agency (EEA)'s core set of indicators. It has also adopted 75 environmental statistics indicators which are focused on 10 themes, and some

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of them are in line with EUROSTAT indicators.

These indicators apply the DPSIR framework approach and are classified into the following five categories: A (descriptive indicators), B (progress indicators), C (environmental performance indicators), G (policy effectiveness indicators) and D (overall environmental, economic and social well-being indicators).

The 74 environmental indicators are made publicly available online at the website of the Ministry of Environment and Physical Planning and are disseminated using the format of the EEA fact sheet for each indicator, in Macedonian and English. Annual data are presented in the form of charts, tables and maps, supported by a short assessment of the status and time series, including trend estimates, thus enabling an overview of each indicator status vis-a-vis relevant targets. The fact-sheets contain also information about the potential response though the policy context and relevance in the current presentation is limited.

The statistical environmental indicators are made publicly available online at the SSO website in a user-friendly way, in Macedonian and English.

Environmental indicators corresponding to 33 indicators of the full list of 42 ECE environmental indicators contributing to the establishment of SEIS in the Pan-European region are regularly calculated and published as per criteria for SEIS implementation agreed under the scope of the ECE Joint Task Force for Environmental Statistics and Indicators (JTFESI).

The 33 indicators have been developed with complete metadata information and are made publicly available online. They are also regularly used in national reporting processes and publications including the Annual Report on the Quality of the Environment, the State-of-the-Environment reports, the Environmental Indicators Report, emission inventories reports, and air quality assessment reports.

As for the remaining indicators in the ECE list of environmental indicators, indicators C12. Nutrients in coastal seawaters and C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients) are not calculated as these are not relevant for the country.

As for ECE environmental indicators I2. Transboundary movements of hazardous waste, I3. Waste reuse and recycling, C1. Renewable freshwater resources, C6. Connection of population to public water supply, C8. Reuse and recycling of freshwater, and C15. Wastewater treatment facilities, these are not calculated because data are not available.

OECD Green Growth indicators are not being produced in the country, although several of the indicators already being regularly produced can be a starting point towards the production of green growth indicators.

Indicators and information for sustainable development goals

SSO produces annually a sustainable development report in both Macedonian and English languages and makes it publicly available online. While the report does not currently monitor progress towards the global sustainable development goals or their environmental dimension, it assesses national trends in the socio-economic, environmental and institutional dimensions of sustainable development as per an approved set of Sustainable Development Indicators (SDIs) structured in accordance with Eurostat's EU SDI set.

There is not yet a national SDG Indicators Framework in the country, but the national SDI set provides a starting point for the SSO to calculate the national data for SDGs in future editions of the report to monitor the progress of the country towards achieving the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. While there has not yet been an assessment of data gaps for future reporting on the environmental dimension of the Global SDG Indicators Framework, SSO has initiated a process involving all institutions within the official statistical system to assess the availability of data and capacities to produce required SDG indicators in accordance with the new European SDG dataset.

Implementation of SEIS principles

The country implements Shared Environmental Information (SEIS) principles of open access to environmental

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data[4], producing and sharing online a set of ECE environmental indicators associated with the implementation of SEIS.

MEIC makes environmental data and indicators publicly available online in observance of the following SEIS implementation categories defined under the scope of the ECE Working Group on Environmental Monitoring and Assessment (WGEMA): relevance; accuracy; timeliness and punctuality; accessibility; clarity; and comparability.

Environmental reporting, publication of environmental data, indicator-based assessment reports

National Book of Environmental Parameters

The national book of environmental parameters provides an overview of environmental parameters that prescribe responsibilities and timelines for data collection, format and source of data, methodologies, processes for environmental data exchange and reporting, and the management of environmental monitoring data and information flows.

It was developed through an inter-agency process and intends to reflect, and guide, the collection and management of environmental data at national level. It was developed in 2015 but has not been updated since and as such does not accurately reflect current responsibilities on environmental monitoring and on management of monitoring data/information flows.

Annual Report on the Quality of the Environment

The Annual Report on the Quality of the Environment is an indicator-based report covering the following main environmental themes: air, water, waste, biodiversity, noise, and climate change.

The report is produced in Macedonian language only, in a user-friendly way designed to be understandable by non-technical audiences, clearly aimed at the general public. It makes extensive use of data visualizations to be such as maps, graphics and tables, and provides readers with a summary assessment of the situation for each theme and with brief description of implemented and planned measures to be taken.

The Annual Report on the Quality of Environment has been regularly produced since 2003, and all editions are made publicly available online. The latest edition available is the 2017 report.

State-of-the-Environment reports

The State-of-the-Environment Report is produced every four years and published in Macedonian and English following an indicator-based assessment approach structured along the DPSIR framework. Its production is regulated by the 2006 Rulebook on the Content of the State-of-the-Environment Report.

So far it has only been produced twice, in 2000 and in 2013. The Ministry of Environment and Physical Planning plans to produce a report in 2019. The 2000 and 2013 State-of-the-Environment reports are made publicly available online.

Environmental Indicators Report

A biennial environmental indicators report is published in both Macedonian and English and follows an indicator-based assessment on 74 environmental indicators covering the following thematic areas: air, biodiversity, climate change, soil, waste, water, agriculture, energy, fisheries, transport, health, tourism, and environmental protection expenditures. The indicators are structured along the DPSIR framework.

The environmental indicators reports have been regularly produced since 2008 but the first three editions (2008,

[4] SEIS principles of open access to environmental data: i.e. data are managed as close as possible to source; and data are collected once and shared for many purposes.

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2010 and 2012) were published only as hard copy versions. The reports for 2014, 2016 and 2018 were published only as electronic versions and are available on the Ministry website. These reports are more extensive and are intended for use both by experts and the wider public. Moreover, the 2018 report is also produced as a short comprehensive briefing, which is planned to be delivered to the Government for adoption in January 2019.

Environmental Statistics Report

The Ministry of Environment and Physical Planning and SSO jointly publish every two years the environmental statistics report. The report is published in both Macedonian and English languages and follows an indicator approach based upon 75 indicators and 10 main environmental themes, structured along the DPSIR framework.

The environmental statistics report has been regularly produced since 2007 and all editions are made publicly available online at both the websites of the Ministry of Environment and Physical Planning and of SSO and are intended for use by the wider public. The latest edition available is the 2017 report.

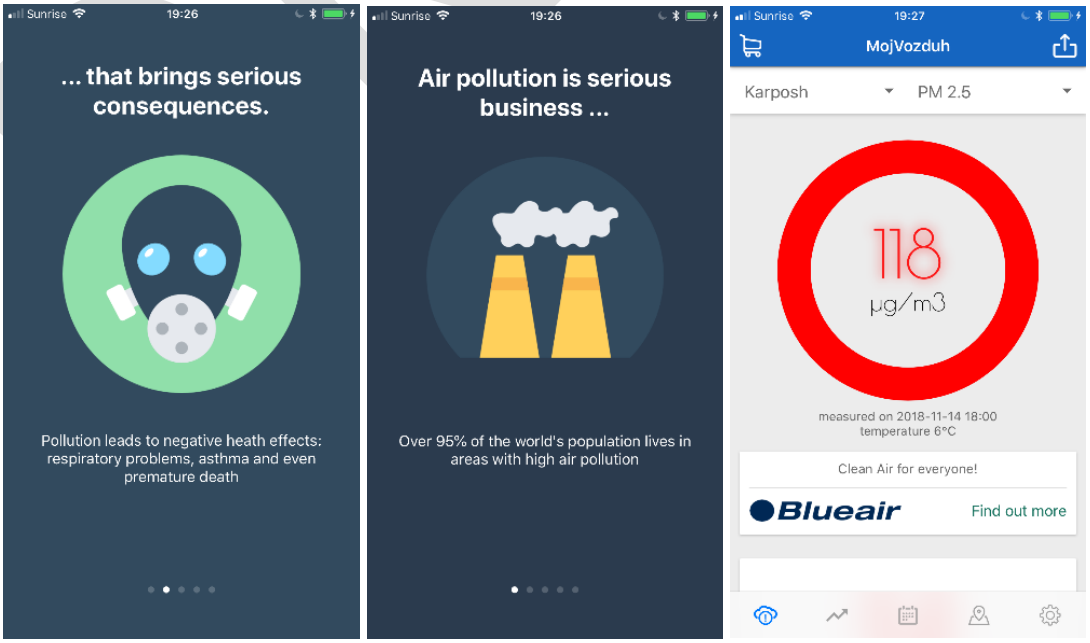
Publication of air quality data in near real-time

Through its air quality information system AIRVIRO, MEIC collects and processes air quality monitoring data from the state automatic monitoring system for ambient air quality and makes it publicly available in near real-time through its web portal for air quality. The web portal for air quality contains information on the current state of the ambient air in the country, as well as information on air pollutants and their health effects, relevant legislation, as well as daily, monthly and annual reports.

In 2011 the City of Skopje installed an automatic air quality monitoring station and outdoor information panel in the city centre providing air quality data to citizens in near real-time. Due to construction activities initiated in 2012 in the vicinity opf the station, the station and outdoor information panel were removed and have since not been reactivated.

Further to this, a citizen science-type initiative led to the launching in January 2015 of the webpage and mobile phone application "MyAir". The App aggregates and stores data provided by the automatic air quality monitoring stations run by MEIC and makes them publicly available in a way that is easy to understand by the public. The application operates in Macedonian, Albanian, and English.

Photo 4: "MyAir" application on air quality data



Drinking and bathing water quality reporting

The Institute of Public Health publishes every year its annual report, including a dedicated chapter on drinking and bathing water quality.

Noise reporting

Each year Bitola, Kumanovo, Kichevo and Skopje CPHs prepare reports on noise measurements and noise exposure and deliver these to the respective local authority, to the Institute of Public Health, and to the Ministry of Environment and Physical Planning. The Institute of Public Health also prepares an annual report on noise measurements and noise exposure with recommendations and delivers it to the Ministry of Health. This report is made publicly available online.

Radiation monitoring reporting

The Institute of Public Health publishes radiation monitoring results on its website and in its annual report.

Linkages of environmental monitoring systems with other monitoring systems

The 2005 Law on Environment and the 2005 Strategy for Environmental Data Management set the framework for the establishment of a national environmental information system aimed at optimizing environmental data flows between relevant institutions and integrating these into a single interconnected system of interoperable databases for improved access and accurate use of environmental information by all concerned stakeholders, including government agencies and the broader public. To this date, such system has not been established in the country.

Nonetheless, the development and establishment of a national environmental information system is expected to be initiated in the beginning of 2019 under the scope of a new IPA II project.

Use of environmental data and information for policy making

Upon publication, the three main environmental data-based publications produced by the Ministry of Environment and Physical Planning – the Annual Report on the Quality of the Environment, the biennial Environmental Indicators Report, and the quadrennial State-of-the-Environment Report – are delivered to the central government bodies for consideration into the policy-making cycle. The Government submits the state of the environment report to the Parliament so that the public representatives are also informed.

Nonetheless, in their present form, these reports are stand-alone products that offer only a limited potential in terms of their use in support of policy-making processes. While elements of the DPSIR framework are considered, none of these environmental data-based reports fully integrate at the moment multi-sector integrated environmental assessment approach. Foresight and projections of possible future negative trends, and their implications vis-a-vis national goals and policies, are missing. The reports also do not address cross-cutting issues such as air quality and health, or transport and environment.

Another relevant use of environmental data in policy making is the use of air quality monitoring data in the formulation of the current "Clean Air Plan" being promoted by the Deputy Minister of Environment and Physical Planning.

4.3 Legal, policy and institutional framework

Legal framework

According to the Law on ambient air quality, the MEIC is required to provide daily air quality information to the State Inspectorate of Environment and to the City Centre for Information, and to develop monthly air quality reports.

The Law on Hydrometeorological Activity stipulates the responsibilities of the Hydrometeorological Service regarding surface water and groundwater monitoring.

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The Law on Nature Protection stipulates the biodiversity monitoring responsibilities of the Ministry of Environment and Physical Planning and of the administrations of protected areas.

The Law on Environmental Noise Protection stipulates the responsibilities of the Ministry of Environment and Physical Planning and of municipal authorities with regard to noise monitoring.

According to the Law on Water, the Institute of Public Health is responsible for monitoring bathing and drinking waters, including through microbiological, parasitological, hygienic, toxicological and biochemical analysis. The 2008 Rulebook on Water Safety further stipulates the water monitoring responsibilities of the Institute of Public Health. A draft rulebook on drinking water safety has been in development given the need for harmonization with EU regulations and is expected to be adopted before the end of 2018. It would bring significant changes in terms of monitoring frequency and parameters.

The management of PRTR information is regulated through the 2011 Rulebook on the form, the content, the methodology and the manner of maintaining of the Pollutant Release and Transfer Register. The Rulebook is in force since January 2013.

Policy framework

A national environmental monitoring strategy was set in place in 2004, further supported by the 2005 Strategy for Environmental Data Management. In 2011 the Government passed an official decision for the establishment of a national monitoring network for air, water and noise, including specified measurement points, parameters and monitoring frequencies.

A draft national environmental monitoring strategy and programme is planned to be developed under the scope of the project "Environmental Monitoring and Information system" which is funded by the IPA 2 Programme and is expected to start in the beginning of 2019.

Institutional framework

The Ministry of Environment and Physical Planning is responsible for monitoring air emissions and air quality; for monitoring soil contamination, erosion, degradation, salinization and organic matter decline; for monitoring land use, land use change, and land cover (together with the Ministry of Transport and Communications); for noise monitoring (together with the Institute of Public Health and municipalities); for monitoring biodiversity; and for monitoring wastes.

Through MEIC, the Ministry of Environment and Physical Planning is responsible for managing the process of collecting, processing, delivery and dissemination of environmental information, including for the development of environmental indicators and environmental reports. It is also responsible for producing daily information and monthly reports on air quality, as well as thematic brochures and topical reports. MEIC maintains the cadastre of Air Polluters and Pollutants, and the Cadastre of Wastewater and Solid Waste Generators. MEIC is also responsible for the development of the Annual Report on the Quality of Environment, of the State-of-the-Environment Report, and of the Environmental Indicators Report.

MEIC also has the responsibility of acting as focal point for environmental reporting obligations at international level.

The Institute of Public Health under the Ministry of Health is responsible for monitoring drinking and bathing water quality, with support from its 10 regional centres of public health. These regional centres also have smaller branches (hygiene epidemiological surveillance stations) that carry out sanitary surveys in the field to assess possible contamination of drinking water sources. The regional centres of public health also monitor bathing water quality. The overall drinking and bathing water quality monitoring programme under the responsibility of the institute of Public Health is published every year through Official Gazette, with the latest programme published in Official Gazette 16/2018 – "sanitary and hygienic survey and expert assessment of the status of surface water intended for human consumption". The Institute is also responsible for monitoring ionizing radiation, noise, and air pollution.

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The Ministry of Agriculture, Forestry and Water Management is responsible for forest monitoring. HMS under the Ministry of Agriculture, Forestry and Water Economy is the main institution responsible for monitoring surface and ground water quality. It is also responsible for monitoring hydrological parameters in rivers and natural lakes. HMS operates the national river monitoring system and implements the surface water quality monitoring programme. HMS is responsible for monitoring atmospheric precipitation. It operates the state network of meteorological stations with professional observers, a network of climatological stations with part-time/freelance observers and a network of freelance observers.

The Hydrobiological Institute in Ohrid is a public and governmental science-research and educational organization of national interest established under the Ministry of Education and Science that has been regularly involved in carrying out long-term surface water monitoring activities in Lakes Ohrid, Prespa, and Dojran. The Institute also undertakes monitoring of surface water in the three lakes. It focuses mostly on physical-chemical and biological parameters monitored under the scope of specific projects.

Participation in international agreements and processes

The Ministry of Environment and Physical Planning has a regular collaboration with the European Environment Agency (EEA) in all topics relevant to the environment and to the management of environmental information including the promotion of Shared Environmental Information System (SEIS) principles in the country. Since 2005, the country has been part of the Environment Information and Observation Network managed by the EEA.

Also, at regional level, the Ministry of Environment and Physical Planning is an active participant of the ECE Working Group on Environment Monitoring and Assessment (WGEMA), the ECE Joint Task Force on Environmental Statistics and Indicators and various activities carried out under the ECE Protocol on PRTRs. The country has a leading role in WGEMA as chair of the working group for several years in a row. SSO collaborates regularly with EUROSTAT.

The country also participates in several international reporting processes, and reports annually on core data flows in the following areas: air quality (PM_{10}, $PM_{2.5}$, O_3, NO_2), air emissions (CLRTAP), biodiversity (nationally designated areas), climate change mitigation (greenhouse gas inventory, UNFCCC greenhouse gas inventory, projections greenhouse gas emissions and removals), environmental noise, industrial pollution, bathing water monitoring and classification; and how data on emissions of pollutants and their transfer are managed and disseminated (ECE Protocol on PRTRs). The country has improved its reporting performance since 2011.

4.4 Assessment, conclusions and recommendations

Assessment

The air quality monitoring network operated by MEIC has been improved since 2011, with an increase in the number of stations and parameters monitored, as well as the replacement of instruments in some of the stations under the scope of technical cooperation projects. Nonetheless, some of the monitoring instruments in place are more than 12 to 15 years old and, in some cases, manufacturers can no longer secure the availability of spare parts. Older instruments in all remaining stations are not replaced by new ones except in the framework of technical cooperation projects.

Also, the operation of the network is undermined by insufficient capacity and resources to ensure adequate maintenance and service of the various air quality monitoring stations. Two service engineers in the Ministry of Environment and Physical Planning are alone responsible for the maintenance of the entire network and for calibration of the measuring instruments. In addition, the air quality calibration laboratory of the Ministry is not accredited, posing additional constraints.

The monitoring capacity and monitoring networks operated by HMS – surface and ground water, atmospheric precipitation and snow cover – have been in decline for some time due to insufficient maintenance, a lack of funding for the repair or modernization of outdated instruments and reductions in human resources. Overdependence on funding from international projects has resulted in overall fluctuating and declining monitoring capacity and infrastructure. HMS also faces several difficulties and constraints in monitoring surface water quality and is not yet able to meet all requirements of the national water related legislation, in particular,

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the determination of chemical status or potential. Also, as routine monitoring focuses mostly on rivers (water reservoirs and lakes are not included), the available monitoring data allow only a partial overview of the quality of surface water resources in the country. As of November 2018, no monitoring of groundwater quality is being carried out by HMS due to insufficient resources.

Few municipalities have the capacity to monitor noise or develop noise maps and the three regional CPH that are carrying noise monitoring activities, as of November 2018, – Bitola, Kumanovo and Skopje regional centres for public health – use outdated equipment. Tetovo CHP and the Institute of Public Health also use outdated equipment for carrying out noise monitoring activities.

Due to the lack of funding, biodiversity monitoring activities are mostly carried out under the scope of specific projects and/or are dependent on funding from international projects, resulting in numerous gaps. Some of these gaps are filled in by monitoring activities carried out by CSOs, which are also dependent on projects for carrying out their activities.

While progress has been made in the development of databases and thematic information management systems (air, water, waste), there is little progress to date on the development of a national integrated environmental information system to support informed decision-making and satisfy various reporting obligations, notably on progress in achieving the Sustainable Development Goals.

The country has a robust system for producing environmental statistics and indicators and, in general, promotes the SEIS principles of open access to data and use of data for multiple reporting purposes. These are reflected in the effective use of environmental data to produce national indicators, addressing international reporting obligations, and in the production of environmental reports. However, opportunities remain for further improving the production of environmental indicators by completing the production of all relevant indicators in the ECE list of environmental indicators, initiating the production of OECD green growth indicators and establishing relevant environmental indicators for reporting on the environmental dimension of the Sustainable Development Goals.

In their present form, the three main environmental data-based publications produced by the Ministry of Environment and Physical Planning offer only a limited potential in terms of their use in support of policymaking processes. They are neither developed within a multi-sector integrated environmental assessment approach, nor do they include foresight and projections of possible future negative trends and their implications vis-à-vis national goals and policies. Furthermore, they do not address cross-cutting issues such as air quality and health, or transport and the environment. The latest editions of the quadrennial State-of-the-Environment Report and biennial Environmental Indicators Report were published, respectively, in 2013 and 2018.

Conclusion and recommendations

Equipment and capacity

There is limited capacity to maintain and service the air quality monitoring network operated by the Ministry of Environment and Physical Planning and the surface water, groundwater, atmospheric precipitation and snow cover monitoring networks operated by HMS, including related databases. There is also insufficient human, technical and financial capacity in the Ministry of Agriculture and Water Resources to ensure comprehensive monitoring of forest resources and the development of a forest inventory.

The City of Skopje does not have sufficient trained resources to systematically monitor noise or develop noise maps. Its automatic monitoring station and outdoor information panel to provide air quality data to citizens in near real-time in the city centre has been inactive since 2012.

Recommendation 4.1:
The Government should ensure adequate capacity of the environmental monitoring networks operated and coordinated by the Ministry of Environment and Physical Planning, Hydrometeorological Service and Ministry of Agriculture, Forestry and Water Economy, by:

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(a) Providing adequate and modern monitoring equipment, replacing outdated instruments and ensuring appropriate resources for regular maintenance and servicing of each monitoring network and related integrated databases, independently of funding provided by technical cooperation projects;
(b) Ensuring stable and adequate funding of forest and biodiversity monitoring activities, supporting the development of a forest inventory and promoting improved coordination of different biodiversity monitoring activities within the scope of a national biodiversity monitoring system;
(c) Conducting training on the basis of international best practices to strengthen the expertise of officials and operators dealing with environmental monitoring and information.

Recommendation 4.2:
The Government should advise the City of Skopje and other municipalities to:

(a) Ensure adequate capacity to monitor noise systematically;
(b) Provide adequate and modern noise monitoring equipment;
(c) Ensure appropriate resources and training for regular noise monitoring and for the timely development of city noise maps;
(d) Develop city noise maps.

Policy and institutional framework

Responsibilities for environmental monitoring and data sharing and for the management of monitoring information flows are neither well defined nor updated in the National Book of Environmental Parameters dated 2015.

Recommendation 4.3:
The Government should prepare a national strategy and action plan on environmental monitoring and integrated information management supported by an updated national book of environmental parameters and protocols for data sharing, clarifying responsibilities related to environmental monitoring and management of monitoring data and information flows, including through amending the related legislation as appropriate.

Laboratories

The Ministry of Environment and Physical Planning's Central Environmental Laboratory and Air Quality Calibration Laboratory both face challenges related to insufficient funding and staff and are not properly accredited. Neither laboratory is provided with sufficient and stable financial and human resources for servicing, updating and calibrating monitoring and calibration equipment and for pursing accreditation under the ISO/IEC 17025 standard on "General requirements for the competence of testing and calibration laboratories". The HMS laboratory also lacks capacity and resources to monitor surface water quality according to the national water related legislation.

Recommendation 4.4:
The Government should ensure financial and human resources and capacity for:

(a) The Central Environmental Laboratory and the Air Quality Calibration Laboratory of the Ministry of Environment and Physical Planning, to adequately service, update and calibrate monitoring and laboratory equipment and meet the necessary requirements for their full accreditation under the ISO/IEC 17025 standard on "General requirements for the competence of testing and calibration laboratories";
(b) The laboratory of the Hydrometeorological Service, to increase its capacity to monitor surface water quality and meet the requirements of the national water-related legislation through appropriate and modern laboratory equipment.

National Environmental Information System

No national environmental information system was developed and established in accordance with the provisions of Law on Environment and the 2005 governmental Strategy for Environmental Data Management. There are currently no provisions to allow a new system, once established, to be effectively operated, appropriately maintained and used for different reporting obligations and decision-making processes.

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Recommendation 4.5:
The Ministry of Environment and Physical Planning, in cooperation with relevant ministries and environmental data holders, should:

(a) Establish a fully functional national integrated environmental information system able to support the monitoring, processing, reporting and dissemination of information on all environmental topics, including for informed decision-making and e-reporting to international organizations;
(b) Ensure sufficient and stable resources so that the new national integrated environmental information system, once developed, can be effectively operated and appropriately maintained;
(c) Use the new system to combine environmental information with data sources from other sectors, in order to support integrated, cross-sectoral policymaking and decision-making, including for achievement of the SDGs;
(d) Continue to support the implementation of Shared Environmental Information System principles of open access to data, to provide timely, relevant and reliable information on the state of the environment to policymakers and the public.

Environmental indicators

The production and online sharing of environmental indicators does not yet include all relevant indicators the ECE list of environmental indicators due to lack of data. OECD green growth indicators are not being produced in the country and there is no monitoring of progress towards the global Sustainable Development Goals or their environmental dimension.

Recommendation 4.6:
The Ministry of Environment and Physical Planning should:

(a) Continue with regular production of national environmental indicators and produce all remaining indicators in the ECE list of environmental indicators, as well as the Organisation for Economic Co-operation and Development green growth indicators, that are relevant to the country;
(b) Establish relevant environmental indicators for reporting on the environmental dimension of the SDGs;
(c) Establish data collection and processing mechanisms for environmental indicators where such data are not yet available.

Environmental reporting

In their current form, the Annual Report on the Quality of the Environment, the biennial Environmental Indicators Report and the quadrennial State-of-the-Environment Report offer only a limited potential in terms of their use in support of policy-making processes. The production of the quadrennial State-of-Environment Report and biennial Environmental Indicators Report has been interrupted since 2013 and 2012, respectively.

Recommendation 4.7:
The Ministry of Environment and Physical Planning should:

(a) Produce regularly reports on the state of the environment, including the biennial Environmental Indicators Report and the quadrennial State of the Environment Report, supported by better quality data and timely information in full alignment with Shared Environmental Information System principles of open access to environmental data, and include in these reports a summary for policymakers;
(b) Strengthen the policy relevance of these reports by moving towards multisector integrated environmental assessment approaches, including: (i) cross-cutting issues; (ii) assessment of progress towards environmental goals and targets and the potential effects and effectiveness of the implementation of environmental protection measures under legal obligations and strategic action plans; and (iii) outlooks and projections of possible future negative trends and their implications vis-à-vis national goals and policies.

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Chapter 5

ACCESS TO INFORMATION, PUBLIC PARTICIPATION, ACCESS TO JUSTICE AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

5.1 Access to environmental information

The public has access to most of the environmental information readily available in the Ministry of Environment and Physical Planning. The list of free environmental information comprises legislation and policy documents, reports, information on projects, on integrated environmental permits, on EIA studies, on concessions, on climate change, environmental indicators and information on environmental media, waste, noise and Pollutant Release and Transfer Register (PRTR).

The level of public awareness on environmental issues is assessed by surveys, for example two surveys conducted by the Ministry of Environment and Physical Planning on climate change in 2014 and in 2016/2017, which show an increase of public awareness on climate change.

A list of environmental information holders, including state institutions and bodies, is made available by the Ministry of Environment and Physical Planning. The list has not changed since its establishment in 2007.

Active access

Website and social media of the Ministry of Environment and Physical Planning

The website of the Ministry of Environment and Physical Planning serves as a primary source of environmental information.

The website gives access to several documents, including guidelines for free access to public information, a list of public information and the contact details of the staff in charge of the free access to environmental information. It provides forms for submitting requests for information and complaints. However, some of the information (e.g., on concessions) dates to 2015–2016 with no information for 2017–2018 posted.

News on activities and projects undertaken by the Ministry are posted daily on the website. Some web links are not active, partly because they were developed as part of project-based efforts and are not maintained for various reasons, while some other links contain outdated information or are temporarily disabled for maintenance work.

In addition to the website, environmental information is also distributed through social media (Twitter, Facebook and Instagram). For instance, the Ministry's Facebook page has 3,161 people following it.

Websites of other institutions

The websites of all state institutions and bodies have a webpage on free access to public information on which are included either the links to the public documents available on-line, or the list of documents and a form to request information. In both cases, the contact details of the staff in charge of addressing the requests are indicated.

Passive access

Each institution is required to constantly update the environmental information in their possession and provide it upon request to the public. The procedure for requesting environmental information is well established. In order to obtain environmental information, a written request by post of by e-mail is required. In the Ministry of

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Environment and Physical Planning, requests are dealt with by the Unit for Communication, Public Relations and Education, who either responds to them or transmits them to the relevant department or unit in the Ministry. The number of requests to the Ministry rose steeply in 2017 (Table 5.1); however, the Ministry continued to respond to all requests (within 30 days for simple requests and with an extension of another 30 days for complex requests), though the number of complaints rose in the last year.

Table 5.1: Requests for environmental information, 2011–2017, number

	2011	2012	2013	2014	2015	2016	2017
Requests received by the Ministry of Environment and Physical Planning, of which:	40	5	20	12	12	21	113
Answered (%)	100	100	100	100	100	100	100
Appeals to the Commission for Protection of the Right to Free Access to Public Information	20	1	0	1	2	3	14

Source: The Ministry of Environment and Physical Planning annual reports to the Commission for the Protection of the Right to Free Access to Public Information.

In 2011, 20 appeals for late provision of responses to requests for environmental information by the Ministry of Environment and Physical Planning were made to the Commission for the Protection of the Right to Free Access to Public Information and in 2017, 14 appeals due to delays in response by the Ministry.

Charges

Environmental information is provided free of charge by the Ministry of Environment and Physical Planning.

Reportedly, reasonable costs are charged by some institutions for the provision of materials in hardcopy format or when the information is not readily available and requires additional research.

Limitations to access to information

Information not intended for public use because its disclosure would reduce the efficiency of the activities of the state bodies is classified "for limited use only". The Minister of Environment and Physical Planning is entitled to assign the information as "state secret" according to the 2004 Law on Classified Information, within the scope of operation of the Ministry. The public can be denied access to environmental information based on the 2005 Law on Environment, which is generally in line with the relevant provisions of the Aarhus Convention. There have been no cases in 2011–2018 when requests for environmental information addressed to the Ministry were denied based on classification of the information as "for limited use only" or as "state secret".

In its annual report to the Commission for Protection of the Right to Free Access to Public Information, the Ministry of Environment and Physical Planning cited the request received in 2015 from civil society organizations (CSOs) to be provided with a hard copy of the EIA report for the National Park Mavrovo and justifying the negative response by its large volume of 1,000 pages, offering the CSOs instead to consult the hard copy of the report on the premises of the Ministry. Following the CSOs appeal to the Commission, the Ministry started to provide large reports in electronic version upon request and to post the EIA studies' summaries on its website.

Challenges with implementation

The lack of awareness in civil society about the availability of environmental information and procedures to access such information is a bottleneck hindering efficient access to information.

Although there have been efforts by governmental institutions to improve the communication on environmental matters with the public, still in many cases information regarding the environment is given in a format that is too technical or "expert" for the public and linkages to human health and safety are not explicitly shown, thus limiting the comprehension of information with a view to act in a timely manner. Moreover, public access to environmental information that is crucial for public action against business entities is often difficult to obtain.

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Information under certain multilateral environmental agreements (MEAs) is available (e.g., Aarhus Convention, Protocol on PRTRs and Convention on Biological Diversity).

The environmental information that is made available is not always easily accessible. It is often kept in archives and unless the user knows the exact title of the document, it is very time-consuming and difficult to find it. Often, the websites contain too general or too technical information.

Official written correspondence by post with the public institutions is usually slow, as reported during the consultation with CSOs.

Active access to environmental information on other than the Ministry of Environment and Physical Planning, public institutions websites is largely missing. That is to say, a minimal approach to comply with the Law on Free Access to Public Information is implemented by providing just the list of information without on-line access to actual documents.

For passive access to information the allowed extension of an additional 30 days for complex information often makes useless the information finally provided because the information was needed for events organized within the first 30 days. The required procedures for getting access to various information are in place but the quality of the information provided, and the efficiency of these procedures are often questionable.

Public access to environmental data is hindered by the lack of an integrated national system that contains all available data or a portal to environmental data. No national environmental information system was established in accordance with the provisions of 2005 Law on Environment and the 2005 Strategy for Environmental Data Management (chapter 4). Currently, on the Ministry website, there are links to dedicated information systems on air, biodiversity, waste and PRTR, however, the link to the information system on biodiversity was not working (last accessed on 12 December 2018) while the waste management information system required credentials for accessing the information. Making information on environmental media available only to subscribed users seriously limits public access to information. Having several links not working could discourage the public from returning or continuing to look for other information on the website.

A challenge in implementing effective public access to environmental information is the lack of adequate expertise and financial resources in the Ministry of Environment and Physical Planning as is in other institutions and local units of self-governance. Another related constraint is the lack of human and financial resources for opening state supported units or centres across the country equipped to facilitate access to environmental information by the public.

5.2 Public participation in decision-making on environmental matters

Overall, the public at large becomes interested and active in environment related issues when the pollution becomes evident, which means that it is active based on "seasonal" and "topical" participation. For example, the public becomes active when air pollution increases in cities in winter, water becomes obviously polluted by changing colour and smelling oddly, waste is disposed of near households, or noise becomes a nuisance. The population is not active on water pollution issues, most probably because of the lack of awareness of its impact on human health and on animals, crops and vegetation. The rural population is particularly difficult to engage as it lacks awareness on environmental issues, such as recognition that their villages are located on the territory of protected areas, or that they need to become active in mitigating or adapting to climate change and in water and waste management.

CSOs

Although the total number of CSOs in the country is close to 9,000, CSOs are not classified by area of activity in the Central Registry.

Since 2007 the Ministry of Environment and Physical Planning has been supporting activities of CSOs through the Annual Environment Investment Programme of approximately €1 million, which is divided through grants between municipalities (60–70 per cent) and CSOs, business and academia (40–30 per cent). About 40–50 grants are given to CSOs annually. Grants under the Programme are for projects with a duration of up to one year. In

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addition, awards are given by the Ministry to individuals and legal entities in recognition of their environmental protection achievements.

Public participation in decision making on specific activities (projects)

Public participation is limited by the established procedures for most of the projects not covered by the environmental impact assessment (EIA), strategic environmental assessment (SEA) and integrated environmental permits (IEP). The public cannot participate in decision-making on issuing an environmental elaborate but has the right to challenge an approved elaborate before the State Commission (chapter 2). Nevertheless, in all cases the public concerned has the right to challenge (within 15 days) a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance.

A similar concern is with projects covered by B-type IEP permits, the decision on which can be appealed before the State Commission by the public only after the issuance of the permit.

The public can participate in the process of issuing A-type IEP permits, by submitting comments within a period of 30 days from the day of posting the related documents on the website of the Ministry of Environment and Physical Planning. The public can also request the applicant for the permit to organize a public hearing. The Ministry has an obligation to indicate, in the explanation attached to the A-type IEP permit, which of the public comments were considered and which were rejected. In addition, the municipality concerned has an obligation to send to the Ministry its opinion on the application for the permit within 30 days from receiving the documents from the Ministry and the mayor concerned can organize a public hearing during this process.

The public can participate in decision-making on construction-related projects during the EIA procedure by making comments within 30 days after the EIA study has been published and by participating in a public hearing organized during the procedure. Since 2014, over 40 EIA public hearings have been organized by the Ministry. The Ministry makes the summary of EIA studies available on its website.

Public participation in decision-making on issuing permits for mining activities is possible, during the process of issuing a permit for exploration of underground resources, including groundwater and mineral resources by the Ministry of Economy, by participating in the EIA process. An EIA study is included in the application for such a permit.

Challenges exist with effective public participation in public hearings. Often information related to the organisation of public hearings is published at short notice or during holiday periods. For example, the public hearing on Galičica National Park was organized on the third of January. EIA reports are not easy to understand for the public, because there is no non-technical summary.

Challenges encountered by the Ministry on Environment and Physical Planning in ensuring public participation in decision-making on specific activities are, firstly, the lack of adequate financial resources and, secondly, the lack of appropriate expertise and insufficient human capacity.

Public participation in decision making on strategic planning and legislation

Posting draft documents on the website and organizing public hearings to discuss them enables the public to fulfil its right to participate in the decision-making process for preparing policy and legal documents. The provision of at least 30 days for the public consultations is in line with international practice. Within these 30 days, at least one public hearing shall be organized after at least 15 days from the beginning of the public consultations but not later than at least 5 days from the end of the consultations. The final five days may be sufficient for simple legal and policy documents; however, that period is too short for complex documents and for those for which the public consultations run for more than 30 days. In 2011, in the public notification, information on the decision on whether the consulted document should undergo an SEA, was included.

The public has the right to participate in the process of SEA of strategies, plans and programmes, including their amendments. The authority preparing the policy documents has the obligation within five days from the completion of the SEA report to make available to the public the draft policy document, the SEA report and the

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details and procedure for public participation in the hearing organized. The public has up to 30 days to submit comments, which are required to be considered during the finalization of the policy document.

A mechanism to monitor to which extent the Ministry of Environment and Physical Planning considers the opinions, comments and suggestions made at the public hearings, despite being obligatory in the process of finalization of the document for final approval, does not exist.

In urban planning procedures, the public can participate during the process of deciding on whether an SEA is needed for a given plan (screening) as well as on the scope of the SEA determined by the Ministry on Environment and Physical Planning (the public has the right to appeal such decisions within 15 days of their posting on the website) and during the SEA procedure by submitting comments within 30 days on the draft document and participating in at least one mandatory public hearing. The authority preparing a proposal for an urban plan is obliged to publish on its website a statement on how the draft plan was revised according to SEA and how the public comments were considered, along with the proposed urban plan. In addition, the public can participate in the expert hearing, which is organized with relevant institutions, experts and CSOs representatives, prior to the decision by the Parliament (Assembly) on the draft plan, and before commencing the procedure for preparing the proposal for the urban plan.

Since 2011, five public consultations have been organized regarding spatial plans, including for Skopje Region (2012), for Ljubanista village in Ohrid Region (2013/2014) and for Eastern Region (2017), and management plans for national parks, such as Galičica National Park (2013) and Pelister National Park (2018). Due to public participation, the proposed management plans were suspended for Galičica National Park and for Ljubanista village.

Public participation in GMO-related decision making

The public has the right to participate in decision-making related to GMOs at the stage of consultations organized by the Ministry of Environment and Physical Planning during the process of issuing licences for the contained use of GMOs, their deliberate release into the environment or placement of GMOs products on the market. The Ministry has an obligation to notify the public within five days from receiving the request for licence by publishing short summary information in two national newspapers. The public has 30 days for submitting comments on the documents, which are made available and include information on GMO product assessment, the opinion of the Scientific Committee on GMOs and other competent bodies, and the plan for emergency cases. However, while the applicant for the licence can contest the decision to reject the issuance of licence, the public cannot contest an approved licence. The basic data, such as general characteristics of GMOs and their classification, name and address of the applicant, location where the GMOs will be released, limitations and safety measures, data regarding the possible harmful and other effects on the environment and human health, and other data necessary for the risk assessment are not allowed to be classified as confidential.

GMO products labels and packages have to clearly state the GMO content and name, name and address of the legal entity or physical person whether producer, importer or distributer who placed the GMO on the market and guidance on where and how to access more information on the GMO product. The products with up to 0.9 per cent of accidental and technical GMOs traces contents are excluded from the labelling requirements.

According to the Third National Report on the implementation of the Cartagena Protocol on Biosafety (2011–2018), the country did not establish mechanisms to ensure public access to information on imported GMOs, to consult the public in decision-making process regarding GMOs, and to make available to the public the results of decisions taken on GMOs. Since 2011 the public was not consulted in the decision-making process regarding GMOs because there have not been any requests for licenses of GMOs.

At November 2018, by-laws on the form and procedures for the public participation in the decision-making on issuing licences for contained use of GMOs, their deliberate release and placement on the market of GMOs products, as required by the 2008 Law on GMOs, was not adopted.

Specific procedures for public participation in decision-making on food and food products containing GMOs or consisting of GMOs are not established. Since the 2013 amendment of the 2010 Law on Food Safety, the

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production, release and import of food and food products containing or consisting of GMOs is prohibited in the country until accession to EU.

Public participation in labelling the products and their packaging

Labelling products and their packaging with information about their potential impact on the environment and on the life and health of people is mandatory. The Ministry of Environment and Physical Planning is the main institution in charge of eco-labelling. Public participation in decision-making, by including a representative of environmental CSO or a consumer organization in the composition of the Commission on Eco-label, is provided for in the 2005 Rulebook on the form and content of the eco-label, the manner, the conditions, as well as the composition and the manner of establishment and operation of the Commission on Eco-label. The Commission does not appear to be active at November 2018. No eco-label has been awarded yet (chapter 2).

Public participation in chemicals- and product-related decision-making

Public participation in chemicals- and product-related decision-making at the regulatory level is possible by engaging in the consultation process on draft laws and regulations.

Explicit provisions for public participation in decision-making are contained in the Law on Environment and the two laws – 2009 Law on Packaging and Waste Packaging and 2010 Law on Batteries and Accumulators and Batteries and Accumulators Waste – that stipulate that the Law on Environment is applicable for these issues. The other laws regulating the environment-related product information, such as 2012 Law on Electrical and Electronic Equipment and Electrical and Electronic Equipment Waste, 2010 Law on Chemicals, 2018 Law on Energy, 2006 Law on Product Safety, 2004 Law on Consumer Protection, and 2007 Law on Safety of Cosmetic Products, do not include any specific provisions on public participation procedures.

Public participation in international forums

The public, including CSOs, is not involved in the decision-making processes regarding the country's substantive contributions to and participation in MEA-related and other international processes (chapter 6). While some experts are involved in activities or are aware of developments under some of the MEAs, the public at large is not familiar at all or has scattered information on topics addressed by the country under MEAs.

Protection of environmental defenders

There are no officially recorded cases of persecution of environmental defenders.

Cases of intimidation and harassment of representatives of CSOs actively contesting or opposing corporate projects reportedly occur. Cases of intimidation of environmental defenders include oral threats made by government officials and representatives of business. The obstruction of representatives of CSOs consists of, but is not limited to, the organization of public hearings at the last moment and only for a limited audience, ignoring public opinion during the consultation at the hearing and blocking access to information claiming that documents, for example, environmental studies related to hydropower plants, are subject to copyright. No specific activities are undertaken by the Government to ensure that persons exercising their rights for access to information, public participation and access to justice in environmental matters are protected from being penalized, persecuted or harassed in any way.

An example of a strategic lawsuit against public participation (SLAPP) is the case of Mr. Igor Smilev from the city of Veles (also, a president of CSO Green Power). He publicly opposed the reopening of a smelter located 2 km from the city centre, which had polluted the city since its opening in 1972 until its closure in 2003. He actively participated in protests and other events, mobilizing the community, and in 2012 was sued by the owner of the company Metrudhem for defamation, seeking compensation of €20,000. After a long hearing, the court case was closed without being resolved for either party. Instead the hearing served mostly to burden an active participant from the public with lengthy complex judicial procedures, thereby intimidating him and impeding further active involvement.

5.3 Access to justice

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Enhancing capacity for access to justice

Access to justice in environmental matters has been promoted since 2012, mostly as a project-based activity, including with assistance from the Regional Environmental Centre (REC) and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety and the German Federal Environment Agency that provided funds through the Advisory Assistance Programme. The project "Better Access to Justice in Western Balkan Countries" implemented from 2016 to 2018 by REC in cooperation with the Ministry of Environment and Physical Planning, CSOs and the Academy for Judges and Public Prosecutors has helped to raise awareness, develop capacity and promote the procedural and practical implementation of access to justice in environmental matters.

Progress was achieved in producing guidance materials to the public on how to exercise their right to access to justice in environmental matters in the county. A user guide "Access to Justice under the Aarhus Convention" has been published in 2017 and a workshop was organized in 2017 with the participation of over 20 CSOs. Furthermore, two comparative studies on access to justice in South-Eastern European countries prepared in 2014 and 2017 by REC in cooperation with the secretariat of the Aarhus Convention, include an assessment of the scope of legal review in the former Yugoslav Republic of Macedonia and its applicability for ensuring effective access to justice in environmental matters.

To develop the capacity of judges and to introduce issues related to environmental legislation and the Aarhus Convention into the formal curricula of judicial training centres and magistrates' schools, two workshops involving public interest lawyers and CSOs have been organised in cooperation with judicial training centres and magistrates' schools. A total of 24 judges and prosecutors from courts of first instance across the country and representatives of institutions, such as the State Commission for Decision Making in Administrative Procedures and Labour Relations Procedures in the Second Instance, and the Commission for the Protection of the Right to Free Access to Public Information, participated in the first workshop in 2017. More than 10 judges from the Administrative Court and the Higher Administrative Court participated in the second workshop in 2018.

In addition, in 2017, the Embassy of United States of America, in cooperation with REC and the Academy for Judges and Public Prosecutors, provided training on court cases in environmental matters held in the United States of America, which was attended by more than 25 judges and public prosecutors.

Procedural aspects

There is no specialized environmental court in the country at 2018. There are no judges specializing in environmental cases. Courts do not have their own environmental experts; in case of need, specialized experts are involved to provide their expert opinion.

There is no specific law, by-law or guidance material dedicated to procedures for processing environmental cases in courts.

The public can submit cases to the Ombudsman before deciding on whether to file a case in court. Annual reports of the Ombudsman contain an overview related to environmental matters. Statistical data show that the Ombudsman acted on 20 complaints related to environment received in 2010, which corresponds to 0.49 per cent of total complaints, on 26 in 2011 (0.61), on 35 in 2012 (0.80), on 20 in 2013 (0.53), on 26 in 2014 (0.61), on 16 in 2015 (0.36) and on 15 in 2016 (0.40). Complaints on environmental matters most frequently refer to problems, which immediately endanger the personal rights or interests of the citizens, such as pollution of air or water, pollution by littering and disposing waste near their homes, increased noise levels in catering facilities located nearby housing, and the delay in certain administrative procedures, such as untimely measures undertaken by inspection bodies.

There is no difference between individuals and CSOs in accessing the judicial system.

Court expenses are no different for environmental cases. All court cases require payment of a court fee and other fees that depend upon the type of case (expert costs, investigation costs, costs for bringing in witnesses). The costs appear to be reasonable but can still be an impediment for the public to use courts in environmental matters.

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Free legal aid for members of the public and CSOs for exercising their rights in the courts does not exist.

Nevertheless, court costs may be waived and free legal aid may be provided for disadvantaged individuals in accordance with the provisions of the 2009 Law on Free Legal Aid.

In environmental cases, the affected members of the public can reach the court directly or can be represented by an environmental CSO.

The Commission for Protection of the Right to Free Access to Public Information is the first institution to be addressed by the public in case of an unsatisfactory response from the information holder. Access to justice regarding public participation is subject to proving evidence that the given individual or CSOs are "concerned", i.e. can be affected by the decision.

The public can challenge court decisions on specific activities relating to environment and submit an administrative lawsuit against an administrative action in a period of 30 days. Moreover, related public requests for remedying damages can be brought to the civil court within a three-year period. The public can appeal the decision of a court of first instance to a court of appeal within 15 days from receiving the decision, which might be too short in complex cases.

In 2017 out of 151 reported environmental crimes, 43 were reported by the victims (individual suffering damage), 4 by other individuals and most of the remaining by the Ministry of Internal Affairs (chapter 2). Environmental cases initiated by environmental CSOs are very few (Box 5.1).

Box 5.1: Selected case of a CSO challenging a decision before the Administrative Court

The CSO Front 21/42 brought before the Administrative Court the case against the State Commission for Decision-Making in Administrative Procedure and Labour Relations Procedure in Second Instance.

Initially, Front 21/42 filed a complaint to the State Commission, appealing the decision made in October 2012 by the Ministry of Environment and Physical Planning approving the EIA study made for the hydropower plant project "Boshkov Most".

The CSO challenged the content and quality of the EIA study and claimed that the right to public participation was not fully respected. Following the rejection of the complaint in May 2013 by the Commission as being without grounds, Front 21/42 filed a lawsuit against the decision of the Commission in the Administrative Court, which decided in favour of the CSO.

The Court's decision was based on the reasoning that the Commission did not explain the reasons for rejecting the appeal, especially why it considered that the Ministry's decision to approve the EIA study was in accordance with the Law on Environment and related by-laws, when the CSO contested precisely the substance of the study. The Court also stated that there was no evidence that the public's comments made during the EIA consultation process had been considered by the Ministry in its decision approving the EIA, because the Court did not receive the requested relevant documents from the Commission to enable the Court to examine the case. As a result, the Court annulled the decision of the Commission and returned the case to the Commission for implementing the Court judgement. The case from the initial complaint before the Commission until the decision of the Court lasted from 2012 to 2013.

The issue of hydropower plant "Boshkov Most" is not yet fully resolved, with CSOs continuing to pursue it, including under the Bern Convention (chapter 6).

5.4 Legal, policy and institutional framework for environmental democracy

Legal framework

The 2005 Law on Environment defines environmental information and stipulates the process to access it, contains provisions on raising public awareness on environmental protection and requires state authorities to inform the public about cases of environmental pollution. The Law has provisions on product labelling information and eco-labelling. It stipulates the principles for public participation in decision-making and the procedures for public participation in the development of legal and policy documents, and in SEA with the right to appeal a decision regarding project-based activity. The Law requires the availability of information on EIA, organization of public

hearings, access to information on applications for IEP, receiving comments from the public and appeals against a decision.

The 2006 Law on Free Access to Public Information requires all state and other bodies to provide free access in any form to information that is produced by or in possession of those bodies. The Law includes provisions on: restrictions to the free access to public information; the content of information and obligations on the side of the holders of information, including on designating an official in charge of communicating public information; requirements for exercising the right of free access to information; costs for receiving information; the Commission for Protection of the Right of Free Access to Public Information; and fines for non-compliance.

The 2004 Law on Classified Information defines the information classified as "state secret", "highly confidential", "confidential" and "internal" and the periodicity of its assessment for potential reclassification, which is up to ten, five, three and two years, respectively. The Law defines the information "for limited use only", which is not intended for public use because its disclosure would reduce the efficiency of the activities of the state bodies.

The 2010 Law on Associations and Foundations regulates the establishment of associations by individuals and legal entities. A minimum of five founding members are required for establishing a CSO.

The 2008 Law on Genetically Modified Organisms enables the public to have access to information on GMOs, products containing GMOs and limited application of GMOs by making mandatory for the relevant state bodies in possession of such information to provide information and to inform the public of their negative influence on human health and the environment. The Law includes provisions on public participation in decision-making in the process of issuing licences for the limited application of GMOs, their deliberate release into the environment or placement of GMOs products on the market.

The 2010 Law on Food Safety provides for open and transparent consultation with the public directly or indirectly through a representative, during the preparation, assessment or amendment of by-laws, unless the urgency of the procedure does not allow it. Also, where there is a reasonable doubt that food may pose a risk to human or animal health, the public must be informed of such risks. Nevertheless, public participation in decision-making on food and food products containing GMOs or consisting of GMOs and the approval procedure of their placement on the market, is not addressed by this Law.

The 2008 Decree on public participation during the preparation of regulations and other acts, as well as plans and programs on environment, details the conditions, the form and the procedure for public participation during the preparation of legal and policy documents in the environmental area. The Decree also specifies the types of policy documents, the form and procedure for public participation in their drafting, adoption, amendment or revision.

Policy framework

There is no policy document specifically focussing on access to information, public participation and access to justice in environmental matters.

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis selected targets of the Sustainable Development Goal 16 of the 2030 Agenda for Sustainable Development is described in box 5.2.

Box. 5.2: Selected targets under Goal 16 of the 2030 Agenda for Sustainable Development

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

The enabling framework for the implementation of Goal 16 is not yet established and specific institutions to lead the implementation of and reporting on this Goal have not been assigned.

Target 16.3: Promote the rule of law at the national and international levels and ensure equal access to justice for all

Concerning environmental matters, access to justice is in its initial stages of development with the basic access established, including allowing in many instances to appeal against the decisions made by the public authorities. Individuals and CSOs can access the judicial system. Costs can be waived for disadvantaged individuals. The public can submit cases related to

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environmental matters to the Ombudsman before deciding on whether to go to court. The minimum legal and institutional frameworks for access to justice in environmental matters are in place.

There is no specific law, by-law or guidance document on procedures for processing environmental cases in courts. Judges specializing in environmental cases or environmental specialists in courts do not exist. Awareness raising and capacity development for the judiciary and CSOs on access to justice in environmental matters, are carried out mostly as a project-based activity. Environmental cases initiated by environmental CSOs are very few.

Knowledge and expert capacity, and financial resources are lacking for an effective implementation of the environmental dimension of this target.

The General Prosecutor's Office, the Ministry of Internal Affairs, the Office of the Ombudsman, the criminal courts, the Ministry of Justice and the Ministry of Environment and Physical Planning should coordinate their efforts to ensure access to justice in environmental matters.

The Ministry of Justice in collaboration with the Academy for Judges and Public Prosecutors and the Ministry of Environment and Physical Planning should conduct regular training on environmental legislation for judiciary personnel.

Target 16.6: Develop effective, accountable and transparent institutions at all levels

As the main governmental authority on environmental matters, the Ministry of Environment and Physical Planning makes available its budget on the website since 2017. Annual Public Procurement Plan for 2018 is also available for the public. Reports on the implementation of the annual budget are not available. The link to audit reports leads to the main webpage of the State Audit Office which includes reports on budget and performance audits.

Environmental protection expenditures had an average share of 0.7 per cent in total central government during 2013–2017; there is no separate information on aggregate environmental expenditures at the local self-government level.

The Ministry of Environment and Physical Planning indicates the lack of adequate human and financial resources as a major challenge for effective delivery of access to information, public participation and access to justice in environmental matters. An estimation of the required resources is not done.

Concerning the proportion of population satisfied with their last experience of public services (global indicator 16.6.2), in the area of environment related public services, the Ministry of Environment and Physical Planning is making efforts to improve the delivery of public services, in particular with regard to provision of environmental information. In 2011, from 40 requests for environmental information sent to the Ministry of Environment and Physical Planning, 20 appeals were made to the Commission for the Protection of the Right to Free Access to Public Information and in 2017, from 113 requests for environmental information, 14 appeals were made, which could be an indicator of the level of public satisfaction with public services in relation to environmental matters, showing an improvement in provision of services.

The State Statistical Office should conduct surveys to assess public satisfaction with the public services provided by the Ministry of Environment and Physical Planning, as well as other institutions in possession of environmental information or overseeing activities that have an environmental and human health impact, and provide annual assessments of the feedback received with a view to adapting the services.

Target 16.7: Ensure responsive, inclusive, participatory and representative decision-making at all levels

In decision-making on environmental matters, public participation is only by the established procedures for activities covered by strategic environmental assessment, environmental impact assessment and integrated environmental permits. However, in all cases, the public concerned has the right to challenge a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance.

Public participation in developing legal and policy documents is enabled by allowing the public to make comments to the draft documents posted on the website and during public hearings organized to discuss the draft documents. Challenges exist with effective public participation in public hearings.

A mechanism to monitor to which extent the Ministry of Environment and Physical Planning considers the opinions, comments and suggestions made at the public hearings, despite being mandatory in the process of finalization of the document for final approval, does not exist.

There is no public participation envisaged in the decision-making procedures for chemicals. The Law on GMOs provides for public participation in decision-making, but by-laws setting detailed procedures for engaging the public in that area are lacking.

The Constitution and several laws, including the 2005 Law on Environment, 2012 Law on Equal Opportunities for Women and Men and the 2010 Law on Prevention and Protection Against Discrimination, provide a good basis for implementing this target.

The State Statistical Office should conduct opinion surveys on whether decision-making in environmental matters is inclusive and responsive.

The Ministry of Environment and Physical Planning and other governmental institutions with activities that can have a potential impact on the environment, should continuously engage the public in decision-making to ensure that the decision-making in environmental matters is inclusive and responsive, including by developing the necessary detailed procedures for an effective engagement of the public.

Target 16.10: Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

The country works on enabling public access to environmental information based on the provisions of the Law on Free Access to Public Information and of the Aarhus Convention acceded by the country in 1999.

A list of environmental information holders is available on the website of the Ministry of Environment and Physical Planning; however, the list has not been updated since 2007. In case of unsatisfactory response from the information holder public can file a complaint to the Commission for the Protection of the Right to Free Access to Public Information. The website of the Ministry contains most of the environmental information accessible for the public; however, some information is outdated or not easy to find.

Regarding the cases of persecution of environmental defenders, which would fall under the global indicator 16.10.1, there are no officially recorded cases of persecution of environmental defenders in the country, but such cases do take place. Specific measures to protect environmental defenders are lacking.

The country should:

(a) Continue to ensure open access to quality information within digital governance and open data frameworks, adapted to the needs of various users.
(b) Develop special measures to collect data and monitor the efficiency and effectiveness of legal proceedings in environmental matters.
(c) Establish mechanisms to prevent persecution, penalisation and harassment, especially given the few cases of oral intimidation and harassment, as well as SLAPP cases.

The Ministry of Justice in collaboration with the Ministry of Internal Affairs and the Ministry of Environment and Physical Planning should take measures fostering trust and confidence to enable victims of violence related to environmental matters to report to competent authorities.

The State Statistical Office in collaboration with the Ministry of Justice, the Ministry of Internal Affairs and the Ministry of Environment and Physical Planning should develop and conduct "victimization surveys" related to environmental matters and collect related data.

The Ministry of Environment and Physical Planning should make specific efforts to further develop a user-friendly website as a main mode to provide access to environmental information.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning through the Unit for Communication, Public Relations and Education ensures transparency and availability of environmental information for the public; raises public awareness and works to enhance understanding of environmental problems and options for possible solutions to improve the environment; and informs and involves the public in environmental decision-making process. The Unit collaborates with mass media, monitors daily media coverage, disseminates environmental information, including by posting information on the Ministry's website and social media platforms, and prepares events for promoting environmental protection. The Unit is organizing meetings with CSOs within relevant policy- and decision-making processes. The Unit promotes environmental education and organizes annually events such as Water Day, Earth Hour, Environment Day and Car Free Day. The Unit is physically located outside the Ministry to allow easier access of public to its premises, and its mobile office "ECO-caravan", which is a transformed truck, ensures a broader outreach.

MEIC collects information on the state of the environment from different institutions and sources, as well as conducts environmental monitoring activities, and makes it available through an electronic information system on the Ministry's website. It produces information materials (reports and brochures).

The Ministry indicates that the lack of human and financial resources hinders an effective implementation of access to information, public participation and access to justice in environmental matters. To date, measuring the

budget for promoting the three pillars of environmental democracy in the country is not possible given that the related desegregated data are not available. A comprehensive analysis to estimate the necessary expenditures (human and financial resources) for the satisfactory implementation of access to information, public participation and access to justice in relation to environmental matters has not been undertaken.

Other institutions

The Ministry of Justice is the main governmental authority for the access to justice pillar of environmental democracy. The Ministry oversees the enforcement and implementation of laws and administers judicial system.

The Supreme Court promotes and protects the fundamental freedoms and rights of individuals set out in the international law and in the Constitution, including the right to a healthy environment, the obligation to promote and protect the environment and providing conditions for the exercise of the right of citizens to a healthy environment.

The work of the Public Prosecutor's Office includes prosecution of perpetrators of criminal offences and misdemeanours against the environment and nature.

The Academy for Judges and Public Prosecutors organizes in-service trainings for judges and public prosecutors, including on environmental protection, and specialised thematic trainings on environmental violations.

The Faculty of Law "Iustinianus Primus" of the University "Ss. Cyril and Methodius" Skopje prepares jurists offering bachelor, master and doctoral studies. At 2018, the Faculty did not offer mandatory or elective courses on environmental law. However, environmental law courses are offered as elective courses, for instance, by the faculties of law of the Management and Information Technologies (MIT) University and the University "St. Kliment Ohridski".

The Ombudsman receives complaints from citizens, including with regard to environmental issues. The work of the Ombudsman, including on environmental cases, is presented in annual reports available on its website.

The Commission for the Protection of the Right to Free Access to Public Information oversees the implementation of the 2006 Law on Free Access to Public Information. The Commission decides on appeals against the decisions by which the information holder rejected the request for access to information. It publishes annually a list of information holders. It collects annual implementation reports from all information holders and prepares by 31 March of each year a joint report to the Parliament for consideration and endorsement.

The State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance considers appeals against administrative decisions on agriculture, forestry, water management, veterinary and environmental protection.

CSOs

Many environmental CSOs are active in the areas of environmental education and training, disseminating environmental information and raising public awareness, and in waste management activities. The Ministry of Environment and Physical Planning cooperates with CSOs. Some of the most active environmental CSOs include the Macedonian Ecological Society (nature protection and biodiversity), Eco-Logic (environment protection and conservation), Go Green (environmental education, waste collection), Zero Waste (collection of e-waste and batteries), Journalists for Human Rights (environmental awareness raising, access to justice), Front 21/42 (environmental awareness raising, access to justice), Eco-svest (civic awareness and active participation), Association for Education, Communication and Consulting (OXO) (environmental education) and Macedonia Without Waste (waste recycling).

5.5 Participation in international agreements and processes for environmental democracy

The former Yugoslav Republic of Macedonia is a Party to the Aarhus Convention since 1999 and to the Protocol on PRTRs since 2010, but has not ratified the 2005 Almaty amendment on GMOs to the Convention.

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The country did not appoint a national focal point for the Convention, but country representatives participate occasionally in Convention's meetings. The country submitted the national implementation reports for the three reporting cycles, albeit after the formal deadline. Moreover, it appointed a national focal point to the Protocol on PRTRs, regularly submits national implementation reports and participates in activities under the Protocol.

The country contributed to two analytical studies (2014 and 2017) considered by the Task Force on Access to Justice. Several capacity-building projects were or are being implemented in the country by REC in cooperation with ECE with a focus on better access to justice (2016–2018).

5.6 Environmental education and education for sustainable development

Integration of environmental education and education for sustainable development (ESD) into curricula

Pre-school education

Pre-school education includes children up to 6-year-old and is not compulsory. There are 97 public and 33 private kindergartens and early childhood development centres, as well as 6 kindergartens that are part of higher education institutions and private schools. Not all children of pre-school age go to kindergarten, for instance in Tetovo, generally, about 30–40 per cent of pre-school age children are enrolled in pre-school institutions, benefiting from environmental education.

Environmental education is integrated in Science subject during which children acquire information about the environment, the characteristics of plants and animals and of inanimate nature (water, air, soil, light, sound) as well as develop ecological habits of cleaning, recycling, taking care of plants, using safe recycled materials to produce decorative objects, protecting nature and being respectful towards the planet (Box 5.3). Cognitive development is focussed on getting to know and understand the environment. Environmental education is organized from simple to complex, ensuring continuity between the age groups. Environmental education methodology includes games and role playing, walking in the nature, observing and discussing. Various traditional games for different age groups are also included in the educational process.

Box 5.3: Environmental education in the kindergarten OJSC "Mladost"–Tetovo

The kindergarten OJSC "Mladost"–Tetovo, established in 1960 for children from 9-month-old to 6-year-old, includes environmental education in its annual programme and has a coordinator for environmental activities. Environmental education started as a project financed by the Ministry of Labour and Social Policy Environmental. Outdoor activities include greening the premises by engaging 3- to 6-year-old children in planting trees and maintaining an eco-garden. The kindergarten had renovated its premises and had installed equipment for in-door air cleaning and modern sanitation facilities adapted for children.

While environmental education is integrated in pre-school education, ESD is not.

Primary education

Primary education, called also elementary education, is compulsory and free of charge, lasts 9 years and is organized in three educational stages, 1–3 grades, 4–6 grades and 7–9 grades. Primary education includes educational programmes, which correspond to levels 1 and 2 of the International Standard Classification of Education (ISCED), i.e. primary and lower secondary education. A total of 192,448 pupils were enrolled in 989 primary education schools in study year 2017/2018.

One of the goals of the primary education is to educate about environmental protection. Environmental protection is included in the natural science subject in the first six grades (2 hours per week or 72 hours per study year). From grade 7 to 9 environmental protection is integrated mainly in biology and geography subjects as well as in chemistry from grade 8 to 9 (2 hours per week for each subject). Elective courses for grades 7 to 9 include a course on environmental education (2 hours per week).

Student assessment includes environmental protection criteria. For example, having studied geography, the eighth grader is expected to be able to explain the problems and consequences of the impact of anthropogenic activities, to explain about the pollution of soil, water and air, to express in own words the meaning of water supply, to reflect on measures for protection of water resources and air quality, to explain about the urbanization and the pollution problems in big cities and rural areas.

Issues of democracy, justice, equality, human rights, discrimination, cultural diversity, active participation in decision-making and community engagement, are taught during civic education, which is compulsory in eighth and ninth grades (1 hour per week) and for which a new curriculum was approved in 2018. Students develop skills for critical thinking about living in a healthy environment, sustainable development, human rights, including environmental ones, as part of civic education (10 hours per year).

Environmental protection is integrated in an annual programme developed by each school based on the curricula and syllabus prepared by the Bureau for the Development of Education and approved by the Minister of Education and Science. Annual programmes, including extra-curricular eco-activities, are approved first by the school boards before being submitted to the Bureau and to the State Education Inspectorate.

Schools are incentivized by activities carried out under the framework of the Programme on integration of environmental education into the education system (box 5.4) and the possibility to apply for small grants for implementing environmental projects, and by the eco-school award (box 5.5).

Box 5.4: Pestaloci primary school committed to environmental education

The public primary school Pestaloci, established in Skopje in 1969, is embracing environmental education within the framework of the Programme on integration of environmental education into the education system. The school is an eco-school participating in the International Network of Eco-Schools, having been awarded the green flag and following diligently the seven steps required for an eco-school with the involvement of teachers, students and parents. The school has an eco-codex, an ecological anthem, and runs several projects on energy saving, separate collection of PET and of e-waste, and maintaining an eco-garden. International environmental protection related days are observed by organizing special events in the school, such as the International Day for the Protection of Ozone Layer, World Water Day and Global Day of Action. The eco-team is composed of a group of students from sixth to ninth grades and is coordinated by the Biology teacher.

All teachers endeavour to integrate environmental issues into their teaching. For instance, during Physics, energy efficiency and renewable sources of energy are explained and promoted. The school has been integrating environmental education for the past 15 years, but the environmental activities have intensified with the school becoming an eco-school. Separate collection of PET, paper and other packaging waste is done through cooperation with waste management company Pakomak. The school's eco-patrol is keeping an eye on the ecological behaviour of students. The degree of integration of environmental education into the school's annual programme is estimated at approximately 20 per cent. The school Principal and teachers observe a gradual shift in students' behaviour towards ecological choices.

Box. 5.5: Tetovo primary school 'Kiril and Metodij' promoting environmental education

The school was founded in 1988, began environmental activities in 2013 and become an eco-school in 2015, having acquired the green flag. Environmental education is embraced by the school staff in close cooperation with the Municipality Department of Public Affairs, with the active involvement of students and parents. The school has an eco-codex and its eco-team engages all teachers in developing various activities for promoting environmental education in the school, on its outside premises and in the community. Pupils participate in waste recycling in cooperation with a local waste collecting company. Various competitions are organized on environmental themes (drawings and writing essays) and teaching or demonstration material from natural components is produced by children. The Principal leads the process and the Biology teacher coordinates the environmental activities. The school's annual programme includes an estimated 15 per cent of environmental education integrated in subjects and civic education. Workshops and training courses on environmental education for teachers are organized by the school.

The school runs various eco-projects based on small grants of some €500. For example, the sustainability of materials and the concentration of radon in the building was assessed. Special attention was paid to spatial conditions for pupils ensuring 6 m^2 per child. The air pollution in the school yard was monitored to assess whether air quality improved since the temporary closure of the nearby Yugohrom factory (due to the lack of adequate air filters). In 2017 over 100 trees were planted by students to green the school premises with the guidance from a parent who was a specialist in agronomy. Another project was to monitor the growth of plants by installing sensors and receiving information on watering needs though a smartphone application. The next eco-project planned is on energy efficiency by changing the school lighting system to a smart lighting in the premises of its branch located in the Falish village.

Teaching materials to support civic education are prepared by the Bureau for the Development of Education, such as the brochures with concrete activities for three themes on what does it mean being a citizen, living in society and the cooperation and relationships in civil society. The 2008 education programme for the elective course on environmental education in the last three grades of the primary education contains eight themes related to environmental protection.

To raise awareness about sustainable development in primary schools, from 2009 to 2012 the Green Pack Junior educational kit was produced and disseminated by the REC country office in the former Yugoslav Republic of Macedonia in cooperation with the Ministry of Education and the Bureau for the Development of Education and the Ministry of Information Society and Administration, with support from the Austrian Development Agency with funding from the Austrian Development Cooperation. 1,800 tool kits were distributed to primary schools in the country for teachers and pupils from the first to the fifth grade.

Secondary education and vocational education and training

Secondary education, which includes educational programmes at ISCED levels 3, i.e. upper secondary education, is compulsory, and consists of four years high school education (gymnasium) or from two to four years of vocational education and training (VET). In study year 2017/2018, a total of 71,458 students were enrolled in 131 secondary education schools, including 14 private schools. As per data of 2016, when 99 public secondary schools operated in the country, these included 16 high schools, 40 VET schools, 34 combined high and VET schools, 4 schools for students with special needs and 5 art schools.

Environmental protection is included to a varying degree in annual programmes prepared by the schools and validated by the school boards based on curricula and syllabus prepared by the Bureau for the Development of Education (for high schools) and in cooperation with the Centre for Vocational Education and Training (for VET schools). Issues related to environment are included in mandatory subjects Biology, Geography, Chemistry and Physics. For students choosing natural-mathematical orientation of study, additional hours of these subjects are offered as part of elective courses. In addition, the life skills education programme includes issues of environmental protection and renewable energy resources. High school project activities required to be carried out every year (for a total of 70 hours per year) include the themes of natural science and peace, tolerance and security. Activities carried out under the Programme on integration of environmental education into the education system also provide incentives for secondary schools to enhance environmental education in their teaching and premises.

Secondary schools that are part of the eco-school network are incentivised to include more environmental education into their annual activities to meet the seven steps criteria required for the eco-schools, which are assessed every two years (Box 5.6). In eco-schools and other schools, beside the engagement of teachers and students, the inclusion of environmental activities into the extracurricular work is also made possible by benefiting from small grants for environmental projects (Box 5.7).

Box 5.6: Skopje "Josip Broz – Tito" High School's engagement in environmental education

The eco-school Gymnasium Josip Broz–Tito in Skopje has an eco-codex and an eco-board, consisting of 12 teachers and eight students, which meets twice a month. The school's eco-patrol includes both students and teachers, inspecting the premises once or twice per week and maintaining an eco-journal. An estimated 20 per cent of environmental education is included across subjects and extracurricular activities. Since 2012, sustainable development issues have been integrated into the curriculum, mostly in Geography for third and fourth graders. Environmental education for teachers is based mostly on self-development through on-line courses and by participating in workshops on environmental and sustainable development issues.

In carrying out recycling activities for carboard, plastic and batteries, the school cooperates with environmental CSOs Go Green and Eco–Logic and with Pakomak and Skopje paper-recycling company Komuna. In exchange of used paper, the school receives A4 printing paper and in exchange of batteries and other e-waste, which students bring from their homes to recycle at the school, the school upgrades its projector and printer.

The school celebrates Earth Day and World Environment Day. About 70 students participated in the Mobility Week organized in September 2018. The school organizes excursions for developing a positive attitude towards nature and practicing eco-

habits. The school also took part in World Cleanup Day organized by environmental CSOs. In addition, the school implemented several environmental projects based on grants (€2,000) and with sponsorship from business and support from parents, such as greening the school area, reusing technical water, making energy efficient the façade of the school and the lighting. The collection of money from entrance tickets to school parties is used for financing works for greening the school area. Students learn to be empathic by organizing charity parties and donating the collected funds to support SOS Children's Villages International and other humanitarian organizations. The International Baccalaureate students engage in a minimum of 150 hours of community service and a 10-day environmental research project with the Geography teachers, studying measures and policies in place to protect a certain area and discussing their effectiveness on the ground. Students participate in field trips such as studying lake ecosystems. In organizing environmental activities, the school cooperates with both the education and environmental authorities of the City of Skopje.

Their challenges include the need to update the curriculum formally to integrate environmental and sustainable development issues across all subjects, not only in natural science related ones, to ensure continuity of eco-activities beyond the projects and piloting programmes, and to give more independence to high schools in organizing environmental extracurricular activities outside the school.

Box 5.7: Tetovo "7 Marsi" High School

The "7 Marsi" High School (gymnasium), established in Tetovo in 2015, endeavours to keep its premises clean and environmentally friendly. Students, teachers and other school personnel engage in recycling paper, plastic and e-waste in cooperation with the municipal waste collecting companies. During World Environment Day, students participate in cleaning activities around the school and greening the area with support from technical personnel. Twenty students from the second grade visited a hydropower plant to learn about its operation and impact on the environment. A Trash Fashion event was organized, for which students designed and modelled clothes made of waste materials. The school includes environmental education activities in its annual programme and reports to the State Education Inspectorate on four eco-indicators. However, this exercise is viewed more as a formality rather than providing an incentive for enhancing its environmental activities. The major challenge in advancing environmental education and ESD was considered to be the provision of adequate in-service training for teachers and school personnel.

The school plans to implement a project to produce its own energy by installing solar panels with financial support from the Ministry of Education and Science, Ministry of Finance and UNDP, scheduled to start in December 2018. The school receives most of its grants from the Ministry through the Municipality of Tetovo.

Curricula for VET vary depending on the area of specialization and for some areas (e.g., agricultural-veterinary, chemical-technological, textiles and leather) include different volumes of studies in Biology, Chemistry, Geography and Physics, in which environmental issues are typically included, as part of the general education curricula. Also, subjects such as plant protection, hygiene and ecology, work and environmental protection are included in professional education in areas of agricultural-veterinary, catering-tourist and geological-mining and metallurgical, respectively. Other specializations do not have studies dedicated to environmental protection and environmentally-friendly and green products, despite the specializations having an impact on the environment.

The 2018 pilot programme for civic education in the first year of the four-year VET in construction and geodesy, electrical engineering and catering and tourism, includes environmental education and ESD. Within the same experimental teaching, a programme for the Geography subject was developed for the first grade of tourist-catering specialization, containing issues of environmental protection and sustainable development. The programme for Physics for first grade students in modular design also contains environmental and sustainable development elements.

Developing capacity and raising awareness about Sustainable Development Goals, including through an on-line educational tool for secondary schools, was done by REC within the project Introducing the United Nations Sustainable Development Goals in Schools in South Eastern Europe (SEEDLING), carried out in 2016–2018 with support from the Austrian Development Cooperation. In the former Yugoslav Republic of Macedonia the project was implemented with support from several CSOs, including OXO preparing young reporters for environmental protection, CeProSARD working on strengthening education in VET through introduction of educational programmes for Sustainable Development Goals, Go GREEN working with youth to engage in sustainable development, Ajde Makedonija working with catering VET on "food for all, poverty for nobody", and the Scout Association of Macedonia promoting implementation of Sustainable Development Goals through the scouting method. An assessment done in 2016 of the existing education programmes for high schools and VET (for each profession) concluded that, in most of the programmes in secondary education, there are goals and contents that directly or indirectly relate to sustainable development, mostly present in the general education

subjects. At the same time, programmes are inconsistent conceptually, structurally and content wise and there is no coherence and systematic inclusion of elements of ESD either between different subjects or within individual subjects.

Higher education

Higher education includes three study cycles (ISCED levels 6, 7 and 8) – undergraduate (bachelor degree) three to four years, postgraduate (master degree) one to two years and doctoral (Ph.D. and Art.D.). In addition, higher education institutions offer vocational studies (ISCED levels 4 and 5). In 2017, 8,545 students (nearly 300 more than in 2016) graduated from 18 higher education institutions in the country.

The Master of Science degree obtained in fields of study related to environmental, natural sciences and mathematics and technical sciences and pedagogical fields of study constituted around 9 and 7 per cent of total degrees obtained for all fields of study in 2016 and 2017, respectively. The Doctor of Science degree obtained in fields of study related to environmental, natural and technical sciences and pedagogical fields of study constituted around 20 and 16 per cent of total doctoral degrees obtained for all fields of study in 2016 and 2017, respectively.

The study programmes are prepared by the faculty teaching council, approved by the senate of the higher education institution and accredited by the accreditation board for a period of five academic years. At 2018, study programmes related to environmental protection and the environmental dimension of sustainable development were provided by several institutions, such as the University "Ss. Cyril and Methodius" Skopje (UKIM) and the MIT University in Skopje.

In other specialities that are not directly related to environmental studies, environmental considerations are included only to a limited extent, mostly as elective courses. For instance, some of the 767 graduates on law in 2017 (288 more than in 2016) benefit from studying environmental law. For instance, elective courses on environmental law at the programme level, and ecology and sources of pollution of the environment at the university level, are offered by MIT University to law students at bachelor level. The University "St. Kliment Ohridski" Faculty of Law also offers environmental law as elective courses. However, there are no statistics available to assess whether and how many law students chose to study these courses.

Adult education, non-formal and informal education

Adult education is included in the education system and consists of formal, non-formal and informal education. Formal adult education is carried out in primary, secondary, VET and higher education institutions. In 2017/2018, 483 adults were enrolled in 12 primary adult schools. The funds for adult education are provided from the state budget; for some courses from the learner’s own resources.

The non-formal adult education is organized for training adults for employment, social activities and personal development based on special programmes, which are developed and accredited. As part of non-formal adult education, a training programme preparing sustainable development analysts is provided by the Association for the Protection and Improvement of the Environment Eco-Logic through the Centre for Adult Education. The programme includes 12 modules taught for 245 hours, including theory, practice and evaluation.

Informal environmental education and ESD are promoted through activities and events organized by the Ministry of Environment and Physical Planning, including in cooperation with municipal authorities, such as promoting reducing and recycling waste, observing Earth Hour, organizing several campaigns related to climate change and sustainable mobility week. In addition, informal environmental education and ESD is provided by CSOs directly engaging with schools and municipality authorities. For instance, OXO produces environmental education materials for mass media and a TV show for children.

The informal adult education is done through community activities to foster attitudes and positive values, skills and knowledge in everyday life and surrounding experience. Also, recycling and other eco-services are often promoted through visual art and posters in the street and on waste collecting vehicles.

Training of teachers

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Pre-school educators and lower primary school teachers (up to fifth grade) are trained at the UKIM Faculty of Pedagogy. Pre-school educators study for three years and teachers for lower primary school study for four years. Environmental education is offered among elective courses for a duration of 45 hours. In addition, environmental education can be chosen as a theme of self-study and project-based work for another 45 hours. Dedicated textbooks for environmental education are not used in the study process. At September 2018, ESD is not offered as a main or elective course.

Teachers for lower secondary (from sixth to ninth grades) and upper secondary (high school and VET) are trained at various faculties, such as those for natural sciences and mathematics, social sciences and humanities. Besides the ecology specialization, environment-related courses are included in the elective courses for future teachers of Biology. The study programmes of future teachers of Geography includes courses on climatology, hydrology, environmental protection, spatial planning and biogeography.

At 2018, no mandatory study programme on environmental education or ESD for future teachers existed in the country. The integration of environmental education and ESD across other subjects is not done. Environmental education is offered as elective course in some institutions only.

In-service training of teachers

In 2017/2018 there were 18,291 teachers in primary schools, 7,445 teachers in upper secondary education and 43 teachers in adult education primary schools.

The in-service training of teachers is mandatory by law (50 hours state provided and 10 hours of self-study during every three school years). Currently, it is done through self-study, taking on-line courses and participating in thematic workshops and conferences.

Several guiding materials on professional and career development of teachers were developed within a project supported by the United States Agency for International Development, however not including ESD competences for teachers.

In-service training on environmental education and ESD was organized during 2010–2015 by OXO in cooperation with the municipalities and schools under the Programme on integration of environmental education in the education system. Eco-schools are particularly incentivised to organize workshops on environmental education for teachers as part of their activities to maintain the standards of an eco-school.

5.7 Legal, policy and institutional framework for education for sustainable development

Legal framework

There is no dedicated law on environmental education or ESD.

The 2008 Law on Environment provides for educational and other institutions, within their activities, to promote and ensure raising awareness on environment and active participation in its protection. The Law also requires the Ministry of Education and Science to include in the primary or secondary school curricula the environmental protection as a compulsory or optional subject. The Law requests the Ministry of Environment and Physical Planning to cooperate with the Ministry of Education and Science in providing support to educational and scientific institutions, professional organizations and CSOs in promoting environmental protection and sustainable development through educational activities. It obliges the Government and the two ministries to support the publication of educational materials on environmental protection and sustainable development in support to environmental education. Municipalities are obliged by the Law to encourage the development of environmental education and to raise public awareness. There is no secondary legislation or an institutional mechanism to ensure the implementation of the Law provisions.

The 2013 Law on Child Protection regulates pre-school education and makes obligatory the inclusion of environmental education activities in the curricula.

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The 2008 Law on Primary Education includes the protection of the environment among the primary education goals.

The 1995 Law on Secondary Education, the 2006 Law on Vocational Education and Training and the 2018 Law on Higher Education do not include provisions regarding the integration of environmental education or ESD.

The 2015 Law on Teachers in Primary and Secondary Schools does not contain environmental education or ESD.

The 2015 Law on the Academy for Teachers establishes and regulates the work of the Academy for Teachers as a public institution for professional development, in-service training and issuing or renewing work-licences of teachers in public and private schools. At November 2018, the Academy was not established.

The 2008 Law on Adult Education requires special education programmes to be developed for adult education to integrate environmental protection. At 2018 there was no evidence of such programmes, except a specialised accredited programme on sustainable development analysts provided by the Eco-Logic.

Policy framework

At November 2018, no national strategic document on environmental education or ESD was adopted.

The National Strategy for Sustainable Development for the period 2009–2030 includes a proposal for an institutional set up based on public-private partnerships to support the implementation of sustainable development in the country based on a university campus for sustainable development responsible for research and testing sustainable development and serving as a "place for new ways of thinking, innovation and living". The Strategy annex II with pilot and demonstration projects planned for 2010–2015 includes proposed activities on ESD based on a pilot education programme for 10 enterprises. At November 2018, there were no actions to implement these measures.

The two technical strategies developed by the Ministry on Environment and Physical Planning – the 2003 Environmental Awareness Strategy, and the 2004 Environmental Communication Strategy – are the guiding documents for the Ministry activities in these areas.

The 2006 National Programme for Development of Education for the period 2005–2015 has a section on ecology, covering only some aspects of environmental protection in secondary and post-secondary education.

Neither the Strategic Plan for the period 2018–2020 nor the Programme of Work for 2018 of the Ministry of Education and Science include environmental education or ESD.

The 2007 Concept for Primary Education does not explicitly include ESD.

The 2013 Programme for Early Learning and Development does not include environmental education or ESD.

The Programme on integrating environmental education in the education system is being implemented by the Ministry of Education and Science in cooperation with OXO since December 2009 (box 5.8).

Box 5.8: Programme on integrating environmental education in the education system

The Programme implemented within the framework of a signed Memorandum of Cooperation with the Swiss Agency for Development and Cooperation, as a measure outside the Governmental Programme, was operationalized through the project "We do not have a spare planet" implemented by OXO in kindergartens, primary and secondary schools, student dormitories and private secondary schools. Key measures include raising the level of environmental activities in education institutions, inclusion of environmental issues into the curricula and development of media products to facilitate the participation of children and students in the process of environmental education. The Programme began in earnest between 2010 and 2015 and is still ongoing.

Since 2010, the Programme's practical implementation in kindergartens and schools resulted in capacity building of principals (on eco-management), educators and teachers (on integrated planning of teaching) and of school coordinators for implementing the Programme (implementation and coordination of environmental projects) (table 5.2). Textbooks and

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educational materials were produced for pre-school and school levels. Eco-standards were established, and eco-management was introduced in kindergartens and schools and a network of eco-schools and eco-kindergartens was set up.

At September 2018, 74 out of 1,212 public kindergartens and schools have been awarded a green flag (10 kindergartens, 40 primary schools and 10 secondary schools), silver (7 schools) and bronze (7 schools) level of eco-school. A small grants programme was established enabling eco-kindergartens and eco-schools to apply for financial support from OXO for implementing environmental projects. At September 2018, 124 environmental projects, i.e. 44 on energy efficiency, 30 on water saving, 30 on waste management and green policy, and 20 on school yard organization have been implemented.

Table 5.2: In-service training provided within the Programme on integrating environmental education in the education system, 2010–2015, number

	2010–2015
Total trained principals, teachers, pedagogues,	**6 500**
of which:	
on environmental management	3 000
on preparing project proposals	1 500
on integrating environmental education across subjects	1 500
on integrating environmental education into school annual programmes	500
Total institutions covered by training,	**510**
of which:	
kindergartens	50
primary schools	360
secondary schools	100

Source: OXO.

Seventy-two municipalities participate in the Programme based on memoranda of cooperation signed with OXO and with kindergartens and schools, including supporting financially schools in their eco-projects. The State Education Inspectorate participates in the Programme by having included eco-criteria and related assessment indicators in the evaluation of each kindergarten and school by education inspectors. At 2018, six eco-criteria cover energy; water; tidy and ecological schoolyard; ecological environment inside school; waste; transport. Over 100 meetings and one-day workshops for capacity-building were conducted for some 300 representatives of the Ministry of Education and Science, State Environment Inspectorate, Centre for Vocational Education, Bureau for the Development of Education and State Examination Commission, as well as for representatives of municipalities.

The strategy for development of adult education in the context of lifelong learning, required to be developed by the 2008 Law on Adult Education, does not exist at 2018. The Concept for non-formal adult education and informal education and the Implementation Guidelines (2015–2020) do not include environmental education or ESD.

The draft strategy for education 2018–2025 and action plan mention Sustainable Development Goals among challenges that need to be met in the education system as a commitment by the country. However, the draft does not include any provision or activity on environmental education or ESD.

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis targets 4.7 and 12.8 of the 2030 Agenda for Sustainable Development is described in box 5.9.

Box 5.9 ESD – achieving targets 4.7 and 12.8 of the 2030 Agenda for Sustainable Development

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

To date, a few themes related to the environment and social dimensions of sustainable development are included mostly in civic education or are provided as elective courses. In pre-school, primary and secondary education, environmental protection topics are integrated into Science, Natural Science, Biology, Geography, Chemistry and Physics as part of the curricula for these subjects. Eco-schools endeavour to integrate environmental protection across all subjects. Environmental protection and sustainable development themes are included to some degree in programmes and offered as elective course in universities that prepare teachers for pre-school, primary and secondary education. Efforts are made to include environmental

themes in student assessment in primary schools. The driving force for promoting environmental education and ESD is civil society organizations based on project and grant activities.

There are no legal requirements for, or a strategic document on, ESD to guide the integration of all dimensions of sustainable development into the formal education programmes at all levels of education for a coherent implementation of ESD. The institutional framework for implementing ESD is not established with clear roles and responsibilities. ESD is not part of teacher education, teacher competences or in-service training of teachers. ESD is not included in student assessment.

To achieve progress in ESD by 2030, the Government should:

(a) Expedite the integration of ESD into all national education policies in a coherent manner to ensure continuity and consistency in learning through all education levels;
(b) Define the institutional framework for ESD with clear roles and responsibilities;
(c) Include ESD in formal curricula at all levels, not only in civic education and elective courses;
(d) Revise the future teachers' education programmes to include ESD as a mandatory course and integrate sustainable development issues across all courses;
(e) Include ESD in the in-service training of teachers;
(f) Revise student assessment to ensure the evaluation of knowledge and skills for sustainable development;
(g) Enable the implementation process and make it sustainable and effective by providing adequate financial support from public funds to support the broad implementation of ESD, including to help all schools become eco-schools;
(h) Based on the good practice thus far, involve CSOs for promoting and advancing ESD on the ground.

Goal 12. Ensure sustainable consumption and production patterns

Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

The achievement of target 12.8 is closely linked to the achievement of target 4.7. The Law on Free Access to Public Information serves as a good legal basis to enable access to information, if it is implemented effectively by all stakeholders. The Ministry of Environment and Physical Planning is a key institution in making available and ensuring open and user-friendly access to environmental information. The State Statistical Office is key partner in providing information related to sustainable development. The Office has published annually, since 2011, statistics related to sustainable development.

User-friendly and comprehensive information related to sustainable development is largely absent in the country. Moreover, the lack of awareness in civil society about the availability of environmental information and procedures to access it is a bottleneck hindering efficient access to information. Although there have been efforts by governmental institutions to improve communication on environmental matters with the public, still in many cases information regarding the environment is given in a manner that is too technical for the public and linkages to human health and safety are not explicitly shown, thus limiting the comprehension of information.

The Government should:

(a) Ensure open, free and user-friendly access to environmental and other information related to sustainable development;
(b) Enhance the knowledge and develop the capacity of public servants responsible for the provision of environmental and sustainable development-related information;
(c) Develop and provide information on the environment and sustainable development in formats to be understood by public, including by making explicit links to the impact on human health, and on the well-being of animals, crops and vegetation and offering examples of possible action by civil society to help mitigate related concerns;
(d) Increase outreach and awareness-raising activities to provide information related to the environment and sustainable development, including by conducting surveys of the public, similar to the ones being done on climate change, to measure the level of public awareness and adapt the promotional measures accordingly.

Institutional framework

Ministry of Education and Science

The Ministry of Education and Science adopts plans and programmes for schools and manages and partially finances the education system through transfers to municipalities. Environmental education and ESD are not explicitly mentioned in the mission and vision of the Ministry. There is no dedicated staff dealing with environmental education and ESD. Nevertheless, since 2009, the Ministry has hosted a project unit for the implementation of the Programme on integration of environmental education in the educational system. The employment of staff on the Ministry budget for implementation of this Programme did not materialise despite it being envisaged.

The Bureau for Development of Education operates under the Ministry as a key institution for the development of standards, curricula and syllabus for the pre-school, primary and secondary schools, vocational education, specialised education and adult education. It promotes environmental education (ecological behaviour and knowledge) through the civic education for primary and secondary education.

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning carries out non-formal and informal education activities promoting environmental protection and sustainable development. The Ministry's Unit for Communication, Public Relations and Education organizes several times per year environment awareness-raising initiatives.

Other institutions

The Ministry of Labour and Social Policy oversees pre-school education. It is engaged in the development and organization of VET. The Ministry is also engaged in adult education by identifying the needs for training and retraining of adults, preparing new vocational qualifications and occupational standards and contributing to professional orientation events. No dedicated staff is dealing specifically with environmental education or ESD.

The State Education Inspectorate has a role in monitoring and assessing the implementation of the annual education programme in schools. Education inspectors monitor progress according to education indicators, including related to environmental education.

The Vocational Education and Training Centre and the Adult Education Centre do not include specific activities to integrate environmental education or ESD.

The National Examination Centre is involved in the national evaluation of students' achievements in the primary and secondary education. The Centre is engaged in the evaluation of school principals, in line with the Programme for training and examination of principals of primary and secondary schools, that includes a module on integrating environmental protection in the education process. Since 2006 the Centre is evaluating the fourth-grade pupils' knowledge and abilities in Nature and Society subject.

The Lifelong Learning Centre is an association that serves as a platform for non-formal adult education and lifelong learning, involved in preparing the methodology and establishing a system of validation of non-formal and informal learning. The Centre's work does not include environmental education or ESD.

The Macedonian Civic Education Centre is a CSO active in the development of educational programmes. Activities are done through projects, including an international project on "Education for Sustainable Development Partnership Initiative" carried out in 2010–2012 with EU funding.

Municipalities' engagement in education

Following the decentralisation of the education system in 2005, municipalities established education units within their administrations and appointed education inspectors to supervise the delivery of education (box 5.9). Municipal authorities have a role in "greening" the education institutions, for instance through supporting water and energy efficiency activities, paper, plastic and e-waste recycling and greening the school courtyard area. Municipalities participate in activities within the Programme on integrating environmental education in the education system, including over 50 municipalities promote eco-schools in local media and websites, 30 municipalities support financially eco-projects in schools and help eco-schools pay the annual membership fee, and engage in events organizes by eco-schools.

Box 5.10: Tetovo municipality approach to environmental education

Tetovo Municipality has a unit for education in charge of 18 education institutions (12 primary schools and 6 secondary institutions, including 4 vocational education and training institutions), and a unit for social, medical and child protection in charge of 9 pre-school institutions.

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The Municipal Council decision-making on issues related to education is supported by the Commission for Public Affairs, which is composed of five members, including four from the Council and one primary school teacher. Environmental education is a component part of the annual education programme prepared by each education institution in the municipality. Following the approval by the school boards, the annual education programmes and implementation reports are approved by the Council. Four municipal and ten state education inspectors monitor the implementation of educational programmes in the municipality. In monitoring the environmental education component, the local education inspectors cooperate with the local environment inspectors.

Schools

Schools' responsibilities include adopting the school statute, developing annual programmes and preparing reports on school performance for the municipal council consideration and approval. Schools play an important role in embracing environmental education and ESD, by including environmental protection and sustainable development activities in their annual programme, putting them into practice and reporting on their implementation. The school boards oversee the integration of environmental education in annual programmes and are involved in implementation.

Eco-schools serve as a good model for implementing a whole-school approach in educational institutions in the country.

University "Ss. Cyril and Methodius" Skopje

The Faculty of Pedagogy "St. Kliment Ohridski" Skopje is the main institution that prepares educators for pre-school and teachers for lower primary education (up to fifth grade). The Faculty follows the developments in relevant legal and policy frameworks and in curricula and cooperates closely with relevant governmental authorities.

The Faculty of Natural Sciences and Mathematics prepares teachers of subjects related to environment for lower and upper secondary education.

The Institute of Pedagogy belongs to the Faculty of Philosophy and prepares pedagogues as well as organizes pedagogical and methodological training for teachers of vocational secondary education institutions who graduated from non-teaching faculties, as well as trains principals for primary and secondary schools. Specific courses on environmental education or ESD are not offered.

CSOs

In practice, CSOs are the driving force for environmental education, which is implemented mainly through project-based activities (Box 5.11).

Box 5.11: Civil society organizations – the drivers of environmental education

OXO promotes the inclusion of environmental education into the education system since 1998, including by producing and disseminating various materials on environment for kindergartens, schools and teachers. OXO helps establish eco-sections in schools and promotes eco-schools concept, in its capacity as the national operator for the network of eco-schools. OXO work on environmental education included organizing trainings for teachers and other staff involved in education activities.

OXO expanded its work in 2014 by developing for children a TV show "Five Plus" in Albanian and Macedonian languages focussed on raising awareness and behavioural change on environmental protection. These activities were carried out in cooperation with the Ministry of Education and Science, the Bureau for Development of Education and the Municipal Departments of Education, with support by donor funds, mostly by the Swiss Agency for Development and Cooperation.

Other civil society organizations, such as Go Green, the Centre for environmental research and information Eko-svest, Zero Waste and Macedonian Civic Education Centre, are supporting environmental education in schools by promoting and helping them to establish processes for paper, plastic and e-waste recycling, carry out activities for water and energy efficiency, greening the schools' premises and conducting civic education activities.

5.8 Participation in international agreements and processes for education for sustainable

development

The country does not participate in activities under the United Nations Decade of ESD (2005–2014) nor in the Global Action Programme on ESD, implemented under the leadership of UNESCO.

The former Yugoslav Republic of Macedonia adopted the 2005 ECE Strategy for ESD and at the beginning participated in activities on implementing the Strategy. However, the country did not submit any of the three national implementation reports in 2007, 2010 and 2015, as well as the report due in October 2018 within the framework of the fourth cycle of the mandatory national implementation reporting. Since 2011 the country does not participate in the work under the Strategy.

The Ministry of Environment and Physical Planning cooperates with UNICEF on preparing an analysis on climate landscape for children that includes environmental education among priority areas. Based on the analysis, policy briefs will be developed to support the decision and policy making in the country.

5.9 Assessment, conclusions and recommendations

Assessment of environmental democracy

Environmental democracy is under development with uneven progress in the implementation of its three pillars. The legislative framework is in place and efforts are concentrated on putting it into practice. A list of environmental information holders is published on the website of the Ministry of Environment and Physical Planning, though the list has not been updated since 2007. The website of the Ministry contains most of the environmental information accessible to the public; however, some information is outdated or not easy to find. Additional efforts are required to ensure on-line access to all environmental information based on a single-window integrated information system. Adequate expertise and financial resources are lacking to ensure effective implementation.

Public participation in decision-making is progressing well in some areas, while in some other areas the right and the effective procedures for public participation need to be established or revised to align them with the Aarhus Convention. Public participation in decision-making in environmental matters is limited by the established procedures for most of the activities not covered by EIA, SEA and IEP. However, in all cases, the public concerned has the right to challenge a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance. Public participation in developing legal and policy documents is enabled by allowing the public to make comments on the draft documents posted on the website and during public hearings organized to discuss the draft documents. Challenges exist with effective public participation in public hearings. Specific procedures for public participation in decision-making processes regarding GMOs, chemicals and waste are not established.

Access to justice in environmental matters has been promoted since 2012, mostly as a project-based activity to develop the capacity of the judiciary and CSOs. The public can submit cases related to environmental matters to the Ombudsman before deciding on whether to file a court case. There is no difference between individuals and CSOs in accessing the justice system, with the exception that costs can be waived for disadvantaged individuals. Court expenses are no different for environmental cases and there is no exemption from court expenses for CSOs. The public has the right to challenge in court decisions on specific activities relating to the environment by submitting an administrative lawsuit against an administrative act (within 30 days) and can appeal the decision of a court of first instance to a court of appeal (within 15 days), which might be too short a period for complex cases requiring extensive coordination among CSOs. The main bottleneck in promoting effective access to justice in environmental matters is the lack of capacity and expertise in governmental authorities, and on implementing access to justice in environmental matters in courts and other judicial institutions.

Assessment of education for sustainable development

Progress has been made in promoting environmental education and engaging relevant national and municipal institutions and schools. Environmental education is driven by CSOs. Since 2009, environmental education is promoted in the education system mainly based on the Programme on integrating environmental education into

the education system, the implementation of which is coordinated by an independent project unit located on the premises of the Ministry of Education and Science.

ESD is not embraced by the country, although some themes of the environmental and social dimensions of sustainable development are included in the civic education and offered as elective courses. The expansion of eco-schools shows a good example for promoting environmental education in the country. However, ESD is still at the inception stage of development in the country and concerted efforts to develop and implement ESD in formal education at all levels, as well as in non-formal and informal education, are lacking.

Conclusions and recommendations on environmental democracy

Access to information

Public access to information related to environmental media is hindered by the lack of an open, updated and user-friendly environmental portal, which is also a challenge to the achievement of the environmental dimension of the global target 16.10 of the Sustainable Development Goal 16. The lack of awareness in civil society about the availability of environmental information and procedures to access it, is another challenge.

Access to environmental information on the websites of public institutions, other than the Ministry of Environment and Physical Planning, is largely missing. A minimal approach to comply with the Law on Free Access to Public Information is implemented by providing only the list of information without on-line access to actual documents. For passive access to information, the allowed extension of an additional 30 days for complex information requests often makes useless the information finally provided, because it was needed for events taking place during the first 30 days. Often information related to public hearings is published at short notice. EIA reports are not easy to understand for the public. The required procedures for getting access to various information types are in place but the quality of the information provided and the efficiency of these procedures are often questionable.

Consolidated versions of laws and secondary legislation are not available to the public for free. This refers not only to environmental legislation. To increase the accessibility of environmental legislation, the Ministry of Environment and Physical Planning publishes such legislation on its website, but the scope of legislative acts published is limited to core environmental topics and the texts displayed are not the latest versions and do not include consolidated versions of the laws that merge in all amendments.

Recommendation 5.1:
The Ministry of Environment and Physical Planning should:

(a) Improve its website to ensure the provision of continuously open and user-friendly free access to environmental information, and enhance the use of social media;
(b) Ensure that the future national integrated environmental information system is fully accessible through its website;
(c) Ensure free online access to a wider spectrum of updated environmental legislation;
(d) Support other relevant institutions to make available environmental information in their possession on open access on their websites;
(e) Conduct awareness-raising activities to enhance the civil society capacity to access environmental information and monitor progress in raising the level of public awareness of environmental issues.

See also Recommendation 4.5.

Public participation

The main challenges in ensuring effective public participation in decision-making on specific activities in line with the provisions of the Aarhus Convention are, firstly, the lack of adequate financial resources and, secondly, the lack of appropriate expertise and insufficient human capacities. Effective public participation procedures are largely not developed. There is no public participation envisaged in the decision-making on chemicals. The lack of effective public participation procedures is a barrier to the delivery on the environmental dimension of the global target 16.7 of the Sustainable Development Goal 16.

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Recommendation 5.2:
The Ministry of Environment and Physical Planning should:

(a) Ensure effective public participation procedures;
(b) Develop capacity and expertise to ensure effective public participation, including by conducting training for public officials responsible for public participation procedures;
(c) Enable public participation in decision-making on chemicals, for instance by initiating dialogue with the involvement of authorities and relevant stakeholders, including producers, researchers, civil society organizations and health and environmental specialists.

Public participation in decision-making on GMOs

The former Yugoslav Republic of Macedonia has not ratified the 2005 Almaty amendment on GMOs to the Aarhus Convention. The Law on GMOs provides for public participation in decision-making, but by-laws setting detailed procedures for engaging the public are lacking. To date, the Ministry of Environment and Physical Planning has not received an application for a GMO-related licence.

The Law on Food Safety does not include provisions for public participation in decision-making on food products containing or consisting of GMOs.

Recommendation 5.3:
The Government should:

(a) Establish detailed procedures to ensure effective public participation in decision-making on the deliberate release of genetically modified organisms (GMOs) into the environment and placing them on the market;
(c) Amend the 2010 Law on Food Safety to include provision for public participation in decision-making on food and food products containing or consisting of GMOs, and establish detailed procedures to ensure effective public participation, in anticipation of accession to the European Union.

Access to justice

The lack of knowledge, capacity and expertise in the governmental authorities, judiciary and independent review bodies in promoting and implementing effective access to justice in environmental matters is the main bottleneck in access to justice in environmental matters. That bottleneck as well as the lack of specific law, by-law or guiding document on procedures for processing environmental cases in courts is also an impediment to effective delivery on the target 16.3 of the Goal 16.

No guidance document on the application of environmental legislation exists.

Recommendation 5.4:
The Ministry of Justice should:

(a) Ensure, in cooperation with the Academy for Judges and Public Prosecutors and the Ministry of Environment and Physical Planning, regular training on environmental legislation for judges, prosecutors and lawyers;
(b) Promote, in cooperation with the Ministry of Education and Science, Ministry of Environment and Physical Planning and respective universities, the inclusion of a course on environmental law, as either a mandatory or elective course, at major faculties of law;
(c) Raise awareness, train public officials and develop other preventive measures, in cooperation with the Ministry of Environment and Physical Planning and Ministry of Internal Affairs, to protect environmental defenders from being penalized, persecuted or harassed in any way in exercising their rights.

Recommendation 5.5:
The Ministry of Justice, in cooperation with the relevant judicial branch, should develop a guiding document for the courts on the application of environmental law.

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Enabling the promotion of environmental democracy

A considerable challenge in implementing effective public access to environmental information, public participation and access to justice in environmental matters is the lack of dedicated centres across the country to actively promote environmental democracy to the public at large and contribute to the development of the capacity of environmental CSOs.

Challenges identified for effective implementation of access to information, public participation and access to justice in relation to environmental matters by the Ministry of Environment and Physical Planning include the lack of human and financial resources and the lack of expertise. However, the resource needs are not estimated.

Recommendation 5.6:
The Government should consider establishing mechanisms to actively promote access to information, public participation and access to justice in relation to environmental matters.

Recommendation 5.7:
The Ministry of Environment and Physical Planning should undertake a comprehensive analysis to estimate the necessary expenditures (human and financial resources) for the satisfactory implementation on the ground of access to information, public participation and access to justice in relation to environmental matters.

Conclusions and recommendations on education for sustainable development

From environmental education to education for sustainable development

The framework for environmental education is provided by the Programme on integrating environmental education into the education system, which is not formally adopted and implemented by the Government. ESD is broader than environmental education and no legal document includes ESD. The 2005 Law on Environment has a requirement to integrate environmental protection into the curricula of primary or secondary education either as an optional or compulsory subject, which is not sufficient for the adequate implementation of ESD.

Furthermore, no formal strategic or policy document on ESD is available in the country at November 2018. A detailed assessment of VET programmes, with a view to integrating ESD into them, was made in 2016 in the framework of the project Introducing the United Nations Sustainable Development Goals in Schools in South Eastern Europe (SEEDLING). The Ministry of Education and Science's role to integrate environmental education and ESD into curricula and oversee implementation is not clearly defined.

The lack of a legal framework or a formal strategic or policy document on ESD is a barrier towards achieving of the global targets 4.7 and 12.8.

Recommendation 5.8:
The Ministry of Education and Science, in cooperation with the Ministry of Environment and Physical Planning, Ministry of Labour and Social Policy, municipalities and other relevant institutions, should:

(a) Develop an action plan for Education for Sustainable Development (ESD);
(b) Develop competences for educators in ESD;
(c) Integrate ESD into the curricula of all education levels and in lifelong learning, teacher education and in-service training;
(d) Integrate ESD into student assessments at all education levels.

Enabling the implementation of education for sustainable development

Environmental education and ESD are promoted mostly within project-based activities; the process is not continuous and sustainable. Progress has been made in environmental education, mostly in primary and secondary schools and mostly through eco-school programme. Eco-schools serve as a good example of integrating environmental education and show the interest and involvement of teachers, students and parents in environmental activities.

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In-service training for teachers does not include ESD. State supported in-service training for teachers does not exist.

In the review period, the country has not benefitted from the tools and materials developed in the framework of the ECE Strategy for ESD, such as indicators to measure the implementation of ESD, the ESD competences for educators, the tools for policy and practice workshops on competences in ESD and examples of good practices in ESD, including in support of greening the economy.

The lack of teacher in-service training on ESD is a barrier towards achieving the global target 4.7 within the Sustainable Development Goal 4.

Recommendation 5.9:
The Government should:

(a) Assign a clear mandate on ESD to the Ministry of Education and Science;
(b) Establish a coordination mechanism on ESD among all relevant stakeholders;
(c) Nominate a national focal point and participate in ECE regional activities on ESD;
(d) Amend the mandate of the Academy for Teachers to include ESD in its activities and establish the Academy so that it can support the in-service training of educators and teachers;
(e) Allocate resources for the implementation of ESD, including to support eco-schools.

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PART II: DOMESTIC–INTERNATIONAL INTERFACE

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Chapter 6

IMPLEMENTATION OF INTERNATIONAL AGREEMENTS AND COMMITMENTS

6.1 General priorities for international cooperation

The status of the country as a candidate for accession to European Union (EU) since 2005, has influenced the country's progress in terms of participation in and implementation of international agreements and commitments. As of 2018, the country has ratified nearly all relevant global and regional environmental agreements. However, some challenges remain in terms of effective implementation and compliance with the obligations under multilateral environmental agreements (MEAs) in the country, especially recently ratified agreements.

6.2 Global, regional and sub-regional agreements

Participation and reporting

The country is usually represented at the most relevant meetings of MEA decision-making bodies by one representative, although it was never represented at the meetings to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The country has made efforts to comply with its international reporting obligations; however, the absence of adequate monitoring data on species and habitats (mostly due to the lack of adequate national financing for these activities) had some impact on timely reporting in these fields. This has affected the quality of the national reports on the nature conservation and biodiversity domains.

CSOs are rarely involved in the preparation of national reports on the implementation of MEAs. Furthermore, CSOs are not involved in the decision-making processes regarding the country's participation in MEAs, neither do they participate in the development of the country's position for international meetings or preparation of the national reports (except the national implementation report of the Aarhus Convention, the draft of which is posted on the Ministry website for comments by the public).

The list of ratified MEAs is available to the public on the Ministry of Environment and Physical Planning website. However, there is a general absence of information provided by the Ministry of Environment and Physical Planning to the public on the status of implementation of MEAs, including the national reports submitted.

MEAs bring with them a variety of obligations in the fields of environmental legislation, enforcement, monitoring and reporting, with some requiring highly specialised expertise and effective inter-sectoral cooperation. Since each MEA also has its own national reporting mechanisms and its own institutional arrangements based on meetings or conferences of the parties, the cumulative technical and administrative burden is considerable. The country faces special challenges in responding to these competing demands.

Synergies between various MEAs implementation

For the implementation of multilateral agreements in the area of nature protection, national focal points have been appointed in the Ministry of Environment and Physical Planning, mainly in the Department for Nature and the Unit for International Cooperation, and national committees have been established for certain conventions.

The country has made some progress in establishing synergies between Basel, Rotterdam and Stockholm (BRS) conventions. A project "Strengthening the national capacities for the coordinated implementation of the Basel, Rotterdam and Stockholm Conventions in the former Yugoslav Republic of Macedonia" presented at the regional meeting on the Strategic Approach to International Chemicals Management (SAICM) in Skopje, September 2013 aimed at assisting the Government to strengthen its capacities to effectively implement the BRS conventions in a

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coordinated and integrated manner. The activities under this project included: (i) Analysis and assessment of the status of implementation of the BRS conventions; and (ii) Development of a national strategic action plan for the coordinated implementation of the three conventions (roadmap). In 2017, the country reported that national coordination mechanisms were in use for the preparatory phase of the 2017 triple COPs of the BRS conventions, and coordination mechanisms existed at intra-ministerial level during the preparatory phases of the triple COP in 2017.

However, the coordination structure between relevant state institutions charged with the implementation of the obligations in respect of biodiversity deriving from global and regional environmental agreements is lacking. Issues exist concerning harmonization of the obligations under the high number of ratified multilateral agreements and the absence of the necessary harmonization of activities with other sectors that have or may have impact on biological diversity.

The lack of coherence and harmonization of biodiversity conservation and land use planning activities among different stakeholders and different institutions is identified as one of the root causes for inefficient biodiversity conservation in the country. Communication, cooperation, and coordination between the institutions dealing with biodiversity conservation, forestry sector and land use planning remain challenging. In general, there is a lack of joint activities to share experience on synergies at the national, regional and international level.

Conservation and sustainable use of biodiversity and nature

Convention on Wetlands of International Importance especially as Waterfowl Habitat

The country has been a party to the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) since 1995. Two sites are included in the Ramsar List: Lake Prespa (1995) and Lake Dojran (2008). The responsible authority for coordination of activities regarding these sites is the Ministry of Environment and Physical Planning and Macedonian Ramsar Committee. The Ministry and the Committee have prepared two national reports for the 12th and 13th Meetings of the Conference of the Contracting Parties to the Ramsar Convention on Wetlands (COP12 and COP13). Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies.

Lake Dojran is a Monument of Nature, Balkan Green Belt (EECONET) and CORINE site. The lake hosts several endemic species and subspecies of fish as well as 11 endemic invertebrates and many protected bird species. A decreasing water level from over-abstraction is perceived as a potential threat.

Lake Prespa is a Strictly Protected Nature Reserve, Ornithological Reserve. The main conservation challenges in relation to water management in Prespa over the last 30 years have mostly related to the degradation of water quality, especially the alarming signs of eutrophication, and the significant decrease in the water level of Great Prespa Lake, which is an issue that has yet to be fully explained. To address water quality degradation and the reduction in water quantity in the Prespa basin a wide spectrum of activities, have been implemented in both transboundary and national level.

Not all the catchment is under protection status in the country. This is somewhat compensated by the fact that the country is the only side of the Wider Prespa Area (WPA) in which local spatial planning regulations are in place.

Several international and regional projects concerning wetlands protection in the region have been implemented. Trilateral project for protection and sustainable use of lakes Ohrid, Prespa and Skadar, which are part of Drin River Basin, has been carried out in the period 2012–2014 and it has strengthened cooperation between the Ministry of Environment and Physical Planning, the then Ministry of Environment of Albania and Ministry of Sustainable Development and Tourism of Montenegro for the purpose of taking common activities for biological diversity monitoring and conservation in Drin River Basin. The project was supported by the German Ministry of Foreign Affairs and implemented by GIZ. Project activities have been aimed at fauna and flora monitoring in accordance with the Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive), sustainable fishing through definition of quotas, protection and revitalization of aquatic/swampy habitats, definition of the obligations based on the Directive 2000/60/EC on establishing a framework for the Community action on water policy.

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Some results have been achieved through partial implementation of activities undertaken by the management body and rangers on Lake Prespa and Ezerani Nature Reserve. Other projects include:

- "Transboundary Biosphere Reserve Prespa - Support to National Park Prespa of Albania", funded by KfW (2010–2015);
- "Restoration of the Lake Prespa Ecosystem" (RPE), funded by the Swiss Development Cooperation (2012–2018); and
- Support of the Society for the Protection of Prespa, funded mainly by WWF International and the MAVA Foundation (1991–2016).

Each of the efforts presented is currently at a different stage of deployment. Some may already be mature and long-lasting, or concluded, whilst others may yet be in their infancy. So, it is not possible to evaluate their success with the same standards and criteria across all efforts.

The regional project in the Drin River Basin "Conservation and Sustainable Use of Biodiversity at lakes Prespa, Ohrid and Shkodra/Skadar Project" is supported and coordinated by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and implemented in cooperation with the competent ministries in the beneficiary Drin Riparians. The project aims to improve the implementation of legislation, regulations and management plans for the conservation and sustainable use of biodiversity at lakes Prespa, Ohrid and Skadar/Shkoder.

Cross-border cooperation for nature protection between the former Yugoslav Republic of Macedonia, Albania and Greece has been promoted within establishment of Nature Fund Prespa-Ohrid (PONT) (chapter 11).

At the moment they are initiative to nomination Lake Ohrid as a Ramsar site

The main obstacles in implementation of this convention are the lack of capacity and financial resources at the national and regional levels.

Convention on International Trade in Endangered Species of Wild Fauna and Flora

The country is a Party to CITES since 2000. As of 2018, the country was not represented at any meetings for the Convention. In the period from 2006 to 2014, the Law on Nature Protection was supplemented by provisions providing for adoption of bylaws to implement provision transposed from multilateral conventions for biodiversity protection, including CITES.

The Government has adopted several regulations, such as lists of threatened and protected wild species, decree on the manner and procedure of issuance of permits or certificated, decree on manner and procedure applied by customs authorities and other competent bodies, and decision on distribution of goods to import-export forms. Rulebooks were adopted by the Minister of Environment and Physical Planning on the format and the content of the form of application, permit and certificate for trade in threatened and protected wild species of plants and animals and their parts, as well as documentation enclosed with the application.

The Ministry of Environment and Physical Planning is the competent authority for issuance of CITES permits. In the period from 2000 to 2017, the Ministry of Environment and Physical Planning has issued a total of 624 CITES import and export permits and re-export certificates for threatened species of wild fauna and flora. No seizures, confiscations or forfeitures of CITES specimens have been reported; neither have there been any criminal prosecutions of significant CITES-related violations reported. Records of issued CITES permit/certificates are kept by the Administration of Environment of the Ministry of Environment and Physical Planning.

Veterinary certificate is issued by the Agency for Food and Veterinary Medicine and concerns health status of animals, protection against infectious diseases that may be communicated to people and veterinary and sanitary examination.

The competent authority for CITES enforcement is Customs Administration. Customs officers are obliged to establish whether the trade in threatened and protected species is conducted in compliance with the issued import

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or export permit or re-export certificate. One of the main gaps with the CITES enforcement issues include lack of training of officers of customs administration to recognize the endangered species.

There are instances of illegal hunting still taking place, especially on the border with Albania. Poaching remains a problem as there have been a few indications of Balkan lynx (Appendix II of CITES) being killed. Overall, little progress has been achieved and implementation of this convention is still at its initial stages.

Convention on the Conservation of European Wildlife and Natural Habitats

The country ratified the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) in 1998. For the period from 2013 to 2014, the country reported an exception concerning strictly protected fauna species, referring to five specimens: northern goshawk (*Accipiter gentilis*), lesser white fronted goose (*Anser erythropus*), great snipe (*Gallinago media*), *wolf* (*Canis lupus*), and wildcat (*Felis silvestris*).

Reporting has been regular. The National focal point, Cabinet of the Deputy Prime Minister in charge of Economic Affairs, and National Scientific focal point participated in the work of the Group of Experts for conservation of natural flora and fauna species and their habitats supported by the Council of Europe and the Bern Convention Secretariat.

The establishment of the Natura 2000 is at the initial stage. In the period from 2002 to 2008, the National Emerald network was designated including 35 Areas of Special Conservation Interest (ASCI) (chapter 11).

A plan for the implementation of Birds and Habitats directives was adopted. Eight potential sites of Community Importance (SCIs) under the Habitats Directive and three potential Special Protection Areas (SPAs) under the Birds Directive have been identified and a plan for future field research work was developed.

According to recommendation No. 184 (2015) of the Standing Committee to the Bern Convention, adopted on 4 December 2015, on the planned hydropower plants on the territory of the Mavrovo National Park ("the former Yugoslav Republic of Macedonia"). In response to a case filed in 2013 to the Standard Standing Committee of the Bern Convention by the Macedonian Society Eco-Svest in respect of the planned construction of two large hydropower plants in the Mavrovo National Park Mavrovo (Boshkov Most and Lukovo Pole), on 4th December 2015, the Standing Committee made the following recommendations:

"*1. Suspend the implementation of all government projects, in particular the hydropower plants foreseen and related infrastructure, within the territory of the Mavrovo National Park, until a Strategic Environmental Assessment will be completed taking into account the following point of the Recommendation, putting specific emphasis on cumulative effects of all planned development activities on the territory of the Park, also taking into account social aspect; the assessment needs to consider the regional long-term effects, on the water regimes of the Drin and Vardar rivers;*
2. In the frame of the assessment above, address the specific conservation needs of those species of fauna and flora for the conservation of which the Mavrovo National Park bears special responsibility, including the species and habitats for which this site was nominated as candidate Emerald site; take into account the results of the analysis recommended under the point above when adopting the Management plan for the area; and
3. Keep the Standing Committee regularly informed about the progress in the implementation of this Recommendation."

It also invited international financial institutions to consider the results of the strategic environmental assessment when deciding on the financing of the hydropower projects in the Park.

Convention on the Conservation of Migratory Species of Wild Animals

In 1999, the country became a party to the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies.

Conservation measures are implemented by the Management Authority responsible for the Ornithological Nature Reserve Ezerani on Lake Prespa. The Research, Education and Training Ornithological Centre is managed by

Macedonian Bonn Committee (MBC). The training programme for observation and monitoring of water birds at lakes Ohrid, Prespa and Dojran has been implemented. Ornithologists and rangers have organized monitoring of migratory birds in 2016–2017 in the Galičica National Park and Nature Reserve Ezerani and lakes Ohrid, Prespa and Dojran.

Since 2006, Macedonian Ecological Society (MES) in cooperation with the Swiss NGO Carnivore Ecology and Wildlife Management (KORA) and the German NGO EuroNatur initiated a programme for monitoring and conservation of Balkan lynx. In 2015, the IUCN published the Balkan lynx on its Red List of Threatened Species as Critically Endangered. The Balkan lynx only confirmed breeding grounds are in the Mavrovo National Park in the former Yugoslav Republic of Macedonia and the Munela Mountains in Albania. The programme is now implemented by several civil society organizations, scientists and volunteers from the region with support from EuroNatur, KORA and the Norway Norwegian Institute for Nature Research (NINA).

In 2014, the Conference of the Parties of CMS adopted the Strategic Plan for Migratory Species 2015–2023, adapting for migratory species the Strategic Plan for Biodiversity 2011–2020 of the CBD, including the Aichi Biodiversity Targets. The five goals and corresponding performance targets must now be integrated into relevant policies and planning instruments. The monitoring of wild endangered species involved in national and international trade is proposed in the National Biodiversity Strategy and Action Plan (NBSAP).

Agreement on the Conservation of Populations of European Bats

The country acceded to the Agreement on the Conservation of Populations of European Bats (EUROBATS) under CMS in 1999. The Department for Nature within the Ministry of Environment and Physical Planning and Macedonian Bonn Committee had prepared two national reports for EUROBATS Meeting of the Parities (MOP6 and MOP7). The national focal point (Ministry of Environment and Physical Planning) and the National Scientific focal point have participated in the last three EUROBATS MOPs, supported by UNEP/CMS and EUROBATS. The country regularly reports and participates in the MOPs under this agreement.

The last national report was prepared for the period from May 2010 to June 2014. In the reporting period, the Department of Biological Diversity and Nature, with cooperation and assistance of the MBC, Birds Study and Protection Society and Bat Study Group implemented measures and actions for the protection of bat population and their habitats in forests and caves. According to the national report of 2014, 26 species of bats are known to occur in the country. Two new species were recently added to the list (*Plecotus auritus* and *Pipistrellus pygmaeus*) by the Bat Study Group. Status and trends of species conservation are the same as in previous years. A detailed inventory and evaluations have not been done due to financial constraints.

A project for evaluation of biodiversity components and natural heritage in Gorge Canjon Matka and Treska River has been carried out to include several important areas for protection of bat population in the country in 2010. The list of fauna species has included bats species from Rhinolophidae: Rhinolophus blasii, Rhinolophus euryale, Rhinolophus ferrumequinum, Rhinolophus hipposideros, Rhinolophus mehelyi, and Vespertilionidae: Myotis blythi, Barbastella barbastellus, Miniopterus schreibersi, Myotis capaccinii, Myotis emarginatus and Myotis myotis.

In 2013, with the support of the Department for Environment, Food and Rural Affairs of United Kingdom and the Eurobat Secretariat, a project for Capacity-Building for Bat Species identification and Future Monitoring was realised by the BSGM at Prespa region. The Batlife Society has several people who are prepared to implement or join a monitoring programme or bat study on a local or national level. No national monitoring programme for bats in the country is in place although there are some attempts of local monitoring.

Agreement on the Conservation of African- Eurasian Migratory Waterbirds

In 2000, the country became a party to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) under CMS. The reporting is regular under this agreement, with the last national report for the implementation of the Agreement for the period from 2015 to 2017 submitted in 2018. The national report has indicated that the level of implementation of this agreement in the country is currently very low due to capacity and financial constraints.

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Convention on Biological Diversity

The country acceded to the Convention on Biological Diversity (CBD) in 1997. Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies.

The process of revision of the first NBSAP prepared in 2004 started in January 2013, in the frames of the Project "Support to the former Yugoslav Republic of Macedonia for revision of the National Biodiversity Strategy with Action Plan and development of the Fifth National Report to the Convention on Biological Diversity", financed by GEF and implemented by the Ministry of Environment and Physical Planning and UNEP Office in Vienna. For defining national targets, process of consultation with the relevant stakeholders was undertaken, through which the goals of the first NBSAP, the status and the trends of biological diversity in the country, identified threats to biological diversity, as well as the guidelines for implementation of the globally set Aichi targets (CBD/UNEP 2013) were reviewed. The revised NBSAP was adopted in early 2018 for the period 2018–2023. Out of the total of 217 actions defined to achieve the main goal and the objectives of the first NBSAP, only 64 actions (29 per cent) have been implemented, 57 (26 per cent) have been implemented partially, and 96 actions have not been implemented which is around 44 per cent of the total number of defined actions. Obstacles to NBSAP implementation that have been identified include, among others, insufficient financial resources, lack of capacities, education and public awareness, and insufficient mainstreaming of biodiversity into different sectors.

For implementation of programmes for work under the CBD, in the last few years, activities were focused mainly regarding protected areas, plants conservation, communication, education and public awareness, implementation of the Cartagena Protocol on Biosafety, as well as preparatory activities for Nagoya Protocol.

Certain progress has been achieved in the domain of research of biological diversity, the amount of knowledge has been augmented, legislation for its protection has been improved, considerable number of project and published results and scientific papers have been implemented, congresses/conferences have been organized, all indicating that there are solid scientific capacities and potentials to implement the CBD in the country. However, on the other side, biological diversity protection, both on national and local levels, faces series of challenges related mainly to the lack of financial, human and technical resources.

Nature protection is multi-sectoral issue that requires high coordination and collaboration between responsible ministry for environmental affairs and many different sectors such as forestry, agriculture, transport, energy, tourism. Insufficient inter sectoral coordination and cooperation among sectors, as well as overlapping responsibilities, weak communication, lack of capacities at national and local level, lack of financial resources have been identified as main obstacles for implementation of CBD at national level. Usually the benefits acquired from biodiversity and ecosystem services are overlooked and undervalued by decision makers that lead not only to loss of biological diversity loss but have affected adversely environmental human health. The preparation of the sixth National Report to the Convention on Biological Diversity is an early phase.

Cartagena Protocol on Biosafety

In 2005, the country ratified the Cartagena Protocol on Biosafety. The country is not yet Party to the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol. The Ministry of Environment and Physical Planning is the Cartagena Protocol Primary National Focal Point. As of 2018, five meetings of the National Coordinating Committee were held.

For implementing the Cartagena Protocol for Biosafety and regulating the issues related to genetically modified organisms (GMO), the Law on Genetically Modified Organisms was adopted in 2008 and bylaws were prepared during 2013, in order to finalize the regulatory regime for biosafety.

Activities for Cartagena Protocol on Biosafety implementation in the country started back in 2004. The country has been implementing two UNEP- GEF projects: (i) Development of biosafety framework; and (ii) Capacity building for effective participation in the Biosafety Clearing House. Workshops were held "Implementation of the national framework for biosafety in the former Yugoslav Republic of Macedonia" in March 2012, in Skopje. Training on the topic "Biosafety and the Rulebooks for the Implementation of the Law on GMOs" and "GMO - Assessment and risk management" were conducted in April 2014. Within the UNEP-GEF project "Capacity

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building for effective participation in the Biosafety Clearing House", several modules of trainings have been implemented, mainly about the awareness raising regarding the Protocol and biosafety.

Main challenge to implementing the Convention is the lack of mechanism for reviewing the risk assessment, including bodies to examine the risk assessment.

Nagoya Protocol

The country has not joined the Nagoya Protocol. In the course of 2013, in the frames of the project for revision of the NBSAP, initial activities were carried out, in the frames of which translation into Macedonian was made of the Nagoya Protocol on the Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization and Bonn Guidelines on Access to Genetic Resources and Sharing of the Benefits Arising out of their Utilization. Furthermore, brief analysis of the Protocol and Bonn Guidelines was made and presented on the second workshop of stakeholders concerning revision of the NBSAP (held in October 2013, in Berovo). Financial support is expected under GEF sixth programme for development of assessment of the national capacity for participation in the Nagoya Protocol.

Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa

The country became a party to the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) by accession in 2002. Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies. However, due to logistical issues the country's delegation did not attended the meeting in 2017. The Ministry of Environment and Physical Planning has been designated as the competent authority for the implementation of the convention in close cooperation with the Ministry of Agriculture, Forestry and Water Economy and related institutions. Only one person within the Ministry of Environment and Physical Planning is tasked with implementation of the convention, whilst the previously established separate Unit for Soil Protection was merged with Environmental Impact Assessment unit of the Ministry.

The country has neither an integrated strategy nor a partial analysis for the various processes of desertification and drought. The 2005 Law on Environment requires the preparation of the National Action Plan and the National Action Programme on combating desertification and mitigation of drought effects. The process started in 2005 but has not been finalized due to a lack of funds and the existence and/or availability of relevant data and information.

The National Committee on Combating Land Degradation and Desertification and Mitigation of the Effects of Drought has been established but has never met.

Protection of the World Cultural and Natural Heritage

The Convention concerning the Protection of the World Cultural and Natural Heritage was ratified by the country in 1997. In 1979, the Ohrid region was added to the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List. The property "Natural and Cultural Heritage of the Ohrid region" was initially inscribed on the World Heritage List for its outstanding natural values and was extended a year later to reflect the region's extensive cultural attributes. The Ministry of Culture is designated as the competent authority, while Ministry of Environment and Physical Planning is responsible for the segment on natural heritage. In 2010, the Law on the Management of the World Natural and Cultural Heritage in the Ohrid region, No. 75/10 was adopted, and the Management Plan for the Natural and Cultural Heritage of Ohrid region with an action plan was prepared and submitted to the UNESCO World Heritage Committee. In 2014, the Galičica National Park was designated as part of UNESCO's World Network of Biosphere Reserves.

The World Heritage Property site benefits from several transboundary agreements, strategic plans, bodies, and designations. The EU-funded project "Towards strengthened governance of the shared natural and cultural heritage of the Lake Ohrid region", supports the implementation of concrete actions by the two countries for the protection of the Lake Ohrid region, implemented as phase two of the pilot upstream project initiated in 2012, with the support of the Ministry of Environment of the Republic of Albania.

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Implementation of the Convention is constrained by institutional arrangements for the management of natural and cultural heritage. Except for the Galičica National Park, the protected areas of Lake Ohrid are understaffed with very limited capacity, financial support and equipment to properly manage the area. The existing transboundary management structure such as the Lake Ohrid Watershed Committee are limited to monitoring (species and eco management) and promotion, thus not sufficiently addressing numerous issues pertaining to the shared transboundary management of the Lake. In addition, institutional structures are missing to support cross-border cooperation for the protection of the cultural values.

As of 2018, the country recorded three heritage sites on its tentative list, all added in the years 2004 and 2009: Markovi Kuli (natural category), Slatinski Izvor (natural category) and Archaeo-astronomical Site Kokino (cultural category).

At its 38th Session in Doha in 2014, the World Heritage Committee expressed concerns with several major infrastructure projects planned within the Galičica National Park, including the Ohrid-Peshtani road. In 2016, CEE Bankwatch Network also raised concerns about the adequacy of the SEA procedure and insufficient public involvement.

As requested by the World Heritage Committee at its 40th session (Istanbul/UNESCO, 2016), a joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission was invited by the State Party to the Lake Ohrid and Galičica National Park and was carried out from 9 to 14 April 2017. The mission, in its 2017 report, expressed its concerns about the threats faced by the natural values of the World Heritage property relating primarily to Lake Ohrid and Galičica National Park, in particular: (i) extensive urban development, (ii) inappropriate exploitation of the coastal zones, (iii) current proposals for large infrastructure and construction projects, (iv) heavy pressures from tourism, and (v) dumpsites. Considering the level of threats to the property, the Reactive Monitoring mission identified a set of recommendations, some of which needed to be prioritized and fulfilled over the next two years, in addition to those adopted in 2016 that still need to be fulfilled.

The findings of the mission suggest that the overall state of conservation can be considered as vulnerable, and if the priority recommendations are not implemented within the suggested two-year timeframe (i.e. in 2019), the property may meet the criteria for inscription on the List of World Heritage in Danger. One of the Reactive Monitoring Mission Report Recommendation No. 6 was a requirement to put in place a moratorium on any coastal and urban transformation within the World Heritage property, at least until all relevant planning documents (Management Plan, OUV-based Urban/Coastal Master Plans etc.) have been prepared and adopted, effective protective juridical regulations have been approved, and effective control mechanisms are established. Later, in September 2018, a complaint was logged to the Standing Committee to the Bern Convention, at the 38th meeting in Strasbourg, 27–30 November 2018 from the Environment Citizens Association concerning to implementation of the Recommendation No. 6 of the Reactive Monitoring Mission Report. Although this Recommendation was part of the immediate measures (February 2018), according to complaint, Macedonian authorities still haven't introduced moratorium on the costal and urban transformations in the Ohrid Region and are continuing implementing activities that are contrary to the Reactive Mission Report recommendations.

Having examined Document WHC/17/41.COM/7B.Ad outlining findings of the mission report, the Decision 41 COM 7B.34 of the World Heritage Committee requested:

*"...*4. *The State Party to develop a Strategic Environmental Assessment (SEA) that comprehensively assess the cumulative impacts of all infrastructure and development plans and other major projects on the property's OUV based on the recommendations and advice provided by the 2017 mission, as well as any necessary Heritage Impact Assessments (HIA), and to submit them to the World Heritage Centre for review by the Advisory Bodies, before any further work is undertaken;*
5. *The State Party to halt the construction projects of the sub-sections (a) and (e) of the A3 road and the Galičica ski resort within the property, which may have negative impacts on its OUV;*
6. *The State Party to urgently undertake a comprehensive comparative study of alternative routes for the railway of the Pan European Corridor VIII, including those that do not pass in close vicinity of the lakeshore, and in particular avoiding one of the last well-preserved stretches of the lakeshore on the Albanian-Macedonian border;*
7. Further requests the State Party to fully implement all the recommendations of the 2017 mission…"

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The Ohrid-Prespa Transboundary Biosphere Reserve (TBR) has been added to the World Network of Biosphere, following its designation as site by the International Coordinating Council of the UNESCO Man and the Biosphere Programme (MAB), at its 26th session in Jönkoping (Sweden) and in the East Vättern Landscape biosphere reserve. With this new inscription, Albania and the former Yugoslav Republic of Macedonia joined the World Network of Biosphere Reserves. The MAB Programme contributes to global efforts for education and capacity building, particularly within the framework of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals as well as to the Lima Action Plan for UNESCO's MAB Programme and its World Network of Biosphere Reserves (2016–2025).

No additional measures have been taken by the country in the context of the implementation of the 2005 UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions.

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis target 11.4 of the 2030 Agenda for Sustainable Development is described in box 6.1.

Box 6.1: Target 11.4 of the 2030 Agenda for Sustainable Development

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage

The country has appropriate legal measures in place for the protection of cultural heritage, in particular the 2004 Law for Protection of Cultural Heritage. Most related policy priorities for target 11.4 are identified in the National Strategy for Culture Development 2018–2022. The institutional framework is represented by the Ministry of Culture.

The property "Natural and Cultural Heritage of the Ohrid region" was initially inscribed on the World Heritage List for its outstanding natural values and was extended a year later to reflect the region's extensive cultural attributes. The Ministry of Culture is designated as the competent authority, while Ministry of Environment and Physical Planning is responsible for the segment on natural heritage. In 2010, the Law on the Management of the World Natural and Cultural Heritage in the Ohrid region, No. 75/10 was adopted, and the Management Plan for the Natural and Cultural Heritage of Ohrid region with an action plan was prepared and submitted to the UNESCO World Heritage Committee.

However large infrastructure projects such as Galičica Ski Centre, the A3 road, the Railway corridor VIII and Highway A2 have been put forward with negative impacts on the Outstanding Universal Value (OUV) of the site which call for urgent measures on Strategic Impact Assessment (SEA), integrated protection and setting necessary control mechanisms. A joint World Heritage Centre/ International Council of Monuments and Sites/ International Union for Conservation of Nature Reactive Monitoring mission on the state of the conservation of the site and the scope and development of SEA took place in spring 2017. During 2017 a management committee has been set up, a draft plan for integrated protection of Old Town, detailed urban plans and technical documentation for a number of large-scale infrastructure works have been finalised but the SEA is still pending.

The Ministry of Environment and Physical Planning should

(a) Strengthen efforts to finalise SEA to comprehensively assess the cumulative impacts of all infrastructure and development plans and other major projects on the property's OUV, as well as any necessary Heritage Impact Assessments (HIA);
(b) In collaboration with relevant institutions, undertake a comprehensive comparative study of alternative routes for the railway of the Pan European Corridor VIII, including those that do not pass in close vicinity of the lakeshore, and specifically avoiding one of the last well-preserved stretches of the lakeshore on the Albanian-Macedonian border.

Water protection

The country acceded to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes in 2015 but it is not Party to the Protocol on Water and Health. Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies.

The UNDP/GEF project "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin" is expected to promote joint management of the extended transboundary Drin River Basin based on the Drin Memorandum of Understanding signed in Tirana on 25 November 2011. This project, prepared by UNDP/GEF, ECE and GWP-Med in cooperation with the Drin Core Group and endorsed by the GEF operational focal points of Albania, the former Yugoslav Republic of Macedonia and Montenegro, was

approved by the GEF Council in November 2012. The project has started in 2015 and is ongoing. Drin Core Group (DCG), as a joint coordination body meets at least once per year. The 14th DCG meeting was held in Podgorica, Montenegro in November 2017.

The project "Restoration of the Prespa Lake Ecosystem" (2011–2018) financed by the Swiss Government and implemented by UNDP, helps hundreds of farmers to learn and apply more environmentally sustainable practices and reduce the use of fertilizers and pesticides. The project will further apply the recommendations of the Prespa Watershed Management Plan developed with UNDP support in 2012. They include large-scale reforestation to combat the effects of erosion, the introduction of wetland restoration techniques for controlling floods and filtering the water of the Golema River, and nature-based upgrades of wastewater management. These improvements in agricultural practices and watershed management are expected to significantly reduce the pressures on the lake, bringing the process of eutrophication under control. Another project "Prespa Ohrid Nature Trust (PONT)", financed by the KfW Development Bank and Mava Foundation, included activities to implement measures to improve the status of the water in the Lake Prespa, which concluded at the end of 2018.

The transboundary Prespa Park was established in 2000, with an informal institutional scheme operating for 10 years until a quadrilateral agreement on the official operation of the park was signed in 2010. The formal institutions of the park have been in limbo since then, due to lack of ratification, a situation which has only very recently changed, with Greece finally ratifying in the spring of 2017. There are four national parks over the three sides of the basin, with two additional lesser protected areas in the country, though not all WPA is covered by these protective regimes. In addition, parts of WPA are also covered by the Ohrid-Prespa Transboundary Biosphere Reserve which was declared in 2014.

Management plan for Great Prespa Lake was not developed until 2012, following funding from a GEF project "Integrated Ecosystem Management in the Prespa Basin in Albania, the former Yugoslav Republic of Macedonia and Greece (IEMP)", funded by the Global Environment Facility (GEF) and other donors carried out from 2006 to 2012. The contribution of the IEMP project to water protection and management at the national level in the two recipient countries was rather marginal in Albania, while it had substantial results in the former Yugoslav Republic of Macedonia - where it also consumed a considerable portion of the project funds (approx. $1.5 million). The IEMP project also included activities aiming to strengthen the institutional water management basis in the country, with the setting up of a Prespa Watershed Management Council, a cross-sectoral participatory body consisting of all the national stakeholders in the Great Prespa Lake area. It has not been reactivated following the conclusion of the project.

According to the 2017 Report to the Prespa Ohrid Nature Trust, the management authorities for the protected areas are weak in all aspects, particularly in terms of expertise and funding.

Preparatory work is also underway to join the Protocol on Water and Health and a working group under the Ministry of Health and the Ministry of Environment and Physical Planning is examining the need for accession to the Protocol. In 2016, the country prepared a report on the assessment of equitable access to water and sanitation in the framework of the Protocol (box 6.2).

Box 6.2: Achieving the Human Right to Water and Sanitation

The report "Achieving the Human Right to Water in Sanitation", prepared by the country in 2016, provides an assessment of the country's current situation and capacity to provide equitable access to water and sanitation "for all members of the population, especially those who suffer a disadvantage or social exclusion". The Score card for equity access to water and sanitation was used as a tool to self-assessment for access to water and sanitation, which was implemented in the country for the period from April 2015–29 February 2016. The Score card served as a Self-evaluation analytical tool to establish a baseline, track progress and prompt discussions on actions needed to achieve equitable access to water and sanitation, and to support the implementation of policies and practices. During implementation of the project a descriptive and quantitative approach was used in three municipalities of Skopje, Veles and Kumanovo, with a detailed focus on the gender dimensions of equitable access to water and sanitation.

The results of the study identified a number of gender related challenges with access to water and sanitation, in particular: (i) toilets that sometimes are not suitable for menstrual hygiene management; (ii) no access to accurate and pragmatic information for menstrual hygiene (in the educational system); (iii) no accessible facilities; (iv) no access to water and soap in places that provide an adequate level of privacy; (v) lack of finance in the municipalities to develop and maintains the access

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to water and sanitation; (vi) access for disable people to public health facilities, but not to toilet; and (vii) no access to drinking water and sanitation in religious facilities.

The report highlights recommended actions to address gender challenges based on the results of the study which include: (i) improving of menstrual hygiene management facilities in educational facilities, as part of Equitable Access Action Plans; (ii) increasing the capacity of municipalities to develop and maintain access to water and sanitation; (iii) setting standards for toilets in public institutions, schools and religious facilities; and (iv) setting up and implementing measures for social protection of the population.

The country is not a party to the Convention on the Law of Non-navigational Uses of International Watercourses and no discussion about accession takes place.

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis target 6.5 of the 2030 Agenda for Sustainable Development is described in box 6.3.

Box 6.3: Target 6.5 of the 2030 Agenda for Sustainable Development

Goal 6: Ensure availability and sustainable management of water and sanitation for all
Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

The country is active in transboundary water cooperation, especially on shared transboundary lakes. The effectiveness of existing agreements is also an important issue, as for example, there is no evidence of regular meetings of the Greek-Macedonian permanent Commission on transboundary freshwater issues. Bilateral agreements exist with Bulgaria on Strumica River Basin and Greece in respect of Vardar River Basin, but the cooperation does not function recently and has to be re-established.

According to the information provided by the country in 2017 as part of the reporting under the Water Convention and for SDG global indicator 6.5.2 (Indicator 6.5.2: Proportion of transboundary basin area with an operational arrangement for water cooperation), the total surface area of transboundary basins of rivers and lakes within the territory of the country is 27,766 km^2, whereas the total surface area of transboundary basins / sub-basins of rivers and lakes covered by operational arrangements within the territory of the is 3,771 km^2. Thus only 13.6 per cent of all transboundary river and lake basins have an operational arrangement for water cooperation in place. There is no information about transboundary groundwater covered by operational agreements on water management as the available data in the country are not sufficient to delineate the area of transboundary aquifers.

The Government should:

(a) Advance cooperation on transboundary water management through strengthening formal communication of the Greek-Macedonian permanent Commission on transboundary freshwater issues
(b) Re-establish the agreements with Bulgaria on the Strumica River Basin and with Greece on the Vardar River Basin through update of the coordinated water management plans, setting up regular data and information exchange between the competent authorities, and securing regular cooperation mechanisms for monitoring and evaluation of the plan implementation;
(c) Make existing cooperation arrangements operational by developing and regularizing activities or expanding the coverage of cooperation arrangements seeking to optimise and use effectively available human, technical and financial resources if the country target of 80 per cent of transboundary basin area for the year 2030 is to be reached.

Air protection and ozone layer protection

Convention on Long-range Transboundary Air Pollution

The country has been a party to the Convention on Long-range Transboundary Air Pollution since 1997 and its six protocols since 2010 and the Oslo[5] and Gothenburg[6] protocols since 2014.

[5] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions
[6] Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone

The Ministry of Environment and Physical Planning is responsible for preparing reports on ambient air quality for implementing obligations under the Law, as well as reports in accordance with obligations under the ratified international environmental agreements.

The third Twinning project "Further strengthening the capacities for effective implementation of the acquis in the field of Air Quality" implemented in 2015–2017 assisted the country to prepare the whole time series inventory for 1990–2016 and EMEP gridded data. Available air emission data (according to the CORINAIR methodology) is submitted on a regular basis, once a year according to the requirement, to the Co-operative Programme for Monitoring and Evaluation of the Long-range transmission of Air Pollutants in Europe) (EMEP) and ECE, as well as to EEA.

There are plans to prepare emission projections for 2025 and 2030 and equip the EMEP Lazaropole station according to the EMEP Protocol requirements in the new project within frame of Instrument for Pre-accession Assistance (IPA) 2 programme.

Substantial actions towards implementation of the Protocols requirements have been taken. However, implementation of protocol requirements is constrained by the institutional capacities limited to a very small team and financial resources.

The country has not yet taken steps towards acceptance of the amendments to the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone and the protocols on Heavy Metals and on POPs. The country plans to start the process of ratification of the amendments to the three last protocols after the adoption of the emission projection for 2020 and 2030, which should be finalized in 2020, and the adoption of a new law on industrial emissions, given that emission limit values and setting emission reduction targets are most significant obligations under the protocols.

The country ratified the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by 30 per cent (Sulphur Protocol) in 2010. In 2014, the secretariat made a referral regarding the country's activities to reduce sulphur emissions and to provide a timetable for expected compliance with its obligations under the Sulphur Protocol. As of December 2018, the Implementation Committee continues to consider the referral by the secretariat concerning compliance of the country with the Sulphur Protocol. The public electricity and heat production sector is the main source of emissions, with only a few power plants being the major contributors. The energy sector is the key source in emissions of the following pollutants covered by the protocols (SOx, NOx, $PM_{2.5}$, Cd, Pb and Hg). The National Emission Reduction Plan (NERP) covering all large combustion plants in the country was adopted in 2017. At the thirty-ninth Session of the Implementation Committee, the Government stated that the implementation of the plan was under way and that it was expected that the country would comply with its obligations in time for the reporting only in around 2020.

Problems exist around implementation of the Best Available Techniques (BAT) and compliance with emission limit values due to a need of big investment to replace old technology and use of low quality raw materials (for example use of coal with 0.7 per cent content of sulfur and use of heavy oil).

Convention for the Protection of the Ozone Layer, Montreal Protocol on Substances that Deplete the Ozone Layer

The country ratified the Convention for the Protection of the Ozone Layer (Vienna Convention) and the Montreal Protocol on Substances that Deplete the Ozone Layer in 1994 and its amendments, except Kigali amendment. The national delegation regularly participates at the Vienna Convention COP and Montreal Protocol MOP. The annual reports were electronically submitted in due time.

Major achievement is the limitation of the ozone depleting substances (ODSs) including hydrochlorofluorocarbons (HCFC) import[7]. Results achieved through the implementation of the Products Containing HCFC Phase-out Management Plan (HPMP) 2010–2015 include:

[7] No ODSs are produced in the country, so the ODSs consumption is equal with the ODSs import.

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- Significant part of the national legislation is in place.
- Annual consumption of ODSs, including HCFCs, in 2017 is zero.
- Under the training programme in good service practice for service technicians 537 service technicians were trained in the frame of HPMP.
- In the frameworks of recovery and recycling scheme implementation, the amount of 208,316 kg of refrigerant were processed.

The Kigali Amendment is legally binding and will come into force from 1 January 2019. The Government has confirmed its intention to make best efforts to ratify the Kigali Amendment as early as possible. Requests for funding of enabling activities were submitted in line with Decision 79/46 by country in 2017. The main objective of these enabling activities is to prepare the country for the ratification and early implementation of the Kigali Amendment through the following lines of action:

- Support for the early ratification of the Kigali Amendment,
- Support to the institutional arrangements,
- Review of the licensing systems,
- Review of the data reporting systems, and
- Preparation for national strategies.

Climate Change and Energy

United Nations Framework Convention on Climate Change

The country has been a (non-Annex I) party to the United Nations Framework Convention on Climate Change (UNFCCC) since 1998 and acceded to the Kyoto Protocol in 2004. As of 2018, three national communications on climate change have been submitted to UNFCCC (2003, 2008, 2014), all supported by GEF through UNDP. The country delivered the INDC to reduce the CO_2 emissions from fossil fuels combustion by 30 per cent, that is, for 36 per cent at a higher level of ambition, by 2030 compared to the business as usual (BAU) scenario. The country ratified the Paris Agreement under UNFCCC in 2018.

The Ministry of Environment and Physical Planning has been designated as the National Focal Point to UNFCCC and as a Designated National Authority for the implementation of the Kyoto Protocol. Other ministries that have responsibilities related to climate change aspects are the Ministry of Agriculture, Forestry and Water Economy, the Ministry of Economy, the Ministry of Transport and Communication, the Ministry of Health and the Ministry of Finance. The National Climate Change Committee is entrusted with the monitoring and the coordination of the Convention implementation. Although good initial steps have been taken through the establishment of this committee, there remains a need for greater funding and effectiveness of institutional arrangements about climate change and adaptation.

The process for producing national communications and biennial reports is led by the Ministry of Environment and Physical Planning. The National Climate Change Committee and the Technical Group at the National Sustainable Development Council also participate in this this process as well as other key stakeholders in government and in civil society. International institutions and donors, specifically GEF and UNDP, have provided financial and technical support for this reporting process. In fact, UNDP has provided support for the majority of climate change policy documents in the country, including its three National Communications, biennial update reports, its INDCs, a climate change strategy for the City of Skopje, and others.

In 2016, the Ministerial Council of the Energy Community, of which the country is a contracting party, adopted a non-binding recommendation to implement EU Regulation 525/2013 on monitoring, reporting, and assessment of greenhouse gases (GHG) inventories and steps taken to address climate change. The recommendation involves providing an annual report to the Energy Community on anthropogenic GHG emissions (to be submitted by 15 January each year starting in 2019). Information provided to the Energy Community by the country will simultaneously be provided to UNFCCC. The energy sector in the country provides the highest GHG abatement potential, accounting simultaneously for economic indicators and technological limitations. Energy planning is crucial for the segment of greenhouse gas emissions reduction. On one hand, the use of fossil fuels has direct impact on greenhouse gas emissions into the atmosphere, and on the other, the utilization of renewable energy sources and energy efficiency has direct effects on reducing the emissions of these gases and a cleaner

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environment. Therefore, energy policy and policy for sound environment should contribute jointly to the achievement of the targets for reduced climate change, in a manner that will secure sustainable development.

The regional project in the Drin River Basin "The Climate Change Adaptation Programme in Western Balkans", supported and coordinated by GIZ and implemented in cooperation with the competent ministries in the beneficiary Drin riparian countries, aims to improve adaptation to climate change and includes among others a range of activities in the fields of flood and drought risk management. Main components of the program include the Drin-Buna Flood Early warning system, climate change adaptation strategies, local flood and drought management plans and implementation of defined measures, regional water resources management and climate change adaptation in urban areas.

Protocol on Energy Efficiency and Related Environmental Aspects and Energy Community Treaty

The country ratified the Energy Charter Treaty and Protocol on Energy Efficiency and Related Environmental Aspects in September 1998. As a contracting party to the Energy Community Treaty since 2006, the country has the obligation to implement the energy acquis in force. Parallel to the adoption of secondary legislation, the implementation of the acquis gives rise to diverse reporting obligations. The Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants sets emission limit values for three pollutants (sulfur dioxide, nitrogen oxides and dust). The country has 10 combustion plants above 50 MW with NERP covering eight of these plants. Given certain gaps and calculation discrepancies identified, the draft NERP submitted to the Secretariat in 2015 was considered by the Energy Community Secretariat to be not fully compliant with the Policy Guidelines. In this regard, the Energy Community Secretariat provided recommendations to improve country's compliance, which the Government subsequently addressed. As of 2018, the NERP for large combustion installations was approved by the Energy Community Secretariat.

The Directive 2009/28/EC on the promotion of the use of energy from renewable sources requires the adoption of a national renewable energy action plan (NREAP) setting out the Contracting Parties national targets for the share of energy from renewable sources consumed in transport, electricity and heating and cooling in 2020 and adequate measures to be taken to achieve those national overall targets. However, the country has failed to comply with its obligations under the Treaty. The current amended NREAP is not designed to achieve the country's legally binding renewable energy target of 28 per cent, instead only a 24 per cent target in 2020 is foreseen. NREAP sets out the trajectory for meeting the country's 28 per cent target only in 2030.

Despite the incomplete legal framework for renewables, several renewable energy projects have become operational in recent years contributing to an increasing share of energy from renewable sources in the energy mix each year. However, the country faces challenges to meeting the its legally binding renewable energy target due to the country's reliance predominantly on fossil fuels (low-grade lignite and oil) and hydropower, and its dependence on electricity imports. Despite, the country's solar PV capacity being the highest compared to neighbouring countries, currently the potential is hardly tapped.

Issues also exist in respect of institutional capacity - there is no dedicated ministry charged with the energy sector development. The responsibility for meeting the obligations under the international and regional agreements falls on the Department of Energy in the Ministry of Economy, which currently has limited human resources, with only 11 staff employed.

Waste and hazardous chemicals

Convention on Persistent Organic Pollutants

The country ratified the Stockholm Convention in 2004. With the funding from GEF and assistance of the United Nations Industrial Development Organization (UNIDO), the Ministry of Environment and Physical Planning prepared the first National Implementation Plan (NIP) for the country in 2005. The first NIP was last updated in 2017.

National implementation measures include:

- Registration and evidence of the Polychlorinated Biphenyls (PCB) and PCB containing equipment

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- Treatment of the obsolete and waste POPs
- Strengthening institutional and legal framework
- Providing synergy with Rotterdam and Basel Convention

Numerous projects on reduction and elimination of POPs were prepared, and most of them were submitted as proposals to several international financial institutions. In the early stages of the NIP implementation the main emphasis was put on the PCB and PCB containing equipment elimination. The project "Elimination of PCBs and Equipment Containing PCBs in the former Yugoslav Republic of Macedonia" for the period from 2008–2013, has been concluded with a successful construction and commissioning of facility for provisional storage and treatment of PCB-contaminated equipment. A state-of-the-art facility that meets the highest safety standards was built and sophisticated technology was installed for treatment of PCB-contaminated transformers, which is in compliance with BAT and Best Environmental Practices (BEP) principles. As a result, 167 tonnes of PCB waste were eliminated, 800 tonnes of transformers were decontaminated and majority of the PCB containing equipment were identified and registered in the designated database with this project

As a result of the construction of the temporary storage and the installation of the PCB treatment technology: (i) the national capacities in PCB management were strengthened; (ii) the cycle of environmentally sound PCB management was completed, and as a result the negative effects caused by PCBs on human health and the environment were either eliminated or reduced; and (iii) the owners of PCB-containing transformers were enabled to meet the requirements emerging from the legislation, as well as to avoid larger expenses in case of treatment abroad.

Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

The country acceded to the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention) in 2010. The country is regularly represented at the meetings to the conferences of the parties to the Rotterdam Convention.

The Designated National Authorities include the Ministry of Environment and Physical Planning and Ministry of Agriculture, Forestry and Water Economy. Also, the procedure of the Rotterdam Convention related to PCB external trade is responsibility of the Ministry of Environment and Physical Planning. The Ministry of Health keeps a register of chemicals, which have been placed on the market in the country, a national list on new chemicals, as well as the chemicals and mixtures that have been already classified. The Chemicals Department of the Ministry of Health is responsible for management of hazardous substances, issuing permits for import and export of chemicals, and for partaking in the decisions on which chemicals are suitable for marketing. The inter-sectoral Chemicals Committee is responsible for the registration of chemicals and for risk assessment of hazards related to chemicals and their classification, whereas the Department is responsible for acceptance, reporting, risk assessment, and classification of chemicals.

Pursuant to the Law on Ratification of the Rotterdam Convention, the Ministry of Agriculture, Forestry and Water Economy is responsible for controlling the imports and exports of the group of pesticides listed in the Convention. It is responsible for issuing approvals for import of pesticides regulated by the Convention.

As of 2018, 47 import responses have been submitted to the Convention Secretariat.

Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The country acceded to the Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) in 1997. The Ministry of Environment and Physical Planning is responsible for ensuring compliance with the obligations under the Convention. Obligations towards the Basel Convention have been incorporated in the Law on Waste Management. Notifications for import, export and transit of waste circulate without obstacles, and the Ministry of Environment and Physical Planning issues an average of some 50 permits per year for this type of activity. National reporting under the Basel Convention has not been undertaken in years, with the last report being submitted in 2002.

Minamata Convention on Mercury

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The country signed the Minamata Convention on Mercury in 2014. To assist with preparations for the ratification and implementation of the Convention, the Government conducted a Minamata Initial Assessment in March 2018. The primary activities of the Assessment included: (i) a review of institutional and capacity needs for implementation of the Convention; (ii) an assessment of national regulations, policies, and legislation to assist with preparations for compliance with the obligations of the convention; and (iii) an identification of the primary existing sources of mercury emissions and releases as part of a detailed National Mercury Profile. The Assessment was conducted with financial assistance from GEF and was implemented in collaboration with UNEP. In December 2017, a UNEP project was implemented through the preparation of the National Inventory on Mercury Releases.

Strategic Approach to International Chemicals Management

Within the framework of the Strategic Approach to International Chemicals Management (SAICM), a UNEP project entitled "Strengthening institutional capacities for mainstreaming quadruple synergy schemes in implementation of the national action plans for implementation of SAICM and inclusion of Minamata convention" is planned.

SAICM, in collaboration with the Government, organized the fifth Central and Eastern European (CEE) regional meeting on SAICM, in Skopje, from 23–27 September 2013. Key outcomes of the meeting included a request for the World Health Organization (WHO) to build capacity in the CEE report for Poison Control Centres. The participants of the meeting had a possibility to visit state-of-the-art facility for temporary storage of PCB-containing transformers and waste providing a sound management and removal of PCBs from transformer oil complying with the highest BAT/BEP standards. The facility is part of the company Rade Koncar – Service in Skopje and its establishment was supported through a project by GEF, the Swiss Government represented by the Swiss Cooperation Office and the company Rade Koncar – Service implemented jointly by UNIDO and the Ministry of Environment and Physical Planning.

The GEF-financed project "Strengthening capacities for the development of the national Pollutant Release and Transfer Registers (PRTR) and supporting SAICM implementation" is to be completed by the end of 2018. The Ministry of Environment and Physical Planning will ensure its coordination.

Industrial accidents

The country acceded to the Convention on the Transboundary Effects of Industrial Accidents in 2010. The reporting is regular, with the latest report prepared for the implementation of the convention for the period from 2014 to 2015. According to the report, most legislation on the identification of the hazardous activities and industrial accidents prevention is in place. Identification and notification of hazardous activities to neighbouring countries was not covered by the legislation during the reporting period and was anticipated to be adopted in 2014. Preparedness and response is mostly covered by the protection and rescue legislation. The national Industrial Accident Notification System is established in the frameworks of the Centre for Crisis Management. Facilities that may cause major accidents involving hazardous substances are identified in the country. However, facilities with transboundary effects that fall under the Convention have not yet been identified.

The country's accident notification system operates at the Emergency Response Coordination Centre. Based at the European Commission in Brussels, the Centre is accessible 24/7 and can spring into action immediately when it receives a call for assistance. The Centre works in close cooperation with national crisis centres throughout the 32 countries participating in the mechanism (EU28, the former Yugoslav Republic of Macedonia, Iceland, Liechtenstein and Norway). The Centre handles over 20 emergencies a year, up from single digit figures in the first few years of existence. The Centre for Crisis Management is the focal point for the Notification System. In the frameworks of the Assistance Progress the manual for Safety Report Development, Check-list for Safety Report Evaluation and Inspecting and Workshop on Safety Report development were prepared.

During the reporting period two rulebooks were adopted: Rulebook on the Safety Report Content and Rulebook on the Prevention Plan Content. The first Safety Report was submitted by the Ministry of Environment and Physical Planning in 2016.

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According to the report, the main difficulty in the Convention implementation is the financial resources for creating a strong system for prevention and control of the industrial accidents, and protection and rescue, particularly those that could cause transboundary impacts, as well as the lack of human resources and appropriate training of operators' representatives, particularly on practical implementation of the provisions of the Convention. The Ministry of Environment and Physical Planning is the competent authority for the Convention.

No progress has been made on transposing the Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III Directive).

The country is expected to submit an implementation report for the period 2016–2019 in 2019.

As a beneficiary country of the Convention's Assistance Programme, the country benefited from a subregional workshop for the countries in South-Eastern Europe on industrial accident prevention: identification and notification of hazardous activities and linkages with the EU relevant legislation (Zagreb, February 2017).

The country submitted the last national self-assessment and action plan under the Convention's Strategic Approach in 2012. Since 2012, the country did not submit a national self-assessment and action plan and related project proposals addressing needs and challenges identified through the self-assessment and in the national action plan.

The country did not identify hazardous activities falling under the scope of the Convention and subsequently did not notify potentially affected countries.

Environmental assessment

The country acceded to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) in 1999 and ratified the Protocol on Strategic Environmental Assessment (Protocol on SEA) in 2013. The country has not accepted the first and second amendment to the Convention.

Three transboundary EIA procedures were carried out until now on the development projects: "Railway, European Corridor VIII" – border with Albania; "Construction of the motor road Demir Kapija-Smokvica" – border with Greece; and realization of the Project: "Constriction of the section 3 of rail corridor VIII: Kriva Palanka - border with Republic of Bulgaria". As a country of origin, the former Yugoslav Republic of Macedonia sent to Bulgaria a Notification Letter on the intention for in July 2017 via Ministry of Foreign Affairs. The relevant governmental institutions in Greece were also notified by the Ministry of Environment and Physical Planning through the Ministry of Foreign Affairs about the initiated EIA procedure for the project that may have an adverse transboundary impact. No response from Greece was received. The country has very limited experience on transboundary SEA (chapter 1).

Technical and human capacity in SEA field is low, with only three members of staff dealing with implementation of the SEA obligations.

Bucharest Agreement on EIA

The country is a party to multilateral agreement among the countries of South-Eastern Europe for implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (Bucharest, 2008). The country reporting obligation is overdue. According to the Report of the MoPs to the Convention on its seventh session and of the MoPs to the Convention serving as the Meeting of the Parties to the Protocol on its third session, concern was expressed that the country has not responded to the questionnaire and urged the country to provide the overdue responses to the questionnaire for the period under review.

Access to information, public participation and access to justice

The country acceded to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) in 1999. The country ratified the Protocol on PRTRs in 2010 (chapters 4 and 5). The country is not a party to the Almaty amendment on GMOs to the Convention. The appointment of a national focal point for the Convention is pending for several years.

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6.4 Bilateral and trilateral cooperation on environment

The country is participating in bilateral cooperation in environmental protection with an emphasis on cooperation with neighbouring countries and receiving technical and other assistance from donor countries. The country signs agreements and memorandum of understanding although the effectiveness of cooperation often depends more on funds for joint programmes and projects than on the existence of a formal agreement.

Bilateral and trilateral cooperation is primarily focused on the integrated management and conservation of transboundary natural resources and ecosystems such as transboundary lakes shared with neighbouring countries, i.e. Lake Ohrid (Albania), Lake Prespa (Albania and Greece), and Lake Dojran (Greece). Significant steps in transboundary context have been made in Ohrid-Prespa region through the initiative for establishment of Ohrid-Prespa Transboundary Biosphere Reserve. This initiative is based on the existing trilateral agreement on Prespa Park and bilateral agreement signed between the governments of the former Yugoslav Republic of Macedonia and Albania, respectively, in 2004. Bilateral Secretariat was established for Lake Ohrid Basin management in the frames of the Ministry of Environment and Physical Planning, with its seat in Ohrid. So far, it has implemented many transboundary and national projects and activities.

The driving force relevant for bilateral cooperation regarding transboundary waters is the WFD, as well as the Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

In the Drin River Basin, coordinated action has been absent until the development of the Shared Vision for the sustainable management of the Drin Basin and the signing of a related memorandum of understanding (Tirana, 25 November 2011) by the ministers of the water and environment management competent ministries of the Drin riparians. This was the outcome of the Drin Dialogue coordinated by the Global Water Partnership Mediterranean (GWP-Med) and ECE.

As for the Vardar River Basin, bilateral cooperation between former Yugoslav Republic of Macedonia and Greece is taking place concerning the conservation of Lake Dojran since a first bilateral meeting in 2001. Although a Joint Water Management Committee of the two countries was established in 2001, this has not resulted in active cooperation in river basin planning or management of the Lake Dojran. The country had three meetings with Greece during past years to discuss the preparation of the river basin management plan for the Vardar River.

In 2010, the signing of a legally binding quadrilateral agreement by the Ministers of Environment of Albania, Greece, the former Yugoslav Republic of Macedonia and the EU Commissioner for the Environment. The signing of this agreement was followed by a period of less intensive state co-operation in WPA, which has lasted until very recently, since Greece only ratified the agreement in spring 2017. Nevertheless, local actors, especially the CSOs, but also the local municipalities, have kept transboundary co-operation alive during these years.

Key challenges in cross-border cooperation still exist on transboundary waters, including the management of the Vardar River with Greece and the Drin River. Over the last decade, numerous projects have been carried out in this region, some of high importance and some being small with local benefits.

Cross-border cooperation also takes place under programme component II of Pre-Accession Assistance (IPA) and covers cooperation with Albania, Bulgaria and Greece which includes environmental aspects as well.

6.5 International technical assistance on the environment

Various bilateral and multilateral donors in the past years have provided an important amount of support for the country. The EU assistance through the Instrument of IPA is dominant source of development assistance. There is significant bilateral assistance provided by France, Italy, Japan, Norway, Slovenia, Switzerland and others. Some of the bilateral donors have changed their focus. Notwithstanding the changes in the composition of external assistance, the Government continuously seeks to enhance coordination with the donor community. Some of the donors pursue their own priorities for which they provide funds or other nonfinancial support, and some leave it to the Government to decide how the funds should be most effectively used.

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Activities for nature protection in the country are to the greatest extent financed by foreign funds, such as: GEF, EU Funds, and donations/ grants from other countries, among which Austria, Germany, Italy, the Netherlands, Switzerland, and other countries have provided the most significant support.

Although the resources channelled by donors are crucial to advancing environmental protection, the financial needs of the country go well beyond the resources currently available from domestic and external sources. In general, the donor community has, until recently, mostly concentrated its financial support in capacity building, in the development of policy and legal frameworks and in small to medium-scale projects.

The country is receiving development assistance on annual basis. However, there is a lack of availability of key information on the website of the key institution for aid-coordination regarding the usage of the funds (aid), as well as lack of coordination in funds distribution among different donors.

6.6 Participation in non-binding processes related to environment, sustainable development and green economy

Ten-year framework of programmes on sustainable consumption and production patterns

There is no single strategy or action plan in the country focused specifically on sustainable consumption and production (SCP). The topic of resource efficiency and natural resources is covered as part of the 2010 National Strategy for Sustainable Development.

The Ministry of Economy and Ministry of Environment and Physical Planning have a shared responsibility in the domain of resource efficiency. Due to the capacity and financial constraints, the Government does not place significant emphasis on SCP in national policymaking. The use of specific mechanisms to promote SCP is generally low. SCP goals are not integrated into energy, transport and agricultural policies.

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis target 12.1 of the 2030 Agenda for Sustainable Development is described in box 6.4.

Box 6.4: Target 12.1 of the 2030 Agenda for Sustainable Development

Goal 12: Ensure sustainable consumption and production patterns

Target 12.1: Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

There is no single strategy or action plan in the former Yugoslav Republic of Macedonia focused on sustainable SCP, nor is there a policy document for the circular economy. Most related policy priorities for target 12.1 are identified in the Strategy for Sustainable Development. Related policy priorities are also included in the third National Energy Efficiency Action Plan. No system is in place for collecting data and information for resource efficiency and material flows. Such system would cover the main developed policies, sustainable activity in forest management, agriculture, waste management, industry and energy.

The Government should:

(a) Establish institutional structure that will cover relevant aspects of sustainable development, circular economy and material resource efficiency;
(b) Introduce the concept of circular economy and material resource efficiency;
(c) Introduce standards and some incentive on the efficient use of materials, so the business could more easily adjust or promote circular economies;
(d) Introduce policies that enhance material efficiency
(e) Provide incentive for sustainable production and consumption patterns
(f) Enhance the customer awareness for such products;
(g) Develop a national action plan on SCP
(h) Establish system in stakeholders' institution for collecting data and information for resource efficiency and material flows.

United Nations Forum on Forests and Forest Europe

The country did not present voluntary national reports to the United Nations Forum on Forests. Attendance at the meetings is also not frequent due to capacity constraints at the Ministry of Agriculture, Forestry and Water Economy, limited to just one member of staff.

Transport, Health and Environment Pan- European Programme and European Environment Health Process

The Institute of Public Health, the Ministry of Environment and Physical Planning and the Ministry of Transport and Communication are the national focal points for the Transport, Health and Environment Pan- European Programme (THE PEP). Within the framework of THE PEP, the work has focused on capacity building, development and dissemination of tools and monitoring of implementation. These activities aim at reducing emissions from transport and increasing physical activity levels in the population through active mobility. The country regular participates at the relevant meetings and high-level events.

The country is also Party to the European Environment and Health Process (EEHP). The Ministry of Public Health is the national focal point for EEHP and regularly attends meetings of the Task Force of the EEHP.

Specific activities under the umbrella of these two processes were implemented, including: (i) preparation of the Climate Change Health Adaptation Strategy and Action Plan (2011), and (ii) Sustainable Urban Mobility Plan for Skopje (2011). The Bike Master Plan 2014–2017 foresaw the creation for more than 50 km of cycle paths by the end of 2017, alongside improving the public bike share scheme and promotion campaigns for cycling.

Environment for Europe process

The country has not submitted any voluntary commitments under the two initiatives endorsed by the ministers at the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016): the Batumi Initiative on Green Economy and the Batumi Action for Cleaner Air.

6.7 Legal, policy and institutional framework

Legal framework

The Constitution prevails over the ratified international agreements. Any ratified international agreement constitutes part of the internal legal system at the moment of publication at the Official Gazette. An international agreement that has been ratified by law prevails over the other laws of the country that might conflict with this international agreement. The Regulatory Impact Assessment (RIA) instrument is in place to assess the needs for participation in additional international agreements.

Policy framework

No single document outlines the general framework for international cooperation on environmental protection, although national priorities on environment can, in part, be drawn from the National Programme for Adoption of the European Union acquis (NPAA), which stipulates that the country shall remain its focus on: (i) implementation of the Intended Nationally Determined Contribution (INDC) to the Climate Agreement Paris in 2015; (ii) implementation of the national legislation and increasing investments, especially in the areas of waste and water, and (iii) assessment of the investments required for implementation of the environmental legislation and strengthening administrative capacities.

Institutional framework

The responsibilities in international environmental cooperation are mostly concentrated within the Ministry of Environment and Physical Planning. Among these responsibilities are development and implementation of the environmental policy and coordination of activities under the NPAA for Chapter 27 – Environment.

The Department for EU within the Ministry of Environment and Physical Planning has overall responsibility for the coordination of Instrument for Pre-accession Assistance (IPA) assistance. The Department consists of four

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Units: (i) Unit for Harmonization of Legislation and Negotiations, (ii) Unit for Standards, (iii) Unit for Coordination and Technical Implementation of the Instrument for Pre-Accession Assistance, and (iv) Unit for Programming and Monitoring of Implementation under the Instrument for Pre-Accession Assistance. The last two units are directly involved in the coordination process within the environment sector, in terms of planning implementation and monitoring of the IPA Transition Assistance and Institution Building (TAIB) projects.

In addition to the IPA planning and implementation related Units, the Unit for International Cooperation is responsible for coordination of activities related to bilateral cooperation with other countries, as well as with international organizations and bodies. It has overall responsibility to keep records of international assistance and a regular register of projects that are implemented in the Ministry of Environment and Physical Planning.

Projects for assistance are being proposed by the Department for EU within the Ministry in cooperation with other departments of the Ministry and the local administration. The staff of the Department for EU has received relevant IPA trainings to develop, prepare, implement, monitor and evaluate projects and to ensure appropriate analysis and reporting on the projects. Operating structure within the Ministry of Environment and Physical Planning includes 10 employees from which the designated IPA coordinator that is Head of Coordination and Technical Implementation of IPA; Advisor for technical monitoring of implementation in the framework of the IPA that is performing duties of Head of Unit for Programming and Monitoring of Implementation in the framework of the IPA and eight employees on positions of advisors, junior and senior associates.

The IPA units are currently not sufficiently and adequately staffed. Since 2017, four employees that previously occupied senior positions at the Ministry, have left their posts. In this regard, with the 2018 Decision to perform working duties No. 02-1758/1, the employee at the position - Advisor for technical monitoring of implementation in the framework of the IPA now also performs the duties of the Head of Unit for Programming and Monitoring of Implementation. The employee at the position - Head of the Unit for Programming and Monitoring of Implementation under the Instrument for Pre-Accession Assistance has been appointed to fulfil additional roles with the 2018 Decision No. 02-3793/1, for the position of the IPA coordinator of the Ministry for the implementation of the RD component of the IPA; with the 2018 Decision No. 02-3795/1 for the position of the IPA coordinator of the Ministry for implementation of the assistance from IPA 2; and with the 2018 Decision No. 02-3796/1 has also been nominated for the role of the Senior Program Officer for IPA TAIB Component from the Ministry. These two authorizations is difficult to justify given that the Head of Unit for Programming and Monitoring of Implementation in the framework of the IPA and the IPA Coordinator are the key positions in the Department for EU within the Ministry and these jobs are defined as highly sensitive due to the obligations for approval of the documents and expenditure verification of payments of all IPA contracts in the area of environment.

The Department for Nature within the Ministry of Environment and Physical Planning is responsible for the implementation of the national legislation and multilateral agreements in nature protection. Focal points for international agreements are experts responsible for the relevant clusters, e.g., biodiversity, chemicals and climate change within the Ministry. The Department for Nature faces lack of capacity (currently has only around 15 employees) and lack of financial resources to implement relevant legislation and other tasks, including planning, establishment and supervision of protected areas.

The Vienna Convention and its Montreal Protocol, the Stockholm Convention on Persistent Organic Pollutants and the SAICM are under one umbrella of the Ministry of Environment and Physical Planning. The Ozone and POPs unit hosted by the Ministry has been covering these three areas for almost 13 years.

Macedonian Information Centre for Environment within the Ministry of Environment and Physical Planning is charged with implementation of the POPs Protocol to the Convention on Long-range Transboundary Air Pollution. The Department for Industrial Pollution and Risk Management and its Unit for Chemicals and Industrial Accidents are responsible for initiating the ratification of international agreements on chemicals, implementation of the provisions of international and national legislation on chemicals.

Overall, the Ministry of Environment and Physical Planning has limited staff and resources and the resources allocated for implementation, compliance and enforcement are inadequate for the scale of the problems confronting the country’s environment, with number of staff employed at the Ministry being significantly reduced

since 2011. For example, currently, one person is responsible for the IPA coordination as well as performing the duties of being the focal point to UNCCD.

The Secretariat for European Affairs supports and coordinates governmental institutions regarding EU integration. Among its tasks are the coordination of foreign aid from the EU and other foreign aid assistance. In 2009, the Secretariat introduced the Programme Based Approach (PBA), as a mechanism for strengthening the aid management. The goal was to further improve the aid effectiveness, by focusing the external development assistance to a few priority sectors (mutually agreed with the international partners) and by ensuring systematic strengthening of national programming and implementation capacity. Currently, there is no information available on the PBA assessment of the working group reports on the Secretariat website. There is also a lack of availability of key information on the Secretariat web-site regarding the usage of the funds (aid), as well as lack of coordination in funds distribution among different donors. The Sector Policy Coordination Framework, introduced by the Secretariat and supported by GIZ in 2016, has replaced the PBA coordination framework in line with the requirements of the sector wide approach as defined by European Commission.

Dedicated committees have been established to harmonize the implementation of international on nature protection, but they lack sufficient activity, with many being no longer operational. The National Committee for Biological Diversity was established in 1999 with the aim to coordinate implementation of the CBD on a national level. It is composed of approximately twenty scientists and experts and was especially active during the elaboration of the Country Study on Biological Diversity (first national report, 2003) and the first NBSAP (2004), however, presently it is almost inactive. Proposal for revision of this Committee was prepared in the process of revision of NBSAP in 2014, and therefore should be re-established by Macedonian Government and actively involved in implementation of requirements according to the CBD.

The Watershed Management Committee for Lake Ohrid was established in 2015. The Committee is responsible for drafting and applying standards, environmental criteria, and requirements for sustainable development by which the integrated protection of Lake Ohrid and its watershed. The Prespa Park Coordination Committee was a non-legal entity whose members are appointed by the three Ministers in charge of environment of Albania, Greece and the former Yugoslav Republic of Macedonia. The Committee was a vital instrument over all these years and was transformed into the Prespa Park Management Committee (PPMC) with the signature of the trilateral Agreement in February 2010 by Albania, Greece and the former Yugoslav Republic of Macedonia on the protection and sustainable development of the Prespa Park area. On 14th February 2017, The Parliament of Greece ratified the international "Agreement for the Protection and Sustainable Development of the Prespa Park Area" by an overwhelming majority. This agreement does give clear directions for the future development of the Prespa Park, defines the members and terms of work of the PPMC and obliges the parties to establish an office for the secretariat.

The international cooperation at the level of local authorities, councils of municipalities and mayors may make autonomous decisions on matters of municipal international cooperation, subject to, in certain limited instances, providing information to higher national authorities for an opinion. For example, the Monument of Nature Lake Dojran is under the authority of the Dojran municipality. The municipality is obliged to develop and implement long-term plans for management of the Monument of Nature Lake Dojran, as well as the annul plans for nature protection. This management plan and annual programmes should be in line with the Dojran basin management plan, i.e. not focused solely on the narrow-protected area, but rather on the whole watershed, considering different activities that take place in the whole basin and protecting all the waters connected to the lake.

6.8 Assessment, conclusions and recommendations

Assessment

The ratification of several more MEAs since 2011, such as the Paris Agreement, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the Protocol on SEA, is evidence of the political importance that the Government attributes to be an engaged participant in international cooperation in the environmental domain. However, the adoption of environmental legislation in the country is mainly driven by the aspiration of EU membership.

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Adequate participation in international negotiations, and full implementation of and compliance with MEAs, remain challenges, due in part to understaffing and limited financial resources in the ministry responsible for environmental issues. An effective response to international agreements and commitments depends on the capacity and financial resources of the Ministry of Environment and Physical Planning, and other involved entities, being consistent with the responsibility of being party to MEAs. Furthermore, the lack of monitoring data affects timely reporting and the quality of national reports. CSOs are not given any role to play in such reporting, and nor do they participate in the development of the country's position for international meetings.

Conclusions and recommendations

Capacity and resources

The extended mandate of environmental bodies and units in the public administration to ensure the country's implementation of and compliance with obligations deriving from global and regional agreements has not been matched by increased capacity and financial resources. Currently, in addition, no efficient coordination structure between relevant state institutions charged with the implementation of those obligations is established. Furthermore, there are difficulties with the harmonization of obligations under the high number of ratified MEAs. Also, there is no harmonization of activities with other sectors that have or may have impact on biological diversity.

Recommendation 6.1:
The Government should:

(a) Establish efficient coordination mechanisms among relevant state institutions, scientific institutions and civil society organizations;
(b) Undertake an in-depth analysis of the administrative and technical capacity and financial needs of the bodies in charge of the implementation of obligations deriving from multilateral environmental agreements (MEAs);
(c) On the basis of the analysis, prepare an action plan to ensure that the adequate administrative and technical capacity and financial resources are secured for the implementation of obligations deriving from MEAs;
(d) Increase efforts to fulfil its reporting obligations under MEAs and ensure the quality of national reports;
(e) Ensure the participation of its representatives in the meetings of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Energy sector

Since 2011, two non-compliance cases were filed under the Bern Convention and the 1985 Sulphur Protocol; both cases concerned activities in the energy sector. These cases point to gaps in the current environmental governance and inadequate streamlining of environmental considerations in the country's energy sector development. Notwithstanding the presence of a requirement for compliance with MEAs in the Energy Development Strategy, in practice, its implementation in conformity with MEAs has proved to be challenging. The priorities for the energy sector development, aimed to be harmonized with MEAs, have driven the national energy policy in the direction of rapid hydropower plants construction, with many planned in protected areas, resulting in tensions with obligations under the Bern Convention.

Elevated emission limit values for sulfur, mainly granted to large coal-fired thermal power plants, caused a breach of sulfur reduction commitments under the 1985 Sulphur Protocol for a period from 2013–2015. Furthermore, the country failed to fulfil some obligations under the Energy Community Treaty. Challenges exist in meeting the country's legally binding renewable energy target due to its reliance predominantly on fossil fuels and hydropower, while its solar energy potential remains untapped.

Concerns have also been raised by CSOs with respect to a lack of transparency on the number and locations of the proposed hydropower plants. This points to a need for a more harmonized approach in the energy sector, development of which inherently touches upon several cross-cutting environmental issues covered by MEAs. In the absence of such approach, the future implementation of MEAs will continue to be constrained and more non-compliance cases are likely to occur in the domain of energy sector development. Nature protection obligations

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should be recognized and respected by the Government whenever hydropower, mining or large infrastructure investments are planned.

Recommendation 6.2:
The Ministry of Environment and Physical Planning and Ministry of Economy should:

(a) Revise all legal and strategic documents that regulate and foresee hydropower construction to ensure that the site selection criteria applied to hydropower plants are based on international best practice, which excludes hydropower construction in protected areas and areas with high hydro-morphological and biodiversity status;
(b) In cooperation with neighbouring countries that are pursuing a similar path in energy sector development, conduct a transboundary study into the cumulative and combined effects on the environment of planned small hydropower plants and associated new infrastructure construction, taking into consideration seismic and climate change effects;
(c) Promote the production of electrical energy from renewable sources other than hydropower;
(d) Ensure that SEAs carried out on energy sector plans and programmes under development are based on international best practice and provide greater transparency and public engagement.

Industrial accidents

The country did not identify hazardous activities falling under the scope of the Convention on the Transboundary Effects of Industrial Accidents and subsequently did not notify potentially affected countries. As a beneficiary country of the Convention's Assistance and Cooperation Programme, the former Yugoslav Republic of Macedonia benefited from a subregional workshop for the countries in South-Eastern Europe on industrial accident prevention by identification and notification of hazardous activities and making linkages with the relevant EU legislation.

Since 2012, the country did not submit an updated national self-assessment and action plan under the Convention's strategic approach, and related project proposals addressing needs and challenges identified through the self-assessment and in the national action plan.

No progress has been made on transposing the Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III Directive).

The country is expected to submit an implementation report for the period 2016–2019 in 2019.

Recommendation 6.3:
The Ministry of Environment and Physical Planning should:

(a) Transpose into national legislation Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III Directive) and work on implementing it;
(b) Identify hazardous activities falling under the scope of the Convention on the Transboundary Effects of Industrial Accidents and notify potentially affected countries accordingly;
(c) Submit an updated national self-assessment and action plan under the Convention's strategic approach, together with project proposals addressing needs and challenges identified;
(d) Prepare in a participatory and transparent manner the implementation report on the Convention for the period 2016–2019 and submit it by the due date to the Convention's secretariat.

Access to information and public participation

The list of ratified MEAs is available to the public on the Ministry of Environment and Physical Planning website. However, no information on the status of implementation of MEAs or other international commitments, including the national reports submitted, is provided by the Ministry of Environment and Physical Planning to the public, except the 2018 national implementation report to the Aarhus Convention and the 2014 national implementation report to the Convention on Biological Diversity. The public, including CSOs, is not involved in the decision-making processes regarding the country's substantive contributions to and participation in MEA-related and other international processes.

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Recommendation 6.4:
The Ministry of Environment and Physical Planning should:

(a) Make publicly available the information on the participation of the country in environmental agreements and international environmental processes and commitments, and the related national implementation and progress reports;
(b) Provide timely access to information on environmental agreements and international processes and commitments to enable effective public participation;
(c) Ensure the effective participation of the public in decision-making on environmental agreements and international processes and commitments, and in the preparation of national reports and other substantive inputs on their implementation;
(d) Include representatives of relevant environmental civil society organizations in national delegations participating in international environmental processes.

Participation in MEAs to which the former Yugoslav Republic of Macedonia is not party

The country is clearly committed to preventing and combating air pollution and to accession and implementation of international agreements in this domain. Further joint work between the country and the ECE secretariat of the Convention on Long-range Transboundary Air Pollution would allow the country to accept amendments to the Protocol on Heavy Metals, Protocol on Persistent Organic Pollutants and Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol).

Though a party to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention), the country has yet to ratify the 2005 Almaty Amendment on Genetically Modified Organisms. Although some preparatory work was carried out, the country has yet to accede to the Protocol on Water and Health and the Kigali amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer. Furthermore, the country has not yet joined the Nagoya Protocol and has yet to accede to the Sofia and Cavtat amendments to the Convention on Environmental Impact Assessment in a Transboundary Context. Although the Government has already conducted primary activities of the Minamata Initial Assessment in 2018, it has not yet ratified the Minamata Convention on Mercury.

Recommendation 6.5:
The Government should start the necessary preparatory work and proceed with:

(a) Ratification of the Minamata Convention on Mercury;
(b) Accession to the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer;
(c) Accession to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity;
(d) Acceptance of amendments to the Protocol on Heavy Metals, Protocol on Persistent Organic Pollutants, and Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) to the Convention on Long-range Transboundary Air Pollution;
(e) Ratification of the Almaty Amendment on Genetically Modified Organisms to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters;
(f) Accession to the Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes;
(g) Accession to the Sofia and Cavtat Amendments to the Convention on Environmental Impact Assessment in a Transboundary Context.

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Chapter 7

CLIMATE CHANGE

7.1 Current and foreseeable economic and environmental impacts from climate change

Environmental impacts from climate change

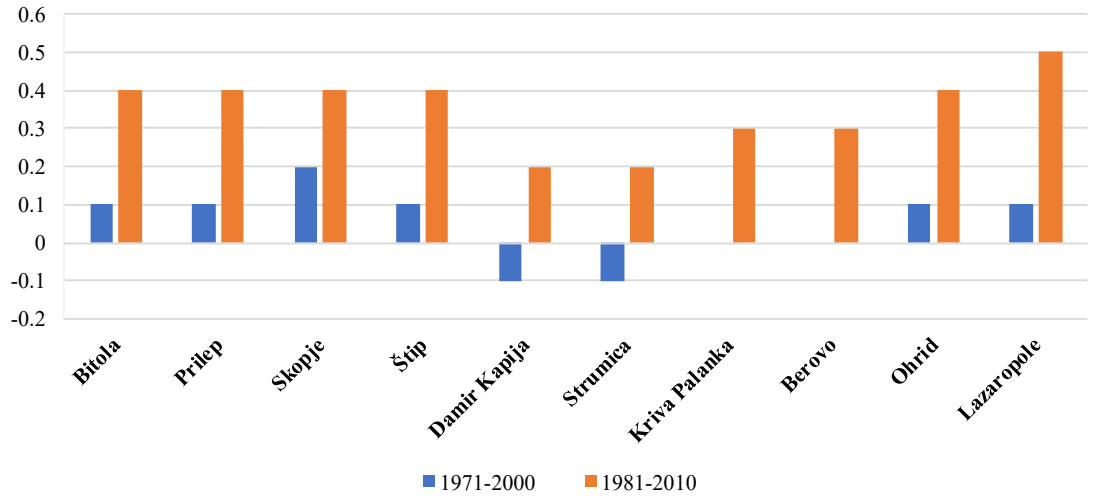
Weather

The former Yugoslav Republic of Macedonia is a landlocked country which covers 25,713 km² in the Balkan peninsula. Despite its relatively small size, the country is rather diverse from a climatic point of view, ranging from Alpine climate in the west and northwest of the country to sub-Mediterranean in the south. The climate of the country tends to be heavily influenced by altitude, with sub-Mediterranean climate found between 50 to 500 m, Moderate/continental/sub-Mediterranean climate found up to 600 m, Hot continental climate found between 600 to 900 m, Cold continental climate found between 900 to 1,100 m, Sub-forest/continental/mountainous climate found between 1,100 to 1,300 m, Forest/continental/mountainous climate found between 1,300 to 1,650 m, Sub-alpine mountainous climate found between 1,650 to 2,250 m, and Alpine mountainous climate found at altitudes higher than 2,250 m. Despite its geographically influenced variability, the climate of the country is generally characterized by cold winters, hot summers and a highly variable precipitation regime. Overall, weather conditions in the country are expected to become hotter and drier, with more frequent and more intense heat-waves, droughts and flood events.

Temperature

According to the Third National Communication, climate change impacts on temperature are already evident in the country. Comparing the average temperature in the 30-year period 1961–1990 to 30-year periods 1971–2000 and 1981–2010, it can be evidently observed that both the periods 1971–2000 and 1981–2010 tend to be warmer than the period 1961–1990 in most locations, with 1981–2010 period being warmer in all sampled locations (figure 7.1).

Figure 7.1: Deviation of the 30-year average from the average air temperature for the period 1961–1990 in selected locations, °C



Source: Third National Communication, 2014.
Note: In the instances where the column is not visible, there is no significant deviation in comparison to the reference period 1961–1990 for the corresponding location.

According to the Third National Communication, analysis of the period 1961–2012 shows an increase in yearly summer days in the later years of the period as opposed to the earlier years of the considered timeframe. An increase in the number of tropical nights has also been observed.

The fastest warming is projected in the mountainous northwest region of the country, while the southeast and central regions of the country are projected to warm at a more sustained pace.

Precipitation

According to the Third National Communication, a decreasing trend in precipitation can already be observed in the country. Projections from 2025 to 2100 confirm this decreasing trend and predict a decrease in total average precipitation of 8 per cent in 2075 and 13 per cent in 2100, as compared to the chosen reference period 1961–1990. The changes in precipitation are expected to be most in the summer months, which are expected to have an almost total absence of precipitation by the end of the century. Precipitation in winter months is expected to decrease less dramatically. The most affected region of the country will be the eastern part of the country. Despite the overall decrease in precipitation, precipitation will be more likely to result in extreme weather events, with potential negative consequences in terms of flash floods. Overall, water availability is expected to decrease by 18 per cent in 2100 as compared to 1990.

Wind

According to the climate change scenarios developed as part of the Third National Communication, very limited variations in wind speed are expected on the territory of the country.

Water

Climate change is expected to result in reductions in available surface water for both the Vardar River and Bregalnica River. The Strumica River Basin, already relatively poor in water resources, is expected to be the most affected by climate change. Apart from the decrease in water quantity, climate change is also expected to negatively influence the quality of water resources, with extreme weather events increasing the likelihood of flash floods (chapter 9).

Soil and land

Climate change is expected to negatively affect soil, especially in terms of erosion. Soil erosion is already a big concern for the country with over 95 per cent of the entire territory of the country being affected by erosion. Erosion in the country is both due to natural phenomena (mountainous terrain, fluctuation between drought and heavy precipitation periods) and manmade (inefficient irrigation schemes, overuse of pesticides, overuse of chemical fertilizers.).

Forests

Climate change is expected to have a negative impact on forests in the country, especially for what concerns a higher incidence of wildfires. While no specific studies have been conducted on the incidence of forest fires under changed climatic conditions in the country, the Forestry and Climate Change assessment prepared under the Third National Communication postulates a probable increase in the incidence.

While no clear trend of increase in forest fires can been identified, it is interesting to note that the peaks in burned forest correspond to a clear increase in greenhouse gases (GHG) emissions from FOLU (figures 7.2 and 7.3), also highlighting how serious the problem of wildfires is for the country, even without considering the probable impacts of climate change. The same assessment also identifies pests and diseases as a possible source of increased negative impacts for forests, without quantifying the expected impacts on forests under climate change.

Biodiversity

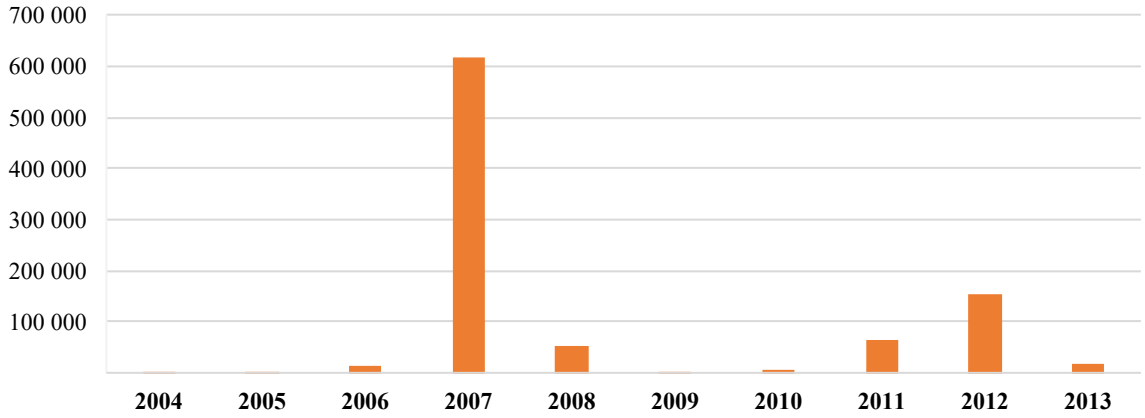
Despite its limited size, the country can be considered a "hotspot" for biodiversity in Europe, with eight of nine biomes of the Balkan Peninsula being present on the territory of the country. Over 16,000 species have been

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recorded on the territory of the country, out of which 854 can be considered endemic.

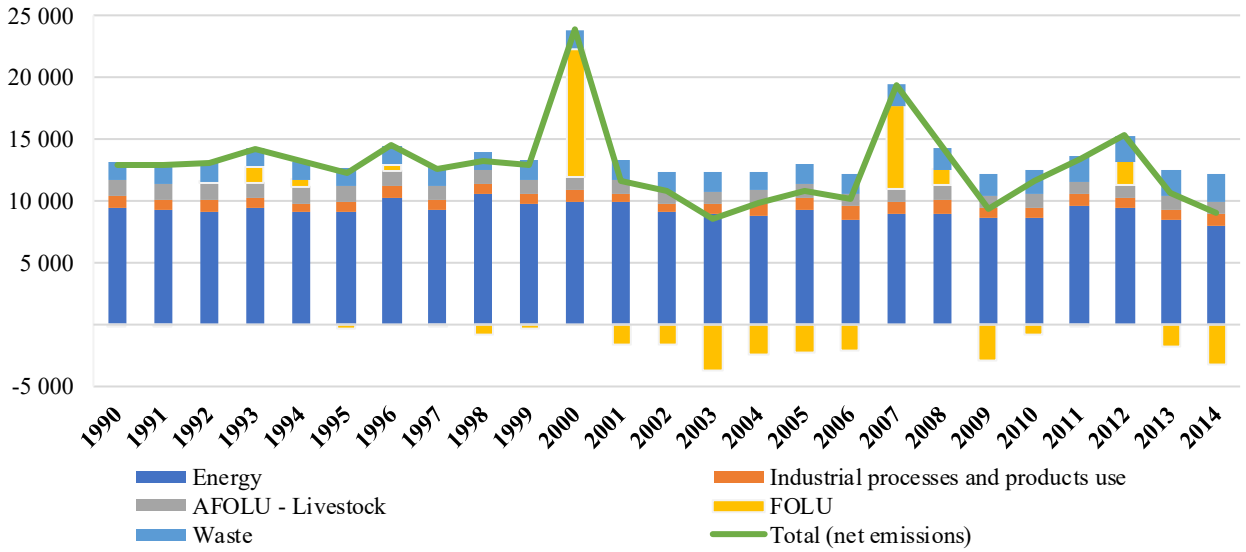
The increase in temperature and decrease in the total volume of precipitations is expected to result in extinction or in a reduced area range for several sub-alpine and alpine species and habitats. Specifically, a total of 18 habitats have been identified as potentially affected by climate change and 58 plant species and 224 animal species have been identified as vulnerable to climate change.

Figure 7.2: Burned forest, 2004–2013, m^3



Source: Forest Fire Country Studies, REC.

Figure 7.3: GHG emissions and removals by sector, 1990–2014, Gg of CO_2-eq



Source: Second Biennial Update Report, 2017.

Human health

Climate change is expected to have a negative effect on human health in the country. Future drier and warmer conditions, as well as more frequent extreme weather events are all expected to negatively affect morbidity and mortality in the country. With an expected increase of the annual incidence of heatwaves, direct health effects of heat waves are expected to increase, especially considering the relatively high urbanization of the country and the increasing trend in urbanization.

Apart from the direct effects of heat waves, an increase in certain infectious disease is expected. According to expert findings, a linear increase in cases of Salmonella could be expected with each degree of increase in temperature. In the Strumica Region, the highest level of seasonal index of salmonellosis was registered mainly in the warm months of March, July, and August, and the lowest in December and January.

Vector-borne diseases are also expected to have a higher incidence in the country. Some climate-sensitive vector-borne diseases have already occurred in the country, e.g.; West Nile fever, while other climate-sensitive vector-borne, such as malaria, have not been reported in the country but are expected in the future.

While the possibility that some positive effects on the human health could be registered in the next decades due to, for example, fewer deaths caused by cold, these limited positive effects are expected to be dwarfed by negative consequences on human health such as those caused by rising temperatures and more frequent heat waves in the summer. Increasing temperatures in the next decades are also expected to have an impact on aeroallergens, and in particular pollen, exacerbating the condition of allergy sufferers. Considering that the elderly tends to be more vulnerable to extreme weather conditions, future health burdens are likely to be exacerbated by an aging population.

Economic impacts from climate change by sector and costs of mitigation and adaptation

While the country expects access to international funding sources, such as the Green Climate Fund (GCF), to significantly contribute to the implementation of adaptation and especially mitigation measures, the country is also dedicating internal resources to climate related activities. According to the Second Biennial Update Report (SBUR), in 2017, 1.98 per cent of the planned Government budget contributed (directly or indirectly) to climate change mitigation, while the budget of Skopje for the same year anticipated a US$1,952,000 contribution to climate related initiatives. Additionally, in the period 2015–2017, the Fund for Innovation and Technology Development has financed climate related projects with €447,592.

Energy

According to a UNDP study published in 2011, Assessing Economic Impact of Climate Change, climate change is expected to increase energy demand, especially for what concerns cooling needs during the warmer periods of the year. Conversely, climate change, with the overall decrease in precipitation and water resources availability in the country is also expected to negatively influence hydropower production in the country.

Industry and mining

There is a lack of information on the impacts of anthropogenic climate change on industry and mining in the country. Climate change, extreme weather events, might hazardously impact mining legacy sites.

Agriculture

Agriculture is an important sector for the economy of the country, contributing to 9 per cent of the GDP in 2017 and more than 17 per cent to employment in the country in 2015. According to the Vulnerability Assessment of the Agriculture Sector developed during the preparation of the Third National Communication, agriculture in the country is highly vulnerable to climate change and is expected to suffer adverse effects from changes in temperature, precipitation and the frequency of extreme events such as droughts, floods and forest fires. These events, including decreased rainfall, would likely result in loss of topsoil and reduced overall soil quality, decreased biomass production and crop yields, and limited fodder availability for cattle farming. The negative impact of climate change on agriculture is expected to translate in negative impacts on yields by 2050, especially for what concerns perennial and summer crops.

Forestry

According to the Vulnerability Assessment of the Forestry Sector developed during the preparation of the Third National Communication, the forestry sector is vulnerable to climate change, with rising temperatures, increased incidence of forest fires, extreme weather events, changes in species composition and diseases and pests, all likely to negatively influence the health of forest. Changes in the distribution of tree species are likely to occur. Three endemic species of oak – Downy Oak (*Quercus pubescens*), Macedonian Oak (*Quercus macedonica*) and the Kermes Oak (*Quercus coccifera*) – and two local coniferous species (*Pinus nigra* and *Juniperus excelsa*) have been identified as most resistant to climate change and thus suitable for afforestation. The assessment was not concluding on the effect that climate change is expected to have on forest productivity, noting that some factors (such as rising temperatures and CO_2 fertilization) could be expected to contribute positively (at least until 2025),

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with other factors (such as water deficits and extreme weather events) being expected to contribute negatively. In the period between 2008 and 2013 no changes in forest productivity have been recorded.

Transport

Transport infrastructure in the country is vulnerable due to the topographical, geological and hydrogeological conditions of the country. Climate change is expected to exacerbate this vulnerability due to a higher incidence of extreme weather events.

Tourism and leisure

With a direct contribution of 1.8 per cent to the GDP (which grows to 6.6 per cent if we consider the total contribution) in 2017 and 816,06 tourist arrivals in 2015 (485,530 of which foreign tourist arrivals), tourism is a sector of growing importance in the country. The Vulnerability Assessment and Adaptation Measures of the Tourism highlights the vulnerability of winter tourism, due to its high dependence on snow, and of cultural heritage tourism, due to the vulnerability of cultural heritage in the country to extreme weather events. The Assessment also highlights the lack of investigations of the impact of climate change on the sector in the country.

Healthcare systems

The negative impact that climate change is expected to have on human health in the country are expected to translate into increased costs for the healthcare system. In particular, it is expected that the increasing incidence of extreme weather events such as floods will result in an increase in costs related to the healthcare system. Using a tool developed by WHO, an estimate of the adaptation cost was made at 12 million local currency units (as opposed to 170 million LCU in climate related damages).

Costs of inaction

Despite the economic impact that climate change is expected to have on various economic sectors in the country, there is no univocal estimation of the costs of inaction for the different sectors. Considering the high sensitivity to climate change of important sectors of the economy of the country, as well as the vulnerability of the country to extreme weather events, not taking necessary adaptation measures would result in significant costs in the future.

7.2 GHG emissions from economic sectors

The country has been developing an inventory of anthropogenic GHG emissions by sources and removals by sinks since 2000 as a part of its national communications and biennial update reports. The latest available data are presented in the SBUR and it updated up to 2014. The inventory of the SBUR includes CO_2, CH_4, N_2O, PFCs, and HFCs, as well as precursors and indirect emissions of CO, NOx, NMVOC and SO_2.

In 2014, emissions per capita were 5.9 t of CO_2-eq (approximately 30 per cent lower than that of a EU citizen), while total GHG emissions, including FOLU were 9,023.2 Gg of CO_2-eq, decrease from 10,720.7 Gg of CO_2-eq in 2013. In 2014 the energy sector accounted for 65.20 per cent of the emissions (excluding FOLU) equivalent to 7,957.52 Gg of CO_2-eq, while Industrial Processes and Product Use (IPPU), Agriculture and Waste accounted, respectively for 7.55 per cent (921.58 Gg of CO_2-eq), 8.21 per cent (1001.81 Gg of CO_2-eq) and 19.04 per cent (2,323.43) of the emissions (excluding FOLU). Table 7.1 shows a summary of historical GHG emissions and removals by sector in select years between 1990 and 2014.

Table 7.1: GHG emissions and removals by sector, 1990, 2000, 2010–2013, Gg CO_2-eq

	1990	2000	2010	2011	2012	2013	2014
Energy	9 415.52	9 983.75	8 561.21	9 558.96	9 450.60	8 419.37	7 957.52
Industrial processes and products use	941.83	828.09	901.46	937.51	776.43	923.05	921.58
AFOLU - Livestock	1 327.68	1 108.94	1 040.56	1 076.25	1 019.38	989.20	1 001.81
FOLU	- 220.04	10 418.45	- 868.11	- 236.93	1 914.75	- 1 837.01	- 3 181.09
Waste	1 391.54	1 522.77	1 980.97	2 055.18	2 146.85	2 226.07	2 323.43
Total (net emissions)	**12 856.53**	**23 862.01**	**11 616.09**	**13 390.98**	**15 308.01**	**10 720.68**	**9 023.25**

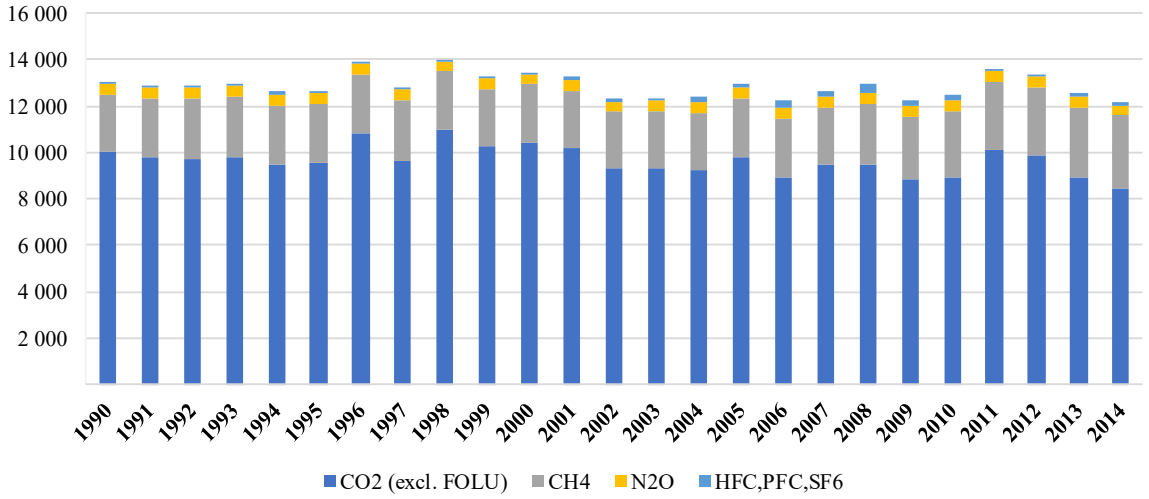
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Total (excluding FOLU)	**13 076.57**	**13 443.56**	**12 484.19**	**13 627.90**	**13 393.25**	**12 557.69**	**12 204.34**

Source: Second Biennial Update Report, 2017.

Total emissions in 2014 were below the levels of 1990 by 29.82 per cent (including FOLU). Figure 7.3 illustrates the fluctuation and GHG emission trends by sector in Gg of CO_2-eq. Looking at the historic trends in GHG emissions in the 25-year period (1990–2014), the most evident phenomenon is the wide variability of the impact of FOLU on total emissions (figure 7.4). While usually a sector with negative emissions, in some years (as is particularly evident in 2000, 2007, 2008 and 2012) the sector has been a major emitter of GHGs, resulting in an increase in overall GHG emissions. This phenomenon is caused by a dramatic increase in wildfires in these years. In 2014 CO_2 accounted for 69.3 per cent with CH_4, N_20 and F gasses accounting for 25.6 per cent, 3.6 per cent and 1.5 per cent, respectively.

Figure 7.4: Total GHG emissions by gas, excluding FOLU, 1990–2104, in Gg CO_2-eq



Source: Second Biennial Update Report, 2017. National Inventory Report

Energy

Energy is by far the highest emitting sector in the country, with 7,957.5 Gg CO_2-eq in 2014, thus accounting for 65.20 per cent of the total GHG emissions of the country (excluding FOLU), and 88 per cent of net emissions. The almost totality of emissions come from CO_2 which accounts for 96.8 per cent of the emissions, with CH_4 and N_20 accounting to 2.5 per cent and 0.7 per cent.

The high emissions of the sector are due to the fact that fossil fuels, primarily domestic lignite, account for over 80 per cent of total energy consumption in the country. While a limited decrease can be observed in the share of fossil fuels, this is primarily due to an increase in electricity imports.

Industry and mining

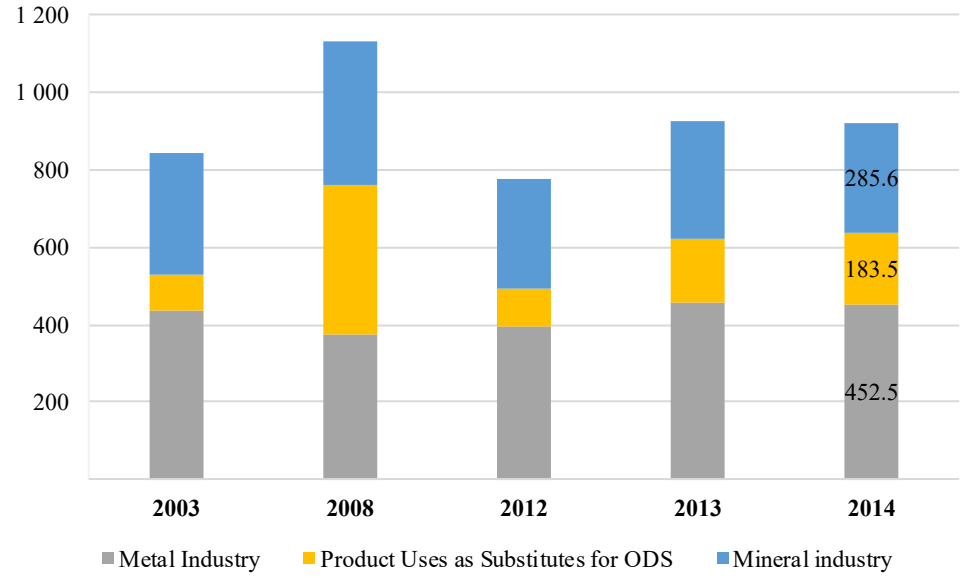
The GHG emissions from Industrial Processes and Product Use (IPPU) in the country originate mainly from production industries or from the use of substitutes of ozone depleting substances in cooling (air conditioning and refrigeration). The metal industry is the main contributor to GHG emissions, accounting for 49.1 per cent of the emissions of the sector in 2014. Mineral industry, mainly due to industries devoted to cement production, is the second largest contributor to the GHG emissions of the sector, while the remainder of the emissions of the sector is due to the use of substitutes for ozone depleting substances. Only a negligible share of GHG emissions come from the chemical industry sector, given that the country lacks a developed chemical industry. In 2014 the sector accounted for 7.6 per cent of the total GHG emissions (excluding FOLU), corresponding to 921.6 CO_2-eq. Figure 7.5 illustrates GHG emissions from the sector in Gg CO_2-eq over time and by contributing category.

If subdivided by gas, 79.88 per cent of GHG emissions in 2014 were CO_2, with HFCs ranking as the second highest contributor with 19.91 per cent of the total emissions, and CH_4 contributing with a very limited 0.21 per cent.

Agriculture

Agriculture (excluding FOLU) accounts for 8.2 per cent of the total GHG emissions of the country in 2014. Most of the emissions of the sector, 52.1 per cent are a consequence of livestock production activities, chiefly due to enteric fermentation, metabolic processes and manure management, with about 80 per cent of these emissions consequently being CH_4.

Figure 7.5: GHG emissions from the IPPU sector, 2003, 2008, 2012–2014, Gg CO_2-eq

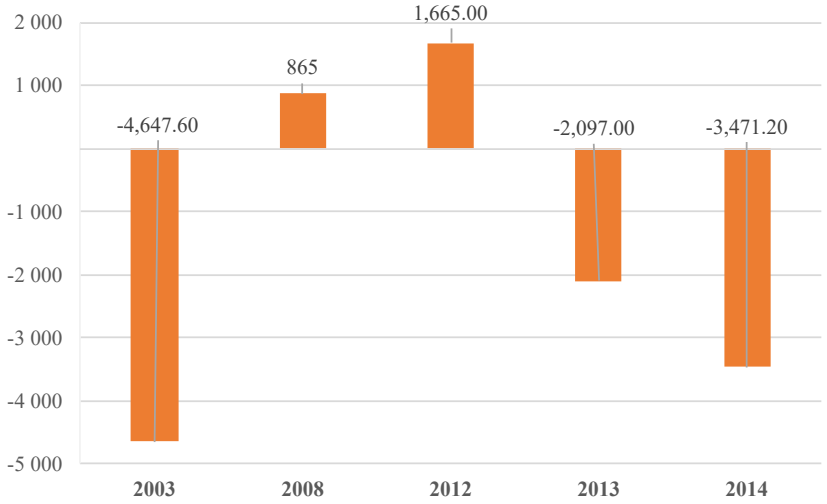


Source: Second Biennial Update Report, 2017.

Forestry

Forests and forest lands are the greatest contributors to CO_2 removals in the country, turning to CO_2 emitters only in years with a high incidence of wildfires in terms of burned area. Figure 7.6 illustrates the great fluctuation of the sector to GHG emissions over time, mainly as the result of the high incidence of this phenomenon. Another, minor but constant source of emissions for the sector is the use of wood fuel in households. In both 2013 and 2014 the sector had negative emissions.

Figure 7.6: GHG emissions for the FOLU sector, 2003, 2008, 2012–2014, Gg CO_2-eq

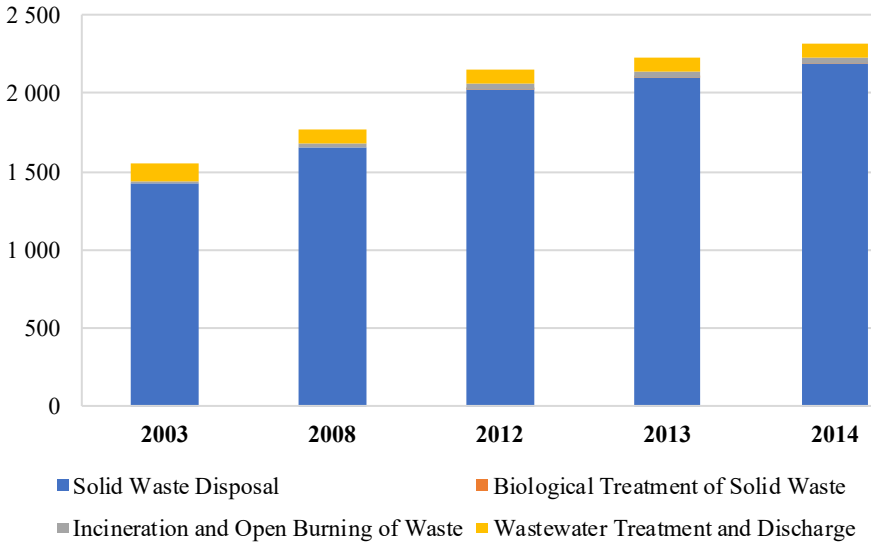


Source: Second Biennial Update Report, 2017.

Waste

In 2014, the waste sector is the second highest emitting sector in the country, accounting for 19 per cent of the total emissions, excluding FOLU, of the country. This is an increase compared with year 2013, when the waste sector accounted for 17.7 per cent of the total emissions of the country. Although the increase between 2013 and 2014 is 4.4 per cent of the total GHG emissions, excluding FOLU, it amounts to 48.64 per cent compared with 2002 and to 66.97 per cent compared with 1990. Figure 7.7 illustrates the GHG emission trends of the sector from 2003 to 2014 in Gg CO2-eq. The greatest contributor to the emissions of the sector is by far solid waste disposal, which is also the highest growing category in terms of emissions. Analysing the emissions of the sector by gas, the preponderance of CH_4 is evident, with methane emissions accounting for 97.6 per cent of the emissions of the sector.

Figure 7.7: GHG emissions from waste sector, 2003, 2008, 2021–2014, Gg CO_2-eq



Source: Second Biennial Update Report, 2017.

Transport

Transport accounted for 20.5 per cent of the overall emissions of the energy sector in 2014, with an increase in emissions of 16.4 per cent as compared to 2012. For what concerns the transportation sector, the great majority of the emissions are due to road transport.

7.3 Legal, policy and institutional framework

Legal framework

The country has no law on climate change issues as of 2018. The preparation of a law on climate action has started in 2018. The three main objectives of the legislation on climate action currently under development are the full transposition and implementation of the EU climate acquis, achieving low-carbon economy and achieving a more climate "resilient" society. Consequently, the new law is expected to take the long-term low-carbon EU strategy until 2050.

Law on Environment

Climate change issues are currently legislated on by the Law on Environment, under the chapter on global issues. Specifically, the Law on Environment prescribes the institutional arrangements for climate change issues, as well as the development and adoption of a national plan for climate change designed for six years, an action plan for prevention of the causes and mitigation of the negative effects of climate change designed for three years, as well as a national inventory of anthropogenic GHG emissions by sources and sinks. In fact, the three national communications of the country to the United Nations Framework Convention on Climate Change (UNFCCC) are considered as the national plans on climate change, which are adopted by the Government

Law on Waters

The 2008 Law on Waters lists "protection and improvement of environment and nature, aquatic ecosystems and biological diversity and protection of human health" among its objectives. However, it contains no explicit references to climate change.

Law on Waste Management

The 2004 Law on Waste Management lists human life and health as one objective while protecting the environment but contains no explicit references to climate change.

Law on Ambient Air Quality

The 2004 Law on Ambient Air Quality sets a framework for the avoidance, prevention and reduction of harmful effects of ambient air pollution on the environment and human health. Among other measures, the Law establishes limit and target values for air quality as well as alert thresholds as well as a system of air quality monitoring. Climate change is considered in the Law, with one of the stated goals of the law being to "prevent and reduce pollutions that may lead to climate change".

Law on Energy

The main innovation of the 2008 Law on Energy is the fact that it transposes the Third Energy Package. The Law also contains climate considerations, listing the decrease of the use of fossil fuels, increase in the share of renewable energy, and climate change mitigation as goals of the energy policy of the country.

Policy framework

The country does not have a dedicated strategy on climate change adaptation and mitigation. The preparation of a long-term climate change strategy for the country has started. The strategy is expected to cover both mitigation and adaptation.

Strategy for Clean Development Mechanism

The National Strategy for Clean Development Mechanism for the period 2008–2012 for the first commitment period of the Kyoto protocol for 2008–2012 was adopted with the aim of enabling the country to host CDM projects. Consequently, the main aims of the Strategy were the operationalization of the National Designated Authority, identification of priority areas for CDM projects and capacity building for participation in CDM projects. Since the adoption of the strategy the country has hosted seven registered CDM projects.

Table 7.2: List of registered CDM projects

Registration date	Title	Annex I Parties	Reductions
04-Dec-09	Skopje Cogeneration Project	The Netherlands	54 623
01-Aug-12	Macedonian Small Hydro Power Plants bundle	United Kingdom	37 442
30-Oct-12	223 MWel Combined Cycle Power Plant (CCPP) Skopje	United Kingdom	444 248
13-Nov-12	Bogdanci Wind Park 36.8 MW	Germany	66 177
19-Dec-12	PCC Hydro Climate Conservation Macedonia	Germany	12 319
29-Dec-12	Macedonian SHPP Bundle III	United Kingdom	46 757
28-Jan-14	Fuel Switch at the Hot Plate Mill of MAKSTIL A.D	Japan	8 563

Source: UNFCCC CDM Project Search at https://cdm.unfccc.int/Projects/projsearch.html
Note: Reductions indicated are estimated emission reductions in metric tons of CO_2 equivalent per annum, as stated by the project participants

National Strategy for Sustainable Development to 2030

The 2010 National Strategy for Sustainable Development clearly identifies climate change as a key challenge and as a cross-cutting issue relevant for a range of sectors from energy to rural development, with the key objective of limiting climate change and its costs and negative effects to society and the environment.

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Energy Development Strategy for the period 2008–2020 with Vision until 2030

The declared objectives of the 2010 Strategy for Energy Development include both the intensification of efforts for improvement of the energy efficiency in production, transmission and consumption of energy and the increase of the utilization of the renewable energy sources. Environmental and in particular climate change impacts of the energy sector are explicitly considered in the strategy.

Strategy for Renewable Energy until 2020

The main objective of the strategy 2010 Strategy for Renewable Energy until 2020 was to provide an analysis of the renewable energy potential of the country, in particular identify technically and commercially feasible opportunities for renewable energy exploitation. The strategy also sets a 21 per cent renewable energy target as a percentage of gross final energy consumption by 2020, in line with the EU renewable Energy Directive.

Energy Efficiency Strategy until 2020

The objective of the 2010 Energy Efficiency Strategy is to develop a framework for the acceleration of the adoption of energy efficiency, thus reducing import dependence, energy intensity, and the non-productive use of electricity, as well as facilitating the achievement of the RES target through the potential impact of energy efficiency measures on final energy consumption.

Climate Change Health Adaptation Strategy and Action Plan

In order to enable the health sector to adapt to climate change, the country, in collaboration with WHO has developed in 2011 the Climate Change Health Adaptation Strategy and Action Plan. The overarching objectives of the strategy are to raise awareness about climate change and its effect on health in the country, identify and monitor climate change related risks for human health, and improve the health system's promotion, prevention and timely response to climate change related risks for human health.

While most of the activities identified under the Action Plan have been at least partially implemented, some areas still require action, including inter-sectoral engagement and coordination that includes local governments, improvement of information and transparency in food safety control and implementation of the Hazard Analysis Critical Control Point System, strengthen vector-borne communicable diseases surveillance system and a cost-benefit analyses for adaptation measures in the health sector.

A Heat – Health Action Plan has also been developed in 2011 with the support of WHO. The Action Plan clearly links climate change with an expected increase in the incidence of heatwaves in the country and includes early warning system implemented in cooperation with the Hydrometeorological Service

Strategy for Waste Management for the period 2008–2020

One of the stated aims of the 2008 Strategy for Waste Management is to contribute to sustainable management of natural resources and waste, as well as to reduce emissions of GHG arising from waste. For what concerns the reduction of GHG emissions little has been implemented due to financial concerns, with the waste sector being the second contributor to GHG emissions in the country after the energy sector, mainly due to poor waste management practices at authorized municipal non-compliant landfills and to the presence of approximately 320 dumpsites on the territory of the country.

Sustainable Energy Action Plan of Skopje

The 2011 Sustainable Energy Action Plan of Skopje contains an inventory of GHG emissions for the city, a list of priority mitigation actions and a reduction target of 21 per cent CO_2 emissions by 2020 in comparison with 2008 which was taken as a reference year. The priority measures identified focus on the building sector, with a more limited set of measures focusing on the transport sector. While the city has implemented some measures, it is difficult to assess to which extent the city will be successful in reducing its emissions at this stage as the latest

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GHG inventory is updated to 2012. This inventory, however, shows an 8 per cent increase of GHG emissions for the City, from 4,947.80 kt CO_2-eq in 2008 to 5,342.72 kt CO_2-eq in 2012.

Resilient Skopje – Climate Change Strategy

Skopje, with financial and technical support from UNDP has prepared and adopted a Climate Change Strategy in 2017. The Strategy, which also contains an action plan, assesses the potential of reduction of GHGs at the city level as well as the vulnerability of a number of sectors to climate change. The action plan has a list of concrete measures, both geared towards emission reductions both aimed at strengthening the resilience of the city. Based on the analysis contained in the Strategy it is concluded that the city, should the measures contained in the strategy be implemented, is on track to ensure 22 per cent CO_2 emissions reduction by 2020, as compared to the reference scenario (scenario without measures).

Municipal Climate Change Strategies

Under the scope of the USAID financed "Municipal Climate Change Strategies Project", implemented by the CSO Milieukontakt Macedonia, eight municipalities (Bogdanci, Bogovinje, Krivogashtani, Mavrovo/Rostushe, Pehcevo, Studenicani, Tearce and Vinica) have developed and adopted climate change strategies in 2015. These strategies have been developed through a participatory process aimed both at including the local population in policymaking and simultaneously familiarizing them with climate change related issues and adopted as official documents by the respective municipalities with a 10-year timeframe. Educational-promotional campaign in each municipality was an important component. In the framework of the project some small scale urgent actions have been identified and implemented (energy efficiency adaptations in public buildings, river bed rehabilitations, installation of water meters).

Draft national transport strategy for the period 2018–2030

The draft transport strategy reflects on the climate change consequences of transport and aims to reduce emissions through the application of the concept of "green transport". The majority of climate relevant considerations focus on the mitigation potential of the sector. While the strategy explicitly recognizes the negative impacts of climate change on transport infrastructure, except for what concerns the preparation of a study for measuring impacts of climate change, climate variability and extreme climate events on infrastructure and services, there are no objectives directly relevant to adaptation and climate proofing of transport infrastructure.

Emission projections for GHG emissions from the sub-sector transport from the energy sector have been incorporated (processed and adopted in the Second Biennial Report on Climate Change), in the draft national transport strategy. Other sectors that are under the competence of the measures envisaged in INDC, especially the strategic and planning documents on energy, energy efficiency and renewable energy sources, are expected to include GHG emissions projections.

Sustainable development goals and targets relevant for the chapter

The current status of the country vis-à-vis Targets 1.5, 11.b, 13.1, 13.2 and 13.3 of the 2030 Agenda for Sustainable Development is summerized in box 7.1.

Box 7.1: SDG Targets: 1.5, 11.b, 13.1, 13.2, 13.3 of the 2030 Agenda for Sustainable Development

Goal 1. End poverty in all its forms everywhere

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to

climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels

Goal 13. Take urgent action to combat climate change and its impacts

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Target 13.2: Integrate climate change measures into national policies, strategies and planning

Currently, the former Yugoslav Republic of Macedonia does not have a national strategy on climate change adaptation and mitigation. Climate change concerns are at least nominally included in most important national policies and plans.

According to the current legislative provisions pertinent to social housing, housing can be provided to members of vulnerable groups in need. The definition of vulnerable groups includes, among others also internally displaced people.

Data on indicator 1.5.1 and 13.1.1 (number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population) are partly available from WHO Global Health Observatory (Monitoring health for the SDGs report, 2017). Average death rate due to natural disasters per 100,000 population during the period 2011–2015 was zero. In 2016 due to a devastating flash flood the country was among the top 10 most affected countries in the world for what concerns both disaster mortality and damages, with 1.06 deaths per 100,000 population and with US$550 million in damages, and the country with the highest percentage of GDP loss (greater than 5 per cent of the GDP).

The country has participated in the Hyogo Framework for Action 2005–2015 and has submitted two national progress reports on the implementation - for the period of 2013–2015 and for the period of 2011–2013 yet the experience has not been used to further advance strategic developments. However, the country does not have a national disaster risk strategy in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 despite the significant country vulnerability to disasters.

Concerning Indicator 1.5.4, 11.b.2 and 13.1.3 (Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies), At local level, eight municipalities, and the City of Skopje and its municipalities have developed and adopted climate change strategies with the assistance and support of international and foreign donors, with the aim to reduce local disaster risk and strengthen the resilience to climate-related hazards and natural disasters.

In the absence of a national policy framework, it is difficult to ensure coherence among the different activities and to learn from good examples to progress towards a holistic disaster risk management at all levels in the country (Target 11.b).

The Government should adopt:

(a) A strategy on climate change adaptation and mitigation that would allow municipalities to develop local strategies on climate change adaptation and mitigation;
(b) A disaster risk strategy in line with the Sendai Framework for Disaster Risk Reduction 2015–2030

The Government should ensure that climate change concerns are integrated in sectoral strategic and policy documents

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Climate change is not integrated in primary, secondary and tertiary curricula, although some ad hoc cases are reported. In the wake of the Health Strategy, climate change issues have been included in the Faculty of Medicine of the University of Ss Cyril and Methodius in Skopje. These, however, are not consequence of organic interventions, but of personal initiatives of lecturers involved. The Ministry of Environment and Physical Planning, local governments as well as international organisations and CSOs present in the country have all been active in initiatives and campaigns to raise awareness and advance citizen's education on climate change and responsible choices for every day's life.

Indicator 13.3.2: Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

The institutional, systemic and individual capacities to tackle climate change are still relatively limited in country.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning is the designated National Focal Point to UNFCCC, National Designated Authority for CDM and the key governmental body responsible for policy making with regards to climate change issues. The Ministry is also identified as the main institution responsible for coordinating the

inter-institutional cooperation for the preparation of the national plans on climate change and action plans. The Ministry is also responsible for the process of preparation of the GHG inventory and reporting obligations to UNFCCC.

Despite the centrality of the role of the Ministry for what concerns climate action, the Ministry has very limited institutional and human capacities for the role. While a unit in the Unit for Climate Change Policy with 4 staff is foreseen under the Department for Sustainable Development and Investments by the Rulebook on the internal organisation of the Ministry since 2017, currently the unit has no staff. The Councillor on Climate Change is the only staff of the Ministry directly working on climate change issues.

Ministry of Economy

The Ministry is responsible, among others, for the energy sector and such closely involved with climate relevant issues.

Ministry of Health

Within the Ministry of Health, the Commission for Monitoring Heat Health Consequences has been functional since 2007 and the Committee on Climate Change and Health has been functional since 2009. The Ministry of Health is represented in NCCC.

Deputy Prime Minister for Economic Affairs

The Deputy Prime Minister for Economic Affairs is responsible for the coordination of the implementation of SDGs at the national level and serves as the National Designed Authority for GCF and for chairing the National Council on Sustainable Development.

Crisis Management Centre

The CMC plays a fundamental role in the Crisis Management System of the country and has responsibilities in prevention, early warning, crisis mitigation, recovery and coordination. The CMC has 35 regional crisis management centres on the territory of the country.

Macedonian Academy of Sciences and Arts

The Macedonian Academy of Sciences and Arts, in particular through its Research Centre for Energy and Sustainable Development, has been engaged in the development of GHG inventories in the country. This engagement, however, tends to be project based, given that the reporting to the UNFCCC of the country has been supported by UNDP.

Hydrometeorological Service

The Hydrometeorological Service is a legal entity within the Ministry of Agriculture, Forestry and Water Economy. It is responsible for performing measurements, monitoring, and research related to the climate-meteorological and hydrological parameters in the country. It also provides early warnings of meteorological and hydrological hazards. The Hydrometeorological Service has been engaged in the elaboration of climate change scenarios, usually on a project basis.

National Climate Change Committee

The National Climate Change Committee (NCCC) has been established in 2000 as an advisory body for policy-making related to climate change issues in the country. As such, the NCCC reviews and approves all components of the national plans. Consequently, the NCCC has participated in the development of the three national communications and two biennial update reports submitted by the country so far.

It consists of 32 representatives from state bodies (such as Ministry of Agriculture, Forestry and Water Economy, Ministry of Culture, Ministry of Economy, Ministry of Education and Science, Ministry of Finance, Ministry of Foreign Affairs, Ministry of Health, Ministry of Transport and Communications), public institutions, non-

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governmental organizations and representatives of the business community, all appointed officially upon request of the Ministry of Environment and Physical Planning.

While the existence of an inter-ministerial advisory body on climate change issues is positive, participating ministries tend not to have units or departments dedicated to climate change; this translates in limited capacities, which can raise questions regarding the effectiveness of this mechanism.

Economic, fiscal and information measures

The country has no emission trading schemes and no carbon tax in place as of 2018.

As part of the process of developing the Third National Communication, a Climate Change Communication Strategy and Action Plan has been developed for the country. The Strategy, whose main declared objective is to raise awareness on climate change related issues, as well as foster broader stakeholder engagements, identifies three separate target groups, namely local governments, the business community and the general public. For each target group a set of specific measures is identified, mainly based on cost-effectiveness (maximum effectiveness with the least amount of resources). The report on implementation of the strategy and its action plan in 2013–2016 shows many achievements for all three target groups but acknowledges that the system for monitoring of implementation is insufficiently developed. A new action plan was prepared for the period 2017–2020 to implement the Climate Change Communication Strategy.

The Ministry of the Environment and Physical Planning is very active on the internet, with two very exhaustive websites, both in English and in local languages gathering both official documents on climate change issues in the country and awareness raising materials. The city of Skopje is also active on the internet with a dedicated website on climate change.

Despite the fact that awareness on climate change related issues has grown, also due to the fact that these are often linked to phenomena that are acutely perceived in the country such as air pollution or health waves, overall awareness is still insufficient, especially in more rural areas. As highlighted in the Training Needs Assessment for civil society organisations prepared under the scope of the Let's Talk About Climate Change Project implemented by CSOs the Centre for Environmental Research and Information, Connecting Natural Values and People Macedonia and Ecologists' Movement of Macedonia, awareness regarding climate change is limited in rural areas of the country.

7.4 Adaptation and mitigation measures

Mitigation scenarios

Intended Nationally Determined Contribution

The country submitted its Intended Nationally Determined Contribution (INDC) in 2015. The country intends to achieve a reduction in CO_2 emissions of 30 per cent (with existing measures (WEM)) or 36 per cent at a higher level of ambitions (with additional measures (WAM)) by 2030 compared to the business as usual scenario (BAU). INDC also estimates the additional cost of the measures necessary for the two mitigation scenarios, with €4.2 billion for the WEM and €4.5 billion for the WAM scenario. All three scenarios assume an annual GDP growth of 4.5 per cent until 2035 and a population annual growth rate of -0.09 per cent in the same period. The mitigation scenarios focus on the energy sector due to its preponderant contribution to the countries CO_2 emissions. Despite a marked decrease in CO_2 emissions compared to the BAU scenario, if compared to 1990, WEM and WAM scenarios would imply an increase in CO_2 emissions of 31 per cent and 20 per cent for in 2030, respectively.

Second Biennial Update Report

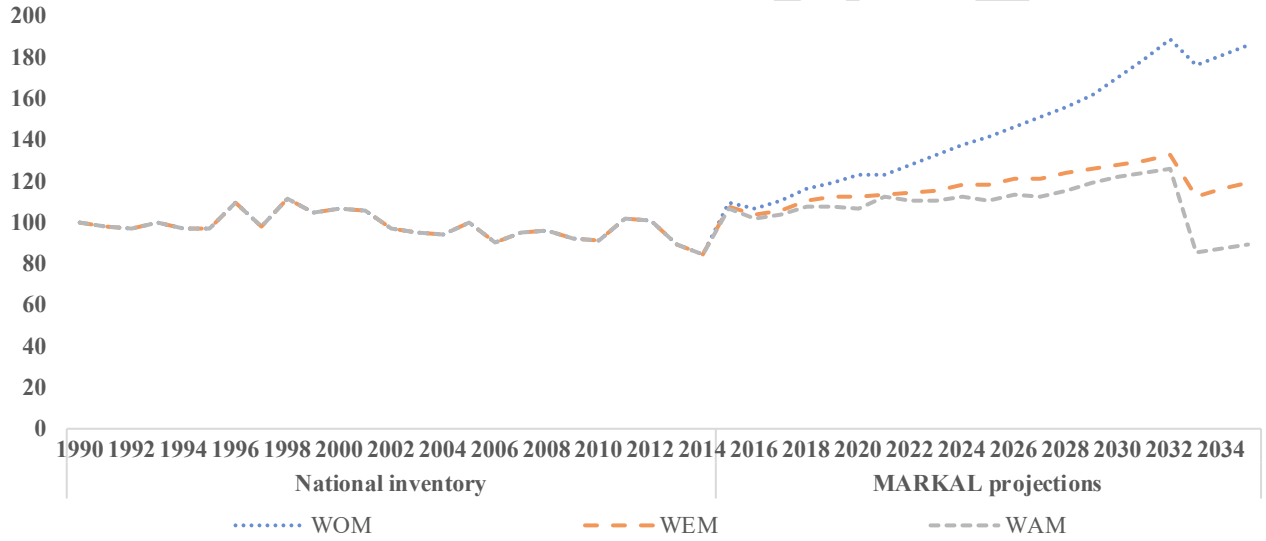
SBUR includes three GHG emissions scenarios, without measures (WOM), with existing measures (WEM) and with additional measures (WAM). Differently from the INDC, the mitigation scenarios from the SBUR include also measures from the AFOLU and waste sector and includes CH_4 and N_2O emissions. All three scenarios are based on the assumption of an average annual GDP growth of 4.3 per cent until 2035 - this figure is slightly lower than the what INDC assumes, but still very optimistic.

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Under the WOM scenario, the country's emissions would increase continually until 2035, finally increasing by 49 per cent if compared to 2012. Under the WEM scenario GHG emissions would increase continuously between 2015 and 2032, with an increase of 2.6 per cent in 2035 if compared to 2012. Under the strictest emissions reduction scenario (WAM), GHG emissions would still increase continuously between 2015 and 2032, but due to a sharper decline after 2032, the GHG emissions in 2035 would be 14 per cent lower than the emissions in 2012. Figure 7.8 shows projections of the three scenarios for the energy sector compared to historical emission data.

For what concerns the energy sector, the greatest contributor of GHG emissions in the country, with the WOM scenario there would be an increase of emissions by as much as 90 per cent if compared to 1990, an increase that would drop to 21 per cent with the WEM scenario. Only the WAM scenario would result in a decrease of GHG emissions for the energy sector in 2035: a modest 10 per cent less than 1990.

Figure 7.8: Comparison of historical GHG emissions with emissions in the WOM, WEM and WAM scenarios, 1990–2034, 1990=100



Source: Second Biennial Update Report, 2017.

Energy

The energy sector is by far the greatest contributor to GHG emissions in the country. It is also the focus sector for what concerns in the INDC for the identification of mitigation measures contributing to the WEM and WAM scenarios, with identified measures targeting both energy supply and building energy efficiency.

Mitigation measures have been implemented in the energy sector, ranging from the introduction of energy audits to subsidies for energy efficiency measures in households. Because of the dominant use of domestic lignite for electricity production, there is a potential for GHG emissions reductions. The potential for emission reductions was also noted in the INDC of the country.

Despite a 28 per cent renewable energy target as a percentage of gross final energy consumption by 2020, in 2016 the percentage of renewable energy reached only 18.2 per cent.

Climate resilience of new hydropower investments is not taken into account considering overall decrease in water resources by the end of the century.

Industry and mining

Currently, there is no evidence of sector-wide specific mitigation or adaptation measures being implemented.

Agriculture

The Vulnerability Assessment of the Agriculture Sector highlights the importance of adaptation measures (especially those regarding irrigation) and proposes (together with TNC) specific adaptation scenarios for maize, wheat and sunflower. Barriers for the implementation of adaptation measures in the agriculture sector exist. The dependence of the agriculture sector on small-scale primary producers and the preponderance of small agricultural plots, coupled with a low level of awareness about the effects of climate change among the key actors in the sector hinder a fully effective implementation of adaptive measures.

Forestry

The Vulnerability Assessment of the Forestry Sector proposes a series of measures for adaptation of the forestry sector, including developing a programme for adaptation of forestry to global climate change, establishing five monitoring stations in forest regions to follow climate changes, purchase of adequate vehicles and equipment for early response to forest fires, biomass stocking and development of a training centre for sustainable forest utilization. There is little evidence these measures have been implemented.

Transport

The transport sector is one of the three sectors specifically considered in INDC for the identification of mitigation measures contributing to the WEM and WAM scenarios. Many of these mitigation measures are explicitly considered in the draft transport strategy, some with a short-term implementation timeframe.

Tourism and leisure

The Vulnerability Assessment of this sector proposes a series of measures for adaptation of the tourism sector, the most important of which is adaptation through diversification of the sector away from highly climate-sensitive activities such as skiing and visits to outdoor natural heritage sites that are expected to be negatively affected by climate change. However, the lack of awareness of relevant stakeholders has translated in a limited implementation of the suggested adaptation measures.

7.5 Participation in international agreements and processes

United Nations Framework Convention on Climate Change

The country is a non-Annex I Party of UNFCCC since 1998 and a non-Annex B Party of the Kyoto Protocol since 2005. The country has submitted its First National Communication in 2003, its Second National Communication in 2008 and its Third National communication in 2014. The First Biennial Update Report on climate change has been developed and submitted to UNFCCC in 2015, while the Second Biennial Update Report has been submitted to UNFCCC in 2018. The country submitted its Intended Nationally Determined Contribution in 2015 and has become Party to the Paris Agreement in 2018. Under its INDC (to be considered a Nationally Determined Contribution after the ratification of the Paris Agreement), the country intends to achieve a reduction in CO_2 emissions of 30 per cent or 36 per cent at a higher level of ambitions by 2030 compared to the business as usual scenario. The INDC has no adaptation component.

The country has participated to the CDM envisaged by the Kyoto Protocol during its first commitment period. During the first commitment period, running between 2008 and 2012, six projects have been registered in the country, with an additional project registered in 2014 (table 7.2).

The country is eligible to receive funding from GCF. As of late 2018, the country is in the process of the preparation of the Country Programme for GCF. The Country Programme, which is intended as a document containing a prioritization at the national level for projects that will be submitted to GCF by the country, has a great importance, especially for the country which is highly dependent on external funding for climate action. Given the importance of GCF as a potential source of funding for the country, special attention should be paid in the elaboration of the Country Programme to align it with existing climate change priorities and commitments. GCF is already contributing, through the technical assistance of UNDP, to the development of a national adaptation plan for the country, and to urban resilience through the EBRD implemented Green Cities Programme.

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Energy Community Treaty

The country is a Contracting Party of the Energy Community Treaty since 2006. The stated aim of the Energy Community Treaty is to expand the EU internal energy market to neighbouring countries, requiring all Contracting Parties to approximate their legislation to EU standards by adopting key EU laws relating to the energy field.

Under the framework of the Energy Community, the country assumed a binding 28 per cent renewable energy target, however, the country submitted the National Renewable Action Plan, which has a less ambitious 24 per cent target.

The Monitoring Mechanism Regulation (Regulation (EU) No 525/2013) has recently entered the Energy Community acquis, with the Ministerial Council adopting a recommendation on the monitoring of GHG emissions. In this recommendation it is recommended that the Contracting Parties prepare the preconditions (legal and institutional) for the implementation of the fundamental elements of the Regulation, which is expected, once implemented, to strengthen GHG reporting.

Contracting parties are also expected to develop national energy and climate plans. Only preparatory activities have been conducted in the country with a national working group on its development yet to be established.

A draft national energy strategy by 2040 is expected to be drafted in line with the Energy Community Guidelines for Integrated Energy and Climate Plans.

The establishment of a working group for preparing an integrated national energy and climate plan is pending adoption by the government. The working group would be composed of, but not limited to, representatives from the Ministry of Economy, Ministry of Environment and Physical Planning, Cabinet of the Deputy Prime Minister in charge of economic affairs, Secretariat of European Affairs, Energy Agency, Ministry of Transport and Communications, Ministry of Finance, Ministry of Agriculture, Forestry, and Water Economy, Macedonian Academy of Sciences and Arts, and the JSC "Macedonian Power Plants" ELEM.

Covenant of Mayors for Climate and Energy

Skopje has acceded to the Covenant of Mayors for Climate and Energy in 2008 and has submitted its Sustainable Energy Action Plan in 2011. The objective is to decrease by 21 per cent the level of CO_2 emissions in 2009 from 1,222,330 tons of CO_2 to 865,640 tons of CO_2 by 2020. Skopje is the only city in the country to have submitted a SEAP, with other two smaller settlements, Karpos and Kochani, being signatories of the Covenant.

7.6 Assessment, conclusions and recommendations

Assessment

The country ratified UNFCCC, the Kyoto Protocol and the Paris Agreement. The country regularly fulfils its reporting obligations and has submitted three national communications under UNFCCC and two biennial update reports. The country submitted its INDC in 2015 and has recently been praised as one of only 16 countries globally that are on track to honour their commitments under the Paris Agreement.

The country does not have legislation to specifically address climate change, nor an overall strategic document on the issue. With climate change the country will face increasing temperatures, decreasing water resources and an increased incidence of extreme weather events. While strategic documents dealing with climate change related issues have been developed on a local and sectoral level, both the policy framework and the human and technical capacities devoted to tackle climate change are not fully sufficient to tackle the challenges posed by climate change.

Conclusions and recommendations

<u>Establishing a strong legal and institutional framework</u>

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The country lacks a comprehensive law on climate change and an overall long-term strategy on climate action. While there is coordination among the different ministries that participate in the National Climate Change Committee, participating ministries tend not to have units or departments dedicated to climate change.

Recommendation 7.1:
The Ministry of Environment and Physical Planning should develop a law on climate change and an overall long-term strategy on climate action.

Recommendation 7.2:
The Government should:

(a) Strengthen human capacities of the most relevant institutions, especially those participating in the National Climate Change Committee, by establishing in all participating ministries climate change units or climate focal points with a clear mandate for mainstreaming climate change in the relevant sectors;
(b) Provide a stronger institutional framework to the national greenhouse gas (GHG) inventory preparation process, which is currently implemented through international projects.

Adaptation to climate change

There is no dedicated strategy for adaptation to climate change. A draft project is being developed for the Green Climate Fund to prepare a national action plan for adaptation to climate change.

Within the national plans on climate change (also known as National Communications under the UNFCCC), vulnerability and adaptation assessments have been prepared for sectors of agriculture, forestry, water, health, biodiversity, crisis management, tourism and cultural heritage protection. Therefore, in the absence of another strategic document for adaptation to climate change, the national plans on climate change serve as strategic documents for adaptation to climate change. The country is very vulnerable to climate change, especially to extreme weather events, as has been tragically shown during recent flash floods. The country lacks clear strategic priorities to be able to adapt to climate change and reduce disaster risks. Despite the economic impact that climate change is expected to have on various economic sectors in the country, no estimation of the costs of inaction for the different sectors is carried out.

Recommendation 7.3:
The Government should:

(a) Develop a national adaptation plan in response to climate change, covering all relevant sectors, including specific measures;
(b) Develop a national disaster risk reduction strategy in line with the Sendai Framework for Disaster Risk Reduction;
(c) Estimate the costs of inaction, and where possible undertake cost-benefit analysis for different sectors;
(d) Implement specific measures identified in the Vulnerability Assessment of the Forestry Sector, including a programme for the adaptation of forestry to climate change;
(e) Conduct a specific study on the incidence of forest fires under changed climatic conditions in the country;
(f) Address the issue of the increasing vulnerability of the agricultural sector to climate change;
(g) Update and fully implement actions contained in the 2011 Climate Change Health Adaptation Strategy and Action Plan, including intersectoral engagement and coordination with local governments, and improvement of information on climate change health adaptation.

Climate change mitigation

The WEM and WAM scenarios prioritize the energy sector for the identification of mitigation measures. Mitigation measures have been implemented in the energy sector, ranging from the introduction of energy audits to subsidies for energy efficiency measures in households. Because of the dominant use of domestic lignite for electricity production, there is a potential for GHG emissions reductions. The percentage of renewable energy reached only 18.2 per cent in 2016 leaving a large gap to fill in order to reach by 2020 the renewable energy target of 28 per cent as a percentage of gross final energy consumption.

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Recommendation 7.4:
The Government should integrate climate change issues into overall energy planning and develop integrated climate and energy plans, which would include the gradual switch from the use of domestic lignite for electricity production to more sustainable and less polluting sources of energy, and the increase of the percentage of gross final energy consumption from renewable energies to meet the national target of 21 per cent by 2020.

The waste sector is the second highest emitting sector in the country, accounting for 19 per cent of the total emissions in 2014, excluding FOLU. Solid waste disposal is by far the greatest contributor to the emissions of the waste sector, which is also the highest growing category in terms of emissions. Analysing the emissions of the sector by gas, the preponderance of CH_4 is evident, with methane emissions accounting for 97.6 per cent of the emissions of the waste sector.

Recommendation 7.5:
The Government should address GHG emissions from the waste sector through an integrated approach, including by improving the current waste management system.

Action at municipal level

The City of Skopje has implemented some measures included in the 2011 Sustainable Energy Action Plan of Skopje, mostly in building sector and to a limited extent in transport sector. However the 2012 inventory of GHG shows an 8 per cent increase of GHG emissions for the City compared with the reference year 2008.

Skopje has prepared and adopted the Climate Change Strategy in 2017 with financial and technical support from UNDP. It is estimated that the City would be on track to ensure 22 per cent CO_2 emissions reduction by 2020, as compared to the reference scenario (scenario without measures), provided the measures contained in the strategy are implemented.

In 2015, eight municipalities developed and adopted climate change strategies within the USAID financed "Municipal Climate Change Strategies Project". These strategies have been developed through a participatory process aimed both at including the local population in policymaking and simultaneously familiarizing them with climate change related issues and adopted as official documents by the respective municipalities with a 10-year timeframe. Educational-promotional campaign in each municipality was an important component.

Recommendation 7.6:
The Government should:

(a) Encourage cities to become signatories to the Covenant of Mayors for Climate and Energy and to subsequently prepare, adopt and implement sustainable energy (and climate) action plans;
(b) Support at municipal level the implementation of measures that would achieve GHG emissions reduction, which are included in the 2011 Skopje Sustainable Energy Action Plan;
(c) Advise the City of Skopje to integrate the updated 2011 Skopje Sustainable Energy Action Plan with the 2017 Resilient Skopje Climate Change Strategy, financed by the United Nations Development Programme, to avoid duplications and overlaps;
(d) Advise municipalities to use the experience gained in the implementation of the 2015 Municipal Climate Change Strategies Project, funded by the United States Agency for International Development (USAID), for the eight municipalities involved, including the project participatory process, in considering the preparation of their local climate change strategies and in raising the awareness of the local population.

Awareness

Despite improvements on climate change awareness, the overall awareness on climate change remains limited. Climate change issues are not integrated in primary, secondary and tertiary curricula. Most awareness raising measures are foreseen by donor-financed projects.

Recommendation 7.7:
The Government should:

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(a) Regularly and systematically implement measures aimed at raising awareness on climate-change-related issues;

(b) Ensure that climate-change-related issues are integrated into primary, secondary and tertiary curricula.

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PART III: MEDIA AND POLLUTION MANAGEMENT

DRAFT

Chapter 8

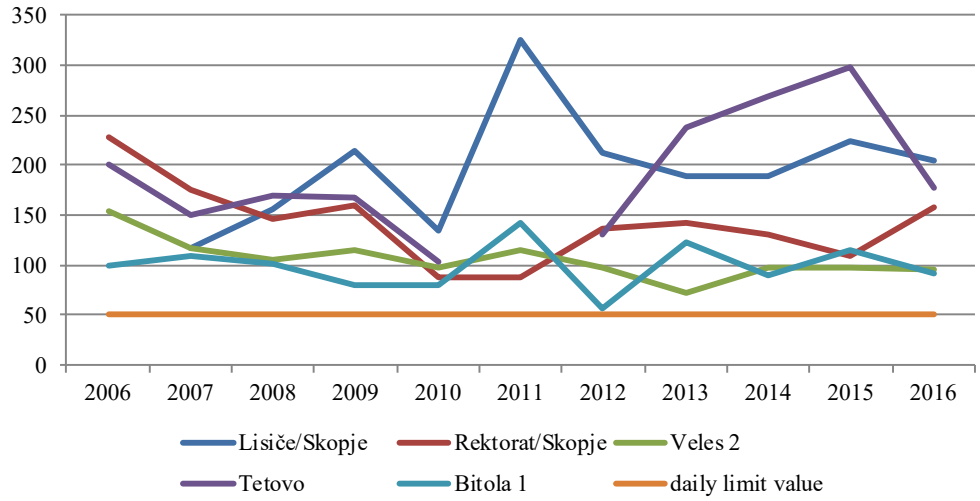
AIR PROTECTION

8.1 Urban and rural air quality

Air quality monitoring is performed automatically in the former Yugoslav Republic of Macedonia since the late 1990's. Since 2012 the results of continuous measurements are accessible to the public in nearly-real-time. The Ministry of Environment and Physical Planning and MEIC compiled a report on air quality assessment covering a decade between 2005 and 2015. The main highlights of the report show that "air pollution in the country is a cause of serious concern, as the limit values set for protection of human health, especially for particulate matter are exceeded significantly".

Figure 8.1 shows the 36th highest mean average daily concentration of PM_{10} emissions recorded in selected stations though out the country, for the period 2006–2016. PM_{10} is monitored at all stations within the state air quality monitoring network but, due to often failures of the monitoring equipment there is insufficient time coverage with significant data gaps, not allowing the presentation of trends of average annual values or highest mean daily values for all stations.

Figure 8.1: 36th highest mean average daily concentration of PM_{10}, 2006–2016, µg/m³



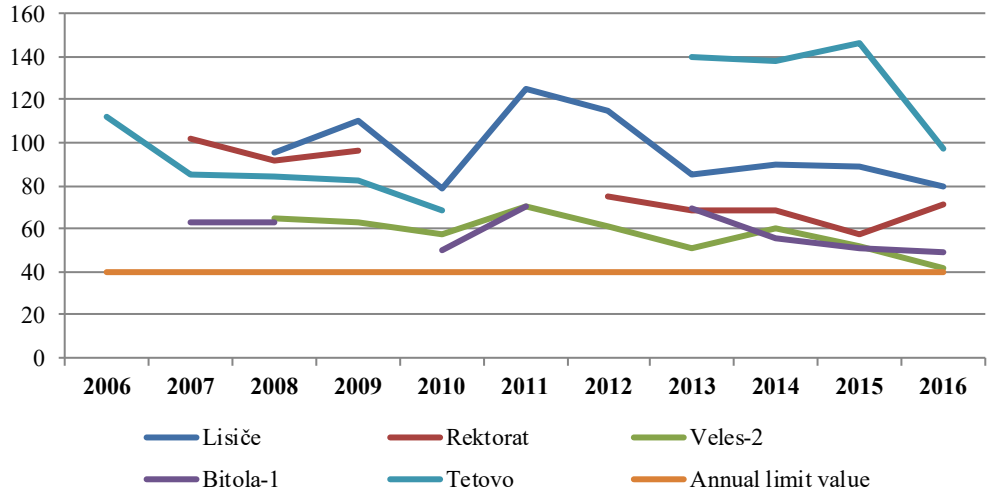
Source: Environmental Indicators 2018, Ministry of Environment and Physical Planning.

Although the figure shows the highest recorded values, with significant peaks recorded at the station Lisiče in Skopje in 2011 (326 µg/m³) and in Tetovo in 2015 (298 µg/m³) the reason for concern is obvious, since all values are well above daily limit value of 50 µg/m³ set by the national and European legislation as well as by WHO guidelines.

The annual mean concentrations of PM_{10} have exceeded the annual limit value of 40 µg/m³ at all urban monitoring sites in all years since 2006 (figure 8.2). PM_{10} was also monitored in the only rural station at Lazaropole, but data with sufficient time coverage (more than 75 per cent of valid measurements throughout the year) are available only for 2006, 2007 and 2014, when the concentrations of PM_{10} were significantly lower than in urban locations (15.3 µg/m³ on average).

Concentrations of fine particles ($PM_{2.5}$) have been measured at two sites in Skopje since 2012. Annual average concentrations have been in the range of 40-50 µg/m³ which is twice the level of the limit value of the national and European legislation and above the corresponding WHO guideline of 10 µg/m³.

Figure 8.2: Annual average concentration of PM_{10}, 2006–2016, µg/m³



Source: Environmental Indicators 2018, Ministry of Environment and Physical Planning.

There is a clear and stable decreasing trend of SO_2 concentrations of in ambient air during the observed decade. While in 2006 the highest annual average recorded concentration of SO_2 was 27.7 µg/m³ in Veles and 25.4 µg/m³ (Center, Skopje), during 2016 the highest average annual concentrations were recorded in stations Miladinovci (Skopje) 4.05 µg/m³ and Bitola 1 (located 14 km far from TPP "Bitola") 4 µg/m³.

Between 2006 and 2016 mean annual concentration of NO_2 ranged from 34.06 µg/m³ in 2006 to 21 µg/m³ in 2016, not exceeding the annual limit value of 40 µg/m³. Exceedances of concentrations of nitrogen oxides were recorded in individual stations in Skopje, but since 2013 there were no exceedances. However, the mean annual concentration at the station Rektorat in Skopje for 2017 was 36.85 µg/m³, which highlights the possibility of exceedances in the future and the necessity of less polluting transport in the city.

No data meeting data quality objectives on measured values of SO_2 and NO_2 at the only rural background station (Lazaropole) are available, except for SO_2 in the last three years (2015–2017) when critical level for the protection of vegetation and natural ecosystems (20 µg/m³) was not exceeded. Data from other stations are not relevant for assessment of the risk posed by air pollution to vegetation and natural ecosystems, since it has to be monitored away from urban areas.

Concentrations of tropospheric ozone fluctuated between 2006 and 2016. Ozone concentrations are monitored in 15 urban stations and the only rural station in Lazaropole. As expected, the highest 8-hour mean concentrations are detected at the rural station in Lazaropole, on average 120 µg/m³, which is over the WHO recommendation (100 µg/m³ 8-hour mean) and at the national/European long-term target value for the purpose of human health protection, set at 120 µg/m³, as maximum daily 8-hour mean value during a calendar year. At the same time, concentrations in Skopje were on average between 30 and 40 µg/m³. Considering the concentrations at Lazaropole, the similar situation could be in other rural places where high ground level ozone concentrations can negatively affect vegetation. Although widely monitored throughout the territory, data recorded in urban stations cannot provide enough information on ozone concentrations impacts on vegetation. Considering the nature of ground level ozone as a secondary pollutant formed out of its precursors by photochemical reactions in the polluted air, it is usually measured at background locations and is often combined with assessing of impact on vegetation growth (foliar damage) and biodiversity.

Concentrations of heavy metals and polycyclic aromatic hydrocarbons in particulate matter are not monitored on a regular basis in the country, since there is no accredited analytic laboratory to perform this task. Some data of indicative nature are available from a campaign measurement and analysis realized between August 2015 and March 2016 in Skopje and October 2015 – February 2016 in Tetovo. The campaign showed increased concentrations of benzo(a)pyrene during the heating season in Skopje – 8 ng/m³ compared to target value of 1 ng/m³. According to the results of this campaign the heavy metal concentrations were well below the target values set for the protection of human health, both in Skopje and in Tetovo. In the scope of this campaign content of

PM_{10} particles were also analyzed in terms of presence of levoglucosan, major organic component of smoke particles from biomass burning. Average levoglucosan level at Karpos station (Skopje) during the campaign was very high, 852 ng/m^3, which is among the highest values measured in Europe.

There are no enough data on concentration of benzene to establish a long-term trend. According to the Air Quality Assessment Report for the period 2005–2015, benzene has been continuously monitored at two automatic stations in Skopje during 2012–2014. The limit value for benzene was exceeded in station Center in 2013, while in 2012 recorded values were very close to the limit value at both stations. During 2011–2012 benzene was measured in two different locations in Skopje with annual mean concentrations in the range of 3.2 to 3.7 µg/m^3. Benzene is monitored at three automatic stations which are all located in Skopje, but last available data meeting data quality objectives are for the station Karpos for 2013 where the annual mean concentration was 2.8 µg/m^3.

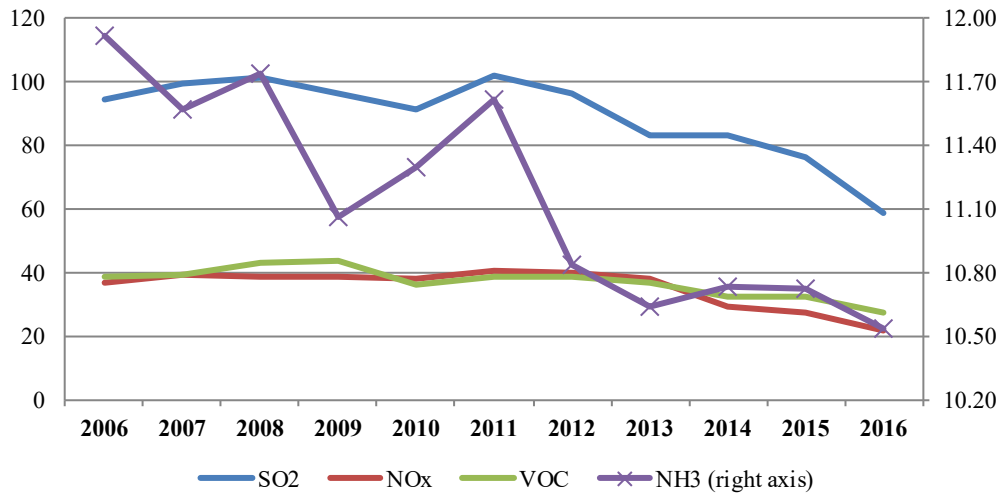
Although six pollutants (SO_2, NOx, PM_{10}, $PM_{2.5}$, CO and O_3) are continuously monitored, in many cases the data time coverage is lower than 70 per cent. However, on the basis of available monitoring data and other information, it is clear that air quality has been improved in the last decade, but several problems remained persistent throughout the observed period:

- High concentrations of PM in winter months, followed by high concentrations of CO and benzo(a)pyrene and high content of levoglucosan in PM_{10}, coupled with statistical data on structure of domestic heating indicate that burning of firewood presents significant threat to air quality;
- Elevated levels of NOx concentrations in Skopje, as well as high background levels of tropospheric ozone show that the traffic in the capital is another important issue for air quality;
- Insufficient data on the levels of heavy metals in ambient air prevent reasoned conclusions on impact of metal industry on air quality;
- Data on rural air quality and impact of air pollution on ecosystems are lacking. Data on ozone concentrations from only rural air quality monitoring station (Lazaropole) pose a matter of concern.

8.2 Trends in emission levels

The last report on emission levels submitted in April 2018 to the Secretariat of the Convention on Long-range Transboundary Air Pollution (CLRTAP) covers emissions in the period 1990–2016 (figure 8.3). The report was compiled in accordance with the revised CLTRAP Reporting Guidelines (2014).

Figure 8.3: SO_2, NOx, NMVOC andNH_3, emissions, 2006–2016, kt



Source: 2018 Informative Inventory Report.

There is a visible decreasing trend of SO_2 and NOx emissions in the observed period, which, according to the explanation given in the report, vary and depend on the coal consumption in electricity production, the dominant source emissions for these pollutants. Apart from reduced amount of burnt coal in TPP Bitola, reduced operation of TPP Oslomej and gasification of some heating plants, the latest drop of emissions, from 2015 to 2016 is

partially due to introduction of the use of a national emission factor in the calculation of emissions from electricity production sector. Emission reduction of SO_2 and NOx in the observed decade is about 40 per cent for both pollutants.

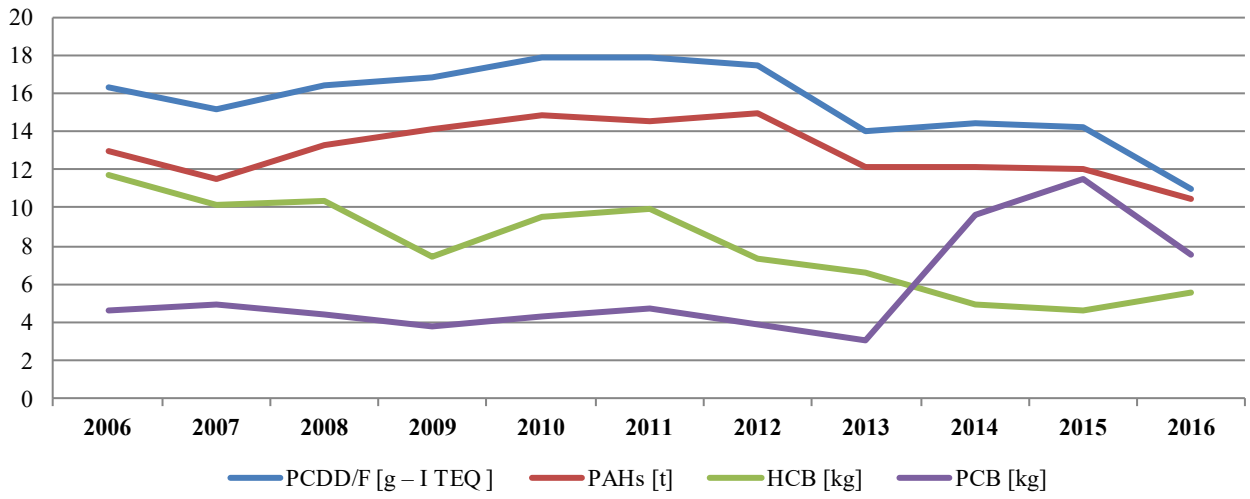
Emissions of ammonia (NH_3) have slow, but stable decreasing trend and have been reduced for 12.5 per cent in the period 2006–2016. Decrease is reasoned by decreasing of emissions from agriculture (manure management) related to decline of the livestock. Emissions in 2016 were 12 per cent below national emission ceiling value (12 Gg NH_3).

Emissions of volatile organic compounds (VOCs) have also declined since 2006. In the 2018 Informative Inventory Report, this decline is attributed to decrease of emissions from industrial processes and other sources such as residential heating.

As for the emissions of persistent organic pollutants (POPs), the National Inventory System provides data on emissions of polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/F) expressed in grams, using toxic equivalency (TEQ), which enable expressing mixture of dioxins and dioxin-like compounds with single number which represent the product of the concentration and individual values of toxic equivalency factor for each congener (figure 8.4). Also, it gives information on emissions of polyaromatic hydrocarbons (PAHs) in tons and polychlorinated biphenyls and hexachlorobenzene in kilograms.

The country did not exceed the emission levels set in POPs Protocol in 2016. Although the Figure 8.4 shows some fluctuations, POPs emissions have reduced in 2006–2016 as follows: 32.4 per cent PCDD/F, 19 per cent PAHs and 52.6 per cent HCB. During the observed period, the quantity of PCBs has increased significantly since 2013, although the emissions in 2016 were only 7.5 kg. The most important PCBs emission source in 2016 was lead production, with a share of 74 per cent in the total national emissions.

Figure 8.4: POPs emissions, 2006–2016

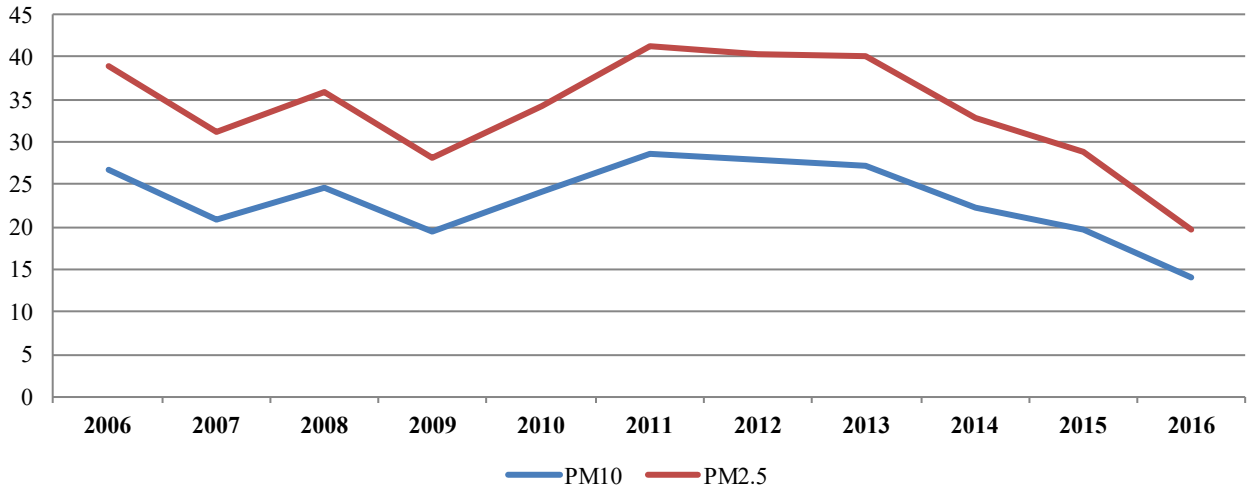


Source: 2018 Informative Inventory Report.

The main emission sources for PM_{10} are residential heating (46 per cent), industrial processes (mainly ferroalloys production) with 22 per cent and production of energy (11 per cent). Similarly, the main emission sources for $PM_{2.5}$ are residential heating with 58 per cent, industrial processes (mainly ferroalloys production) with 20 per cent and production of energy (6 per cent).

Reductions of emissions of particulate matters in recent years are attributed to decreased production of ferroalloys (figure 8.5). The installation producing ferrosilicon has worked with limited capacity since the end of 2014 and during 2015 and was closed again in November 2016 for non-compliance with conditions related to air emissions abatement equipment in its integrated environmental permit. Furthermore, the decrease in emissions is associated with the reduced consumption of coal and heavy fuel oil in the last years.

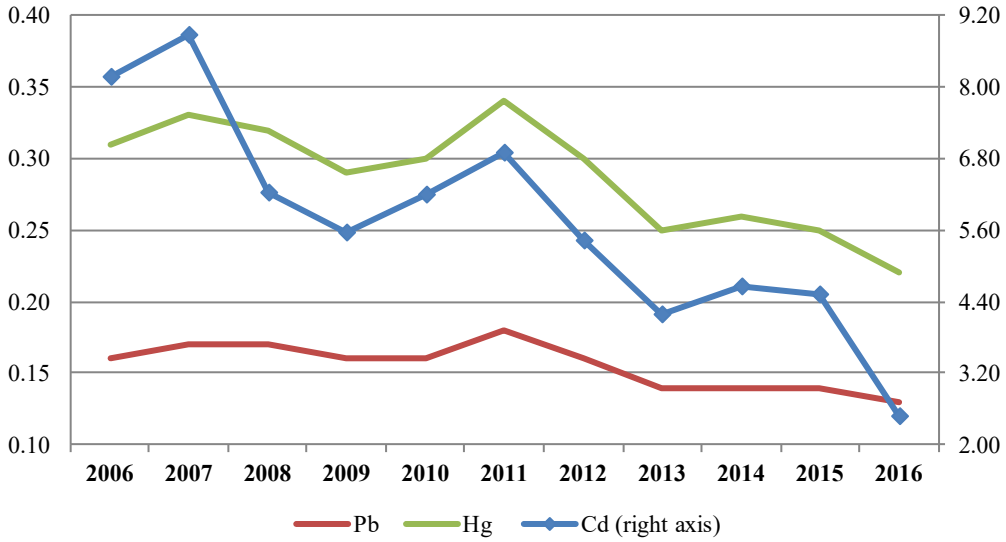
Figure 8.5: PM_{10} and $PM_{2.5}$ emissions, 2006–2016, kt



Source: 2018 Informative Inventory Report.

Emissions of lead and mercury are low and stable since 2003 (figure 8.6), when the smelter located in Veles stopped the production of lead and zinc. Additional reductions of lead emissions were achieved by prohibiting gasoline with lead additives in 2006 and emissions of mercury from residential heating were decreased by changing the fuel in residential heating systems in Skopje to natural gas. Emissions of cadmium are also reduced for some 70 per cent in the period 2006–2016 due to reduced metal production.

Figure 8.6: Emissions of heavy metals, 2006–2016, kt



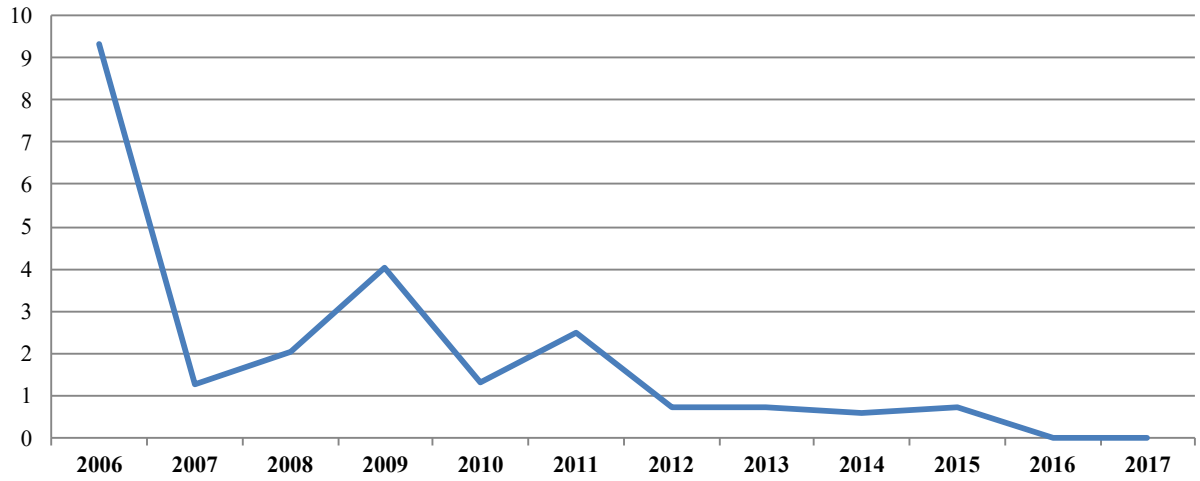
Source: 2018 Informative Inventory Report.

Although consumption of hydrochlorofluorocarbons (HCFCs) is still permitted in accordance with the Montreal Protocol, consumption of these ozone depleting substances is phased out in the former Yugoslav Republic of Macedonia as of 2016 (Figure 8.7).

The former Yugoslav Republic of Macedonia submitted its Second Biennial Update Report on Climate Change to the Secretariat of the United National Framework Convention on Climate Change (UNFCCC), in January 2017. Before this last report, three National Communications (2003, 2008 and 2014) and the First Biennial Update Report (2015) were submitted to UNFCCC. This report updates existing inventory data and adds data for 2013

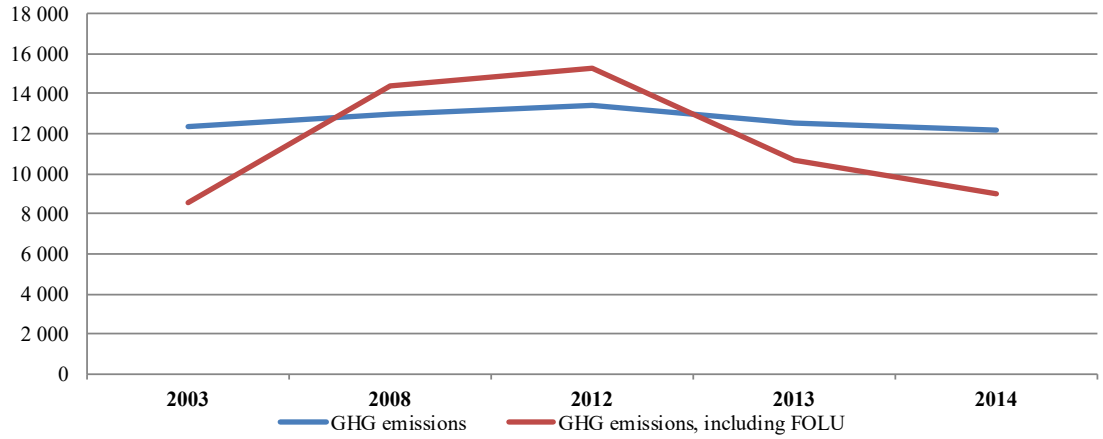
and 2014. Figure 8.8 presents the trend of total net emissions of greenhouse gasses expressed in Gg of CO_2 equivalent.

Figure 8.7: Consumption of ODS, 2006–2017, t



Source: Ministry of Environment and Physical Planning, 2018

Figure 8.8: GHG emissions, 2003–2014, Gg CO_2 eq



Source: Second Biennial Update Report on Climate Change

The peak of total net GHG emissions in 2012 is attributed to emissions from forestry and other land use (FOLU) sector, due to intense forest fires during 2012. This peak is not distinct when emissions from this sector are excluded (blue line). The country is committed to reduce by 2030 the CO_2 emissions from fossil fuels combustion by 30 per cent, that is, by 36 per cent at a higher level of ambition compared to the business as usual (BAU) scenario in accordance with Paris Agreement. CO_2 emissions from fossil fuels combustion cover almost 80 per cent of the total GHG emissions in the country with a dominant share of the following sectors: energy supply, buildings and transport.

8.3 Performance and gaps in air monitoring networks

State automatic monitoring system for ambient air quality (SAMSAAQ) consists of 17 fixed monitoring stations (table 8.1). One mobile station is used additionally to complement monitoring results. For the purpose of air quality assessment, the former Yugoslav Republic of Macedonia is divided to western and eastern air quality zone and agglomeration Skopje.

The latest upgrade of the State automatic air quality monitoring system was in 2017, when measurement instruments were replaced in the following stations: Kumanovo, Bitola 2 and Tetovo. As of 2017, concentrations of $PM_{2.5}$ are also measured at these three locations. Furthermore, a new mobile station was installed in Skopje. This supply was funded by the EU technical support project.

Table 8.1: State automatic monitoring system for ambient air quality

	AQ zone	Location	Station type	Parameters
1	Agglomeration Skopje	Centar	Urban traffic	O_3, NO_2, SO_2, CO, PM_{10}, $PM_{2.5}$, BTX
2	Agglomeration Skopje	Gazi Baba	Sub-urban background	NO_2, SO_2, CO, PM_{10}
3	Agglomeration Skopje	Karpos	Urban background	O_3, NO_2, SO_2, CO, PM_{10}, $PM_{2.5}$, BTX
4	Agglomeration Skopje	Lisiče	Urban traffic/industrial	O_3, NO_2, SO_2, CO, PM_{10}
5	Agglomeration Skopje	Rektorat	Urban traffic	O_3, NO_2, CO, PM_{10}, BTX
6	Agglomeration Skopje	Miladinovci	Industrial	O_3, NO_2, SO_2, CO, PM_{10}, BTX
7	Western zone	Bitola 1	Industrial	O_3, NO_2, SO_2, CO, PM_{10}
8	Western zone	Bitola 2	Urban background	O_3, NO_2, SO_2, CO, PM_{10}, $PM_{2.5}$
9	Western zone	Kicevo	Sub-urban background	O_3, NO_2, SO_2, CO, PM_{10}
10	Western zone	Lazaropole	Rural background	O_3, NO_2, SO_2, PM_{10}
11	Western zone	Tetovo	Urban traffic/industrial	O_3, NO_2, SO_2, CO, PM_{10}, $PM_{2.5}$
12	Western zone	Gostivar	Sub-urban background	O_3, NO_2, SO_2, CO, PM_{10}
13	Eastern zone	Veles 2	Sub-urban background	O_3, NO_2, SO_2, CO, PM_{10}
14	Eastern zone	Kavadarci	Urban traffic	O_3, NO_2, SO_2, CO, PM_{10}
15	Eastern zone	Kocani	Sub-urban background	O_3, NO_2, SO_2, CO, PM_{10}
16	Eastern zone	Kumanovo	Sub-urban background	O_3, NO_2, SO_2, CO, PM_{10}, $PM_{2.5}$
17	Eastern zone	Strumica	Sub-urban background	O_3, NO_2, SO_2, CO, PM_{10}

Source: Ministry of Environment and Physical Planning, 2018.
Note: BTX refers to mixtures of benzene, toluene, and the three xylene isomers.

Monitoring stations are often positioned so that they are affected by multiple factors, e.g. both industry and traffic or traffic and domestic heating. When these impacts are not dominant, stations monitor representative background pollution. In other cases, without further analysis it is difficult to distinct level of contribution of different sources. Despite of the type of station almost the same parameters are monitored in each station. Although the country is Party to EMEP protocol to CLTRAP, the only rural background station (Lazaropole) is not equipped as an EMEP station in order to monitor parameters foreseen by EMEP Programme, including transboundary transport of pollution. One station is not enough to assess rural air quality and impact of pollution on environment.

In the period 2006–2016 $PM_{2.5}$ and benzene (BTX) were measured only in Skopje agglomeration. Analysis of heavy metals and PAHs in particulate matters is performed only occasionally, when the budget is available, since there is no accredited laboratory for air quality assessment in the country.

Measurement instruments are regularly and professionally maintained and calibrated by the calibration laboratory of the Ministry of Environment and Physical Planning, which participates in inter-laboratory comparisons organized by JRC/EC and WHO and the results are traceable and completely satisfactory. However, since there is no an official accreditation of that laboratory, accuracy of data on air quality can be questioned, especially when it comes to their international comparability and their use for reporting to EIONET.

Air quality data from the state monitoring network are collected by MEIC. MEIC has established and manages the air quality information system AIRVIRO, which collects, validates and processes the air quality data. This system is connected to a web portal for air quality.

8.4 Pressures on air quality

Summarizing the findings of the 2018 Informative Inventory Report it can be concluded that energy sector, including, as per nomenclature for reporting, public electricity and heat production, transport, other sectors (mainly residential heating) and stationary combustion in manufacturing industries and construction, is a major source of air emissions. Industrial processes and product use, agriculture and waste sector also contribute to emissions of the main pollutants.

Major part of NOx emissions, 41 per cent comes from public electricity and heat production, while transport and stationary combustion in manufacturing industries and construction contribute to 31 per cent and 20 per cent

respectively. Public electricity and heat production is responsible for more than 90 per cent of SO_2 emissions. Agriculture is major contributor of ammonia emissions (89 per cent). Residential heating is major contributor to PAH emissions with share of 79 per cent. Residential heating is a major source of PM emissions: 46 per cent of emissions of PM_{10} and 58 per cent of $PM_{2.5}$. Industrial processes and product use contribute with 22 per cent to emissions of PM_{10} and 20 per cent to emissions of $PM_{2.5}$, while public electricity and heat production is responsible for 11 per cent of emissions of PM_{10} and 6 per cent of emissions of $PM_{2.5}$. Public electricity and heat production is also a major contributor to emissions of heavy metals with share of 49 per cent in total emissions of cadmium and 45 per cent of total emissions of mercury. For emissions of VOCs there is no single dominant source: 29 per cent is emitted from residential heating, 20 per cent from industrial processes and product use, 16 per cent agriculture, 14 per cent from waste and 9 per cent from transport.

Agriculture

According to the 2018 Informative Inventory Report, 89 per cent of the total national emissions of NH_3 are emitted from the agricultural sector. Agriculture is also contributing some 16 per cent in emissions of VOCs and 12 per cent in total PM_{10} emissions. The most of emissions comes from animal husbandry and manure management, use of inorganic nitrogen-based fertilizers and animal manure applied to soils.

The share of Agriculture in total GHG emissions is 8.2 per cent. The Second Biennial Update Report on climate change states that within the agriculture sector the dominant emitter of GHG is livestock production activities, which generated 52.1 per cent of emissions. It also points out that GHG emissions from crop production are generated by inadequate or excessive fertilization with mineral fertilizers, infrequent and inadequate application of manure, inadequate management of arable land and improper management when fertilizing.

Statistical data show that 59 per cent of the total agricultural land are pastures and that over the last period an average of 0.35 livestock units were reared per hectare of utilized agricultural area, which is almost half of the EU–28 average.

According to the Rural Development Programme 2014–2020, the latest data show a low use of mineral fertilizers on average (around 104 kg NPK[8]/ha of arable land or 12 kg NPK/ha agriculture land).

Energy

In 2016, the energy production (public electricity and heat production) contributed 41 per cent to the total emissions of NOx and even 91 per cent to the SO_2 emissions. Contribution to CO emissions is only 8 per cent, while contribution to PM_{10} and $PM_{2.5}$ emissions is estimated to 11 per cent and 6 per cent respectively. Consumption of energy, especially in residential heating, has major contribution to PM emissions.

Energy production is also dominant source of emissions of lead (38 per cent), mercury (45 per cent) and cadmium (49 per cent).

Public electricity production is dominated by two large plants, which are using lignite as a major fuel and heavy fuel oil as a supporting fuel, while natural gas is not widely used for power generation. District heating plants are all operated using natural gas. As of 2018, biofuels are not used for power or district heat generation.

The 2012 Programme for Gradual Reduction of Emissions of Certain Polluting Substances covers nine large combustion plants and their contribution to emissions of NOx, SO_2 and total suspended particles (TSP). According to the Programme, TPP Bitola has by far the most dominant impact on air pollution – 70.88 per cent NOx, 62.96 per cent SO_2, and 74.37 per cent of TSP. TPP Bitola is coal fired and has three blocks with total capacity of 675 MW. As of November 2018, it does not have an integrated environmental permit.

Industry and mining

[8] NPK: nitrogen, phosphorus, and potassium

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Industry including solvent use contributes with around 20 per cent to emissions of NMVOC, NOx and PM_{10}. Production of lead alone is a major source of PCB emissions, with a share of 74 per cent. Metal production is also contributing with 6 per cent to emissions of PCDD/F and is a significant contributor to emissions of heavy metals.

Manufacturing industries contribute with 10 per cent to emissions of PAH, with 11 per cent to emissions of SO_2 and with 9 per cent to emissions of CO.

Some industries are taking actions to abate air pollution, e.g. installation of electrostatic filters in two rotary kilns as well as scrubbers for reduction of emission gases from two electric furnaces fulfilling the integrated environmental permit, while others closed for failing to install abatement equipment requested under the integrated environmental permit.

Transport

In line with the 2018 Informative Inventory Report, transport is one of the key sources of CO and NOx national emissions, with contribution of 67 per cent of emissions of CO and 31 per cent of NOx. It also contributes 9 per cent to the total national emissions of VOCs.

Environmental statistics for 2017 present the total annual emission of air pollutants by sectors under the Selected Nomenclature for Air Pollution and with that methodology estimates that emissions from the transport sector during the last years have been on average, around 14 per cent.

In passenger transport, which is dominant in the transport structure, passenger cars have the greatest share (77 per cent), followed by buses (22.1), while railway was used only 0.9 per cent in 2016. Average age of passenger cars in 2016 was 18.6 years, while buses were in average 17.8 years old.

Since 2015, with support from the European Bank for Reconstruction and Development within the Railways Fleet Renewal Project, the country acquired four new diesel passenger multiple units and two new electric multiple passenger units. Moreover, since 2011, 312 buses compliant with the EURO 4 standard have been procured for public transport, however, many of them are out of order. Public transport enterprise of Skopje put three gas powered buses and one electric bus into the public transport system. There was also a successful technical project of the Faculty of Mechanical Engineering of the University of Skopje on retrofitting old diesel buses for use of gas.

Housing

Residential heating has a major share in total national emissions of PAHs of 79 per cent and PCDD/F of 77 per cent. It also contributes with 67 per cent to the total national emissions of carbon monoxide, although emissions of this pollutant were decreased in 2016 compared to 2015 for 14 per cent due to higher use of natural gas and briquettes and pellets for residential heating instead of the use of fossil fuels and wood. Residential heating also has a dominant share in emissions of PM_{10} (46 per cent) and $PM_{2.5}$ (58 per cent) which represent a major air quality concern in the country. Moreover, it contributes 29 per cent to total national emissions of VOCs, 10 per cent of emissions of PCB and 8 per cent of emissions of NH_3.

A survey conducted in 2014 and published in 2015 by SSO showed that 62 per cent of households relays on wood for heating, 29 per cent use on electricity, 8 per cent are connected to district heating systems, and 1 per cent use other types of heating. According to the World Bank study "Biomass-Based Heating in the Western Balkans – A Roadmap for Sustainable Development", biomass use for heating in the former Yugoslav Republic of Macedonia is already high (39 per cent of current heat demand), but, mainly inefficient: 74 per cent of biomass is used in traditional, inefficient stoves, and not properly dried. District heating systems which use natural gas are only available in the City of Skopje, which plans to connect some 14,000 of new consumers during the heating season 2018–2019. A 2018 UNDP survey of 5,044 households within the project "Skopje is heating" revealed that only 21 per cent of residents of Skopje are connected to the central-heating system, whereas 45 per cent heat their houses with wood. The same survey shows that over 90 per cent of houses do not have any thermic insulation on their facades and roofs.

8.5 Legal, policy and institutional framework

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Legal framework

The 2004 Law on Ambient Air Quality aims to align national legislation with relevant EU acquis and regulates sources of air pollution, limit and target values of concentrations and emissions of air pollutants, air quality assessment, monitoring and management, strategic documents on air protection, information and reporting, measures for air protection, competences, financing, supervision and penalties.

The Law gives competences on air protection to the authority in charge of environmental affairs, including the development of legal and strategic framework, monitoring, reporting, management of information system. Measurement of emissions from stationary sources is outsourced to the private accredited laboratories.

The former Yugoslav Republic of Macedonia has not transposed the Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants, which reflects the amended Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to CLRTAP.

Policy framework

The 2012 National Plan for the Protection of Ambient Air proposes more than 100 different measures for improvement of air quality. However, there are no reports on its implementation, nor an analysis of effects of implemented measures. Although the foreseen timeframe for implementation of most of measures expired, the Plan was not updated. The Plan should cover the period of at least five years, but its update is not regulated. No implementation reports were submitted although the Ministry is obliged to report to the Government at least every two years.

The 2012 Programme for Gradual Reduction of Emissions of Certain Polluting Substances provides projections of emissions for SO_2, NOx, NH_3 and VOCs for the period 2010–2020. The goal of the Programme was to identify the measures for reduction of emissions of these pollutants by key sources in order to prevent excess of the national emission ceilings established in accordance with protocols to CLRTAP. So far, only reduction of emissions of SO_2 (by 30 per cent compared to 1980) was not achieved.

The 2017 National Emission Reduction Programme for Large Combustion Plants, as required under the Athens Agreement on Energy Community, serves as an instrument for implementation of EU Directive on Large Combustion Plants. According to the 2017 Energy Community Annual Implementation Report, its implementation began in 2018, hence, there is no yet information on the level of its implementation. The reporting under the Programme is envisaged to start in the beginning of 2019.

The Programme for Reduction of Air Pollution adopted in November 2018 contains a set of measures which implementation is planned during the period 2019–2020. The goal of the Programme is to achieve reduction of air pollution for 50 per cent in Skopje and 30–50 per cent in other urban centres. Measures include improvement of air quality monitoring, increase of capacities of environmental inspection, rise of the public awareness and reduction of emissions into air coming from domestic heating, waste management, transport, industry and construction. Description of measures is not detailed and does not contain financial estimation, estimation of reduction of air pollution by measure, exact deadlines or authorities in charge to implement them, thus not providing enough information on how the settled goals of the Programme will be achieved. The Programme also foresees the establishment of the mechanism to monitor its implementation. The Programme foresees nine measures for reduction of air pollution from household heating to be implemented during 2019–2020, including increase of consumers in the district heating network and gas supply network, support to producers and users of eco-friendly appliances for domestic heating, energy efficiency in private homes and ban of sale of coal for domestic heating purpose. The Programme recognizes limited capacities of the environmental inspectorate and the need to improve its performance through increase of the number of staff, increase of the number of regular inspections, change of legal acts which will affect institutional set-up and contribute to more efficient system of inspections. The Programme also foresee amendments to the Law on industrial emissions and publishing of lists of companies with valid integrated environmental permits. The Programme envisages to completely replace the equipment on all monitoring stations with the new instruments and apply modern air quality models for air pollution predictions. The Programme foresees urgent implementation of the Skopje City initiative to reconstruct neglected public areas and realization of the City Greening Plan during 2019–2020.

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Bitola, Skopje, Veles and Tetovo adopted local air quality plans. The Law on Ambient Air Quality prescribes obligation of local authorities to report on implementation of air quality plans to the Ministry. Out of 51 measures in the air quality plan for Skopje about 33 measures (64 per cent) are implemented or their implementation is ongoing. Out of 38 measures foreseen in the air quality plan for Tetovo only 7 are implemented or ongoing, majority of them through activities taken at national level. The rest of the measures are not implemented or information on their implementation is not provided to the Ministry. Apart from 21 recommended measures for improvement of air quality, the plan for Bitola contains recommendations for the first revision in 2014 and regular assessment of the effectiveness of the measures. However, an updated plan is still not developed. According to the 2018 report on implementation of Air Quality Plan for Bitola the implementation of more than 80 per cent of measures is on-going, but the level of implementation is limited by financial resources and legal competences of the local administration.

Sustainable development goals and targets relevant for the chapter

The current stance of the country vis-à-vis targets 3.9 and 11.6 of the 2030 Agenda for Sustainable Development is described in box 8.1.

Box 8.1: Targets 3.9 and 11.6 of the 2030 Agenda for Sustainable Development

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.9: By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and from air, water and soil pollution and contamination.

Among other means, achievement of the target 3.9 is measured by mortality rate attributed to household and ambient air pollution. During the preparation of the National Plan for Ambient Air Protection in 2012, the National Institute of Public Health estimated the health effects attributable to outdoor air PM_{10} exposure for selected health endpoints in the city of Skopje based on the WHO methodology. In 2010, 110 deaths out of 4,602 (deaths from external causes excluded), 420 inpatient hospitalizations from respiratory diseases out of 8,630, and 80 inpatient hospitalizations from cardiovascular disease out of 6,106 were attributed to exposure to ambient air PM_{10}.

Assessment prepared in the framework of the Green Growth and Climate Change Analytical and Advisory Support Programme of the World Bank Group implemented in the former Yugoslav Republic of Macedonia in 2012–2013 showed that approximately 1,350 deaths annually are attributable to exposure to PM. People also suffer from the day-to-day consequences of respiratory diseases. It is estimated that several thousand work-years are lost annually from chronic bronchitis, asthma, hospital admissions and days of restricted activity. PM air pollution costed the economy about €253 million or 3.2 per cent of the GDP in 2011.Moreover, the assessment has demonstrated that potential health savings associated with reductions in PM_{10} and $PM_{2.5}$ are substantial and can be upwards of 2 per cent of GDP if EU limit values were reached.

One component of the twinning project "Further strengthening the capacities for effective implementation of the acquis in the field of air quality" was dedicated to strengthening the capacities for health impact assessment of air pollution. Activities included analysis of the current capacities of the Institute of Public Health and other central level institutions to conduct health impact assessment and a draft plan on health impact assessment improvement in the country including the needs for human and technical resources and information. Training and support on the basic health impact assessment methodologies were provided and a plan for establishing bio-monitoring related to air pollution was developed.

In 2017 the Institute of Public Health demonstrated the potential health benefits in reducing $PM_{2.5}$ levels in the main cities of the country (Bitola, Kavadarci, Kicevo, Kocani, Skopje and Tetovo) to EU limit and WHO guideline values. The current levels of population exposure to $PM_{2.5}$ are responsible for 1794 deaths annually in the cities: deaths can be avoided through active interventions on improvement of the air quality. Reduction of $PM_{2.5}$ levels to the EU limit value will save about 874 lives and to WHO guideline one will bring greater health gains up to 1,464 lives. The age-standardized mortality (rate per 100,000 population) attributed to ambient air pollution in the country is estimated at 46 in the WHO Global Health Observatory data repository. These data are in the UN Global Indicators Database and could serve as baseline to monitor progress.

According to the 2018 report on air quality in Europe (EEA Report No 12/2018), premature deaths attributable to $PM_{2.5}$, NO_2 and O_3 exposure in the country in 2015 were 3,000, 110 and 90, respectively. It also provides data on years of life lost (YLL) attributable to $PM_{2.5}$, NO_2 and O_3 exposure in 41 European countries. In the former Yugoslav Republic of Macedonia there were1,469 YLL/10^5 inhabitants due to exposure to $PM_{2.5}$, 56 due to exposure to NO_2 and 52 YLL/10^5 inhabitants due to exposure to elevated concentrations of O_3 in 2015, which for EU countries were 820 YLL/10^5 inhabitants due to exposure to $PM_{2.5,}$ 157 due to exposure to NO_2 and 36 due to exposure to ground-level ozone.

The household air pollution has not received due attention in the legal agenda even though people spend about 75 per cent of their life indoors. The draft strategy on health and environment recognizes the need for indoor air quality monitoring

especially in schools and day care centres, but it has not yet been adopted. According to 2007 WHO analysis of the environmental burden of disease by country, exposure to indoor air pollution from solid fuel use (30 per cent of households) in the former Yugoslav Republic of Macedonia is responsible for less than 100 deaths per year. The 2016 WHO Global Health Observatory estimate of the age-standardized mortality (rate per 100,000) in the country attributed to household air pollution is 43. The same data are in the UN Global Indicators Database to serve a baseline.

The joint effects of ambient and household air pollution in terms of attributable age-standardized mortality is estimated at 82.2 and is more than twice greater than the corresponding European Regional average of 36.3, indicating the rather high burden of ill health from air pollution in the former Yugoslav Republic of Macedonia.

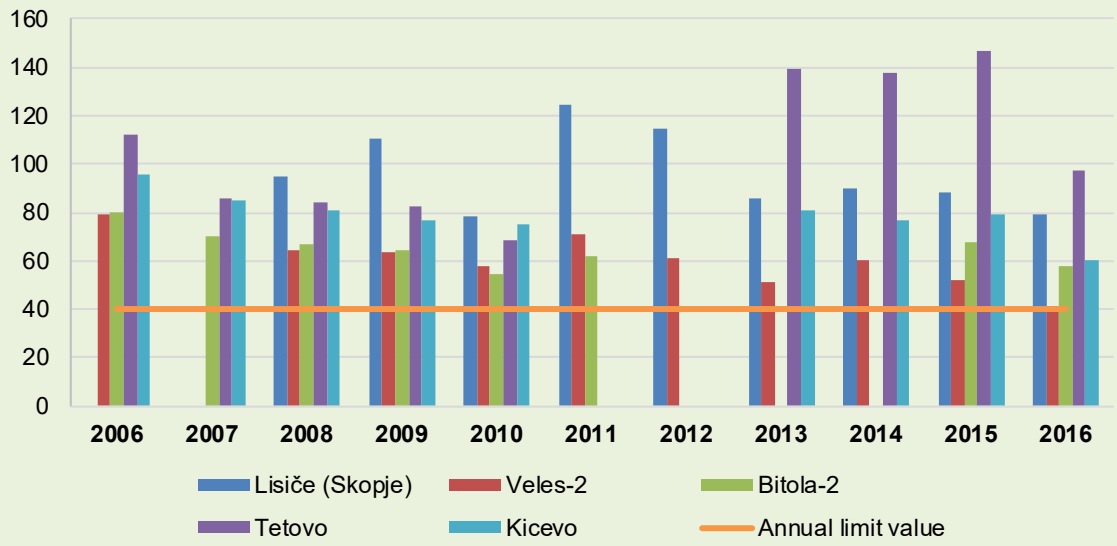
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

More than a half of global population lives in cities. Environmental impact of urban living is often expressed through air pollution level, and annual mean levels of fine particulate matter in cities (population weighed), are globally used to monitor progress towards achievement of the target 11.6. Data for reporting on this indicator are available, but the achievement of this SDG target already presents a challenge for the country. The indicator can be found at the official portal of Ministry of the Environment and Physical Planning (http://www.moepp.gov.mk/?page_id=4819&lang=en).

Since there is an exceedance of the annual limit value recorded on all measurement stations throughout the country during the whole observed period, on the basis of methodology of the European Environmental Agency (EEA) it is considered that the whole population is exposed to PM_{10} concentrations exceeding annual limit value of 40 μg/m^3 (figure 8.9). The EEA report "Air quality in Europe" notes that according to data from 41 European countries, concentrations above the PM_{10} annual limit value in 2016 were monitored in 6 per cent of all the reporting stations. Out of the 17 stations in the former Yugoslav Republic of Macedonia, 13 are among the 6 per cent.

Figure 8.9: Average annual PM_{10} concentrations in selected cities, 2006–2016, μ/m^3



Source: MEIC, 2018.

Achievement of the SDG target for reducing the adverse per capita air pollution of cities requires integrated and intersectoral approach to air quality management. Hence, the problem with quite high emissions of PM_{10} throughout the country has to be managed from different angles.

Similarly, the annual average $PM_{2.5}$ concentrations for Skopje during the 5-year period (2012–2016) triple the WHO guideline value (10 μg/m^3) and were higher than the EU limit (25 μg/m^3). The WHO Global Health Observatory provides estimates of exposure country average in terms of population-weighted average of the mean annual $PM_{2.5}$ concentrations for 2016. For the former Yugoslav Republic of Macedonia, the $PM_{2.5}$ exposure is 33.0 μg/m^3 for urban areas and 28.3 for the entire country. The corresponding averages for the European Region were at 14.2 μg/m^3 and 14.0 respectively. As regards to the household air pollution, the WHO Global Health Observatory provides country exposure data in terms of population using solid fuels (estimates) and population with primary reliance on clean fuels and technologies. In 2013, 33 per cent of the population in the former Yugoslav Republic of Macedonia used solid fuels for heating and cooking, 56 per cent in rural and 15 – in urban areas. The proportion of population with primary reliance on clean fuels and technologies has increased from 44 per cent in 2000 to 66 per cent in 2016.

The Government should:

(a) Continue to implement measures related to improvement of energy efficiency of households, e.g., efficient windows and heaters)
(b) Further develop gas supply network with envisaged establishment of district heating on gas in Bitola;
(c) Strengthen measures related to mitigation of emissions from industry, including energy production;
(d) Advise the City of Skopje to undertake a study on measures needed to enhance its public transport infrastructure to increase its use by the public.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning is performing most of the activities on air protection in the country through MEIC, covering not only technical and information issues (monitoring and reporting), but also those related to policy and legal framework.

The 4-staff Unit for Air Quality Monitoring within MEIC performs a variety of tasks. Maintenance and calibration of air quality monitoring instruments is performed by two staff. The other two staff members bear the majority of administrative burden, playing several roles which are not limited to the coordination of air quality monitoring, data validation and processing, reporting on air quality and providing access to air quality data to the public, but also include other non-technical tasks such as development of legal and policy framework, participation in international cooperation and reporting in accordance with the requirements of relevant international agreements, cooperation with relevant institutions, private sector and citizens and coordination of air quality management in general, since there is no an air quality department in charge of legislation, policy and cooperation with relevant national and international bodies in the area of air protection. The Unit is supported by the Unit for Analytics and Reporting and Unit for Cadastre and Modelling in data collection on emissions of air pollutants, preparation of the national inventory of emissions, emission projections and air quality modelling.

Monitoring and the control over the transboundary transportation of pollutants into the atmospheric air is a legal obligation of the Hydrometeorological Service, but since there is no an EMEP station for monitoring of transboundary transportation of air pollutants within the state network (except the Lazaropole station, which is an EMEP station, however doing only certain measurements and therefore not classified as level 1 EMEP station), MEIC develops dispersion projections of air pollutants on the basis of meteorological data provided by the Hydrometeorological Service.

State Environmental Inspectorate

The State Environmental Inspectorate (SEI) and local environmental inspectors control industrial emissions. Measurements are performed by three laboratories accredited for limited number of parameters. In case of non-compliance an inspector can start a misdemeanour procedure, but also has the opportunity to use softer instruments such as settlement or mediation. In that case the operator is given a period to achieve compliance, pay the fee or compensate the damage. The Law also prescribes the possibility of organization of an educational training for the polluter to support him in overcoming the non-compliance. While "soft instruments" like settlement are used in cooperation with operators, with rather high level of tolerance (e. g. REC "Bitola" still works without an integrated environmental permit), training for operators were organized within some internationally supported projects but are not a part of the usual routine of environmental inspectors.

Other institutions

Competences to carry out the assessment of health effects associated with ambient air quality are with the state administration responsible for the health. However, activities on health impact assessment of air pollution are not performed on regular basis and rely only on project-based activities supported by international donors.

Control over emissions from mobile sources of air pollution is carried out by the body responsible for determination of technical functionality of individual mobile sources, the State Market Inspectorate performs control over the quality of fuels while the State Sanitary and Health Inspectorate is the competent body for control of the health and safety of plant production carried out on lands along roads.

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Coordination between institutions responsible for air protection at national and local levels

Ministries of health and economy are recognized throughout legal framework as the main partners of the Ministry of Environment and Physical Planning in drafting the policy documents and prescribing air quality standards on which they should give official consents. The Ministry of Interior is also involved in management of traffic during periods of high air pollution episodes in affected locations, upon the proposal of the Ministry of Environment and Physical Planning. In practice, cooperation with other relevant institutions is mainly channelled through an intersectoral group on air quality. It was established in 2012 and consists of representatives of relevant institutions, ministries SEI, hydrometeorological and public health institutes. In October 2017 the members were partly changed, the group was extended with members from CSOs to include citizen opinions. The Deputy Minister of Environment and Physical Planning started to chair the group to raise the political support for recommendations provided by the group in formal conclusions of the meetings. The group is active, especially during the heating season when there are episodes of bad air quality. However, these conclusions are not of a mandatory nature and no instrument is in place to follow-up on their implementation. Considering that this mechanism does not provide measurable results, coordination between institutions remains limited.

According to the Law on Environment, the Ministry of Environment and Physical Planning supervises local authorities in implementation of their competences stemming from this law, and if it finds that local authorities fail to implement necessary measures and activities, can take over their competences upon informing ministries in charge of finance and local government affairs. Although local authorities are responsible for the development of local air quality plans, for zones and agglomerations which are considered as priority, the development of an air quality plan is led by the Ministry in cooperation with the local authorities.

Mayors of municipalities and the City of Skopje have the obligation to cooperate with the Ministry of Environment and Physical Planning, Ministry of Health and the competent Information and Warning Centre in case of alert situations regarding air pollution. Councils of the municipalities and the Council of the City of Skopje shall be involved together with the Ministry of Environment and Physical Planning in cases of transboundary air pollution, in drafting of common action plans with a neighbouring country bodies. While cooperation of local and central authorities in alert situations and in everyday air quality issues is put in practice, there were no cases of drafting cross-border action plans due to transboundary pollution,

Economic, fiscal, information and other measures

Economic measures

There is a set of economic measures used to improve air quality in the country. The Government as well as local authorities approved funds for application of energy efficiency measures (new windows, more efficient stoves), purchase of more eco-friendly fuels such as pellets, purchase and use of bicycles for more sustainable and less polluting transport, investments in better public transport, use of renewables (e.g., solar panels, heat pumps).

Fiscal measures

The publication of the State Statistical Office "Environmental Statistics 2017" provides information on the structure of environmental taxes. In 2015 energy taxes had the greatest share (64.6 per cent), followed by transport taxes (34.5 per cent), while pollution taxes had the lowest share (0.9 per cent).

The Law on Environment prescribes that pollution tax is defined based on the quantity, volume and impact on environment of the emitted polluting substances. According to this law, the authority responsible for environmental affairs has the obligation to maintain the register of pollution tax payers. Apparently, this register does not exist. Pollution taxes are required only from installations which should have an A-type integrated environmental permit. The tax is payed for request for issuance of the permit, request for change of conditions of the permit and closure of installation. There is also an annual tax, calculated with the formula taking into account the area of installation, number of emission discharge points and different pollutants. The average basic fee for emission of pollutants ranges from 3,000 to 9,000 denars. This basic fee is multiplied by the quantity of emissions, which is related to limit values (per cent of exceedance) but is not expressed in tons or kilograms and their toxicity and other features related to impact on environment, including the recipient media. Knowing that emissions are

measured by private laboratories whose accreditations cover only limited number of pollutants, this mechanism for collection of pollution taxes is not well functioning.

Apart from taxes, in case of unresolved non-compliance the polluter shall pay a fine in the range of €8,000 to €20,000 for failing to comply with emission limit values for stationary or mobile sources, putting on the market fuel with higher content of polluting substances or failing to implement measures envisaged in programmes or plans. In addition to the fine, the polluter may be prohibited to perform the activity in the period less than 30 days.

Information measures

MEIC maintains an informative air quality portal, which provides complete information on state of the ambient air in the country, including nearly-real-time status, air quality index and daily, monthly and annual reports. Moreover, it gives information on measures for improvement of air quality, on sustainable transport and cleaner domestic heating practices for citizens, instructions to public in case of exceedances of information and alert thresholds set for certain pollutants, health advices of the Institute of Public Health, as well as on monitoring network activities, legislative and policy documents, projects, emission inventories and results of modelling of air quality. All data are public.

Apart from its official air quality portal the Ministry communicates with citizens on air protection also via the social networks. International donors also recognized the importance of air pollution and UNDP established another website "Skopje is heating" to promote the results of a study on household heating, while the City of Skopje had maintained its own webpage with local information on air pollution.

Public awareness measures

The last decade was also marked by a significant rise of public awareness on the sources and impacts of air pollution as well as on the measures to mitigate those impacts. The Ministry produced public awareness raising brochures on understanding the effects of air pollution, good wood burning practices at home and ways of smart mobility and living better.

Other measures

The development of the natural gas supply system is ongoing. During the last two years the total length of pipelines was doubled to some 200 km and it is planned to extend the system to a total of 340 km by 2020. One of the measures adopted under the Nationally Determined Contribution to reduction of emissions of GHG in accordance with the Paris Agreement is the construction of the system for district heating on gas in Bitola. The pipeline system is already approaching Bitola and is covering Kumanovo and Strumica as well as the industrial zone of Skopje. Natural gas comes from imports.

In October 2016 the Government adopted a programme for reimbursement of the costs for purchased and installed solar thermal collector systems in households and for reimbursement of the cost of purchased and installed PVC or aluminum windows in households, with financial support from the State Budget in the amount of 52 million denars (€845,000). Some 2,472 requests were submitted to the Ministry of Economy for the thermal solar systems, of which 1,794 households have been reimbursed and 2,401 requests were submitted for installation of PVC or aluminum windows with total window area of 10,000 m^2, of which around 1,327 households have been reimbursed.

In the Budget of the Ministry of Economy for 2018, as a part of the Programme for Promotion of Renewable Energy Sources and Encouraging Energy Efficiency in Households, a total of 50 million denars were approved for the realization of a programme for subsidies to compensate part of the cost of purchasing and installing of solar collector systems, PVC windows and pellet stoves for households for 2018. The public call was published on January 31, and by September 2018, 433 households who bought pellet stoves were subsidized up to 50 per cent but not more than €500 in denars equivalent per household.

Skopje's measures

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City of Skopje through "Skopje Lab" and departments of city administration strives to provide better services to its citizens by understanding their needs and supporting their initiatives, in particular, on air pollution.

Some local measurements were performed by Skopje at one location in the centre of the city. Equipment is removed from that location where is now a construction site. The instruments for measurement of concentrations of air pollutants at that spot were directly linked to a display, which was showing the key parameters to the citizens of Skopje in the main walking street. Having informative character, the display also showed an air quality index. However, this air quality index (developed by US Environmental Protection Agency) is not harmonized with domestic legislation and European Air Quality Index[9],

Photo 8.: Air quality display in the centre of Skopje



Chimney sweeping action is a good example. Even though Skopje has about half million of inhabitants and that some 45 per cent of households are using wood for heating, there are only eight registered chimney sweepers in the city. Skopje organized a three-month training for new chimney sweepers during 2018. Trainees receive a monthly stipend of 9,000 denars and after successful completion of training, a certificate and basic materials for independent entrepreneur work. This activity is expected to result in 100 chimneys cleaned for free and to promote chimney sweeping to reduce air pollution. On one side it offers an opportunity for self-employment and development of a small business, it helps low-income families to get free service and at the end results in better air quality and rising of awareness on simple but important steps which every household can make to improve air quality in the city.

In November 2017, to encourage citizens to use renewable energy sources to heat their homes, the City of Skopje implemented the measure to subsidize or provide partial refund for purchased pellet stoves. The budget for this activity was 10 million denars (around €166,000) and supported some 340 households.

Skopje is also very active in renewal of the urban green area. In the first half-year of 2018, the city planted 4,000 new trees, and plans to plant additional 8,000 by the end of the year. In cooperation with the public enterprise "Parkovi i zelenilo", some 40,000 m^2 of green areas were made or reconstructed in spring 2018. Work on additional 10,200 m^2 is ongoing. Taking into account that Skopje is one big construction site since the launch of the project "Skopje 2014" and associated with it high dust emissions, increasing of city green areas is more than necessary.

Another city action is related to the improvement of urban green areas by planting a tree for every newborn. In April 2018, Skopje, the University Clinic for Gynecology and Obstetrics, the Special Hospital for Gynecology and Obstetrics, Re-Medica and Acibadem Sistina signed a memorandum of understanding for implementation of the project "A tree for every child". In accordance with the programme, parents of a newborn will get a code which should be registered for the seasonal renewal of the city green. The tree will wear a tag with the name and

[9] http://www.eea.europa.eu/themes/air/air-quality-index/index

date of a newborn baby. In the years to come children can follow the growth of the tree planted in honour of their birth.

Skopje joined the Cities for Cycling network with a goal to raise cycling share in the modal split from 1.5 per cent to at least 5 per cent. It adopted a master plan with an action plan for reconstruction of cycling paths for the period 2014–2017 which was successfully implemented. During 2018, subventions were granted to 3,133 citizens of Skopje for buying bicycles. The subsidy covered up to 50 per cent of the price but limited to 3,000 denars per person.

8.6 Participation in international agreements and processes

In 2010 the former Yugoslav Republic of Macedonia ratified all eight protocols to CLRTAP, to which it was Party since 1997. However, in the period 2011–2014 there were negotiations on the proposed figures related to the baseline year emission levels (1990) and national emission ceilings for 2010. The Executive Body of the Convention on its 32nd Meeting, decided to accept the last proposed figures for Annex II of the Gothenburg Protocol and Annex II of the Protocol on Sulphur of 1994. With the adoption of the proposed amendments in September 2014, the country became a Party to these protocols. The country is not Party to amended versions of the protocols on Heavy Metals, on POPs and of the Gothenburg Protocol. The country regularly fulfils its reporting obligations (with exception of the obligation to report emission projections for 2020 and 2030) towards the Convention and its protocols, and according to the last available data (reported until November 2017) compiled by the Secretariat of the Convention in cooperation with the Centre on Emission Inventories and Projections (CEIP), is in compliance with established emission reduction targets, except that for SO_2 still not reaching the reduction of 30 per cent compared to the baseline year (1980), as set in the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes.

The country is Party to the key international agreements related to climate change - UNFCCC, Kyoto Protocol and the Paris Agreement (since January 2018), as well as the agreements related to protection of the ozone layer - Vienna Convention and Montreal Protocol, including its four amendments. The country did not Party to the Kigali Amendment of the Montreal Protocol.

The country is Party to the Stockholm Convention on Persistent Organic Pollutants. The Minamata Convention on Mercury has been signed in 2014, but not ratified yet.

Since September 2015, data from the State automatic air quality monitoring system is delivered to EEA in real time. A project "Development of Environmental Monitoring and Information System" is expected to be launched in the beginning of 2019. Within this project it is planned to establish national environmental databases and improve in general data acquisition, processing and sharing, including introduction of environmental spatial data.

The country is not participating in the Batumi Action for Cleaner Air and has not determined any voluntary commitments in support of this initiative.

8.7 Assessment, conclusions and recommendations

Assessment

Air pollution decreased in the period 2006–2016. Reduced use of fossil fuels in energy production and gasification of heating plants contributed greatly to the achieved improvements – there is a clear decreasing trend in concentrations of SO_2 and even in concentrations of particulate matter in the ambient air. Nevertheless, the whole population of the country is exposed to PM_{10} concentrations exceeding the annual limit value, which poses a great challenge for achievement of the SDG target 11.6.

Since 2013 there have not been any exceedances of the limit values for concentrations of NOx, but values close to the limit in stations affected by frequent traffic indicate the need for further action. There are still occasional exceedances of air quality standards established for CO_2 during the heating season.

There is no continuous monitoring of heavy metals and polycyclic aromatic hydrocarbons, while monitoring of ground-level ozone does not reveal the impact of elevated concentrations on vegetation. So far, data for benzene

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(BTX) are available only for Skopje, while data for fine particulate matter ($PM_{2.5}$) are available for Skopje since 2012 and for Tetovo, Bitola and Kumanovo since the second half of 2017. Despite the regular calibration of existing equipment, the lack of an accredited calibration laboratory brings data quality into question.

Despite insufficient administrative capacities, major achievements in the improvement of air quality management were achieved with international technical assistance. The institutional capacity cannot cover all tasks and activities in air protection and air quality management. Policy documents and measures for the improvement of air quality are not regularly updated, their implementation is not monitored, and the effectiveness of their implementation is not assessed.

Conclusions and recommendations

Improvement of air quality data

Air quality monitoring is in the competence of MEIC under the Ministry of Environment and Physical Planning, which has limited human resources and technical and financial capacities to perform this task.

Data on air quality are often fragmented due to inconsistent measurement that leads to a failure to meet data quality objectives (75 per cent of measurements valid during the year) and makes them unsuitable for official use. The calibration laboratory is not accredited, which again puts data quality into question. There is no accredited laboratory on the national level to analyse parameters such as heavy metals and PAH. The air quality network comprises mainly stations positioned in urban settlements, affected by multiple sources (traffic, industry, household heating), hence not allowing for the distinction of dominant sources from background pollution. All of above-mentioned limitations distort the picture on air quality.

Recommendation 8.1:
The Government should ensure sufficient financial and human resources for:

(a) Regular maintenance and operation of the air quality monitoring network, including regular (every five years) recomposition of the network;
(b) Accreditation of the existing calibration laboratory;
(c) Establishment of an accredited analytical laboratory for the regular analysis of contents of heavy metals and PAHs in particulate matter or outsourcing of this task on a regular basis.

Impact of air pollution on human health

Reliable data are lacking to assess the impact of air pollution on human health and the environment, establish cause-effect relations and design appropriate actions to mitigate those negative impacts. Although some project-based environmental health assessment activities are performed in the country, the mortality rate attributed to indoor and outdoor air pollution is not monitored. Integrated air quality and health assessments are not carried out on a systematic basis.

Recommendation 8.2:
The Ministry of Health, through its Public Health Institute, in cooperation with the State Statistical Office and Ministry of Environment and Physical Planning and other relevant stakeholders, should:

(a) Monitor population exposure to $PM_{2.5}$ and PM_{10}, including in support of achieving SDG target 3.9 and monitoring the global indicator 3.9.1 (Mortality rate attributed to household and ambient air pollution);
(b) Implement an integrated environmental and health monitoring system with an adequate level of spatial resolution to enable monitoring of the implementation of policy measures on air pollution abatement and assessment of their effectiveness.

Impact of air pollution on the environment

The lack of monitoring of air quality in rural sites prevents the assessment of the impact of air pollution on ecosystems and biodiversity. The only rural background station is at a high altitude and measurements of ozone

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and its precursors is highly inconsistent. There are no data on parallel assessments of foliar damage or other indicators of the impact of air pollution on vegetation.

Recommendation 8.3:
The Ministry of Environment and Physical Planning should ensure the monitoring of the negative impacts of air pollution on ecosystems, based on a network of monitoring sites that is representative of their freshwater, natural and semi-natural habitats and forest ecosystem types, using a cost-effective and risk-based approach.

Monitoring of the implementation of policy documents

The current strategic framework for air protection was created in 2012, when all of the main policy documents were created with the support of international technical assistance. By 2018, none of these documents has been updated and there are no official reports on their implementation and the effect of the implemented measures. This makes air quality monitoring and analysis of emissions of air pollutants largely senseless, since gathered knowledge on recognized air pollution problems is not properly used for their solution.

The Ministry of Environment and Physical Planning focuses on the collection of data, their processing and the production of information on air pollutant concentrations and emissions, but the measures to improve air quality proposed even through an inter-sectorial working group are not given enough political backing to ensure their implementation.

The 2018 Programme for Reduction of Air Pollution does not contain precise deadlines and institutions competent for its implementation, measurable indicators, financial estimations and other elements to enable the smooth realization of proposed measures, its monitoring and the estimation of its impact on the improvement of air quality.

Recommendation 8.4:
The Ministry of Environment and Physical Planning should establish a system to monitor the implementation of policy documents on air protection, entrusting this task to a separate administrative unit that would regularly estimate the effectiveness and appropriateness of implemented measures and, based on this, update policy documents to improve air quality and achieve progress towards the achievement of SDG targets 3.9 and 11.6.

Renewal of the vehicle fleet

Transport is a significant source of pollution, especially in Skopje. The main characteristic of passenger transport, which dominates the sector, is a very high share of passenger cars (77 per cent), the average age of which was 18.6 years in 2016. The average estimated age of public transport buses in 2016 was 17.8 years. The share of urban and suburban public transport (11.9 per cent in 2016) is low compared to the use of individual passenger cars. End-of-life vehicles and the low rate of use of public transport against that of passenger cars together multiply significantly the negative impacts of transport on air quality.

Recommendation 8.5:
The Ministry of Economy, in collaboration with the Ministry of Environment and Physical Planning, should:

(a) Introduce measures for renewal of the passenger vehicle fleet, favouring fuel economy through the "feebate" system of charges and rebates, whereby energy-efficient or environmentally friendly practices are rewarded while failure to adhere to such practices is penalized;
(b) Introduce a green public procurement system and advise national public institutions and municipalities to renew the public transport fleet, including by using the green public procurement system, favouring electric and gas-powered buses.

Reducing air pollution by improving energy efficiency

The energy production (public electricity and heat production) contributed 41 per cent to the total emissions of NOx and 91 per cent to the SO_2 emissions in 2016. Its contribution to CO emissions is 8 per cent, while its contribution to PM_{10} and $PM_{2.5}$ emissions is estimated to 11 per cent and 6 per cent respectively. Consumption of

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energy, especially in residential heating, has major contribution to PM emissions. Energy production is also dominant source of emissions of lead (38 per cent), mercury (45 per cent) and cadmium (49 per cent).

Residential heating has a major share in total national emissions of PAHs of 79 per cent and PCDD/F of 77 per cent. It also contributes with 67 per cent to the total national emissions of carbon monoxide, although emissions of this pollutant were decreased in 2016 compared to 2015 for 14 per cent due to higher use of natural gas and briquettes and pellets for residential heating instead of the use of fossil fuels and wood. Residential heating also has a dominant share in emissions of PM_{10} (46 per cent) and $PM_{2.5}$ (58 per cent) which represent a major air quality concern in the country. Moreover, it contributes 29 per cent to total national emissions of VOCs, 10 per cent of emissions of PCB and 8 per cent of emissions of NH_3.

Recommendation 8.6:
The Government should introduce measures to improve energy efficiency and to stimulate changes towards using more sustainable fuels in the housing and energy sectors.

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Chapter 9

WATER MANAGEMENT

9.1 Water resources

The available water resources are at 3,040 m^3/cap/year in the country.

Groundwater

No comprehensive data on the quantity of groundwater bodies are available. Although numerous hydrogeological studies have been carried out in the past, there is no nationwide systematic and continuous monitoring and evaluation.

Groundwater resources can only be roughly estimated, or, to a large extent, no data on the resources are available. A hydrogeological map of 1977 serves as a basic information about groundwater. According to data of the 70s there are about 4,400 sources, spring water and wells, with a total yield of 992 million m^3/year. About 58 have a capacity of over 100 l/s. Only three of these sources are in the central part of the Vardar plain. All the others are in the western region. The eastern part of the country is poor in water and only seven springs with very small capacity are registered there.

The groundwater reserves for abstraction are estimated at about 50.2 m^3/s with a quantity of exploitation of the reserves yield of 23.8 m^3/s for spring water and 26.35 m^3/s by the construction of wells.

Surface water

There are about 35 rivers and about 53 natural and artificial lakes. With an area of about 488 km^2, the lakes cover about 1.8 per cent of the country's territory. The topography is essentially hilly to mountainous (79 per cent).

The average annual available quantity of surface water in the country is about 6.8 billion m^3 /year. This value varies according to the amount of rainfall in the year, so that for a medium dry year the available amount of surface water is 4.5 billion m^3 /year.

The country is divided into four river basins (table 9.1 and map 9.1). The Juzna Morava River Basin is the smallest river basin with a catchment area of only 44 km^2, or 0.17 per cent of the country's territory.

Table 9.1: River basins

River Basin	Catchment area		Surface water resources (million m^3)	Superficial run-off ($l/s/km^2$)
	(km^2)	(per cent)		
Vardar	20 661	80.35	4 600	7.00
Strumica	1 649	6.41	132	3.10
Crn Drim	3 359	13.06	1 640	12.30
Juzna Morava	44	0.17	9	..
Total	**25 713**	**100.00**	**6 381**	**..**

Source: 2012 National Water Strategy.

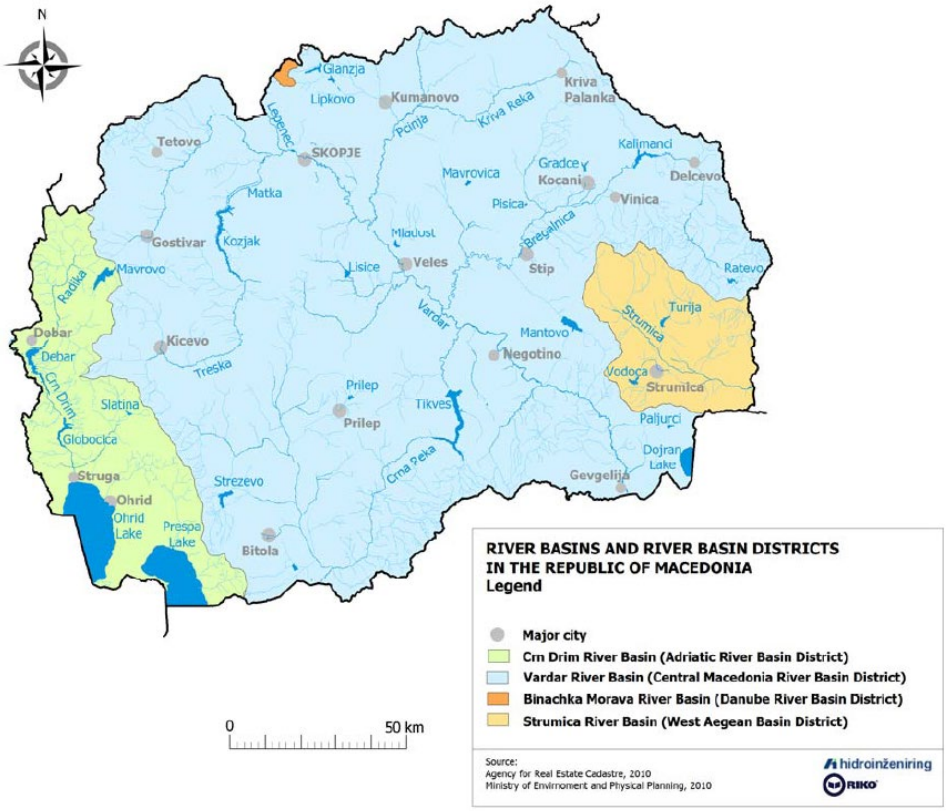
With a catchment area of about 20,661 km^2, the Vardar River Basin covers about 80.4 per cent of the country's territory and is thus the largest in the country. It consists of the Vardar River and the main tributaries Treska, Lepenec, Pcinja, Bregalnica, Crna, Bosava and Dosnica rivers. Within the catchment area lies Lake Dojran.

The Strumica River Basin is located in the east of the country and includes Strumica, Cironska and Lebnica rivers. It covers an area of 1,650 km^2. Water availability is the lowest in these parts of the country.

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The Crn Drim River Basin is the richest region in water. The Crn Drim River rises from Lake Ohrid at the town of Struga and includes the two largest natural lakes in the catchment area - Ohrid and Prespa. While the flow direction of the Vardar and Strumica rivers is northwest to southeast, the Crn Drim River's flow is south to north.

Map 9.1: River basins and river basin districts



Source: Agency for Real State Cadastre, Ministry of Environment and Physical Planning, 2010.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Lakes, including wetlands

Lake Ohrid is one of the oldest lakes in the world with an age of two to five million years. The total area of the lake, which lies between Albania and the former Yugoslav Republic of Macedonia, is about 349 km^2. This makes it the second largest lake on the Balkan Peninsula. The largest part, about 230 km^2 belongs to the former Yugoslav Republic of Macedonia. The water level is 695 m above sea level and the lake has a maximum depth of 288 m. The catchment area is 1,414 km^2. Geology is characterized by karst. Lake Ohrid drains near Struga into the Crn Drim River towards the Adriatic Sea.

Lake Prespa is neighboured to Lake Ohrid. It is located in the border triangle of the former Yugoslav Republic of Macedonia, Albania and Greece. The total area of the lake is 273 km^2, of which 190 km^2 are on the side of the former Yugoslav Republic of Macedonia. The water level of Lake Prespa is about 849 m above sea level and is therefore significantly higher than the neighbouring Lake Ohrid. Due to the karst the two lakes are directly connected to each other. Lake Prespa drains into Lake Ohrid. In some places the flow time is only six hours. With a maximum depth of 54 m Lake Prespa is much shallower than Lake Ohrid.

Lake Dojran is the smallest of the three large lakes and is located in the southeast of the country on the border with Greece. Its total area is about 43 km^2, of which the larger part, about 27 km^2, is on the side of the former Yugoslav Republic of Macedonia. With a mean depth of about 10 m, it is comparatively shallow.

There are about 44 wetlands covering an area of about 574 km^2 or 2.23 per cent of the country's territory. The natural lakes, such as lakes Ohrid, Prepsa and Dojran, make up the largest part of the area of wetlands with 82.5

per cent. The other wetlands are in the area of artificial lakes/ reservoirs (11.3 per cent), such as Tikves, Mladost, Matka, Glaznja, Lipkovo and the marshes (5.54 per cent) Katlanovko Blato, Belcisko Blato and Monosptiovsko Blato.

Artificial lakes and large dams

Tikves has a storage volume of 475 million m^3, Kozjak 550 million m^3 and Mavrovo 357 million m^3. There are also about 110 smaller dams with a volume of less than 500,000 m^3.

9.2 Performance and gaps in water monitoring networks

The hydrological monitoring network comprises 110 surface water stations for (map 4.3) and 115 groundwater stations (map 4.4). A restriction of budget in 2003 influenced the maintenance of the network. As of November 2018, 65 stations for surface water and 38 groundwater stations are operational. For groundwater level, long time series in quite a few monitoring points are available.

The surface water quality monitoring network comprises 20 sampling points (map 4.2). Although 15 automatic stations in the Vardar River catchment areas with data transmission were installed between 2004 and 2008, only one is still in operation.

No satisfactory data are available for both surface and ground water bodies. The human and financial resources are limited to ensure a reliable water monitoring. In 2017 the annual budget for maintenance, measurement, fuel etc. was only about 1,451,000 denars, around €25,000. Just to compare it with the number of the existing stations for surface and groundwater monitoring it would be only about 6,500 denars per station and so less than 0.1 per cent of the investments costs of building a new station for maintenance,

An attempt is currently being made to implement monitoring in accordance with the Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive) guidelines, but the Hydrometeorological Service (HMS) faces difficulties in monitoring of some quality elements. Due to the lack of appropriate and modern laboratory equipment, only heavy metals (Cd, Pb and Ni) are analysed. For the ecological state the current national monitoring programme comprises three biological elements: benthic invertebrate fauna, phytobenthos and phytoplankton. Sampling of these quality elements has started in 2018 two times per year, but the other two biological quality elements (macrophytes and fish) are not yet subject to routine monitoring. Therefore, the available monitoring data allow only a partial overview of the conditions of the surface water resources in the country. HMS focuses on rivers; therefore, reservoirs and lakes monitoring data are not included.

The country lacks reliable data on groundwater quality and quantity. No groundwater quality monitoring network is operational. So, there is no nation-wide overview of the groundwater quality. Due to a lack of financial resources, systematic and permanent groundwater monitoring is not carried out.

Some data are provided from several projects but give only a basic picture in some regions. They are either not centrally stored, recent or outdated. No data specific in the interactions with ecosystems are available.

Monitoring of drinking water quality is conducted for public water supply systems by regional centres for public health. Annual reports on drinking water quality monitoring are prepared by the Institute of Public Health (IPH) based on reports submitted by the centres. Control monitoring of municipal public water supply systems is conducted by IPH periodically.

9.3 Water quality

Groundwater

Statements on possible negative influences due to anthropogenic use from areas such as waste, wastewater, agriculture (nitrate, pesticides) and industry, especially in the hydro-geologically sensitive areas of the karst with a high-water permeability, are not possible. Singular studies have revealed isolated findings, but no nation-wide information is available.

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Surface water

Rivers

According to the Law on Waters, the categorization and classification of the waters is done in line with international standards. Water bodies are classified from "purity" (class I) to "pollution" (class V) in five quality classes. The permitted use criteria are defined for the respective quality classes.

A 2009 biological survey of surface waters showed that 85.5 per cent of samples can be placed in quality class II, 7.2 per cent in quality class III and 7.2 per cent in quality class I.

Due to the high load by sewage, especially below big settlements, the self-cleaning of the waters is strongly limited. By contrast the hydromorphologic state of the waters overall is very good. In some areas this state is negatively influenced by new projects.

Based on a very high BOD_5 concentration from 2000–2008 between 6 and 11 mg/l (within water class III/heavy polluted) and up to 14 mg/l, respectively, the values measured in flowing waters have been reduced until 2010 and since then have fluctuated around a lower level. The Bregalnica River shows the lowest load of 2–4 mg/l (within water class II). The average burden in the Vardar and the Crn Drim rivers is higher, but still within the water class II.

The nitrate concentration is comparatively low compared to other Western European countries. In the Vardar River the values are about 1.5 mg/l. At the Bregalnica and Crn Drim rivers, the values are around 1 mg/l.

The amount for total ammonium in the rivers is around 0.5 mg/l and therefore very low. Ammonium is partly present in alkaline wastewater as toxic ammonia, which kills many aquatic organisms even in relatively low concentrations. Inorganic total nitrogen from wastewater also partly acts as fertilizer for aquatic plants and algae. Overfertilization of water bodies can lead to algal blooms and a lack of oxygen in water bodies.

Through anthropogenic input, phosphorus becomes the main eutrophication factor. The orthophosphate is free and quickly available for algae and aquatic plants, therefore an increased proportion of orthophosphate causes a very strong algae growth and thus caused oxygen deficiency situations in the water. A value of 0.02 mg/l P orthophosphate would be required to achieve quality class I. In Vardar River, coming from values of 1.0 mg/l and more, the maximum values after 2004 are 0.4 mg/l. In Bregalnica River the measured values are below 0.4 mg/l and in the Crna River the values are partly above 0.4 mg/l and thus at quality class III-IV.

In addition to the anthropogenic causes, there is also a basic geogenic load.

Lakes

Lake Ohrid is an oligotrophic lake with high transparency and in total low concentrations of phosphorous (0.001 to 0.02 mg/l P). The water of Lake Ohrid is very clear and unpolluted and can be used for drinking without any treatment. Wide parts the data recording of the totally nitrate and totally phosphorous concentration show gaps. Besides, the sudden fluctuations within in the data rows are not quite understandable.

Lake Prespa is a mesotrophic lake with higher concentrations of phosphorous (0.02 to 0.09 mg/l P). The insufficient wastewater treatment and leakages in the sewer system have a heavy impact to the water status.

For Lake Dojran, only few data are available. Lake Dojran suffers from water abstractions and decreasing water level, which have severely impacted its water quality, resulting in eutrophic status. During the past two decades, a rapid drawdown of Lake Dojran was observed, and there was a danger of losing the lake completely. The reasons for the disappearance of the water from the lake were the dry hydrological cycle of more than 10 years and uncontrolled use of the water from wells for irrigation. To improve the situation, a pipeline system for recharging the lake with groundwater was installed.

Drinking water

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The water sampling is consistent with international standards and European directives for drinking water. In 2015, 95 per cent of the drinking water is compliant with norms, while 2.9 per cent are physicochemically unsafe and 2.2 are microbiologically unsafe. The most frequent causes of non-compliance in physical and chemical parameters include absence of residual chlorine or increased content of iron in raw water and in very few samples it is due to increased content of nitrites from dig or drilled wells of individual users.

Bathing water

The percentage of samples from natural lakes with non-compliant quality is still very high, especially for physical and chemical parameters. The quality of water in the lakes is threatened by direct discharges of wastewater or rivers entering the lakes contribute to deterioration of the quality of lake water, but also uncontrolled use of lake waters for agricultural and tourism purposes.

9.4 Management of water use and pressures on water resources

Water abstraction and use by sector

The water exploitation index (WEI) is the annual total abstraction of freshwater divided by the annual total renewable freshwater resource (7.9 billion m^3), expressed in percentage terms. In years of intensive water use, WEI is around 20 per cent and at peak times, up to 35.7 per cent in 2012.

An actual trend that can be derived from macroeconomic contexts is not discernible. On average, in the period 2007–2014, 81 per cent of the water demand is covered by surface water (table 9.2).

When considering the water demand over several years, it is generally noticeable that it is fluctuating. This applies not only to the total water demand of all sectors, but also to the consumption of the various sectors. In 2012 the higher demand from agriculture was mainly met by surface water, while the higher demand from industry was met by groundwater. Another important factor in the comparison of the water supply with the water use is the water loss, from the water extraction to the place of use (tables 9.2 and 9.3). The water losses in water supply companies in the country are generally in range between 40–65 per cent of the system input.

Table 9.2: Water abstraction by type and sectors, 2007–2014, million m^3

	2007	2008	2009	2010	2011	2012	2013	2014
Total abstracted surface water	**422.6**	**527.9**	**886.0**	**1 357.8**	**754.4**	**2 033.5**	**679.9**	**467.2**
Industry	107.9	67.7	299.3	959.5	448.7	637.4	410.5	51.0
Households	189.4	183.9	226.8	39.4	33.0	131.6	113.0	207.2
Agriculture, forestry and fishing	125.3	276.3	359.9	358.9	272.7	1 264.5	156.4	209.0
Total abstracted groundwater	**116.3**	**155.0**	**162.1**	**326.9**	**227.9**	**775.1**	**59.8**	**60.0**
Industry	79.1	104.5	114.1	130.2	55.3	652.9	25.3	17.6
Households	37.0	48.9	47.0	195.7	171.6	33.5	34.4	42.2
Agriculture, forestry and fishing	0.2	1.6	1.0	1.0	1.0	88.7	0.1	0.2
Grand total	**538.9**	**682.9**	**1 048.1**	**1 684.7**	**982.3**	**2 808.6**	**739.7**	**527.2**
Industry	187.0	172.2	413.4	1 089.7	504.0	1 290.3	435.8	68.6
Households	226.4	232.8	273.8	235.1	204.6	165.1	147.4	249.4
Agriculture, forestry and fishing	125.5	277.9	360.9	359.9	273.7	1 353.2	156.5	209.2
Water exploitation index	6.8	8.7	13.3	21.4	12.5	35.7	9.4	6.7

Source: Ministry of Environment and Physical Planning, 2018.

Table 9.3: Water resources use by sectors, 2007–2014, million m^3

	2007	2008	2009	2010	2011	2012	2013	2014
Households	114.8	79.0	273.8	235.0	205.0	165.1	147.3	249.0
Processing industry	174.5	215.0	622.0	659.0	254.0	218.8	391.8	58.0
Production of electric energy - cooling	12.3	8.0	18.1	18.0	15.0	0.0	0.0	12.0
Irrigation	125.5	278.0	360.0	293.0	360.0	1 353.0	156.5	209.0

Total	**427.1**	**580.0**	**1 274.0**	**1 205.0**	**834.0**	**1 737.0**	**695.6**	**528.0**

Source: Ministry of Environment and Physical Planning, 2018.

Industry and mining

Industry capacities can be divided into two groups: connected to public water supply systems using water of high quality, and using own water resources (spring, wells, river diversion, and reservoirs) (table 9.4). In comparison to the public water supply, the companies' own water supply accounts for the largest share. A very inhomogeneous picture also emerges regarding the total water demand, but also regarding the sources used to cover the demand. An apparent doubling or halving of the total water demand within only a few years is not comprehensible. Similarly, no clear, sustainable use concept can be discerned for the resources used. In 2010, water from reservoirs was used almost exclusively to meet demand. In 2011, demand was met from watercourses while reservoirs were conserved or exhausted.

Table 9.4: Water supplied to industry and mining, 2008–2015, thousand m^3

	Total	Own water supply					Public water supply	Other
		Groundwater	Springs	Water courses	Reservoirs	Lakes		
2008	1 922 147	107 598	42 249	18 052	1 533 464	220 753	68 452	4 143
2009	4 500 119	114 139	260 618	1 572 063	2 175 430	377 869	36 162	235 584
2010	6 368 589	130 168	532 162	494 360	4 680 863	531 036	516 497	35 468
2011	5 869 979	55 265	480 396	5 061 935	52 171	220 212	203 126	233 093
2012	5 006 246	65 293	147 494	2 639 871	1 901 038	252 549	102 695	5 901
2013	2 537 780	25 504	539 968	959 418	1 012 888	2	354 580	2 288
2014	3 427 825	17 606	1 654 162	481 822	1 010 409	263 827	32 283	2 819
2015	4 282 042	3 920	217 847	1 278 812	812 725	8 112	32 461	1 363

Source: Environmental Statistics, State Statistics Office, 2017.

The largest water resources cover industrial needs, such as electricity, gas, steam and air conditioning supply, which accounts for 99 per cent.

Water requirements for mining and quarrying and manufacturing are of secondary importance. Less than 1 per cent of the water demand is re-used water.

Pressure from industry

Only a limited number of industrial wastewater treatment plants (WWTPs) have been constructed, and most of them only have mechanical treatment. A limited number of industrial WWTPs have mechanical and chemical (or biological) treatment. Some of the industrial WWTPs are out of operation due to malfunctioning, lack of spare parts or non-maintenance. About 99.6 per cent of the untreated wastewater are discharged in watercourses.

Heavy industry plants as well as existing and abandoned mines could impact water resources and concentrations of heavy metals could be detected in water.

Blašnica River, for example, shows high concentrations of arsenic in water originating from the mining activities of an abandoned mine. Excessive concentrations of Pb and Cu are also recorded in water, as are concentrations of nickel and chromium in the sediment.

In Kavadarci, the strongest pressure is exerted by the metal industries, which burden the Luda Mara River downstream with manganese, copper and cadmium.

Agriculture, including irrigation

The total agricultural land area within the country is 1.264 million ha, out of which cultivated area is around 513,000 ha. The potential irrigated area is only around 164,000 ha of the total arable land area and only 126,617 ha of this area is equipped. About 99,918 ha were located in the Vardar River catchment area,18.432 ha in the

Strumica River catchment area and 8,267 ha in the Crn Drim River catchment area. The largest irrigation schemes are located in Bregalnica (29,315 ha), Tikvesh (19,225 ha), Strezevo (20,200 ha) and Turija (10,051 ha).

Most of the irrigation systems have been constructed before 1990s. In 1998, there were about 160 large and small irrigation schemes with a storage capacity of 1.850 million m^3. For this purpose, had been built over 27 big dams, over 120 small dams and about 1,400 km of main channels/pipelines and about 6,800 km of detailed irrigation network composed.

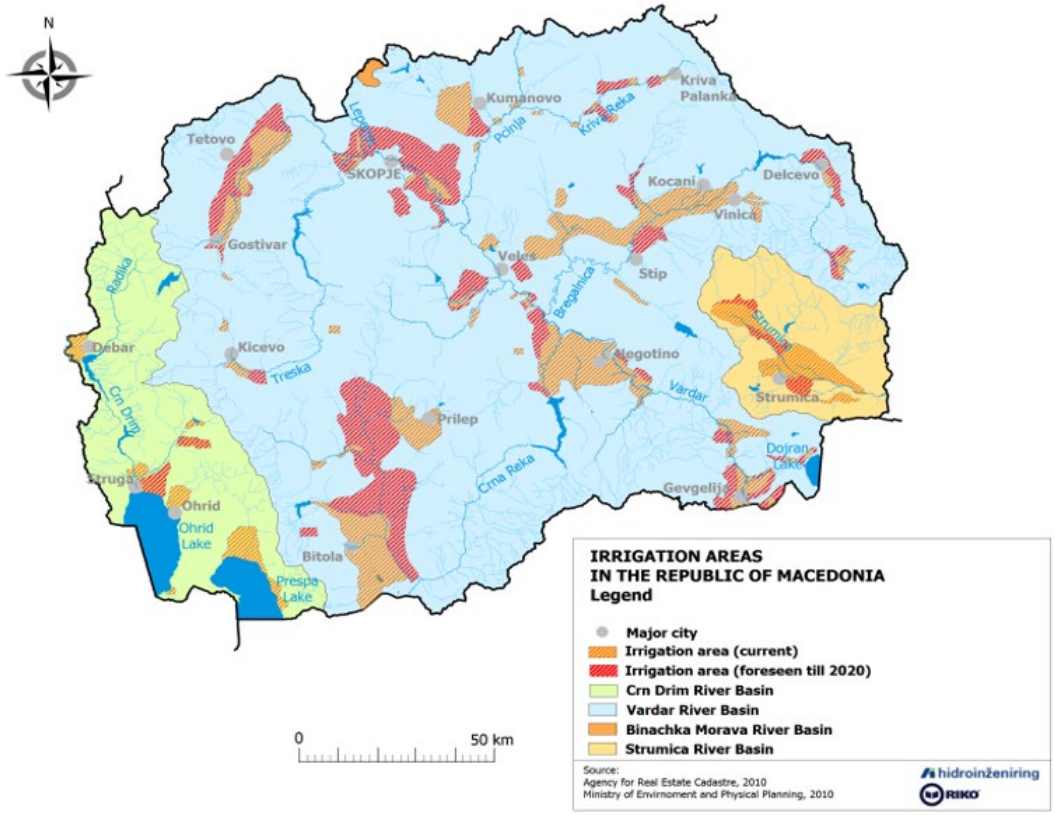
Irrigation is mainly from surface waters (reservoirs, streams, lakes). Due to the lack of information about the groundwater status and use there could be a high number of irrigated areas relying on groundwater sources (local wells). The three irrigation methods (surface irrigation, drip irrigation, irrigation and sprinkling irrigation) are evenly used on the irrigated areas. Most of the irrigation schemes have no measuring devices on irrigation intakes. There are no reliable data on irrigation water used and quantitative data on water losses.

Apart from irrigation the drainage of the land is also an important issue concerning the agriculture. The total drainage length is 7,637 km and the average drainage density is 0.30 km/km^2. The largest drainage density is in water management division Gorna Bregalnica, which belongs to the Vardar River Basin.

Due to agricultural use, pollution of soil and groundwater in regions cannot be ruled out. Especially in hydro-geologically sensitive areas with a high permeability to groundwater (karst), an intensive use of fertilizers and plant protection chemicals can be expected to have negative effects, but no systematic monitoring and analyses are performed.

In the coming years the demand for irrigation water might increase due to the high and increasing water losses as well as the expected changes related to climate change.

Map 9.2: Irrigate areas



Source: Agency for Real State Cadastre, Ministry of Environment and Physical Planning, 2010.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Pressure from agriculture

The effects of agriculture on the status of surface and ground water can be separated in point and diffuse sources. Regarding the point sources there are the discharges of wastewater from livestock farms and slaughterhouses. An improper storage of waste and little use of waste treatment facilities could pollute the ground or surface water. The organic manure production amounts to annually about 3 million tons. No data on the quantity and quality of discharged wastewaters from farms are available. No data on the use of mineral fertilizers or the consumption of pesticides are available.

Erosion

The country is one of erosion most affected territories on the Balkans. Water erosion caused by rainfalls and running waters are dominant in the country. Beside the natural reasons, like the erodibility of certain sediments, rocks and soils, there are also long-term destructive impact by man. The destruction of natural vegetation, the absence of measures for agricultural soil conservation and inadequate processing have resulted in deterioration of physical soil properties.

According to a report of the European Environment Agency, the country belongs to the so called red zone of water erosion in Europe. According to the Ministry of Environment and Physical Planning, 96.5per cent of the total area is under erosion process. The total annual erosion for the country is about 17 million m^3.

In addition to the loss of cultivable land, the negative effects on the water status, the entrained sediment leads in floods to a significant increase in damage and a higher cost to eliminate the effects. The soil erosion was considered in detail in the River Basin Management Plan (RBMP) Begalnica. For the Bregalnica River basin, a yearly loss of 7 million tons with an average area-specific soil loss rate of 15 tons per hectare and year have been estimated.

Energy, including hydropower plants and reservoirs

The water demand for the energy sector is very low compared to the other sectors. The hydropower plants already play a role in energy supply. There are currently 9 large and 73 small hydropower plants. The total installed power of the existing hydropower plants is 580 MW.

Pressure from hydropower

The available potential for construction of small hydropower plants on possibly 400 locations is assessed at 255 MW. There is a programme to build several new (small) hydropower plants. Many of the projects are in protected areas, like national parks. Although they seem initially positive compared to conventional power plants they have negative effects on water bodies, like the stopped fish migration, gravel and sediment transport. To ensure the fish migration fish ladders are to be built.

The residual flow is defined only as 10 per cent of the average water flow. By faulty planning of fish passes and violation of the residual flow requirements, the function of existing fish ladders is endangered. In some cases, the residual flow is reduced to zero to increase the performance of the hydropower plant.

Households

Drinking water supply

About 70 per cent of the public water supply is covered by groundwater. In 2015 around 79 per cent of in total 2.07 million inhabitants are provided with water from centralised drinking water system operated by public water utility companies (table 9.5). Around 10 per cent inhabitants are supplied trough local, rural water supply schemes by local communities. 11 per cent have their own, individual water supply.

Out of the total number of inhabitants in the country, around 60 per cent are supplied from karstic water sources, around 20 per cent from surface water resources and around 20 per cent from groundwater. Drinking water consumption varies over the country from 93–151 l/capita/day. The average consumption is 128 l/capita/day.

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Majority of public water supply systems provide clean and safe drinking water. However, there are 11 municipal water supply systems and three municipalities connected to regional water supply scheme where lack of residual chlorine, turbidity, humid substances, iron or manganese were identified.

Major cause of non-compliance is the lack of sanitary protection of the sources, poor maintenance of structures and equipment or absence of or inadequate chlorination. These scattered systems represent small water supply zones providing water for around 10 per cent of total population in the country. The level of compliance in 2015 was around 35 per cent for microbiological parameters, i.e. 28 per cent for physicochemical parameters. The provision of safe and secure drinking water from small water supplies is a complex and resource intensive challenge.

Table 9.5: Overview of drinking water supply service coverage

Administrative region	Population 2015 estimate	Served by water supply systems operated by PUC (Number)	(%)	Supplied by means of local community system (Number)	(%)	With self-supply (individual wells, intakes) (Number)	(%)
Vardar	152 917	127 121	83.1	12 042	7.9	13 754	9.0
East	176 877	145 598	82.3	15 100	8.5	16 179	9.1
Southwest	219 718	164 639	74.9	32 927	15.0	22 152	10.1
Southeast	173 552	132 489	76.3	17 451	10.1	23 612	13.6
Pelagonia	230 880	195 926	84.9	13 235	5.7	21 720	9.4
Polog	320 299	183 385	57.3	90 699	28.3	46 216	14.4
Northeast	176 231	115 486	65.5	17 235	9.8	43 511	24.7
Skopje	620 913	562 357	90.6	13 949	2.2	44 607	7.2
Total	**2 071 387**	**1 627 000**	**78.5**	**212 636**	**10.3**	**231 751**	**11.2**

Source: Development of National Water Study, 2017.

The most vulnerable category is individual water supply due to frequent microbiological non-compliance.

The protected zones for drinking water supply are not fully identified. As of November 2018, there is not a centralized database of protected zones. The information is possessed by various departments in the ministries, municipalities and available in different databases, electronical or physical formats. In 2012, technical regulations for the identification of protected zones for drinking waters has been drafted, but not adopted yet.

Sewage

According to the 2002 Census of population, households and dwellings of 2002, 40.1 per cent of the total number of dwellings are not connected to public sewage network, 21 per cent use septic tanks and 12 per cent have free wastewater discharge. Almost 180,000 dwellings, which are connected to the public water supply systems, are not connected to public sewage. Bigger part of the constructed sewage network does not lead to modern system of drains. In rural areas, only 13 per cent of the population have a wastewater connection. In Skopje, the coverage levels are markedly higher with a wastewater collection coverage of 70 per cent.

Table 9.6: Water service infrastructure coverage by settlement size

	Population	Households	Households connected to Water (number)	(%)	Sewage (number)	(%)
Urban	1 082 278	308 272	225 571	73	185 990	60
Suburban	289 163	101 734	76 145	75	55 691	55
Rural	303 595	79 188	65 277	82	10 395	13
Total	**1 675 036**	**489 194**	**366 993**	**75**	**252 076**	**52**

Source: 2014 Development of National Water Tariff Study.

The current condition of the sewage systems varies in urban and rural areas. Generally, the systems are rather old, worn out, and the collecting network is constructed of different materials. The pipes are cracked, and there

are leakages of the wastewater. The capacity is very often not sufficient to collect all wastewater. The systems for urban wastewater and storm water are not separated, and during floods, pipes are overloaded and suffer from increased pressure. Generally, existing sewage systems in major urban areas are designed to collect and convey both, wastewater and storm water.

Only 12 cities have constructed separate sewage systems. Skopje has constructed separate system for wastewater (56 per cent) and for storm water (18 per cent). Usually, collectors for storm water discharge water into closest recipient, while wastewater is discharged downstream from the urban areas. Sewage systems are local systems for each urban area. Beside these local systems there are three larger or regional sewage systems for protection of lakes Ohrid, Prespa and Dojran. The sewage system for protection of lakes Ohrid and Prespa consists of collector pipelines, pumping stations and WWTPs. Even if the two lakes are very important for the tourism industry the operation of the WWTP is not ensured.

Wastewater treatment

There are 24 WWTPs reported to be in function with a total capacity of 525,000 p.e., which represents 24.5 per cent of the required capacity. In Skopje, with a population approaching 700,000, there is no WWTP. All sewage is discharged untreated into the Vardar River. Skopje is planning to build a WWTP.

Since 2011, an additional capacity for approx. 258,000 inhabitants has been created. Under the EU Operational Programme for Environment and a Swiss donation, it is expected to construct four WWTP in the period 2018–2020, Bitola (112,474 p.e.), Tetovo (98,417 p.e.), Kocani (40,000 p.e.), Delcevo (18,000 p.e.). This would mean an increase of almost 280,000 p.e..

There is no wastewater monitoring of influent or effluent municipal sewage system discharge to recipients, except in places with operational WWTPs. However, even in cases where discharge is monitored, there are no restrictions in place, even when discharges exceed the normal limits.

Storm water system

The total length of sewerage network in the City of Skopje in 2014 was 1,021 km out of which 302 km is storm water system. In 2012 the total length in the storm water network for all pipe diameters was 550 km in the whole country. There are some projects to build additional storm water networks.

Because of the costs and the missing wastewater treatment, the common network for storm water and communal wastewater is the most popular system. A combined network, although cheaper, causes functional problems during wet weather, namely flooding of the streets with wastewater, but is also an additional burden for WWTPs.

Landfills

There are 54 active municipal non-compliant landfills operating without permits. Only one landfill (Drisla landfill) covers the region of Skopje, has the operational permit and is the only waste site compliant with national requirements. It is estimated that there are about 1,000 dumpsites, especially in rural areas. Active municipal non-compliant landfills are categorized according to the assessment of their environmental risk. According to this categorization 16 non-compliant landfills are ranked with high risk, 17 with medium, and 21 with low environmental risk. In hydro-geologically sensitive areas, such as karst, water bodies or floodplains, industrial waste and municipal solid waste can have a negative impact on surface or ground water.

Little or no information is available on the history of the dumpsites from abandoned mining and processing industries, their environmental impact and the legal heritage is not clear. Sixteen major industrial areas and dumpsites are identified as "hot-spots" regarding their high hazardous potential.

Tourism

From 2007 to 2017, the number of tourists nearly doubled, from 536,212 to 998,841, but the numbers of nights increased by 37.5 per cent from 2,019,712 to 2,775,152. Depending on the type of touristic activity, time duration is from 120 to 270 days, while for Skopje as capital of the state and cultural, economic and trade centre, 365 days.

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An additional load of wastewater is discharged by tourists. The water consumption norm is from 0.280 m^3/tourist/day to 0.400 m^3/tourist/day for Skopje.

During the touristic season higher values for nutrients can be registered in the lakes. The organic loading is also more intense during the summer period. The reason is an increased number of people and number of touristic facilities which contribute to the pollution of the ecosystem. Also, the tributaries, affected by the system for the discharges of communal and industrial waters and the drainage waters from the surrounding agricultural areas, in the watershed of the lake have a high influence.

Due to the missing WWTP in Skopje the higher number of tourist has an impact to the water quality. Same at Lake Ohrid where the permanent operation of the sewage treatment plant is not ensured. Otherwise the capacity of the existing WWTP at Lake Ohrid is sufficient.

Sludge

There is no sludge management. A proposed sludge management strategy was included in a draft national water management plan for the period 2018–2024, which was undergoing internal consultation with stakeholders at January 2019. Adopting a separate strategy on sludge management requires first amending the Law on Waste Management.

The manner and procedure for the sludge management from waste treatment plants is regulated. The re-use of sludge in agriculture is not regulated. Advanced sludge treatment (drying, composting) is not practiced in the country. The use of sludge is rather negligible.

9.6 Impact from and adaptation to climate change

Since 2002 storms and flash floods in some regions have become more frequent and caused significant damages. Heat waves have been more frequent in the last 10 years in Skopje region. 2012 was the year with the biggest number of heat waves.

For assessing the trend, an observation period from 1951–2010 has been analysed for temperature, precipitation and the discharge of selected rivers, which is for systematic observations and measurements very short period for assessing the statistical trend on long-term basis. The recorded annual average and maximum discharges from 2001–2010 show an increasing trend. According to the statistical trend analysis the last decade can be recognized as a hydrological wet period.

Generally, there is a reduction of the annual values of the average discharges for all river basins. The air temperature data from Strumica show for an observation period from 1951–2010 an increasing trend for the last decade 2001–2010 which resulted in an increasing trend line for the entire observed period 1951–2010. The south-eastern part of the country was identified as the most vulnerable.

Climate change has a high impact on the irrigation. While the air temperatures and the water demand are increasing, precipitation and the main source for irrigation, surface water, have reduced. 2012 has shown how sensitive the irrigation sector in the country is, While the other sectors showed no change in consumption, irrigation use quadrupled compared to the average demand.

At national level, no specific priorities can be identified for tackling climate change on water management. In the 2012 National Water Strategy the continuous adaption to climate change was pointed out without setting any priorities.

9.7 River basin management

The Ministry of Environment and Physical Planning has the leading role concerning the river basin management. In terms of planning, the Ministry is responsible for the preparation of the RBMPs. In terms of implementation, the Ministry has a leading role in the management of international river basins.

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The Environmental Administration under the Ministry has to ensure the fulfilment of the expert activities and undertake measures and activities significant for water resources management for each river basin, such as the collection, processing and storage of data from the water monitoring, the preparation of basic assessment of the characteristics of each river basin and the preparation of a program of measures.

River basin management councils

No river basin management council (RBMC) is established. RBMCs have to be established for each river basin, and on voluntary basis for sub-basins, with the purpose of preparation, implementation and monitoring of the river basin management plans, and for proposing measures for improving water management. RBMCs are the mechanisms ensuring the participation of local communities in water management.

The Government can approve RBMCs on proposal of Ministry of Environment and Physical Planning, one for each river basin area.

River basin management plans

The Government should adopt RBMPs and monitor their implementation. RBMPs for Lake Prespa and Bregalnica River are developed. RBMPs for Strumica and Vardar river basins were drafted. None of the RBMPs so far developed is adopted by the Government and for none of them the SEA has been done. The management plans for the other river basins are still missing.

In the case of Bregalnica RBMP, a communication concept for public involvement was developed. Public participation was ensured on several levels. There had been several public project presentations and sub-regional workshops with representatives of the Government, the municipalities of the Bregalnica region, public utilities, NGOs and civil society. There had been municipality forums, organized by the municipalities, with the support of external moderators and public events to raise public awareness on water issues in the region. The website www.breganica.mk provides the public with information on the project and important documents. It also offers online participation tools, such as comment tool and a forum.

However, RBMP suffer in some areas from the lack of data due to the poor state of the qualitative and quantitative water monitoring system. Apart from this, some biological quality criteria, like fish, are not be defined and so the real ecological status of the water bodies is not defined. In addition, the reference conditions to define to the status are still not yet established.

9.8 Floods management

Because of its geomorphology and climate, the country is prone to floods. Floods account for 44 per cent of all disaster events in the country.

The basis of the flood risk management plans are flood hazard and flood risk maps, both have not been created yet.

The partly existing maps of flood plain are not equivalent to the flood hazard maps. The flood hazard maps show the spread of flood events of different years while a map of a flood plain usually indicates one year. Flood risk maps are regarding four criteria of the consequences of flooding: human health, the environment, cultural heritage and economic activity. A differentiated view of different events, their effects and the conclusions for adapted measures (prevention, preparedness, emergency response and recovery) is therefore not possible according to the Directive 2007/60/EC on the assessment and management of flood risks. Due to the large deficits in monitoring surface waters, forecasting and estimating flood events is difficult. Therefore, it is attempted to ensure the flood forecast by means of precipitation measurements. The sole consideration of precipitation is essential, but is not sufficient to capture the actual discharge, in quantity and over time, in the water. The pressure from construction on the flood plains increases the risk potential in flood situations.

In January and February 2015, the country has been affected by floods. The biggest recorded rainfalls since the measurements started in the country, resulted into significant rise of level of the rivers, dams and accumulations, causing extensive flooding in 43 out of 80 municipalities in the country. Approximately 170,000 persons were

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directly affected by floods and nearly half of the total population were indirectly affected (965,569 persons). The occurrences of floods have increased in frequency and intensity over the past decades. During the last three decades regional floods caused by the biggest rivers in the country caused an estimated total damage worth US$193.8 million.

Several studies concerning the issue floods are ongoing. For the city of Skopje, a flood modelling based on the Directive 2007/60/EC was carried out. Apart from plans and studies there are also existing large flood control structures (dams and reservoirs) in the areas of Skopje, Pelagonija, Strumica and Struga.

The Directive 2007/60/EC is not transposed into the national legislation. The Directive requires a mandatory creation and revision of flood risk management plans every six years. However, the issue of flooding and how to deal with it is regulated by law and some essential points of the Directive are thus fulfilled. The Law on Waters requires that a programme for protection against harmful effects of water is prepared within the respective river basin, as an integral part of RBMPs. This would ensure the regular (6-year cycle) review of the programme, but its inclusion as an element within the RBMP would not do justice to the importance of the Directive.

9.9 Legal, policy and institutional framework

Legal framework

Law on Waters

The 2008 Law on Waters regulates issues pertaining to surface water, including permanent watercourses or streams in which water occasionally flows, lakes, reservoirs and springs, groundwater, water habitats and their management including distribution of water protection and conservation of water and protection against harmful effects of water, water facilities and services, organization and financing of water management, as well as the conditions, methods and procedures under which they use or release water. The Law defines principles of sustainable water resources management, like ecological, social and economic concept, precautionary principle, minimal use of resources, stakeholders' participation. It stipulates competences in water management at all governmental levels. Through the decentralization process, the municipalities will be key executive players in environmental protection in the future and will provide most of the utility services: water supply, industrial and municipal wastewater, flood protection, erosion, and water discharge.

Law on Nature Protection

The Law on Nature Protection carries out through biological and landscape diversity protection and natural heritage protection, in and outside protected areas the protection of nature. The Law regulates the protection of habitats and ecosystems, including water related.

Law on Drinking Water Supply and Urban Wastewater Drainage

This Law regulates drinking water supply, urban wastewaters, water supply and sewage systems, relationships between providers and consumers, as well as the supervision over its implementation.

Law on Water Services Pricing

The Law on Water Services Pricing ensures the establishment of a financial self-sustaining water services system that ensures high standard of services provided with an affordable price in accordance with the objectives of the National Strategy for the Waters and RBMPs.

Law on Water Economy

The Law on Water Economy regulates the management, use, operation and maintenance of hydro systems, irrigation systems and drainage systems.

Policy framework

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The 2012 National Water Strategy defines the long-term policy to ensure the sustainable water development by meeting the demands of all users and covers a period of 30 years. It remains general. There are no fixed requirements about time implementation. In addition, there is no prioritization of the various areas such as water supply, monitoring, flood protection as well as no prioritization of the mentioned measures. It is a guideline in the preparation of action plans of the individual ministries and their coordination with each other.

No water resources management basis was drafted. A water resources management basis is for integrated planning and implementation of the programmes and measures for development of waters in accordance with the objectives of the national sustainable development and harmonization of the economic development, social progress and protection of the environment, as well as implementation of the National Water Strategy. Theoretically it shall be adopted for a period of 20 years.

River basin management plans have to be prepared every six years. As of November 2018, there are only a few RBMPs existing, like for Lake Prespa, Bregalnica and Strumica rivers. RBMPs for Lake Ohrid and Vardar River are under development.

Sustainable development goals and targets relevant for the chapter

The current status of the country vis-à-vis target 3.9 and Goal 6 of the 2030 Agenda for Sustainable Development is described in box 9.1.

Box 9.1: SDG Target 3.9 and Goal 6 of the 2030 Agenda for Sustainable Development

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Indicator 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)

The burden of disease associated with unsafe water and sanitation and lack of hygiene in the former Yugoslav Republic of Macedonia is low: WHO 2016 estimates of mortality rate attributed to exposure to unsafe WASH services (per 100,000 population) at less than 0.1. The European Regional average is at 0.3.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all

Indicator 6.1.1: Proportion of population using safely managed drinking water services

According to WHO UNICEF Joint Monitoring Programme estimates in 2015 about 84 per cent of the total population in the country have access to safe drinking water; the access is for 90 per cent of the urban population vs. 74 per cent of rural thus pointing out some urban-rural disparities. The total population access was at the levels of 91-92 per cent from 2000 to 2009 and decreased as of 2010. The rural population access estimates show increase from 81 per cent in 2000 up to 90 per cent followed by a steady decrease as of 2010. In 2000, about 98 per cent of the urban population had access to safe drinking water but its decline started much earlier – since 2005. The decrease in population access is primarily due to deterioration of the water network and lack of funds for its maintenance and rehabilitation.

With the negative time trend, the country is off track on achieving the 2030 SDG target on universal and equitable access to safe drinking water.

The Government should:

(a) Seek funding mechanisms to invest in water network rehabilitation and metering to reduce losses, to reduce the impact on the environment and finally to public health
(b) Ensure that public buildings such as schools, kindergarten and day care centres are connected to safe drinking water supply and sewerage systems as a matter of priority.

Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

Indicator 6.2.1: Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water

The WHO/UNICEF JMP estimates of the proportion of population with access to improved sanitation facilities in 2015 are as follows: 94 per cent for the total country population, 100 per cent of the urban and 87 per cent of rural one. Of those connections to sewers are available for 71, 97, 36 per cent respectively. There are no data available on hand-washing facilities. All hospitals and educational facilities in the bigger cities as well as in the villages with larger schools have special toilets for men and women. Smaller regional schools have common toilets. Gender related challenges with access to water and sanitation remain (Box 6.2).

Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Indicator 6.3.1: Proportion of wastewater safely treated

As of November 2018, it can be estimated that up to 24.5 per cent of the wastewater is potentially treated. Most of the wastewater plants just have secondary treatment. Due to lack of maintenance and other reasons the wastewater treatment plants are sometimes subject to discontinued operation. By providing a clear structure and concentrating responsibilities to singular central bodies, the access of municipalities to technical assistance and capital funding in the wastewater sector could be facilitated.

Indicator 6.3.2: Proportion of bodies of water with good ambient water quality

Country data reported in the framework of global monitoring and initial data collection in 2017 show that 8.7 per cent of all assessed water bodies are estimated to be of good ambient water quality i.e. at least 80 per cent of compliance of the core parameters with country defined target values based on the available monitoring data. None of the groundwater bodies or of the open water bodies assessed during the same time were of good ambient water quality. Only 12.5 per cent of the rivers assessed are of good ambient water quality. Because of the lack of wastewater treatment in many parts of the country and other adverse impacts on water poor ambient water quality bodies can be found nearby settlements or in the lower course of the waters.

Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

Indicator 6.4.1: Change in water-use efficiency over time

No reliable data are available. Currently water consumption varies considerably both between and within sectors and so does fresh water resources for the sectors across the years. It is expected that water losses will continue to increase in the future due the outdated water supply infrastructure and the lack of investment unless urgent countermeasures are put in place.

Indicator 6.4.2: Level of water stress: freshwater withdrawal as a proportion of available freshwater resources

In 2014 the overall pressure by all sectors on renewable country water sources is estimated at up to 13.78 per cent. Taking into account the lack of systematic quantitative information about groundwater and the high levels of impacts on surface water related to water usage many activities as well as the effects of the climate change one can conclude that the available freshwater amount will deplete, the water shortage - considerably increase together with the demand-supply conflicts.

Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

Indicator 6.5.1 Degree of integrated water resources management implementation (0–100)

According to a 2016 UNEP survey, the current degree of the IRWM implementation is 22, which is classified as low. Country target for 2030 is 65.

The Government should strengthen the capacity of water related capacity, introduce effective managerial instruments to make rational and informed decision-making between alternative actions and secure funding.

Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Indicator 6.6.1: Change in the extent of water-related ecosystems over time

Although some of the water-related ecosystems including the lakes Ohrid and Prespa are under protected areas it is by far not sufficient. The lack of systematic monitoring prevents setting priorities for protection and restoration of water-related ecosystems.

The extent of water-related ecosystems, in particular the surface water-related ecosystems as the initial focus has to increase. Currently it is about 2 per cent of the total land area and does not show any trend of increase from 2005 to 2015. Concerning

the water quality of those, the nationally derived proportion of water bodies with good water quality in 2016 was below 9 per cent, and that of rivers – up to 12.5 per cent.

The Government should raise public awareness about the water-related-ecosystems and improve public knowledge about possible and necessary extent of the water-related ecosystems.

Target 6.b: Support and strengthen the participation of local communities in improving water and sanitation management

Indicator 6.b.1: Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

In the process of decentralisation, responsibilities for water supply and sanitation are assigned to the municipalities.

Legal mechanisms allowing public participation in decision-making processes related to water resources management are in place and anticipated to have better effect while further developing and implementing RBMPs in compliance with the national legislation. The availability of financial means to perform these tasks is an important aspect of meeting the target.

In addition to general information related to water management, river basin management councils are not established leading to a lack of priorities that are relevant in the respective catchment area. Although established, the National Water Council is not in operation. These institutions could develop targeted communication channels to specifically address the stakeholders involved in water management, such as the Ministry of Agriculture, Forestry and Water Economy to the farmers in areas of high erosion

The Government should ensure the establishment of river basin management councils and the operation of the National Water Council.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning supervises the implementation of the legislation related to water. The Administration for the Environment fulfils responsibilities on water management. Within the Administration, the Department for Waters is responsible in the implementation of the Law on Waters provisions. In total, there are six units, one for water management planning and development, one for concession and inter-sectoral cooperation and one for water rights and three units for each of the three river basins – Crn Drim, Strumica and Vardar.

The Ministry is responsible for protection of waters from pollution, issuing water permits, concessions for water use, also the protection against harmful effects of water (floods and erosion), including establishment of measures in early warning plans. The Ministry prepares and manages of monitoring activities, information to the public and definition of the contents of reports. It is responsible for the definition of a plan for water management for the use of funds.

Ministry of Agriculture, Forestry and Water Economy

Before the adoption of the Law on Waters, the Ministry of Agriculture, Forestry and Water Economy was responsible for overall water management. Since 2011, most of the competences moved to the Ministry of Environment and Physical Planning. The Ministry of Agriculture, Forestry and Water Economy remained competent for functions related to irrigation and drainage, as well as protection of waters from pollution from agricultural resources.

Within the Ministry of Agriculture, Forestry and Water Economy, HMS is responsible for maintenance and development of the meteorological and hydrological observation network and measurements; monitoring and research of atmosphere and water resources; and the application of meteorology and hydrology. Due to the insufficient financial and personnel resources, hydrological observations are not performed continuously. Therefore, data collected into a hydrometeorological information database show gaps. HMS informs the public on the state of waters and alarm on the appearance of imminent dangerous or harmful hydrological circumstances. HMS provides information on the quantity and level of water to the Crisis Management Centre before critical levels are reached. HMS is responsible for the measurement of qualitative parameters of rivers. These measurements do not include reservoirs and lakes.

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Ministry of Transport and Communication

The Ministry of Transport and Communication is responsible for communal infrastructure, issues of waters supply and collection, drainage and treatment of wastewaters especially the aspect of construction and management of water management facilities. The Ministry is responsible for supporting the development and management of communal water infrastructure, it supervises the activities and decisions of the municipalities about drinking water supply and through the mechanism of supervision over the legality of operation of the municipalities. The Ministry implements a programme for removal, collection and treatment of urban wastewater, which is prepared based on the draft similar programmes prepared by the municipalities, the municipalities of the City of Skopje and the City of Skopje. The Ministry provides the manner of maintaining and protecting the water supply and sewage systems. The Ministry supervises activities and decisions of the municipalities on drinking water public water supply and sewage services.

Ministry of Health

The Ministry of Health identifies water bodies suitable for human consumption and bathing waters and takes care of the wholesomeness and safety of drinking and bathing waters, including the protection of the population from diseases transmitted through water. The protected zones for water intended for human consumption and public water supply are subject to strict sanitary control. The Ministry of Health provides conditions for economic activities in the protected zones for water that may affect the quantity and the quality of the drinking water.

The Institute of Public Health is responsible for the monitoring of drinking water and surface waters. The Institute and 10 regional centres monitor drinking water and surface waters. The regional centres process and submit data to the Institute in a form of annual and half-annual reports. The Institute publishes an annual public summary report based on data submitted by the regional centres.

Ministry of Education and Science

The Hydrobiological Institute under the Ministry of Education and Science performs monitoring over the three main natural lakes in the country: lakes Ohrid, Prespa and Dojran. Located in Ohrid, the Institute is an education and research organization focused on hydrobiology issues on natural lakes, artificial lakes and rivers.

Ministry of Economy

The Ministry of Economy is responsible for the preparation of proposals for concession for water use for the industry and energy production. Its area of competence covers groundwater, use of mineral and thermo-mineral resources and electricity generation.

Others

The State Environmental Inspectorate is responsible for inspections related to water. The State Communal Inspectorate is responsible for responsible for inspections related to public water supply systems and systems for collection, drainage and wastewaters treatment. The State Inspectorate for Agriculture is responsible for the control of nitrates in vulnerable zones and irrigation and drainage and the State Sanitary and Health Inspectorate is responsible for inspections related to drinking waters and bathing waters.

The Energy Regulatory Commission is an independent regulatory body and regulates prices of water services, sets up tariffs for the bulk water supply and drinking water supply, collection and disposal of urban wastewaters, as well as purification of wastewaters. In 2017 the Commission published a rulebook on the manner and procedure for setting of water service tariffs and of the regulatory tariff for water services.

The Crisis Management Centre is an independent state body established to propose decisions, ensure permanent consultation, coordination, timely reaction and efficacy in cases of crises, as well as to ensure assessment of safety and risks throughout the country. It also proposes to the Government early warning plans in accordance with Ministry of Environment and Physical Planning.

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The Department for Protection and Rescue is an independent state body under the Government and cooperates with the Ministry of Environment and Physical Planning on measures for protection against floods.

The National Water Council is a consultative body. The Council comprises of members proposed by the following institutions: Ministry of Environment and Physical Planning, Ministry of Health, Ministry of Transport and Communication, Ministry of Economy, Ministry of Agriculture, Forestry and Water Economy, ZELS, Academy for Science and Art, non-governmental sector and the river basin management councils. As of November 2018, the Council is not in operation.

Water economies have been established. These autonomous public entities are responsible for the management, use, operation and maintenance of hydro systems, irrigation and drainage systems. Also, water communities, non-profit associations of owners and users of agricultural land, for using, maintaining, constructing, extending and reconstructing the small irrigation and drainage system were created. Both are responsible for the maintenance of beds and canals for protection and prevention from harmful effects of waters

Regulatory, economic, fiscal and information measures

Water use and integrated environmental (air, water and waste) permits are implemented in the country. Wastewater discharge permits for installations which are included in legally binding lists are covered by the integrated environmental (IEP). Permit for water abstraction has to be issued separately, prior to the issuance of a single or an IEP. The 2008 Law on Waters defines the request for water permit, lists activities and works requiring a permit and describes the procedure to be carried out for the issuance of water use permit. However, water abstraction below 10 m^3 per day requires registration. Table 2.2 provides data for the period 2011–2016.

The use of water, including groundwater is regulated also by the award of a concession for water. Concessions are awarded for generation of electricity in hydropower plants, water bottling for commercial purposes, lake traffic and rendering touristic, sports and other recreational services by construction of permanent facilities.

The irrigation water charges are linked to irrigation norms of crops based upon profitability of irrigated crops and different for pumped zones vs gravity supply. Due to the lack of flow measurement equipment, they are also area-based rather than volume-based. Therefore, there are differences in fees, for example the irrigation of tomatoes in the Strumica region costs 10,000 denars/ha while it costs 5,820 denars /ha for the same fruit in Kochani. At the same time, the irrigation of one ha of wheat in the Strumica region costs 2,500 denars.

The fees for wastewater are lower than for fresh water. As a rule, the fees for citizens are significantly lower than those for companies. However, the fees are not high enough to cover the costs. An additional problem is the inability to collect legitimate payments in full. In some cases, collection rate is only 50 per cent.

The average cost of water services is for 70–75 per cent of the households of an affordability threshold of 3 per cent of the average household income, which is at the lower end of the accepted set in the EU for water services (3–5 per cent). According to the national legislation, cost recovery of water services, including environmental and resource costs, is to be considered when setting the prices. The currently applied tariffs do not fully respect the user pays principle due to a significant cross subsidy from non-household, like industry to household consumers. In addition, the tariff system does not cover all costs, for example, maintenance of the technical equipment.

The determination of tariffs is under the sole responsibility of the public water companies that are owned by local governments or councils (table 3.3). Low tariffs, insufficient collection rates, and liability of utility companies to pay VAT for provided services which have not been paid by the users, lead to the lack of revenue, which results in no maintenance, no repairs and no possibility for infrastructure extension and improvement.

9.10 Assessment, conclusions and recommendations

Assessment

The monitoring of water quality and quantity, neither surface waters nor groundwaters is insufficient to provide a picture of the state of water resources. The reasons are insufficient financial and staff resources. The network

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of monitoring stations has deteriorated. Monitoring and assessment of the state of water resources is essential for any sustainable management of those resources. Without accurate data the preparation of a resilient and effective RBMP becomes questionable and the subsequent tracking of the results of implementation of programmes of measures is not possible.

Although some new WWTPs have been constructed, most wastewater – especially industrial wastewater – is still discharged untreated to the rivers. Therefore, rivers are largely polluted and it can be assumed that those river sections will not comply with the WFD criteria for "good" status. The main source of water pollution is poorly treated wastewater from different sectors. Only 25 per cent of necessary WWTPs have been built and, due to the lack of maintenance and other reasons, the actual number could be lower. Even though WFD has been implemented in the Law on Waters and Directive 2007/60/EC on the assessment and management of flood risks is intended to serve as a guideline for further action on flooding in the future, the practical implementation of both lines of regulation is significantly behind. Due to the organization and responsibilities of the water industry by the Law on Waters, coordination between the ministries is of great importance to implement the measures. The establishment of river basin management councils for all river basin units for the implementation of WFD and Directive 2007/60/EC on the assessment and management of flood risks therefore seems appropriate.

The country is very vulnerable to river floods and flash floods. Without hydrologic knowledge of the rivers, flood prediction, warning and the taking of appropriate measures in case of flood are difficult to implement. Just relying on precipitation data is not sufficient for flood prediction. In preparing for climate change, a strong, long-running, monitoring network is necessary.

Conclusions and recommendations

Enhancement of water monitoring

No comprehensive data on the quantity of groundwater resources are available. Although numerous hydrogeological studies have been carried out, there is no nationwide systematic and continuous monitoring and evaluation. The same applies to surface water monitoring.

Recommendation 9.1:
The Government should allocate an adequate regular budget for remediation and maintenance of the water monitoring network to enable the systematic monitoring and assessment of the status of surface water and groundwater bodies in line with international and European Union practices.

Water supply

Due to the lack of accurate data, unknown and unregulated use of surface and groundwater, especially by industry, can occur. Higher water requirements are sometimes required, for example, for irrigating agricultural land in case of hot weather periods. Water demand from other areas, such as for drinking water, is increasing. The total national availability of water is expected to decrease. This would increase the value and importance of water and competition for this rare good will increase. The loss of water in drinking network systems, leakage from degraded irrigation systems and awareness and technical devices for saving water resources is of major concerns. The lack of sanitary protection of the sources leads to case of non-compliance.

Recommendation 9.2:
The Government should:

(a) Improve data collection on groundwater and surface water abstraction and use;
(b) Apply the water-user and polluter-pays principles for all water users and dischargers according to the 2008 Law on Waters, taking into account the needs of poor and vulnerable groups in the population;
(c) Raise awareness of water-saving measures and provide water-saving technical devices;
(d) Introduce domestic, municipal and industrial reuse and recycling of water, and rainwater collection for non-potable uses;
(e) Ensure a special regime for the sanitary protection of sources of drinking water supply.

Irrigation

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The existing irrigation structures, facilities and equipment are in a poor technical condition. High water losses are characteristic. There are no reliable data on water consumption for irrigation. The price for irrigation is defined by area and the cultivated crop and not by the consumed water.

Recommendation 9.3:
The Government should:

(a) Ensure rehabilitation of irrigation systems and expansion of the percentage of closed pipe systems in relation to open systems;
(b) Provide measurement devices in irrigation systems for water quantity intake and water consumption by farmers and promote high-value, low-water-use crops;
(c) Strengthen agricultural advice on different irrigation methods, selection of crops adapted to local boundary conditions and optimization of existing systems.

Sewage

About 12.5 per cent of rivers assessed are of good ambient water quality. One of the main reasons is the discharge of untreated wastewater. Wastewater treatment capacity is meet 25 per cent of the demand of settlements. Bigger cities still have no sewage treatment plants. The average rate of wastewater collection in sewerage collection systems is around 60 per cent for households (Census 2002).

Although certain rural areas have developed combined domestic sewerage and storm wastewater collection systems, no treatment is performed prior to wastewater discharge. This situation worsens during low-flow periods in rivers during summer due to lower sewage dilution.

Industrial wastewater is discharged without prior treatment or pre-treatment is carried out in poorly-maintained and inefficient facilities. Beside organic matter, toxic sewage is being discharged into rivers. Landfills close to rivers or lakes are a further source of pollution by infiltration or run-off into surface water and groundwater.

Recommendation 9.4:
The Government should:

(a) Ensure the construction of wastewater treatment plants and sewage collection systems for cities over 100,000 p.e. as a priority and for municipalities over 10,000 p.e. as a secondary priority;
(b) Ensure that the sewage collection systems focus on separating wastewater from storm water, with the storm water being returned to the hydrological cycle by infiltration;
(c) Prevent the deterioration of the existing sewage collection systems, which should be repaired or renewed;
(d) Ensure maintenance and operation of sewage collection systems;
(e) Consider the establishment of decentralized sewage treatment systems in rural areas;
(f) Ensure that industry applies appropriate wastewater treatment prior to discharge into water bodies according to national standards;
(g) Close and remediate all dumpsites along river banks exposed to flooding and infiltration into groundwater.

River protection

The national legislation requires good ecological status for rivers and lakes. That can be achieved through good water quality and good hydromorphology status of riverbeds, banks and flood plains. Although rivers and partially lakes suffer from wastewater discharges, most reaches of the rivers are not hydromorphologically degraded (except from reservoirs) by channelizing, embankments and loss of flood plains. This offers an excellent opportunity to ensure that most water bodies can reach good ecological status according to the Law on Waters, once water quality has improved. Dams in rivers and reservoirs are severe interruptions in the structure and ecology of a natural river. Fish migration and gravel and sediment transport are stopped and sedimentation, eutrophication, warming, oxygen depletion, occur.

Recommendation 9.5:

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The Government should:

(a) Ensure a sufficient buffer strip along rivers and lakes for agricultural lands exposed to erosion, and that relevant cultivation methods are applied to protect from erosion;
(b) Ensure that ecological improvements on dams, such as fish ladders and fish ways, are considered and that the environmental flow below dams is set and inspected;
(c) Consider more twinning arrangements with countries that have experience in implementing Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for community action in the field of water policy (Water Framework Directive) and river basin management;
(d) Establish reference conditions for water bodies to enable their classification.

Flood management

The Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks is not transposed into the national legislation. Over the past decades, there have been many floods with high levels of damage and even deaths. It took a long time to eliminate the negative consequences of those floods. Due to climate change, an increase in number and size of floods is also to be expected. Nevertheless, there is still a high pressure for new buildings, construction and land use in flood plains.

Recommendation 9.6:
The Government should:

(a) Ensure that flood plains are left open without further building, construction and land use involving water-polluting substances;
(b) Consider preparing a handbook of flood-adaption planning and building in flood areas if it is unavoidable;
(c) Raise public awareness of floods through reconnaissance and preparation for flood events, supported by flood preparedness and response exercises for those involved in flood management;
(d) Ensure the maintenance of existing flood protection systems and consider the building of flood protection systems including precise flood predictions and hydrological forecasts;
(e) Adapt the management of reservoirs to flooding;
(f) Promote the increase of the percentage of pervious surfaces in urban areas by considering the introduction of specific minimum values for new urban developments and for the regeneration of existing parts of urban areas;
(g) Promote the implementation of nature-based solutions in urban areas to increase adaptation to climate change.

Institutional framework

In water management planning, the Ministry of Environment and Physical Planning has an exclusive and coordinating role. It is responsible for the protection of waters from pollution and water permitting. It also has to prepare and manage monitoring activities. Furthermore, in agreement with the Ministry of Agriculture, Forestry and Water Economy and the Ministry of Transport and Communication, and in collaboration with the Ministry of Finance, the Ministry of Environment and Physical Planning has a responsibility for the definition of a plan for the use of funds for water management.

Since 2011, the Ministry of Environment and Physical Planning has been strengthened in the water management sector. However, the Hydrometeorological Service, which is responsible for meteorological and hydrological observation network and measurements and monitoring and research of water resources, is not under the structure of the Ministry.

Recommendation 9.7:
The Government should:

(a) Provide sufficient financial and personnel resources to the Ministry of Environment and Physical Planning to enable it to perform its role in water management;
(b) Consider establishing comprehensive data management;

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(c) Consider concentrating all state investments in the water sector within the Ministry of Environment and Physical Planning, including for irrigation and public water supply;
(d) Ensure, by contract, subsequent maintenance and operation and consider fines in the case of infringement;
(e) Consider transferring the Hydrometeorological Service to the Ministry of Environment and Physical Planning to complete the transition of competences for water management.

River basin management

According to the Law on Waters, river basin management councils will be created with the purpose of preparing, implementing and monitoring river basin management plans (RBMPs), and for proposing measures for improving water management. The establishment of river basin councils is new in the country and many aspects of their functioning, such as detailed criteria for representation of various groups of stakeholders, methodological guidance and funding issues, are not yet defined and tested and may require adjustment after a certain period of their work.

RBMPs for Lake Prespa and Bregalnica River have been developed, while RBMPs for Strumica and Vardar river basins have been drafted. None of the RBMPs so far developed has been adopted by the Government and none of them has been subject to SEA. In addition, RBMPs suffer in some areas from the lack of data due to the poor state of the qualitative and quantitative water monitoring system.

At November 2018, the National Water Council is not in operation.

Recommendation 9.8:
The Government should:

(a) Establish as a pilot project, based on a proposal by the Ministry of Environment and Physical Planning, a river basin management council for which a basin management plan is at the final drafting stage, and work out the modalities for the effective launch and functioning of the new institution by seeking support from other countries to benefit from similar experience;
(b) Apply, in due time and taking into consideration the lessons learned, the tested working arrangements for establishing river basin management councils in the other designated river basins, based on proposals by the Ministry of Environment and Physical Planning;
(c) Ensure that river basin management plans for the remaining river basins are developed;
(d) Ensure that the National Water Council is operational.

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Chapter 10

WASTE AND CHEMICALS MANAGEMENT

10.1 Practices and trends in waste management

Data inconsistency

Data collection for most of the waste types is done both by the State Statistical Office and the Ministry of Environment and Physical Planning. While the State Statistical Office applies the internationally accepted standards for data collection, the latter relies only on reports from municipalities and from other legal entities which are subject to reporting as defined in the waste management related legislation (e.g., healthcare institutions, generators of hazardous waste or collective waste handlers). In case of the municipal solid waste (MSW) some municipalities do not report to the Ministry despite their legal obligations, so the datasets of the State Statistical Office can be considered as official. However, in the lack of weighting gates at all non-compliant landfills (Drisla landfill is the exception), data are estimated. Data on the fulfilment of permits issued based on the legislation on extended producer responsibility is exclusively collected by the Ministry.

Therefore, datasets of the State Statistical Office and the Ministry of Environment and Physical Planning do not comply with each other and are not comparable. This is the case especially in the hazardous waste related data where both institutions collect and publish data, but the reported amounts to the Ministry are much bigger than the total generated amount by economic activities published by the State Statistical Office. There are discrepancies in almost all datasets that are covered and published by both institutions. The discrepancy is explained by the fact that the Ministry collects data from all legal entities that produce hazardous waste, while the State Statistical Office collects data only from some economic activities which are included in the National Classification of Economic Activities (NACE) list.

Municipal solid waste and similar waste

MSW and similar waste collection is in the responsibility of municipalities that they usually fulfil through public communal companies. Public communal companies are the main service providers of waste management services in the country, conducting waste collection services and the final disposal of waste. Most of the public communal companies are owned by the municipalities, only few of them operate in a Public-Private Partnerships (PPPs) system where private investors are also owners.

Generation of MSW remained stable and varied between 786,000 tons and 797,000 tons from 2011 to 2017, except 2011 and 2014 when the amounts were lower, 735,250 tons and 765,156 tons respectively (table 10.1). Accordingly, the waste generation per capita remains relatively low and varied between 354 and 384 kg/person.

Since 2017, data on the detailed waste structure within MSW are available. About 87 per cent of the total waste is mixed MSW followed by organic waste, paper and textile (figure 10.1). About 83 per cent of MSW is generated by households while 17 per cent can be defined as commercial waste.

The collection rate has varied between 70 and 81 per cent, thus a significant part of the population still does not have access to waste collection services, predominantly in remote rural areas. Most part of the collected municipal waste is disposed at municipal non-compliant landfills with the exception of Skopje where Drisla landfill fulfils the basic requirements for landfilling (box 10.1.) and where there is primary sorting of waste to wet and dry fractions. All the other municipal disposal sites do not fulfil even the basic conditions for safe waste disposal. However, they are controlled by the State Environmental Inspectorate, given that they are envisaged to operate until the completion of regional landfills which is expected to take at least another few years.

The country was heavily affected by mass migration and refugee influx in the last few years, which peaked in 2015 when several hundred thousand people crossed through the country. Migration still affects the country although in much smaller magnitude than in 2015. Most of the migrants entered nearby Gevgelija and left the

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country nearby Kumanovo and most of them also stayed several days or longer in the transit reception centres (camps) established at these two locations, which are partly still in use. Consequently, these two camps with an official accommodation capacity of 500 (Tabanovce) and 1,500 (Gevgelija) generated and generate a significant amount of waste similar to MSW, but there were no official measurements or estimations on the generated waste amount.

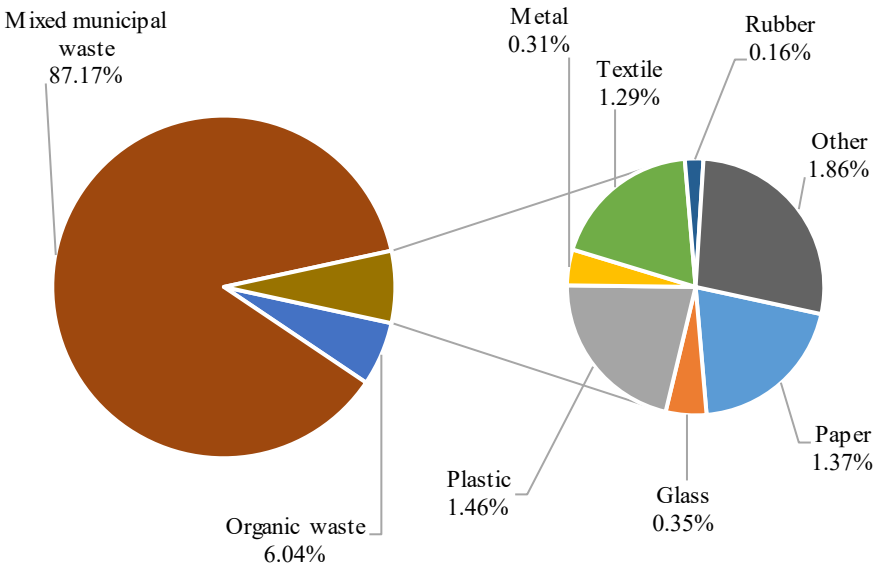
However, municipal waste management companies could not deal with the increased amount of waste, the local non-compliant landfills were not big enough to receive all the waste generated in these camps. Based on the initiative of the international donors (UNDP and Government of Japan), a small temporary landfill was built nearby Gevgelija which was planned in a way to comply with all the related national (and EU) regulations (e.g., EIA was done during the planning and the type B integrated environmental permit was requested). The construction and equipment of the landfill was finished by the end of September 2018 and the start of its operation is planned for the beginning of 2019. The capacity of the landfill is 60.000 m^3 and it is envisaged to serve the municipality of Gevgelija (around 15,000 inhabitants) approximately for the next five years until the regional landfill is being constructed and starts with operation. Also, within this project the local non-compliant landfill will be closed. In both camps the separate collection of plastic bottles and the reuse of the abandoned blankets/sleeping bags has been introduced.

Table 10.1: Generated and collected MSW by waste management regions, 2011–2017, tons

	2011	2012	2013	2014	2015	2016	2017
Total MSW generation	**735 250**	**786 909**	**792 785**	**765 156**	**786 182**	**796 585**	**786 881**
Vardar	77 935	118 780	128 573	73 417	93 238	76 824	84 051
East	81 251	82 849	72 241	65 848	72 303	65 995	55 828
Southwest	87 820	86 960	97 061	96 249	94 391	110 039	95 827
Southeast	91 364	68 146	51 465	75 865	46 860	59 707	58 656
Pelagonia	77 010	85 360	81 594	89 730	80 732	80 115	87 245
Polog	90 567	104 289	106 421	116 997	150 520	128 158	139 003
Northeast	57 467	72 121	83 856	78 182	83 059	93 258	91 298
Skopje	171 836	168 404	171 574	168 868	165 079	182 489	174 974
Total MSW collection	**543 954**	**555 760**	**554 938**	**569 794**	**620 328**	**610 227**	**635 875**
Vardar	64 921	61 957	67 057	65 083	76 235	63 214	63 584
East	69 588	70 485	61 470	59 281	52 580	56 614	50 016
Southwest	47 432	49 488	54 506	56 138	46 771	52 670	49 815
Southeast	39 674	45 474	34 339	28 621	33 764	42 034	43 085
Pelagonia	65 066	72 176	69 010	70 173	69 446	70 724	77 203
Polog	62 388	59 096	60 296	71 318	117 645	92 127	108 047
Northeast	47 080	52 492	61 040	65 747	72 295	72 554	79 879
Skopje	147 804	144 593	147 220	153 433	151 592	160 290	164 246
Percentage of collected waste (per cent)	73.98	70.63	70.00	74.47	78.90	76.61	80.81
Waste generation per capita (kg)	357	382	384	370	380	384	379

Source: State Statistical Office, 2018.

Figure 10.1: Collected MSW and similar waste, 2017, percentage



Source: State Statistical Office, 2018.

Box 10.1: Skopje's waste management

In Skopje the waste collection is done by the public company "Public Hygiene", which is owned by City of Skopje. "Public Hygiene" collects waste form households and companies that produce waste similar to MSW (commercial waste) from the whole urban part of the city and also from around 60-70 per cent of the suburban parts. Different tariffs apply for the two types of consumers: 3.59 denars/m^2 (+VAT) for households and 5.5 denars/m^2 (+VAT) for companies (in September 2018), while households in suburban areas have a flat rate fee equivalent to 5 €/month. Tariffs are regulated by the decision of Council of the City of Skopje. The amount collected covers the expenditures. The payment rate is around 80 per cent, while the cumulative payment rate is 95 per cent (after forced payments or charges on court).

The company operating Drisla landfill was converted to PPP because it would ensure more funds for the needed upgrade of the landfill. A feasibility study was carried out in 2011 that incorporated all the necessary improvements (better leachate and surface water control, constructing of a new landfill body, introduction of mechanical biological treatment, green waste composting, ensuring conditions for the proper treatment of Construction and Demolition waste, construction of a hazardous and non-hazardous waste treatment plant, construction of a new medical incinerator plant). Due to the termination of the contract the landfill is owned by the City of Skopje and only smaller developments were made since 2011. Still, the landfill fulfils the basic requirements for safe waste disposal and it holds a A-type environmental integrated permit for waste management. It has a system for monitoring of wastewater and gases inside the landfill, leachate water is collected, and the residue is landfilled, atmospheric water is channelled around the landfill so that that do not enter to the site, the site is fenced and under video surveillance. Asbestos is landfilled at special underground part of the landfill separately from MSW. Construction and Demolition waste is landfilled as MSW, but it is also used as cover layer. Medical and hazardous waste in the country is only treated at the Drisla landfill: it is co-incinerated in the landfill's furnace in which new filters were installed in 2018.

Recycling of specific waste streams

Despite the introduction and operation of the extended producer responsibility (EPR) schemes, separate collection and recycling, the overall recycling rate in the country remained very low. The only available official data on recycling are based on reports received from only eight municipalities (though it includes Skopje) and according to that the recycling rate of non-hazardous MSW was 0.9 per cent in 2017, which shows a very limited progress since 2011 when the recycling rate was 0.37 per cent. On the other hand, the recycling rate of waste streams that are regulated by EPR laws is much higher than the national recycling rate (table 10.2). The total recycling rate for all types of packaging waste in 2016 was 39 per cent, but the recycling of paper and cardboard reached 68 per cent, plastic 38 per cent and glass 23 per cent. For waste batteries and accumulators (WBA), data show that recycled amounts are even bigger than the amounts put on the market, so either illegal (not reported according to EPR law) amounts were too small or the data collection and reporting method was inappropriate (table 10.3).

Table 10.2: Recycling rate of packaging waste, percentage

	2011	2012	2013	2014	2015	2016
Glass	no data	0	14.68	7,79	10.02	23.06
Plastics	no data	31	29.17	35,11	44.36	38.81
Paper and cardboard	no data	28.65	32.84	44,83	59.89	68
Metal	no data	0.17	0.12	no data	1.47	5.74
Wood	no data	0	1.32	no data	9.89	11.41
Composite materials	no data	0	0	no data	0	0
Other	no data	0	0	no data	0	0
Total	11.75	18.82	22.84	27.38	35.3	39.47

Source: Quality of the environment in the Republic of Macedonia - Annual reports 2011, 2012,2013,2014, 2015, 2016, 2017, Ministry of Environment and Physical Planning.
Note: Data presented in the table are compiled data collected from collective handlers, small producers and self-producers, which are obliged to report to the Ministry of Environment and Physical Planning.

Table 10.3: Waste batteries and accumulators, 2011–2015, kg

	Batteries and accumulators released on to the market	Collected WBA	Treated and recycled WBA	Recycling rate of WBA
2011	1 548 690.13	2 604 413.33	2 365 584.00	152.75
2012	2 430 122.34	541 155.00	541 155.00	22.27
2013	2 523 473.88	2 081 690.00	1 873 931.50	74.26
2014	2 486 725.90	2 610 945.40	2 504 018.00	100.70
2015	2 751 515.99	3 311 933.70	3 137 070.00	114.01

Source: Ministry of Environment and Physical Planning, 2018.
Note: Data presented in the table are compiled data collected from collective handlers, small producers and self-producers, which are obliged to report to the Ministry of Environment and Physical Planning.

Manufacturing waste

Manufacturing waste has been increasing from 2010 onwards (table 10.4). From the amount of 1,017,007 tons in 2010 it has reached 1,638,238 tons in 2014, while for 2016 the amount of waste was only 215,010 tons that implies to possible change in methodology.

Table 10.4: Waste by economic activity and by type, 2010, 2012, 2014, 2016, tons

		2010	2012	2014	2016
Total	**Total**	**1 876 208.41**	**2 112 372.96**	**1 725 911.44**	**1 358 602.89**
	Non-hazardous	**1 150 017.26**	**1 433 898.89**	**1 687 349.91**	**1 302 193.59**
	Hazardous	**726 191.15**	**678 474.07**	**38 561.54**	**56 409.31**
Mining and quarrying	Total	854 855.64	802 124.34	75 198.14	700 549.75
	Non-hazardous	135 807.12	135 505.44	73 834.65	687 248.70
	Hazardous	719 048.52	666 618.90	1 363.49	13 301.05
Manufacturing	Total	1 017 007.14	1 303 806.21	1 638 238.43	215 010.13
	Non-hazardous	1 009 918.27	1 293 868.45	1 601 112.38	214 625.03
	Hazardous	7 088.87	9 937.76	37 126.05	385.11
Electricity, gas, steam and air conditioning supply	Total	4 345.65	6 442.41	12 474.87	443 043.01
	Non-hazardous	4 291.89	4 525.00	12 402.88	400 319.86
	Hazardous	53.76	1 917.41	72.00	42 723.15

Source: State Statistical Office, 2018.

Waste from energy sector

Data on the waste produced by energy sector (electricity, gas, steam and air conditioning supply) (table 10.4) show a dynamic increase from 2010 (4,346 tons) until 2014 (12,475 tons). The amount of 443,043 tons for 2016 probably refers to inconsistency in data collection or change of the methodology.

Construction and demolition waste

Despite it is being estimated as one of the biggest source (beside mining and manufacturing waste and MSW) within the total generated waste in the country, this type of waste is still not covered by regular data collection. Although, for 2016 the State Statistical Office published a detailed table on the amount of waste by section of economic activity that contains data on construction waste (table 10.5), data should be considered with reserves, because the amount of construction and demolition waste is 1,235 t is smaller than those generated by transport services (1,817 t) or by human health and social work activities (2,410 t), which suggests that the data collection might not have covered all the construction activities in the country.

Mining and quarrying waste

The amount of waste was above 800,000 tons both in 2010 and 2012, while in 2014 it sharply decreased more than 10 times to 75,198 tons, then in 2016 it reached again 700,550 tons (table 10.3). 2014 data might refer to inconsistency in data collection, but the overall trend is a gradual decrease in the amount of waste.

Past pollution

In the former Yugoslav Republic of Macedonia the only comprehensive assessment of the situation related to environmental hotspots – former industrial and mining sites where a larger amount of hazardous waste is still present and stored in an inadequate way thus being an actual or potential threat to the environment – was done in 2005. Since then, between 2010–2018, progress was made only in the case of OHIS site in Skopje (box 10.2) which was ranked in the 2005 study as being one of the three hotspots with "high environmental risk". The other two sites with high environmental risk (Bucim copper mine at Radovis and MHK Zletovo lead and zink smelter at Veles) have been privatized (given in concession) since then and were operational in 2018. On Bucim site the concessionaire cleaned-up the historical pollution based on the obligation prescribed in its concession contract. On the site of MHK Zletovo the Government has contracted a private company to remediate the site (including excavation, packaging, transport and export of the waste from the country in accordance with the Basel Convention). Since 2010 feasibility studies were carried out for the following four sites: OHIS, Makstil (iron & steel plant), Silmak and MHK Zletovo. There are ongoing activities at Silmak ferro-silicium plant (former HEK Jugochrom) where the cleaning station is working on reducing Cr_6 to Cr_3.

Table 10.5: Waste by section of economic activity, 2016, t

	Generated	Stored	Received	Delivered	Recovered	Disposed
Total	1 437 492.17	769 370.47	583 872.78	491 337.70	8 190.53	838 051.85
Non-hazardous	1 380 118.77	763 503.49	562 863.19	449 272.48	7 288.83	807 629.08
Hazardous	57 373.40	5 866.98	21 009.59	42 065.22	901.70	30 422.78
Agriculture, forestry and fishing	5.64	1.00	-	-	1.04	3.60
Non-hazardous	5.64	1.00	-	-	1.04	3.60
Hazardous	-	-	-	-	-	-
Mining and quarrying	700 549.75	689 405.29	-	2 040.58	-	9 160.47
Non-hazardous	687 248.70	684 605.10	-	1 987.06	-	659.15
Hazardous	13 301.05	4 800.19	-	53.52	-	8 501.32
Manufacturing	215 010.13	455.24	276.05	175 296.52	1.55	40 790.88
Non-hazardous	214 625.03	455.24	276.05	174 994.58	1.55	40 663.21
Hazardous	385.11	-	-	301.94	-	127.67
Electricity, gas, steam and air conditioning supply	443 043.01	10 587.00	-	232 279.92	-	200 378.54
Non-hazardous	400 319.86	10 587.00	-	210 541.54	-	179 414.79
Hazardous	42 723.15	-	-	21 738.38	-	20 963.75
Water supply; sewerage, waste management and remediation	56 512.65	68 595.49	580 987.53	63 947.87	8 187.94	581 541.88
Non-hazardous	56 512.45	67 693.79	560 267.94	44 097.67	7 286.24	581 541.88
Hazardous	0.20	901.70	20 719.59	19 850.20	901.70	-
Construction	1 235.10	4.36	-	174.33	-	1 073.18
Non-hazardous	1 211.98	0.64	-	134.87	-	1 058.34
Hazardous	23.12	3.72	-	39.46	-	14.84
Wholesale and retail trade; repair of motor vehicles and motorcycles	16 350.55	305.59	2 609.20	16 203.39	-	1 697.30
Non-hazardous	15 924.45	146.45	2 319.20	16 148.57	-	1 361.07
Hazardous	426.10	159.14	290.00	54.82	-	336.23
Transportation and storage	1 817.27	16.50	-	1 147.25	-	655.60
Non-hazardous	1 750.01	14.27	-	1 120.99	-	616.59

Hazardous	67.26	2.23	-	26.25	-	39.01
Accommodation and food service	276.61	-	-	148.72	-	135.89
Non-hazardous	272.58	-	-	148.52	-	132.06
Hazardous	4.03	-	-	0.20	-	3.83
Information and communication	50.39	-	-	0.33	-	50.06
Non-hazardous	50.39	-	-	0.33	-	50.06
Hazardous	-	-	-	-	-	-
Financial and insurance activities	2.33	-	-	1.26	-	1.07
Non-hazardous	2.33	-	-	1.26	-	1.07
Hazardous	-	-	-	-	-	-
Real estate activities	0.80	-	-	-	-	0.80
Non-hazardous	0.80	-	-	-	-	0.80
Hazardous	-	-	-	-	-	-
Professional, scientific and technical activities	8.97	-	-	1.00	-	4.01
Non-hazardous	8.97	-	-	1.00	-	4.01
Hazardous	-	-	-	-	-	-
Administrative and support service	1.61	-	-	0.16	-	1.45
Non-hazardous	1.61	-	-	0.16	-	1.45
Hazardous	-	-	-	-	-	-
Public administration and defence; compulsory social security	34.65	-	-	7.35	-	26.31
Non-hazardous	34.65	-	-	7.35	-	26.31
Hazardous	-	-	-	-	-	-
Education	177.85	-	-	69.98	-	108.19
Non-hazardous	177.85	-	-	69.98	-	108.19
Hazardous	-	-	-	-	-	-
Human health and social work	2 409.99	-	-	18.05	-	2 418.78
Non-hazardous	1 966.60	-	-	17.60	-	1 982.65
Hazardous	443.39	-	-	0.45	-	436.13
Arts, entertainment and recreation	4.60	-	-	1.00	-	3.60
Non-hazardous	4.60	-	-	1.00	-	3.60
Hazardous	-	-	-	-	-	-
Other service activities	0.27	-	-	0.01	-	0.26
Non-hazardous	0.27	-	-	0.01	-	0.26
Hazardous	-	-	-	-	-	-

Source: State Statistical Office, 2018.

Box 10.2: Project "Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for Alpha-HCH, Beta-HCH and Lindane Contaminated Sites at OHIS"

The project for remediation of the former OHIS (Organic Chemical Industry "Naum Naumovski-Borce") site contaminated with lindane and hexachlorocyclohexane (HCH) has been initiated in 2014. Approximatively, 50,000 tons have to be treated. Before the actual treatment and remediation, a certain amount of preparatory work had to be done. Most of the preparatory work was completed by mid-2018: the adoption of legal acts for management structure and by-laws (rulebooks) to introduce them into the national legislation, technical tools are also prepared as well as the detailed site investigation and public procurement for the remaining works is the next step.

The project also contains the elaboration of feasibility study, cost-benefit analysis, risk analysis and communication plan for public awareness raising on this specific issue and project. The project itself will cover the treatment and removal of 10,000 tons contaminated soil, while for the removal and treatment of the remaining 40,000 tons further funds need to be ensured. The experience gained through this project will serve as an example for further clean-up activities in the country and in other countries, which means that during the preparatory work a methodology was prepared. To facilitate knowledge sharing and raise the professional and public awareness, the Instructions for the sustainable management of contaminated sites in the country were published in May 2018 in three separate books: Assessment of contaminated locations, Remediation of contaminated sites and Standard operational procedures.

Agricultural waste

No data exist on agricultural waste generation, treatment and disposal. However, a significant part of agricultural waste is recovered within the agricultural sector. There are two IPPC waste to energy installations that are using the manure and produce electricity. The waste that cannot be (re)used, is mostly treated as MSW or hazardous waste (e.g., packages of pesticides).

Hazardous waste

The State Statistical Office publishes data for every second year, including data on hazardous waste from selected sectors of economic activity for 2010, 2012 and 2014 (table 10.4) and as of 2016 detailed data on hazardous waste from sectors of economic activity (table 10.5). According to the data, the total generated hazardous waste from selected sectors of economic activity in 2014 was 38,562 tons and 56,409 tons in 2016. The total generated hazardous waste in all sectors of economic activity constitute 57,373 tons in 2016. Data show that hazardous waste is predominantly (98 per cent) generated by three economic sectors: mining and quarrying, manufacturing and electricity, gas, steam and air conditioning supply.

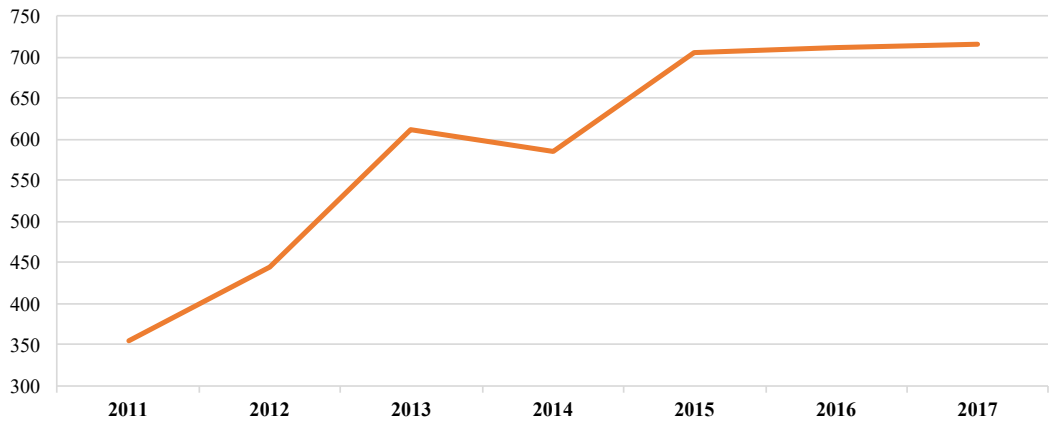
However, data published by the Ministry of Environment and Physical Planning for 2017, obtained from 103 business entities, the total reported generated hazardous waste by them was 2,041,268 tons. The difference in the two datasets is explained by the different data collection methods: while the Ministry of Environment and Physical Planning collects data from the industry, mining sector and also from other entities that generate hazardous waste, the State Statistical Office gathers data only from some economic activities from the NACE list not covering all the entities that report to the Ministry.

Medical waste

Healthcare institutions that generate medical waste submit an annual report on the generation and treatment of waste to the Ministry of Environment and Physical Planning. According to the submitted data from the healthcare institutions, the amount of reported generated medical waste has almost doubled between 2011 and 2017 from 355 tons to 716 tons (figure 10.2). Most part of the medical waste is classified as "waste whose collection and disposal is subject the special requirements due to protection from infections", in 2017 it made up 87 per cent of the total medical waste. However, it is worth to note that the reported amounts are not equal to the total generated amount of medical waste in the country, because it does not cover the waste that is generated by households (especially medicines) that ends up as MSW because there is no separate collection for medical waste generated by households.

Medical waste collected by companies that have permits for that is mostly co-incinerated at Drisla landfill. A small part is exported for final treatment and disposal. However, the incinerator at Drisla landfill is old and uses an outdated technology, but after the new filter of the furnace for incineration was officially put into operation in April 2018, it meets the criteria set by national regulation. The company operating Drisla has appointed an accredited laboratory for measuring emissions of pollutants in the air from the furnace for combustion of medical waste. Measurement results between April and September 2018 show that the average emission concentrations do not exceed the limit values and are in accordance with the Rulebook on emission limit values for burning and combustion of waste and the conditions and method work on installations for burning and combustion. The medical waste stove filter has a capacity of 2,500 m^3/hour.

Figure 10.2: Generated medical waste, 2011–2017, tons



Source: Ministry of Environment and Physical Planning, 2018.

Radioactive waste

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Radioactive waste is only generated in very small amounts by hospitals but there are no data available on their management.

Persistent organic pollutants waste

No persistent organic pollutants (POPs) are produced in the country, but they are still present in the country as past pollution at former industrial sites. The activities for removing and restoring the sites contaminated with POPs are almost exclusively project based and coordinated by the POPs Unit, which is an external project unit. There were a few very successful projects in the past decade and there are ongoing projects as well (box 10.2), thus the country is advancing in the clean-up of POPs and gradually moving towards removing all the existing obsolete POPs. In 2011 a demonstration project has been implemented aimed at installation of technology for the treatment of polychlorinated biphenyl (PCB) at Rade Koncar Factory site. In this project 800 tons of PCB were treated which was used before for maintaining the transformers and then it was stored on site.

Waste generated by military activities

Unusable assets, i.e. weaponry for which the expiration date expired, or for which the repair would be uneconomical that were used by the Army and by the Ministry of Defence are discarded according to the prescribed procedure. After the adoption of the Decision for disbursement, those funds are re-categorized as waste and as such they are handed over to the Army's Collection Centre where they are stored in the warehouse and the procedure for their possible sale of those funds is initiated according to the prescribed procedure for sale.

The Army does not use chemicals or dangerous substances, poisons or their imitators in their arms and weapons, nor radioactive materials or biological agents. Small amounts of chemical substances from old detecting or imitation devices such as chemical detector, chemical contamination imitators are destroyed by neutralization, cracking, dusting and burning. Following these procedures, decontamination is performed on the spot according to a simplified procedure. These actions have been so far realized in special places on the military base Krivolak and do not pose any threat to the environment.

Radioactive sources taken from obsolete detection devices are stored in appropriate containers. Used chemical sources of accumulators are offered for sale as waste. Used engine oil is collected in appropriate containers and stored in a special place in the barracks until their sale.

Material assets such as ammunition and mine explosive materials are destroyed with a method of incineration in a cauldron and by detonation. By the Decision of the Ministry of Defense, the military base Krivolak was designated as a temporary place for destruction with detonation method.

The waste obtained during the daily work of the Military Medical Centre-Skopje and the ambulances in the armoury of the Army which is treated as medical waste, is kept in the central storage in accordance with the prescribed procedure and is handed over to a company under an agreement authorized for acceptance and destruction of such type of waste.

10.2 Transboundary movement of waste

The amount of waste shipments has varied between 46,000 and 70,000 tons (table 10.6) between 2011–2015 without any specific trend for growing or decreasing, also the exported and imported amounts were quite similar. Available data for 2015–2018 show that mostly waste lead batteries were imported to the country, while in waste export besides lead-acid batteries, different types of used oils were predominant. In much smaller quantities wastes of textile, tobacco production and chemicals were imported and exported to the country.

Table 10.6: Waste imports and exports, 2011–2015, tons

	2011	2012	2013	2014	2015
Imports	66 287	53 108	54 429	69 731	51 852
Exports	46 677	54 461	58 280	68 405	51 215

Source: State Statistical Office, 2018.

10.3 Practices and trends in chemicals management

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The base for the proper chemicals management was set by a project initiated and financed through the framework of Strategic Approach to International Chemicals Management (SAICM). Within the project "Mainstreaming Sound Management of Chemicals into MDG-based National Development Planning" that has been implemented between 2008 and 2011, based on the recommendations given by international experts the country has prepared two strategic documents for chemical management (National Action Plan for Sound Management of Chemicals and Road map for mainstreaming of Actions for Sound Management of chemicals into Development Planning Processes) and a new project was prepared in order to develop National Implementation Plan for implementing the SAICM. The final outputs of the initial SAICM project still makes the base on policy level in chemicals management.

The Ministry of Environment and Physical Planning also hosts the National SAICM Committee, which is an inter-ministerial and inter-institutional body that involves several ministries, customs administration, two representatives of academia and State Agricultural Inspectorate. The National SAICM Committee has just started the procedure to upgrade the SAICM on national level.

Legal entities that produce and/or trade with chemicals should meet the conditions that are regulated by the by-laws from the Law for chemicals, in terms of space, equipment and personnel, depending on the chemical hazard. Once they obtain that conditions they get an approval from the Department for Chemicals of the Ministry of Health to produce or perform import or export on chemicals for period of five years.

The chemical industry mainly produces finished products for other industries but in smaller extent consumer products are also produced. Products include medication, plastic products, PVC pipes, detergents and cleaning agents, cosmetics, technical gases and coatings. The industry does not produce all the basic chemicals the country needs but it still offers a wide range of products. The pharmaceutical industry is a leader in the chemical industry. The production of chemicals and chemical products accounts for 4.6 per cent in the total volume of national industrial production; plastics and rubber production accounts for 1.9 per cent. In 2015, there were 95 enterprises manufacturing chemicals and chemical products and 60 of them were members of the Chemical Industry Association.

Implementation of the HCH management plan

The country is preparing an amendment to the national legislation with the aim to ban all the ODS ozone depleting substances. HCH is the only remaining substance that is not banned. Comparing 2010 and 2013 there was an annual reduction of 5 per cent, in 2010 the consumption was about 33 tons. There is no production or export of HCH, the consumption is only based on import, however there was no import in 2017 at all.

Usually HCH is used for servicing needs in the country. The POPs Unit is working on the introduction of the certification of servicemen, which will be obliged to take theoretical and practical trainings and pass an examination. Since September 2018, the drafting of a certification system is. The recovery and recycling of HCFC and HCH from refrigerators is operating in the country. In 2017 about 36 tons of refrigerators were recycled by services that have permits for such work.

10.4 Pressures from waste and chemicals

Due to the lack of monitoring activities and installations on the existing municipal non-compliant landfills, the only evidence-based evaluation of the pressures and risks that non-compliant landfills are posing on the environment was made within the project "Capacity building for implementation of EU-landfill directive – closure of dumpsites and inspections" in 2011. The study carried out a risk assessment with a method based on the following main criteria for which weighted scoring factors on a scale of 1–100 per cent (factors 0.01–1) were applied:

- Participation of the hazardous/medical waste in the total volume disposed (0.5 factor)
- Extent of the landfill (0.35 factor)
    - Area of the landfill (0.15 factor)
    - Volume of wastes disposed of the site (0.20 factor)
- Site characteristics and sensitivity

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- Morphology of the landfill (0.25 factor)
- Hydro-geological conditions / permeability of subsoil (0.20 factor)
- Distance from water courses (0.15 factor)

The classes of risk (low, medium and high) were established upon the magnitude of the total scores (12.75–53.25), by introducing thresholds for each next higher class of environmental risk as following:

- 12.75 – 24 for the lowest environmental risk;
- 24 – 30 for the medium environmental risk;
- 30 – 53.25 for the highest environmental risk

Based on the risk assessment the 54 municipal non-compliant landfills were classified into one of the three risk group (table 10.7). 16 were classified as high-risk non-compliant landfills, 17 as medium risk and 21 as low risk non-compliant landfills. This study still makes the base for the prioritization of the closure of non-compliant landfills.

10.5 Extended producer responsibility (EPR) for packaging, electric and electronic, batteries and accumulators waste

The most significant measures on waste management in the country since 2011 were the introduction of the system of EPR for packaging waste, electric and electronic equipment waste (WEEE) and WBA. For regulating these areas three separate laws were adopted between 2009 and 2012: the 2009 Law on Management of Packages and Packaging Waste, the 2012 Law on the Management of Electric and Electronic Equipment and Waste Electric and Electronic Equipment No. 6 and the 2010 Law on the Management of Batteries and Accumulators and Waste Batteries and Accumulators No. 140. Their implementation was gradual. For packaging waste, the multi-phased implementation has started on 1 January 2010 and the latest provision was due on 31 December 2012 (the deadline for elaborating the programme for waste management by the producers). The implementation of the law regulating waste batteries and accumulators has started on 1 January 2011 and it was fully implemented from 1 January 2012. The Law on WEEE has been implemented since 1 January 2013 with a one-year phase-in period.

Table 10.7: Risk ranking of operating municipal non-compliant landfills

Rank	Municipality	Municipal non-compliant landfills	Score	Deposit (m^3)
1	Kicevo	City Landfill	53.25	50 000
2	Gevgelija	"Suva Reka"	53.25	17 000
3	Gostivar	v. Dolna Banjica "Susicki Most"	47.75	720 000
4	Meseista	Meseista	46.75	6 240
5	Krusevo (1)	"Kole Nalco"	46.75	5 400
6	Karbinci (1)	v. Karbinci	46.75	1 456
7	Karbinci (2)	v. Tarinci	46.75	5 824
8	Krusevo (2)	"pod Avtoturist"	43.75	3 600
9	Karbinci (3)	v. Radanje	43.75	416
10	K. Palanka	v. Konopnica	38.75	130 000
11	Radovis	City Landfill	37.5	50 000
12	Belcista + 3	"Belcista"	37.25	16 250
13	Sveti Nikole	v. Nemanjeci	36.25	60 000
14	Valandovo	"Suvodolica"	35	80 000
15	Ohrid	"Bukovo"	34.25	200 000
16	Murtino	"Dineva Bara"	31	5 000
17	Mak. Brod	"Barbaras"	29.75	12 000
18	Struga (2)	v. Vishni	28.25	50 000
19	M. Kamenica	"Kamenicki Rid"	28	50 000
20	Pehcevo	"Suvi Dol"	27.75	20 000
21	Vinica	v. Leski	27.75	430 000
22	Negotino	v. Dubrovo (Buceto)	27.25	120 000
23	Berovo	"Iljadin Valog"	25.5	22 000
24	Novo Selo	loc. Solena Reka	25.25	480
25	Blatec	"Pocivalo"	25.25	3 840
26	Oblesevo (1)	"Progon"	25.25	180
27	Štip (2)	"Krstot"	25	300 000

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28	Bitola	"Meglenci"	25	1 500 000
29	Kumanovo	"Krasta"	25	1 832 200
30	Strumica	17 km northern	24.5	350 000
31	Prilep	v. Alinci ("Omec")	23.75	530 000
32	Delcevo	"Ostrec"	24.5	175 000
33	Kratovo	"Zeliznica"	24.25	35 000
34	Veles	"Bunardere"	23.75	620 000
35	Kavadarci	"Melci"	23.75	480 000
36	Zletovo	"Meliste"	23.75	72 000
37	Struga (1)	v. Kjafasan (Mali Vlaj)	22.75	50 000
38	Kocani	"Belski Pat"	22	300 000
39	Demir Kapija	"Pcenicni Dupki"	22	101 200
40	Resen	"Alchevi koshari"	22	200 000
41	Debar	"Krivici"	22	150 000
42	Probistip	v. Neokazi (Strmos)	22	22 000
43	Krivogashtani	"Livadski Pat"	21	800
44	Karbinci (4)	v. Krupiste	21	416
45	Orizari	"Bel Kamen"	20.75	7 000
46	Dolneni (2)	v. Crniliste	16.75	1 000
47	Bogdanci	"Brdanov Kamen"	16.75	50 000
48	Dolneni (1)	"Debreshte"	15.5	1 300
49	Miravci	"Karaivanovi kurii"	15	2 000
50	Dojran	"Dekil-Tas"	14.5	40 000
51	Štip (1)	v. Penush ("Trestena Skala")	12.75	8 000
52	Novo Selo	(the old one) "Sopov Rid"	12.75	80 000
53	Oblesevo (2)	v. Banja ("Jaz")	12.75	5 000
54	Lipkovo + 3	v. Nikustak	12.75	16 536

Source: "Capacity building for implementation of EU-landfill directive – closure of non-compliant landfills and inspections", Ministry of Environment and Physical Planning-SEPA, 2011

Packaging waste

According to the 2009 Law on Management of Packages and Packaging Waste No. 161, producers and manufactures who put on the market packed products (plastic, metal, glass, wood, paper and cardboard– including plastic coated paper) are obliged to fulfil the national targets related to their own generated waste (proportionally to the packaging waste that they generate) and to ensure the separate collection of packing waste (including transporting and wholesale package) and their recycling or reuse. National targets until 2020 for packaging waste recovery and recycling (table 10.8) defined that at least 60 per cent of the waste (measured in weight) should be recovered (which means that it can be energy recovery) and at least 55 per cent of the waste (measured in weight) should be recycled. There are different targets for the different types of packaging waste ranging from 60 per cent for glass to 15 per cent for wood.

Table 10.8: National targets until 2020 for separate collection and waste recovery as defined by related laws

Type of waste	Deadline	target value
Packaging waste	By the end of 2020	Minimum 60 per cent of the waste in weight to be processed by recovery or energy recovery
		Minimum 55 per cent-max 80 per cent of waste to be recycled
		Minimum 60 per cent of glass to be recycled
		Minimum 60 per cent of paper and cardboard to be recycled
		Minimum 50 per cent of plastic to be recycled
		Minimum 15 per cent of wood package to be recycled
	By the end of 2018	Minimum 22.5 per cent of plastic to be recycled into plastic
WEEE	By the end of 2016	Minimum 25 per cent to be collected separately
	By the end of 2020	Minimum 45 per cent to be collected separately
WBA	By the end of 2020	Minimum 4 kg/per capita/per year to be collected separately

Source: related laws, ECE

Producers annually generating at least 30 tons of packaging waste are obliged to develop programmes for restriction and prevention of the creation of packaging waste, which in particular should include quantitative measures for restriction and prevention, measures for achieving the aims and mechanisms for quality control of packaging for the purpose of meeting the targets in accordance with the technical and economic opportunities. Producers should ensure organize the system of separate packaging waste collection, they are obliged to take back

the packaging waste from end-users. To fulfil their obligations, they should cooperate with the mayors of municipalities and designate together locations where the separate waste collection is available for the citizens, thus they should adequately inform the public on the possibility of separate packaging waste collection and about the locations for that. The fulfilment of the law can be reached independently by the producers (although they need to have a permit for such activity i.e. for handling of waste) or through collective management schemes. Collective waste management schemes were introduced by the law in order to ensure the economies of scale for handling packaging waste, thus to offer a more professional and cost-effective way for producers to fulfil their obligations. Collective packaging waste management schemes are run by non-profit companies particularly established for this purpose who should attain a permit for their activity and cover at least 15 per cent of the package placed on the market but not more than 51 per cent.

According to Government estimates the proportions of free riders (i.e. those companies who are neither registered as individual handlers, nor made contract with collective handlers and not even paying the fee) is between 30–40 per cent. The control of the companies whether they fulfil their obligations arising from this law (except a few provisions which are controlled by the State Market Inspectorate) is done by the State Environmental Inspectorate (SEI), but there is no information about its activity related to this law. However, the high estimated rate of free riders suggests that SEI does not have the capacity to fulfil its role related to packaging waste. The State Market Inspectorate is controlling the fulfilment of the ban on non-biodegradable plastic bags and the obligations related to the heavy metal limits and labelling.

Mayors of the municipalities also have their roles in the management of packaging waste. The law explicitly states they are responsible for separate waste collection on the territory of their municipality. However, mayors can fulfil this obligation also by contracting a collective scheme or individual handlers.

The law has introduced smaller changes related to packaging waste: the option of deposit (return) packages, the obligation of labelling the type of package and the limitation of heavy metals in packages. Another novelty is that the Law has banned the release to the market of the plastic bags unless they are biodegradable regardless of if they are offered for free or for payment, but the Rulebook that regulates this issue in details has introduced exemptions (e.g. plastic bags for the transport of goods on the market which are intended to be used for garment, books, stationery, technical goods, furniture, sanitary ware, gardens, medicines and auxiliary medical products, household containers, toys, sports equipment and similar bulky goods that are not subject to everyday life and general consumption, plastic bags used for measuring and packaging food and food products). The law also prescribes a fee for the release of the plastic bags that are non-biodegradable, but not even banned due to the exemptions made in the Rulebook.

Small producers are exempt of obligations prescribed by the law, explicitly from those provisions that define that the producers need to reach the national targets for separate collection or recycling of packaging waste on their own cost, thus it means that they dispose the total amount of packaging waste they are generating. Those producers are considered small producers whom package output do not exceed any of the defined limit values by type of packaging material: 800 kg glass, 100 kg plastic, 300 kg paper and cardboard, 100 kg in case of metal, wood or other packaging material.

Batteries and accumulators

Very similar EPR schemes to that one of packaging waste have been introduced for WEEE and WBA. The 2010 Law on the Management of Batteries and Accumulators and Waste Batteries and Accumulators prescribes labelling obligations and sets limits for three types of heavy metals in the products: mercury, lead and cadmium. The limits for exempt for small producers and traders was set quite low, so that in fact almost all the market is covered by the law: 50 kg for portable batteries, 10 kg for button batteries and 100 kg for vehicle accumulators. The national target is defined only for (separate) collection of WBA, not also for their recovery, and set as 25 per cent by 2016 and 45 per cent by 2020 (measured in weight).

Electric and electronic equipment

The 2012 Law on the Management of Electric and Electronic Equipment and Waste Electric and Electronic Equipment has introduced ban on harmful substances as lead, mercury, cadmium, chrome (Cr+), polybrominated

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diphenyl ethers (PDBE) and polybrominated byphenils (PDB) and labelling obligations. The limits for exempt for small producers and traders are 1,000 kg for electric equipment and 50 kg for electronic equipment.

There is a special obligation for mayors to ensure at least one WEEE separate collection point in each municipality or at least one collection point for 30,000 inhabitants. The national target for this scheme is as follows: by 2020 at least annually 4 kg per capita of WEEE should be separately collected and companies need to collect the amount proportionate to their share in the previous year's EEE sales.

Other specific waste streams

From other specific waste streams there were laws under preparation (as of September 2018) for the end-of-life vehicles, used tires, waste textiles and waste oils, which would introduce very similar obligations and systems as those of the already operating EPR-schemes. For other waste streams (which are partly recyclable or not recyclable, such as aerosol spray cans, wax, chemicals as municipal waste), there are plans for the introduction of separate collection on collection points, which will be organized by the municipalities and be a part of the regional waste management system.

Collective waste handler companies (collective scheme)

Currently there are three companies registered as collective packaging waste handlers, three companies as collective WBA handlers and four companies as collective WEEE handlers. The schemes for extended producer responsibility were set up in a way to ensure some level of competition among the waste handler companies and consequently better operation and fulfilment of obligations entailing from the legislation. At the same time it requires the economies of scale in operation by setting limits for market coverage (between 15-51 per cent in case of packaging waste) that proved to be a good solution according to the experiences gained until now.

Reporting on implementation

Despite the new regulation and the mid-term targets for packaging waste and WEEE, no assessment on the fulfilment of targets and operation of the system has been carried, even though the collective waste handlers are obliged to send reports about their performance and progress in fulfilment of their targets. No report based on the reports of collective waste handlers has been compiled, which would serve as a good basis for identifying the free-riders and for planning measures to involve more companies into the system.

Concerning the definition of national targets for separate collection and recovery (or recycling) based on the total sold (released to the market) amounts of concerned type of products and/or its packages arises the question of the adequacy and reliability of the targets and their fulfilment. The sold amounts of products/packages of those producers or traders who are not fulfilling their obligations cannot be calculated into the total sold amounts because they are not reporting according to the law. This results that the rate of total separately collected and recovered waste amounts are less than they should be according to the law, because the non-reported amounts are not incorporated into the total amount of products/packages that entered into the market.

Gaps in the implementation of EPR schemes

It is uniform in all the three laws that collective waste handler companies (collective scheme) cannot perform any waste management activity by themselves, but they need to cooperate and contract a communal company entitled to collect and treat waste (which are almost exclusively public companies) to do so and to contract legal entities who have permit for waste management according to the Law on Waste Management. This means that actually, they are not collecting the waste and they do not own the waste at any moment, but they can only indirectly promote separate collection and recycling in practice by establishing the conditions for separate collection. Within this activity, they provide and place bins and containers for separate collection on the streets or in public or private buildings and they contract communal companies to regularly empty and transport the waste from those containers and proceed it to recycling. This separation of the activities prescribed by the law to the handler of waste on one hand and to actual waste manager on the other hand, hinders the provision and development of the separate collection and recycling activities because the collective waste handlers cannot directly affect and enhance the efficiency of such activities, they have no means except awareness raising campaigns and extending the infrastructure and number of collecting points. For example, often citizens call the packaging waste handlers

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that the containers for separate collection are full and in this case the handler can only inform the communal company about the situation, but it cannot order the communal company to empty the container within a certain deadline. Also, this system hinders or at least discourages the waste handlers for over-performing of the national targets for separate collection and recycling predefined by the law, because there is neither stimulation for them to attain higher recycling rates by the law, nor they can sell and make revenue from the collected waste.

10.6 Legal, policy and institutional framework

Legal framework

The 2005 Law on Environment sets the basic principles and policy level requirements for waste management, but the detailed regulation is defined by the 2004 Law on Waste Management.

The Law on Environment has a chapter on Prevention and control of major accidents involving hazardous substances describing the obligations of the operators handling the hazardous chemicals. Each operator has to prepare their internal emergency plan for prevention. This chapter in fact transposed the Seveso Directive and the Convention on Transboundary Effects of Industrial Accidents.

The Law on Waste Management defines all the relevant definitions, priorities, principles, strategic and planning requirements and responsibilities of the different territorial levels as well as all the activities that need to be implemented by state bodies and municipalities. It defines the rules for non-hazardous and hazardous (including special types) waste handling, sets the basic regulations for landfills, incineration and co-incineration, shipment of waste and the related monitoring activities and required information system on waste management. The Law also regulates exports and imports of waste in line with the Basel Convention and EU Waste Shipment Regulation.

The 2012 Law on Mineral Resources regulates the exploitation of mineral resources, including the remediation and recultivation. The exploitation of mineral resources and performing mining works may be started after the concessionaire obtains a license for exploitation of mineral resources. Waste management plan and the plan for remediation and recultivation for the site are also part of the documentation that is requested by the Ministry for granting the concession. All the concessionaires are obliged to follow these plans regarding the generated waste and landfilling, and remediation. The waste management plan is part of the "Main mining project for exploitation of mineral resources" document and as such it is subject to the concession. Although the Law introduced financial guarantee for remediation, it is not defined as an obligation and as a result this provision is not implemented, as of November 2018 none of the concessions issued included payment guarantee for remediation due to the gap in the law. The effects of this gap cannot be evaluated because none of the issued concession has terminated since the adoption of the law.

The 2006 Law on Sanitary and Health Inspections regulates the responsibilities and work of the State Sanitary and Health Inspectorate.

The 2010 Law on Public Health regulates tasks and activities for maintaining the public health and it has some implications on sanitary requirements in the settlements that are connected to waste management.

The 2011 Law on Chemicals regulates chemical management. It covers all chemicals except those that are considered waste, the shipment of chemicals, and pesticides. It defines the basic rules for classification, packaging and labelling of the chemicals based on the EU Regulation concerning the Registration, Evaluation, Authorisation and restriction of Chemicals (REACH). It defines the rules for production and distribution, export and import of chemicals and the notification on new substances, introduced safety cards and the register of chemicals and set the rules for banning of chemical products. The Law also sets provisions for the National Control and Information Centre for Poisonings.

The Law on Plant Protection Products regulates all the issues related to pesticides. However, to comply with EU regulations a draft law is under preparation.

The 2010 Law on Food Safety set the basic requirement on food safety that regulates issues related to the residues of pesticides and other contaminations.

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The 2005 Law on Crisis Management defines the regulations on crisis management in general, regardless of the cause of the crisis.

The 2002 Law on Protection against Ionizing Radiation and Radiation Safety sets the basic regulations and rules related to activities concerning radioactivity.

The management of medical waste is regulated by the Law on Waste Management and the 2007 Rulebook on the methods for management, packaging and labelling of the medical waste.

The 2016 Rulebook on the import, export and transit of waste specifies in detail the shipment of all types of waste in line with the EU regulation 1013/06. The rulebook define the following:

- Procedures for approving the export, import and transit of waste
- Types of waste under each type of control
- Form and content of the written notice and general information
- Form and content of the application and the permit for export and import of waste
- Manner of determining, activation and calculating bank guarantees, insurance
- Procedure for issuing the approval for the waste treatment installation
- Procedure for supervising of the export, import and transit of waste.

Policy framework

The Waste Management Strategy for the period 2008–2020 defines the strategic principles and priorities in waste management until 2020.

The National Waste Management Plan for the period 2009– 2015 set more detailed and quantitative objectives to be achieved by the end of 2014. Nevertheless, most of these objectives were ambitious: e.g., 50 per cent of the collected MSW should be landfilled at landfills that comply with EU standards by 2014 or redirection of the flows of industrial hazardous waste from landfills for non-hazardous waste 100 per cent by 2010. The draft national waste management plan for the period 2018–2024 (for consultation) is about to define more realistic objectives based on the slow progress in the establishment of regional waste management system and the construction of landfills. In parallel with the national waste management plan, the draft national waste prevention plan has been prepared and is pending adoption.

Municipalities are also obliged to prepare a municipal waste management plan for 3 to 6 years and an annual waste management programme in order to facilitate the implementation of the National Waste Management Plan. In 2018 about 80 per cent of the municipalities had an adopted and valid waste management plan.

Sustainable development goals and targets relevant for the chapter

The current stance of the country vis-à-vis targets 3.9, 6.3, 11.6, 12.4 and 12.5 of the 2030 Agenda for Sustainable Development is described in box 10.3.

Box 10.3: Targets: 3.9, 6.3, 11.6, 12.4 and 12.5 of the 2030 Agenda for Sustainable Development

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Unintentional poisonings could be potentially associated with contamination from municipal non-compliant landfills dumpsites due to a lack of safe hazardous chemicals management, attributed mortality being just the tip of health-effects pyramid with relatively very low levels of incidence. WHO estimates the burden of disease from unintentional poisonings for the former Yugoslav Republic of Macedonia in terms of attributable mortality at 0.4 per 100,000 population in 2016, with the low levels remaining almost unchanged since 2000.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

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Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Except the Drisla landfill serving Skopje, which complies with the basic requirements for safe waste disposal, all other municipal waste collected (about 73-75 per cent of the total) is still dumped near human settlements with majority of the non-compliant landfills and dumpsites constituting pressure on environment and human health. Furthermore, the prevailing method of hazardous waste management i.e. its removal by the generating business entities themselves poses considerable risk to environment and human health. The lack of sewerage connections and wastewater treatment facilities further aggravates the situation. With the slow progress of building regional landfills, the existing non-compliant landfills will continue to operate.

The State Environment Inspectorate conducts annually a minimum of two inspections per non-compliant landfill and four inspections to Drisla landfill. For the non-compliant landfills, the Inspectorate is checking only limited parameters.The Inspectorate should undertake relevant measures to stop environmentally harmful activities at non-compliant landfills.

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

The urban solid waste collection rate was in the range between 70 and 81 per cent in the period from 2011 to 2017 without any trend to increase, indicating that a significant part of the population, predominantly in rural areas still does not have access to waste collection services.

Most part of the collected municipal waste is disposed at non-compliant landfills with the exception Skopje, which means that overall around 50 per cent of the total generated municipal solid waste is adequately discharged. The progress in the implementation of regional waste management plans and construction of more sophisticated regional landfills is rather slow.

The Government should advance the establishment of regional waste management system and the construction of regional landfills following a clear prioritisation based on risk assessment with the aim to minimise and prevent risks to environment and human health, with appropriate investments.

Goal 12: Ensure sustainable consumption and production patterns

Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

Indicator 12.4.1 refers to the Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement.

The country is Party to the Rotterdam, Basel and Stockholm conventions and Montreal Protocol on Substances that Deplete the Ozone Layer to the Vienna Convention for the Protection of the Ozone Layer. It has fulfilled the requirements for ratification of the Minamata Convention on Mercury thus enabling to benefit from international experience and cooperation on environmentally sound management of chemicals and wastes.

Based on the information collected by each of the conventions' secretariat for the first baseline reporting cycle in 2017 (covering the period 2010–2014) the country has been in full and close to full compliance with the Montreal Protocol (100 per cent) and the Rotterdam Convention (over 92 per cent), and in a moderate one (50 per cent) with the Stockholm Convention. However, the fulfilment of country’s obligations in transmitting information to the Basel Convention is only at 16.7 per cent.

The country should strengthen its efforts to report regularly on the control of transboundary movements of hazardous wastes and their disposal.

12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment

Both the State Statistical Office and Ministry of Environment and Physical Planning collect and publish statistics on amount of hazardous waste management though with differences in methodology and data collection. The State Statistical Office collects data on a two-year cycle on hazardous waste generated, treated and disposed covering manufacturing section only and expressed in kg per capita. In 2014 and 2016, data were much lower than in 2012 because of a new method of data collection and also a lower response rate.

There is a legally binding requirement for all commercial entities which generate hazardous waste to submit annual reports on hazardous waste to the Ministry of Environment and Physical Planning. A national indicator is produced on the hazardous waste generated, imported and exported, temporarily stored, as well as treated, and expressed in tons, m^3, or percentage. The indicator methodology is based on the definitions and conditions set in the Law on Waste Management and uses national classification of economic activities harmonised with the relevant international ones. A decrease in 2016 for the hazardous waste generated is explained again with a response rate with the lack of annual report by REK Bitola responsible for generation of about 90 per cent of the hazardous waste in the country.

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Indicator 12.5.1 National recycling rate, tons of material recycled

Despite the introduction and operation of the extended producer responsibility (EPR) schemes, separate collection and recycling, the overall recycling rate of non-hazardous MSW in 2017 based on reports of only eight municipalities (Skopje included) remained very low – at 0.9 per cent only. Separate collection and recycling under the EPR schemes for specific waste streams such as packaging waste, waste batteries and accumulators, and waste electric and electronic equipment have seen some progress.

The Waste Management Strategy and National waste management plans, and also the relevant legislation, define and focus on targets for separate collection and waste recovery, recycling but currently do not provide adequate measures to enable growth of the domestic recycling industry. The recycling rate could hardly be increased in the absence of a strong recycling industry in the country. Therefore, he Ministry of Environment and Physical Planning should take a range of measures to encourage sustainable waste management. Those could include a dedicated national policy on waste reduction, reuse and recycling with an action plan and realistic targets and milestones.

The Ministry of Environment and Physical Planning, in cooperation with the Ministry of Economy and Ministry of Finance, should encourage recycling and reuse of waste by providing competitive advantage and incentives to waste collectors for separate collection of different types of waste upon its generation and to domestic industry manufacturers to use waste as raw material.

The Government should be conducting and favouring procurement for use of recycled materials by the public administration and promotions for customers purchasing consumer goods made of recycled materials.

Landfills

Due to the legal obligation of the establishment of regional waste management systems, all the eight regional waste management regions were obliged to prepare their waste management plans (map 10.1). So far seven regional waste management plans were prepared and adopted (Eastern, Northeast, Pelagonia, Skopje, Vardar, Southwest and Southeast) while the one for Polog waste management region is under preparation. The adoption of the regional waste management plans was the precondition for the construction of the regional landfills which is under preparation in seven regions. In five out of eight waste management regions the technical documentation is already completed.

Landfills in two regions (East and Northeast) in the country will be financed through EU's Instrument for Pre-accession Assistance (IPA), while four regions still do not have decision on financing (Skopje, Pelagonia, Vardar and Southwest), Polog is financed by the Swiss Government and there the project for implementation has started, while in the Southeast region even the required technical documentation is missing.

Map: 10.1: Waste management regions



Source: Ministry of Environment and Physical Planning, 2018.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Emergency preparedness at the level of operators

There is no strategy or plan on chemical emergency preparedness.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning is responsible for waste management in general, partly (the external transport, recovery and disposal) for medical, and excluding radioactive, agricultural, mining and military waste. The Ministry drafts regulations, prepares national plans, issues environmental permits, and collects and validates reports related to waste. The Ministry is responsible for the clean-up of hotspots if they are on former industrial sites.

The Department for Coordination of Work of the LSGUs and Supervision Work receives the request for waste permits and checks if the documentation is complete and ask the opinion of the Department for Waste. The Unit for Chemicals and Industrial Accidents within the Department for Industrial Pollution and Risk Management is responsible for the chemical management and for the implementation of SAICM and Stockholm Convention.

Under the Administration for the Environment, the Department for Waste is the primary responsible unit for municipal and hazardous waste in the country. The Department for Industrial Pollution and Risk Management is responsible for the prevention of pollution from industrial sources, as well as for industrial accidents and chemicals management (related to industry, not in general).

MEIC proceeds waste related data that it receives from the Department for Waste which receives the reports from the obliged parties i.e. municipalities in case of MSW and other non-hazardous waste, healthcare institutions in case of medical waste and companies that are obligated to do so based on the laws regulation EPR-schemes and from companies which generate hazardous waste. All these data are first collected by the Department for Waste, which validates and then transmits them to MEIC to proceed it for further reporting on country level and for publishing. Despite the development of the Waste Management Information System, which was intended to facilitate reporting to the Ministry by all the obliged parties, the system is not operational because it is not fully compliant with the current legislation. Reports are still submitted on paper that make their validation, further data procession and publication much more burdensome.

Ministry of Health

The Ministry of Health is responsible for defining the national policies related to medical (together with the Ministry of Environment and Physical Planning) and for radioactive waste and drafting the legislation related to both waste types. Also, the Ministry of Health is responsible for chemicals management. The National Control and Information Centre for Poisonings[10] under the Ministry of Health provides emergency advice on the management of poisoning cases as well as to compile data on toxic exposures and on toxic substances to support public health and chemical safety in prioritising preventive efforts and management of health impacts of chemical incidents. In the context of the International Health Regulations (IHR, 2005) the Ministry of Health is leading the emergency preparedness and response to a range of biological, chemical and radiation hazards that may constitute a treat to public health.

Ministry of Agriculture, Forestry and Water Economy

The Ministry of Agriculture, Forestry and Water Economy is responsible for drafting of regulations on agricultural waste and on pesticides, as well as on the management of animal by-products.

Ministry of Economy

The Ministry of Economy is responsible for drafting regulations of the exploitation of mineral resources, thus it defines the regulations for deposits for remediation after the closure of mines and quarries, but does not collect

[10] http://toxicocenter.com.mk/

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data about mining waste, at all, and waste management is regulated on the level of concessions, i.e. individual mining sites. The Ministry is also responsible for the clean-up of hotspots if they part of a former mining site.

Ministry of Defence

The Ministry of Defence is responsible for drafting regulations and for the management of all the waste that is generated by military activities e.g. weapons, ammunition, explosives. Its Department for Protection and Rescue is also involved in the case of any kind of emergency.

Ministry of Interior

The Ministry of Interior's only role related to waste is to impose fines on disturbing the public order by littering on public spaces which is executed by the police.

Centre for Crisis Management

The Centre for Crisis Management is an independent state body responsible for preparation and management of all kinds of crisis in the country including those caused directly or indirectly by inappropriate waste management or chemicals management.

State Environmental Inspectorate

The State Environmental Inspectorate is responsible for law enforcement related to waste management. The Inspectorate conducts environmental inspections to ensure compliance with regulations related to waste management, especially on hazardous, industrial and medical waste. It controls the installations with A or B (only for hazardous waste) integrated environmental permits whether they comply with the conditions set by the integrated permit.

The Inspectorate controls whether landfills are complying with regulations as well as the whole waste treatment and disposal process and the related (pre)conditions. In practice, the Inspectorate conducts annually a minimum of two inspections per non-compliant landfill and four inspections to Drisla landfill. For the non-compliant landfills, the Inspectorate is checking only limited parameters. As a result of inspection, the public enterprises for communal services receive a decision to address the issues identified, to stop activities or to pay a fine.

State Market Inspectorate

The State Market Inspectorate is responsible for controlling the labelling obligations and limits for heavy metals related to products that are subject to EPR schemes. The Inspectorate controls the labelling and other requirements of all the chemicals that are put on market.

State Sanitary and Health Inspectorate

The State Sanitary and Health Inspectorate controls the production and distribution of all the products of general use that might came into contact with people's skin or mycoderm, also it controls the production and distribution of poisons and harmful materials. It also implements measures for protection against harmful substances and impacts on health of people, including the chemicals. The Inspectorate checks whether the rules on generation, separate collection, packaging and disposal of medical waste are respected, so it controls all the state and private healthcare institutions regarding medical waste regulations.

State Agricultural Inspectorate

The State Agricultural inspectorate is responsible for implementing the controlling mechanisms based on the Law on Plant Protection Products. Phytosanitary inspectors are performing the control by examining the residue levels in agricultural products, including taking samples, sending them to the State Phytosanitary Laboratory for examination, and preparing the report.

Municipalities

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As part of decentralization in the country, many responsibilities were delegated to the municipalities. Municipalities are responsible for organizing the collection, transportation and disposal of municipal wastes; supervising transportation and disposal of industrial non–hazardous waste, deciding on the location of waste management facilities, issuing local regulations on waste management, financing and supervising dumpsite and non-compliant landfill closures and termination of waste management facilities.

Mayors also have their roles in the implementation of extended producer responsibility schemes. They are responsible for separate waste collection in the territory of their municipality. They need to cooperate (contract) with collective or individual waste handlers (collective schemes) and private waste collection companies or by their public communal enterprises.

Unit for POPs

The Unit for POPs is a separate body for the implementation of projects on obsolete POPs removal but also it updates and defines national policy and legislation related to POPs based on the experience and needs arising through the implementation of projects. In practice it works as a unit of the Ministry of Environment and Physical Planning, although it is formally not part of the Ministry. The Unit offers trainings such as the training for contaminated sites management in July 2018, but they had also trained about 500 technicians on best practices of HCH handling. It has prepared a handbook on the management of obsolete pesticide stocks in 2012.

Coordination among institutions responsible for waste and chemicals management at national, regional and local levels

In 2012, the Government established the inter-municipal waste management boards (IMWMBs) to speed up the establishment of regional waste management systems. The introduction of the IMWMBs aimed at reducing the risk that a limited number of municipalities might jeopardize the integrated regional waste management system in a region. Members of the IMWMB must be mayors of the municipalities or persons designated by the mayors and have the following responsibilities with respect to managing the regional system:

- Approve draft regional waste management plans;
- Organize the implementation of the regional waste management plan;
- Organize procurement and selection of suppliers and contractors for infrastructure development;
- Organize public procurement and selection of operator(s);
- Approve proposals for price for waste treatment (per ton);
- Approval of draft investment programme;
- Exercising control of the activities of the chosen operators;
- Adopting and amending Book of Rules of the IMWMB;
- Elect the Chairperson of the IMWMB.

So far, IMWMBs does not prove to be an effective management body and they did not speed up the establishment of the regional waste management systems, rather they remain a formal legislative obligation to be fulfilled.

Regulatory, economic, fiscal and information measures

Permits

The Ministry of Environment and Physical Planning issues waste import permits. The Ministry is also responsible for issuing permits related to the transport of waste according to procedures of the Basel Convention, such as export and transit permits for shipment of waste, and hazardous waste export permits. The Ministry issues all types of permits related to waste management:

- A type integrated environmental permits for the following activities and installations:
    a. installations for the storage (landfilling), recycling and/or co-incineration of hazardous waste, with a capacity of over 10 t/day;
    b. installations for co-incineration of municipal waste, with capacity over of 3 t/hour;
    c. installations for landfilling on non-hazardous waste with capacity of over 50 t/day;

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d. landfills with capacity of over 10 t/day or which total capacity exceeds 25.000 tons, with the exception of landfills for construction and demolition waste;
e. installations for co-incineration of on animal carcasses;
f. installations for mining waste management.

- Permit for the collection and transport of non-hazardous waste (currently 124 valid permits)
- Permit for the collection and transport of hazardous waste (currently 4 valid permits)
- Permit for storage and treatment
- Permit for export, import and transit of hazardous and non-hazardous waste (currently 159 permits are valid)
- Permits for collective waste handling (packaging, WBA, WEEE) and for individual waste handling.

Permits are administered by the Department for Local Self -Government and Administrative and Supervisory Affairs, although they ask the opinion of the Department of Waste. Permits can be issued up to 15 years, but in practice they are issued for 5 years to control more often the companies and because of the frequent change in legislation. The Department of Waste sends its opinion after the on-the-spot check and the Department for Coordination of Work of the LSGUs and Supervision Work prepares the permits for signing to the Minister. This system was set up in 2014, before that only the Department for Waste administered the permits. The most common reasons for refusal are the lack of technical requirements or the unregulated land/property issues.

Permits are issued by the type of waste. As of September 2018, the following permits were issued by the Ministry:

- Waste Paper and cardboard: 40 companies have permit for storage and treatment from which only two are making recovery, the others are only selling or exporting.
- Metals: 87 companies have permit for storage and treatment from which only one is a smelter for scrap ferrous metal, the others are only selling or exporting.
- Plastics: 121 companies have permit for storage and treatment from which only 4 are making recovery, the others are only selling or exporting.
- Glass: only three companies have permits for collection and storage and export all collected waste.
- Wood: 97 companies have permit for storage and treatment.

B-type integrated environmental permits are issued by the municipalities for all installations for landfilling, recycling, or co-incinerating of hazardous waste, municipal waste, landfilling of non-hazardous waste that are not subject to A-type integrated environmental permits for waste management.

Taxes and fees

To ensure that the producers are fulfilling their legal obligations ensuing from the laws regulating EPR, fees for waste management of the concerned types of waste have been also introduced (table 10.9). In fact, these are fines for those companies that either have not registered as individual waste handlers or have not made a contract with a collective handler and are not exempt of these laws based on small manufacturers' provisions.

The fee for packaging waste management has been introduced to encourage and push companies either to register as individual packaging waste handlers or sign a contract with a collective handler. The fee varies by the type of package, between 4,000 denars/ton for wood and 30,000 denars for package consisting of mostly paper or cardboard and not used as package for drinks.

Table 10.9: Fees introduced by EPR schemes for packaging waste, WEEE and WBA

Type of waste	Subtype of waste	Fee
Packaging waste		Denars/t
	Glass	4 500
	Plastic	20 000
	Paper and cardboard	6 200
	Multi-layered package consisting mostly of paper or cardboard for beverages	22 000
	Multi-layered package consisting mostly of paper or cardboard for other purpose	30 000
	Metal cans	8 500
	Other metal packages	6 200
	Wood	4 000
Waste batteries and accumulators		Denars/kg
	Portable batteries and accumulators	120

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	Lead accumulators for vehicles and industry	0.9
	Other non-lead industrial and vehicle batteries and accumulators	8.5
Electronic and electric equipment		Denars/kg
	Big households appliance	50
	Small households appliance	80
	IT and telecom equipment	60
	Screens	70
	Electronic equipment for entertainment and other consumers use	60
	Television	90
	Lightning equipment	80
	Fluorescent, compact and other bulbs	120
	Electric and electronic tools	100
	Electric and electronic games and equipment for entertainment and sports	100
	Medical devices	100
	Instruments for monitoring and control	100
	Vending machines	50

The fee for bags for the transport of goods applies to the plastic bags put into the market (which are exempt of the ban of the sale of plastic bags) regardless of their material (i.e. if they are biodegradable or not) and it is paid based on the net weight of plastic bags 1 denar for 1 kg.

For portable, small batteries and accumulators that are widely used in households the fee for the management of waste batteries and accumulators is 120 denars/kg. The fee to be paid for lead accumulators used in vehicles and industry (0.9 denars /kg) is much less than the fee for non-lead vehicles accumulators (8.5 denars/kg; e.g. those containing lithium). However, the fee needs to be paid only if the producer/trader do not have contract with collective waste handler or have not registered as an individual handler.

There are 10 different sub-type of electric and electronic devices defined by the law and the fees for the management of waste electric and electronic equipment are varying between 50 and 120 denars/kg, but the fees need to be paid only if the producer/trader do not have contract with collective waste handler or haven't registered as an individual handler

The 2007 Law against the Violation of Public Order introduced a fine for littering and illegal waste disposal in public buildings, public fountains, springs, beaches, parks, promenades or other public facilities and installations. The amount of imposed fine could be between €100 to €400 in denars equivalent.

Awareness, education and training for waste

Since the introduction of the EPR schemes awareness raising for waste management is predominantly done by the collective schemes. They are obliged by the Law to perform awareness raising campaigns, to enhance the effectiveness of their work, to ensure that separate collection points are widely used by the citizens and, finally, to ensure that the targets for recycling and recovery prescribed by the law are met.

These campaigns do not only target citizens in general, but for example, one of the collective scheme operators agreed with schools to offer them containers for separate collection and after certain amount of waste are being collected the operator gives some reward for the schools (e.g., printing paper for collected paper and cardboard, monitors for collected WEEE). Also, awareness raising related to waste prevention, reduction and management is done in other forms in the schools.

Awareness, education and training for sound management of chemicals

The Unit for POPs has published professional and communicational material on chemicals management not only to experts but to the public.

Waste Management System Information

The Waste Management Information System was developed in 2012 to facilitate reporting to the Ministry of Environment and Physical Planning by municipalities, health care facilities, enterprises, on EPR-scheme and public communal companies. The system is not operational because it is not fully compliant with the current legislation, mostly due to the lack of required resources to upgrade and maintain an adequate waste management

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information system. According to the Ministry's calculations, the development of an adequate system is estimated to be from €1.5 to 4 million and the maintenance at €185,000 per year. A team of five full-time experts are estimated to be required to manage the system, process the data and support municipalities. Provision of adequate training to municipalities and operators would be required. There might be offsetting savings related to the existing approach to data collection, as there might be additional costs for the transition period.

10.7 Participation in international agreements and processes

The country actively seeks to implement the Rotterdam, Basel and Stockholm conventions and uses the funds and opportunities offered for their implementation not only on practical level (as is the case with POPs removal) but on policy and institutional level, as well. To enhance the synergies of implementation on national level the country has prepared in 2014 the Assessment of the status of implementation of the Basel, Rotterdam and Stockholm conventions and the Action plan for synergetic and coordinated implementation of the Basel, Rotterdam and Stockholm conventions for the period of 2014 and 2017.

Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade

The former Yugoslav Republic of Macedonia has ratified the Rotterdam Convention in 2010. Since its ratification, though the Convention's procedures, it has reported 47 import responses, all of them in 2012. In most of the cases, the country has refused the consent for the import, while in 12 requests the consent to import was given with specified conditions.

Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal Convention

The country is Party to the Basel Convention since 1997, it has ratified the Ban Amendment in 2004 and the national focal point is the Ministry of Environment and Physical Planning. The country's legislation related to waste shipment is aligned with the Basel Convention.

Convention on Persistent Organic Pollutants

The country has signed the Stockholm Convention in 2001 and ratified it in 2004. In the year of ratification, the National Implementation Plan on Reduction and Elimination of the POPs has been prepared and its upgrade was finished in 2014 by involving all the relevant stakeholders. The plan was upgraded with new chemicals from the Stockholm Convention (PFOS, PBDEs, chlordecone, endosulfane and related isomers, lindane). The national focal point for the Stockholm Convention is the Ministry of Environment and Physical Planning. The fourth national report of the Stockholm Convention has been submitted in August 2018.

Minamata Convention on Mercury

The former Yugoslav Republic of Macedonia has signed the Minamata Convention in 2014 but it has not ratified yet. However, the country has completed its Minamata Initial Assessment Report in March 2018 as well as the Minamata Inventory Report which is comprehensive inventory of mercury releases in the country with the base year of 2013. The Minamata Initial Assessment Report provides general recommendations for further prioritized steps towards phasing out mercury and sustainable mercury management in the country.

Convention on the Transboundary Effects of Industrial Accidents

The former Yugoslav Republic of Macedonia has acceded to the Convention on the Transboundary Effects of Industrial Accidents and incorporated the Convention's as well as the Seveso Directive's provisions to the Law on Environment. The national focal point is the Ministry of Environment and Physical Planning and it is also responsible for policy level regulation and implementation, but it is in close cooperation with the Ministry of Defence and with the Centre for Crisis Management. The information system is operated by the Centre for Crisis Management.

10.8 Assessment, conclusions and recommendations

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Assessment

Waste management in the country has made some progress since 2008 but, due to the lack of infrastructure, the overall performance of the waste management system is moderate. Despite developments in the establishment of regional waste management systems and progress in the preparatory work, none of the regional landfills has been completed in the past period. Also, the much needed and planned upgrade of the Drisla landfill serving the City of Skopje has stalled due to property disputes with the investor.

Until the completion of the regional landfills, the existing municipal non-compliant landfills continue to operate, but they do not fulfil even the basic conditions for safe waste disposal, thus their control by the State Environmental Inspectorate is limited. Due to the lack of adequate infrastructure, data collection is mostly not evidence-based and, because of some overlap in responsibilities of institutions, there are significant discrepancies in the published datasets for some waste types.

Progress was made in separate collection and recycling of waste streams that are under the extended producer responsibility schemes, such as packaging waste, waste batteries and accumulators and waste electrical and electronic equipment. However, the fine tuning of the laws that regulate the operation of these schemes, in order to give more influence to the operators in actual waste collection, would be fruitful by better fulfilling the overall objectives: the increase of separate collection and recycling rates.

The country's application of the principles of the Strategic Approach to International Chemicals Management provided the foundations for sound chemicals management in the country. Since then, numerous projects have been implemented targeting both the upgrade of policy and the improvement of the situation with practical measures, mostly focusing on (preparing for) the remediation of contaminated sites, but also with smaller measures (training events). Chemicals management has also taken a big step forward with the adoption of the Law on Chemicals in 2011 that transposed the EU REACH Regulation.

Conclusions and recommendations

Inspections

The current regulations on the inspection system and final waste disposal were designed with the aim to ensure adequate control of landfills that comply with the national law. However, in the current situation, the lack of proper landfills makes it impossible to control the municipal disposal sites against the standards set by the legislation. The existing municipal non-compliant landfills will continue to operate at least for another few years, but most of them do not fulfil the basic requirements and are subject to inspections checking only limited parameters, which is not sufficient to ensure basic sanitary conditions.

Recommendation 10.1:
The State Environmental Inspectorate should undertake relevant measures to stop environmentally harmful activities at non-compliant landfills.

Separate collection and recycling

Collective packaging waste management schemes are run by non-profit companies, which cannot perform waste management activities by themselves. This means that the collective waste handler companies have only indirect tools to promote separate collection and recycling. This separation of the activities prescribed by the law to the handler of waste, on the one hand, and to the actual waste manager, on the other hand, hinders the provision and development of the separate collection and recycling activities, because the collective waste handlers cannot directly affect and enhance the efficiency of such activities. Nevertheless, the experience of the already existing extended producer responsibility schemes show that this system is an adequate way to manage different waste streams, thus it is worth considering covering new waste types with this system and to ensure their separate collection and recycling.

Recommendation 10.2:

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The Ministry of Environment and Physical Planning should assess the efficiency and impacts of the existing legislation on extended producer responsibility and introduce extended producer responsibility for other waste streams, in particular waste textiles, waste oils, used tyres and end-of-life vehicles.

The Waste Management Strategy and national waste management plans, and the relevant legislation, define and focus on targets for separate collection of waste and waste recover and recycling, but currently do not provide for adequate measures for the growth of domestic recycling industry. In the absence of a strong recycling industry, the recycling rate within the country cannot be increased. Waste collectors are not encouraged to collect waste separately (by types) wherever waste is generated. The industry that uses the waste as raw material, is not stimulated for recycling. Also, there is no encouragement of consumers to purchase products made of recycled materials. To address concerns related to waste reduction, reuse and recycling, a draft national waste prevention plan has been prepared and is pending adoption.

Recommendation 10.3:
The Ministry of Environment and Physical Planning should:

(a) Adopt the draft national waste prevention plan to serve as the national policy on waste reduction, reuse and recycling;
(b) Undertake, in cooperation with collective waste handlers, awareness-raising and information campaigns for manufacturers and consumers on reduction, reuse and recycling of urban waste;
(c) Promote, in cooperation with the Ministry of Economy and Ministry of Finance, recycling and reuse of waste by domestic industry and manufacturers.

Waste management infrastructure

The slow implementation of regional waste management plans and regional landfills hinders the effectiveness of the whole waste management system in the country. Therefore, the completion of the regional landfills has to be high on the agenda of the Government.

Recommendation 10.4:
The Government should support the establishment of the regional waste management systems and take measures to speed up the construction of regional landfills.

Data collection

For some waste types both the State Statistical Office and the Ministry of Environment and Physical Planning collect and publish data (e.g., municipal solid waste, hazardous waste). There are discrepancies in data published by both institutions. Calculation methodologies are not adjusted, and there is a lack of clear delineation between the two institutions and their responsibilities in data collection, thus leading to overlaps.

Recommendation 10.5:
The Ministry of Environment and Physical Planning and the State Statistical Office should:

(a) Adjust their data collection methodologies and clearly delineate their tasks and roles, and propose the necessary amendments to the legislation related to data collection on waste;
(b) Establish an expert group to agree on waste-related indicators, underlying statistics, data collection and reporting methods, to avoid overlap and the duplication of efforts, especially under conditions of limited financial resources and capacity.

Waste Management Information System

The Waste Management Information System was developed to facilitate reporting to the Ministry of Environment and Physical Planning by all the obliged parties (municipalities, health care facilities, enterprises, on EPR-scheme and public communal companies). The system is not operational because it is not fully compliant with the current legislation. Reports are submitted on paper, which makes their validation, further processing and publication much more burdensome

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Recommendation 10.6:
The Ministry of Environment and Physical Planning should ensure the implementation of the activities necessary to bring the Waste Management Information System into operation, to facilitate the legally binding reporting of all obliged parties to the Ministry and reduce the burden for data validation, exchange, processing and publication of information.

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Chapter 11

BIODIVERSITY AND PROTECTED AREAS

11.1 Trends in species and ecosystems

Due to the limited data deriving from nature inventories and scientific research activities, insufficient biodiversity monitoring and the non-operational National Biodiversity Information System, the available statistical data on biodiversity in the former Yugoslav Republic of Macedonia should rather be perceived as rough estimates. This is also why a comprehensive assessment of the status and trends in species and ecosystems is not possible, which applies to almost all flora, fungi and fauna species occurring in the country, regardless whether widespread or rare, native or alien.

Species

According to the Ministry of Environment and Physical Planning, in the period between the first and the fifth national reports to the Convention on Biological Diversity (2003–2014), there is an increase in the knowledge on biodiversity, in particular in describing approximately 250 taxa new to science (six higher plants, more than 170 taxa of diatoms algae and 48 invertebrate species). In addition, hundreds of previously unregistered species have been registered for the first time, including 23 higher plants and 237 fungi species. Moreover, quantitative assessments of the populations of several species (e.g., Balkan lynx, several bird species) have been carried out and trends in the populations of several bird species such as Griffon Vulture (*Gyps fulvus*, LC), Egyptian Vulture (*Neophron percnopterus*, EN), Lesser Kestrel (*Falco naumanni*, LC) and Imperial Eagle (*Aquila heliacal*, VU) have been documented. Progress was made in enhancing the knowledge on algae diversity (primarily of silica algae) and fungal diversity.

A National Biodiversity Information System established in 2011 at the Ministry of Environment and Physical Planning within a UNDP project, which includes a national biodiversity database, is not operational at December 2018.

Species diversity

Since 2011, progress in biodiversity research, in particular since 2013, when the revision of the 2004 National Biodiversity Strategy and Action Plan commenced, results in the higher number of flora, fungi and fauna species recently recorded, compared to 2011 data, in particular concerning invertebrate and fungi species. According to the 2018 National Strategy for the Protection of Nature (2017–2027), the number of species occurring in the country accounts for some 3,200 vascular plant, 450 moss, 2,000 algae, 450 lichen, over 2,000 fungi (1,250 in 2011), 13,000 invertebrate (10,000 in 2011), 85 fish and *Cyclostomata*, 14 amphibian, 32 reptile, 335 bird and 89 mammal species.

Threatened species

No national red lists of threatened species have been adopted so far, and consequently no corresponding red data books have been published. Therefore, it is not possible to identify which native species (including local endemics) are threatened by extinction.

The draft red list of fungi and draft red list of butterflies have been prepared in 2012 and the draft red list of orthoptera in 2014 by the Ministry of Environment and Physical Planning. Activities lead by the IUCN Regional Office for Eastern Europe and Central Asia in Belgrade (IUCN ECARO) within an ongoing project on "Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning" (2016–2020), funded by GEF, will support the preparation of the first complete national Red Lists and Red Data Book for 46 reptiles and amphibians and 14 national plant species selected according to their importance for the international conservation.

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The 2011 lists of strictly protected and of protected wild species indicate 194 strictly protected species (51 flora, 9 fungi, and 134 fauna species) and 820 protected species (151 flora, 75 fungi, and 594 fauna species).

However, the most recently published global IUCN Red List (version 2018–2, updated on 14 November 2018) contains records on 379 plant species, 1 species from the fungi and protist group, and 946 animal species occurring in the country. Out of 379 plant species, 4 are globally threatened by extinction, including 1 species categorized as Endangered (EN) and 3 as Vulnerable (VU), 6 plant species are categorized as Near Threatened (NT), 30 as Data Deficient (DD) and 339 as Least Concern (LC). The species from the fungi and protist group listed by IUCN is categorized as VU. As for the fauna, two species are categorized as Extinct (EX), while as many as 120 other animal species (6 mammal, 13 bird, 2 reptile, 13 fish, 71 mollusc and 15 other invertebrate species) are globally threatened by extinction, where 19 species are categorized as Critically Endangered (CR), 34 as EN and 67 as VU. A further 60 fauna species are categorized as NT, 50 as DD and 714 as LC.

Not all reptile, fish, mollusc, other invertebrate, plant, fungi and protist species have so far been assessed for the global IUCN Red List. Therefore, the flora, fungi and fauna may include more species globally threatened by extinction, which have not yet been assigned relevant IUCN Red List categories. Similarly, due to missing or incomplete data from recent field research and inventory works, many other species are temporarily categorized only as DD, despite their confirmed rarity status.

As for the regional approach, 113 species of vertebrates present in the country are included in the European Red List, compiled according to IUCN Regional Red Listing guidelines, and indicating species that are threatened by extinction at the European level.

In the light of the country's ongoing preparations for accession to the European Union, and establishment of Natura 2000 network, another approach could be to perceive animal species listed in Annex IV (a) and plant species listed in Annex IV (b) to the Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive), and bird species listed in Annex I to the Directive 2009/147/EC on the conservation of wild birds (Birds Directive) as threatened at the EU level (and therefore requiring strict protection). According to the assessments of the 2009 Emerald Network project, 84 animal species from Habitats Directive Annex IV (a) and 10 plant species from Habitats Directive Annex IV (b) are present in the country. According to assessments carried out by the Macedonian Ecological Society in 2010 under the "Wings Across Balkans" EU project (2010–2012), amended in 2014 and 2015, the presence of 117 bird species (including 82 nesting or regularly occurring species) listed in Birds Directive Annex I, is reported on the national territory. The project "Strengthening the capacities for implementation of Natura 2000" (2016–2017), financed by EU IPA funds, concluded its activities in April 2017, resulting in strengthened administrative capacities at central and local level for the implementation of the legislation on nature protection, with a particular focus on the requirements of the EU Birds and Habitats directives. Within the project have been developed draft reference lists of birds, species and habitats as well as plans for implementation of Birds and Habitats directives.

The 2014 Fifth National Report to the Convention on Biological Diversity (hereinafter Fifth National Report) informs on negative trends in populations of several fauna species between 2003 and 2013. This is probably why neither the Fifth National Report, nor the 2018 National Strategy for the Protection of Nature could indicate the number of threatened species, but inform on three already extinct species of plants (*Acorus calamus*, *Sagitaria sagitifolia*, and *Lysimachia thyrsiflora*) and two extinct bird species: bearded vulture (*Gypaetus barbatus*, NT), and cinereous vulture (*Aegypius monachus*, NT) previously recorded in the country, and on the disappearance of at least 20 nesting bird species throughout the last 60 years. Both above documents mention several species considered as threatened, but do not provide exact information on their population trends and current status, except for the decreasing trend in populations of the griffon vulture (*Gyps fulvus*, LC), Egyptian vulture (*Neophron percnopterus*, EN), and lesser kestrel (*Falco naumanni*, LC), as well as the decline in the local populations of regionally endemic Balkan chamois (*Rupicapra rupicapra balcanica*, LC) in Mavrovo National Park, and in the Multipurpose Area Jasen.

According to the 2018 National Biodiversity Strategy and Action Plan (NBSAP) for 2018–2023, the elaboration of red lists and red books (Action 12.1) is planned until 2023.

Endemic species

According to the global IUCN Red List (version 2018–2) 13 bird species occur naturally only in the country. Numerous other species present in the country are endemic on a regional scale (e.g., native endemics of South-Eastern Europe). The Macedonian pine (*Pinus peuce*, NT) forming an extensive forest stand of some 1,800 ha in Pelister National Park and present also in other parts of the country, the Balkan lynx (*Lynx lynx ssp. balcanicus*, CR) occurring in Mavrovo, Galičica and Pelister national parks, and the Shar Planina Mountains, and the Balkan chamois are fine examples of such regionally endemic species, the conservation of which is particularly important. However, according to the 2018 Statistical Yearbook, the Balkan chamois is hunted, moreover in still increasing numbers: 58 individuals hunted in 2013 versus 85 in 2014 and 149 in 2017.

According to the state-of-the-environment report of the former Yugoslav Republic of Macedonia prepared by the Ministry of Environment and Physical Planning in 2013, 976 species are endemic, of which 870 are considered to be local endemics. According to the Fifth National Report, the country harbours some 150 endemic algae, 120 endemic vascular plants, over 700 endemic invertebrates, and 27 endemic fish species. The same source indicates Lake Ohrid as a centre of endemism (with 212 endemic species), in particular, concerning lower plants. As for higher plants, according to the National Strategy for the Protection of Nature 158 taxa are considered endemic to Lake Ohrid, while other locations can also be considered as centres of floristic endemism, in particular, high mountain regions, e.g., Galičica, Jakupica-Karadzica, Korab, Pelister, or Shar Planina, flora of which includes approx. 150 endemic species. Most of the endemic species at the national or local scale are vulnerable to extinction due to their very restricted range size. According to the SSO's environmental statistics for 2017, there are over 950 endemic species, including 196 algae, 109 Dicotyledoneae, 5 Monocotyledoneae, 2 mosses, 1 ferns, 27 fish and 3 mammals.

Widespread species

Due to the gaps in biodiversity monitoring and official statistics, no reliable data are available on the population numbers and trends of widespread species in the country. The 2017 Environmental Statistics and the Statistical Yearbook, both published by the State Statistical Office, contain data on species such as the European hare (*Lepus europaeus*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), common pheasant (*Phasianus colchicus*), grey partridge (*Perdix perdix*), and rock partridge (*Alectoris graeca*, NT). However, the information provided by both sources is not on the exact or estimated size of their living populations, but on the numbers of animals hunted, with increasing trend in mammal species (no roe deer hunted in 2011 and already 127 individuals in 2017, red deer 0 and 8, hare 660 and 2,034, wild boar 438 and 1,318 respectively). Other sources inform on the occurrence of other widespread species, incl. the wolf (*Canis lupus*), Eurasian badger (*Meles meles*), fox (*Vulpes vulpes*), otter (*Lutra lutra*, NT), and pine marten (*Martes martes*).

In 2018, the Ministry of Environment and Physical Planning in cooperation with Macedonian Ecological Society started working on developing a national strategy for anti-poisoning of the widespread species.

According to the 2018 NBSAP for 2018–2023, the development of scientific studies on the status of game species populations for the purpose of setting more appropriate hunting quotas is planned between 2019 and 2022 (Action 7.2.4).

Alien species

The country did not develop the list of invasive vascular plants. Currently, the preparation of a list of invasive aquatic and terrestrial plants is ongoing. Several invasive alien woody species have intentionally been introduced, either for afforestation, timber harvesting, engineering (e.g., slope and roadside stabilization, erosion and landslide prevention), or decorative purposes, including the black locust (*Robinia pseudoacacia*), Douglas fir (*Pseudotsuga menziesii*), tree of heaven (*Ailanthus altissima*), maple ash (*Acer negundo*), goldenrain tree (*Koelreuteria paniculata*), Arizona cypress (*Cupressus arizonica*), as well as numerous other plant species, e.g., the common ragweed (*Ambrosia artemisiifolia*), wormseed (*Dysphania ambrosioides*), and Canadian waterweed (*Elodea canadensis*). According to the Fifth National Report, a programme of measures for controling the spread of the Douglas fir in Pelister National Park was developed already in 2008, however as at November 2018, no information is available on implementation progress and results.

According to the 2018 NBSAP for 2018–2023, fish species include 17 introduced species out of approximately 85 species from 15 families found in the country. Ichthyofauna of lakes Prespa and Ohrid has been severely

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endangered by the introduction of non-native species (12 in Lake Prespa and 7 in Lake Ohrid). Ichthyofauna of Dojran Lake includes two introduced species out of 14 species.

According to the 2018 NBSAP for 2018–2023, the implementation of the National Target 8 "Develop and establish appropriate policy for recording, control and protection of non-native and invasive species" shall begin from the identification of non-native (in particular invasive) species (Action 8.1.1) which is due to be completed by 2021, followed by the preparation and adoption of a national list of invasive species (Action 8.1.2), to be achieved between 2021 and 2022.

Ecosystems

According to official statistics, since 2011 the land use pattern slightly changed, as at 31 December 2017 forests covered 1,001,489 ha, which accounted for 38.95 per cent of the territory (compared to 981,812, or 38.18 per cent as at 31 December 2011), despite the decreasing trend in afforestation activities (553 ha in 2017, compared to 2,081 ha in 2011). The total area and share of agricultural land increased to 1,266,000 ha or 49.24 per cent of the country area compared to 1,120,000 ha, or 43.56 per cent in 2011. The total area and share of pastures increased from 608,000 ha (23.65 per cent) in 2011 to 748,000 ha (29.09 per cent) in 2017, despite the ongoing succession of shrub and forest vegetation on abandoned post-agricultural land in depopulating, most remotely located rural areas (in particular in high mountain regions).

As at 2018, the country has not yet prepared the national inventory of forest resources, which is required by the 2009 Law on Forests. Between 2011 and 2017 the areas overgrown by deciduous and mixed forests increased (from 569,635 ha to 605,661 ha, and from 286,646 ha to 289,822 ha respectively), while the areas of coniferous and degraded forests decreased (from 75,589 ha to 65,032 ha, and from 49,942 ha to 44,356 ha respectively). Hence, at the end of 2017 deciduous forests accounted for some 60 per cent, mixed forests for 29 per cent, coniferous for 6.5 per cent, and degraded for over 4 per cent of the total forest area.

Since 2011, the annual volume of harvested timber fluctuated between 857,000 m^3 in 2011, 691,000 in 2013, 890,000 in 2016, and 807,000 in 2017, with the prevailing share of deciduous tree (beech, oak) timber, mostly used as fuelwood in households.

According to official data, the volume of illegal logging decreased from 25,189 m^3 in 2011 to 18,662 m^3 in 2016, however, due to many reasons (incl. the lack of forest cadastre and regularly updated forest inventory, gaps in monitoring, and low motivation for forest patrolling) the factual amount of illegally harvested timber are not known and must be estimated well above these officially reported numbers.

Forest ecosystem services include also the provision of non-timber forest products, e.g., mushrooms, berries, medicinal, decorative, and aromatic plants, and game animals, which include 133 wild fauna species, acquired in 256 hunting grounds (incl. 112 hunting grounds for large game and 146 for small game), managed either by the Public Enterprise Macedonian Forests, or private hunting associations which were awarded with a concession (20-year concessions in case of large game hunting grounds, and 10-year concessions for small game hunting grounds).

According to the Fifth National Report, 28 key ecosystem types, including 177 habitat types at the level 3 of the European Nature Information System, were identified. Wetland habitats, degraded during previously undertaken drainage works, are currently most threatened, together with their flora and fauna. Many areas of key importance for biodiversity conservation (incl. high mountain, forest, and aquatic ecosystems) are shared with neighbouring countries.

11.2 Pressures on species and ecosystems from

Land uptake

According to the Fifth National Report, ongoing urbanization processes threaten some of the last remaining parts of lowland priority habitats, in particular, wetland habitats. Other ecosystems and habitats are threatened by loss or fragmentation due to land uptake as the result of several transport infrastructure development projects. Furthermore, land uptake resulting in irreversible losses of habitats and species takes place in locations of open

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pit mineral resource extraction. The Report mentions a number of endemic species associated with marbleized limestone, directly threatened by marble exploitation works. According to data published by the Ministry of Economy, as many as 375 concessions for mineral resources exploitation have been awarded, and 45 contracts for detailed geological surveys have been concluded in 2016. Furthermore, since 2012 when the Law on Tourism Development Zones came into force, the demand for land suitable for tourist and recreational infrastructure development increased, including in protected areas (three out of the first eight planned tourist development zones are located in Galičica National Park), due to which anthropogenic pressures on natural habitats are expected to increase.

Development of energy installations and infrastructure

Construction of reservoirs in the river gorges leads to immersion of large areas of the ravines, which represent refugiums of relict flora and vegetation, resulting in degradation and partial destruction of the existing phytocenoses on the lower vertical profiles of the rivers, as well as to the reduction of the area of the relict, endemic and rare plant species.

Habitat fragmentation and man-made barriers for migratory species

According to the Fifth National Report, between 2003 and 2013 several transport infrastructure development projects started or have been announced, which may impact biodiversity, causing fragmentation of habitats and intersecting wildlife migration routes, also in ecologically sensitive, and legally protected areas. Examples include the highway "Demir Kapija – Smokvica" and motorway "Bridge on the river Radec – Gradsko" (both expected to cross sensitive habitas in areas designated as Emerald sites, Important Bird Areas and Important Plant Areas), highways "Miladinovci – Sveti Nikole - Shtip" and "Shtip – Strumica" (both passing through important bird and important plant areas), highway "Kichevo – Trebenishta" (affecting Habitats Directive priority habitats, and potentially blocking ecological corridors designed under the National Ecological Network), express road A3 "Ohrid – Sveti Naum" planned across the territories of Galičica National Park (designated as World Heritage property, UNESCO MaB transboundary Biosphere Reserve, Emerald site, Important Plant Area and Prime Butterfly Area), and motorway "Kula – Makedonski Brod", passing through the MultiPurpose Area "Jasen".

Logging and deforestation

The pressures on species and ecosystems from forestry operations and illegal logging seem to be insignificant, deforestation process is also not yet the case, as the total area of forests in the country slightly increased within the reporting period (in the light of decreasing afforestation measures, most probably due to natural forest succession to post-agricultural land), while illegal logging usually takes place close to human settlements, hence the scope of disturbance of forest habitats is probably limited. However, the scale of anthropogenic impact and pressures cannot properly be determined in the absence of forest inventories and biodiversity monitoring programmes.

Acidification

The implementation of both the 2012 National Plan for the Protection of Ambient Air in the period 2013–2018 and the 2012 Programme for Gradual Reduction of Emissions of Certain Polluting Substances providing projections of SO_2, NOx, NH_3 and VOCs emissions for the period 2010–2020 would support lowering the emissions of acidifying substances. However, no information on the progress in their implementation and their impact achieved since 2013 are available.

Eutrophication

Since 2011, the pressure from eutrophication decreased. With the support provided by donors, new wastewater treatment plants for several cities (e.g., Strumica, Kicevo, Radovis, and Prilep) were built. No recent information on the current scale of this pressure is available. However, the eutrophication of aquatic ecosystems might still be the case in rural areas, in result of uncontrolled livestock husbandry waste discharge into watercourses. Eutrophication of water in rivers and lakes threatens the viability of fish, amphibian and reptile populations.

Desertification

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The scale of desertification in the country is not yet determined. Between October 2013 and December 2014 the Ministry of Environment and Physical Planning implemented a GEF-supported project "Support to the former Yugoslav Republic of Macedonia for development of National Action Program aligned to the UNCCD 10-Year Strategy and Reporting Process under UNCCD", with the objective to meet obligations under the UNCCD, by formulating a first national action programme, and facilitating the reporting and review processes, for better decision making concerning measures mitigating land desertification, land degradation and drought, and sustainable land management issues. No information on the progress of implementation of the National Action Program is available.

Intensified agriculture

Pressures to ecosystems and species deriving from intensified agriculture include increased surface water intake for irrigation purposes, resulting in reduced water quantity and quality in lakes and rivers, pollution of groundwater with chemical plant protection products and livestock husbandry waste discharge, and accumulation of pollutants in water reservoirs (e.g., Lake Prespa). The abandonment of traditional agricultural and land-use practices in meadows and pastures (e.g., haymaking, sheep grazing) in rural areas, depopulating due to migration from villages to urban settlements, results in threats to grassland habitats, as the previously grazed and mowed meadows become subject to natural succession of shrub and forest vegetation. Most affected are *Hordeeto-Caricetum distantis*, *Cynosureto-Caricetum hirtae* and *Trifolietum resupinatibalansae* plant communities.

Hunting and fishing

Hunting

The size of populations of widespread species, including game, has not yet been adequately investigated. Due to the non-operation of the national biodiversity monitoring system and the absence of nationwide assessments, and the non-availability of data on wildlife population size and trends, it is neither possible to assess whether hunting quota are set at the sustainable level, nor properly assess the intensity of hunting pressure on wildlife. Since 2011 the amount of hunted game mammal individuals significantly increased, which probably did not correspond to a comparable increase in their population numbers. Furthermore, hunting on game species decreases the availability of prey, including carcasses, for rare and threatened predatory species, such as the Balkan lynx and numerous bird species, and therefore directly contributes to a further decline in their populations. However, a real threat to wildlife is poaching (sometimes with the use of traps, live snares and poison) for either subsistence purposes or illegal trade, also in rare and endangered species, such as the brown bear, Balkan lynx, and Balkan chamois. The illegal use of poison baits has led to the disappearance of the bearded vulture and cinerous vulture, and to a drastic reduction in the populations of the Egyptian vulture and griffon vulture.

According to the 2018 NBSAP for 2018–2023, the development of scientific studies on the status of game species populations for setting more appropriate hunting quotas is planned between 2019 and 2022 (Action 7.2.4).

Fishing

There are several vulnerable fish species in the country, specially in Lake Ohrid. Monitoring of fish stocks has resulted in the lowering catch quotas in Lake Ohrid area. There are six fishery inspectors whereof two works in Lake Ohrid. Aquaculture is forbidden in the lake. There is also a three months fishing ban for the endemic Lake Ohrid brown trout (*Salmo letnica*, DD) during the reproduction period. The deliberate introduction of non-native fish species is forbidden, but alien species already present in the country also cause serious problems.

The endemic fish species populations in Lake Prespa are threatened by the degradation of the quality and reduction in the quantity of water, degradation of fish spawning grounds; competition from non-native species, illegal fishing, overfishing, and the absence of a species conservation or management plans.

The UNDP project on Restoring of the Ecosystem of Lake Prespa (2011–2018), with financial support from the Swiss Development Cooperation, focussed on activities to reduce the pressures on the ecosystem of Lake Prespa with a view to improve the health and resilience of the lake.

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Collection of non-wood forest products

Despite the prohibition by the Ministry of Environment and Physical Planning for collection of the species *Gentiana lutea* and *Gentiana punctata* issued in 2006 for a 5-year period, illegal collection of *Gentiana* continued, resulting in threat to this species population and degradation of its habitats. Other affected species include the common bearberry (*Arctostaphylos uva-ursi*), and the regionally endemic mountain tea *Sideritis scardica*.

Tourism

The impact of the tourism sector development on biodiversity leads to a number of adverse consequences, in particular in most visited protected areas. Besides various recreational uses, the most obvious threats relate to tourist activities in protected areas, increasing anthropogenic impact on, and disturbance of valuable habitats and rare species, and other economic activities which are not fully regulated by the management plans, or when there are not enough resources to deal with them successfully, or implement the prescribed measures. As tourism is an important source of income for protected area management, it is difficult to regulate it in an adequate manner, and the "maximum carrying capacity" concept limiting tourist access cannot be implemented.

Other threats result from unplanned construction of certain tourist facilities, which degrade neighbouring ecosystems. The adverse side effects of increasing visitation, as well as recreational and tourism infrastructure development include the growing volume of solid waste and wastewater, and changes in landscape. Lake Ohrid area is a good example, as the wastewater treatment facilities cannot cope with the fast increase in the number and capacity of hotels and other tourist accommodations. Since the adoption of the 2012 Law on Tourism Development Zones, the pressure on development of new tourist facilities increased, also in protected areas. Fishing tourism could also add to pressures on threatened fish stocks.

Climate change

Climate change poses a major threat to all natural ecosystems and the overall biodiversity of the country, as the raising temperatures and decreasing precipitation have adverse effects on the environmental conditions in habitats of rare and endangered plant species and communities, as well as decreases the potential for the regeneration of the vegetation, which could result in extinction or significant reduction of the geographic range of several sub-alpine and alpine species, specially mountain areas, for instance dry grasslands, forests and aquatic ecosystems are vulnerable to climate change.

According to estimates carried out for the elaboration of the Third National Communication on Climate Change, 18 habitats, have been identified as potentially affected by and 58 plants and 224 animal species vulnerable to climate change. Furthermore, climate changes enhance desertification and soil erosion processes, the expansion of arid areas, and increase the threat of grassland and forest fires. According to official statistics, the size of areas destroyed by forest fires initially decreased, from as much as 34,443 ha in 2007 and 15,046 ha in 2008, to 8,702 ha in 2011, 2,844 ha in 2013, and 1,150 ha in 2014, 3,165 ha in 2015, and 2,166 ha in 2016. However, in 2017 forest fires affected 13,405 ha. Most affected are the thermophilous oak forests and shrublands that are characterized with high diversity and/or presence of species characteristic for Mediterranean coastal forests and maquis biome.

LMOs/GMOs

According to the Law on Nature Protection, the introduction of species into the nature is generally prohibited, and requires a permit, regardless whether the species concerned is native, alien, or a living modified organism (LMO) species. The 2008 Law on Genetically Modified Organisms regulates the deliberate release or placement of LMOs on the market by means of licences. However, the Ministry of Environment and Physical Planning has not received any request for a LMO-related license. No research results on, nor evidence of the potential adverse effects of LMO release on the native ecosystems and species are available. Food and food products containing GMOs or consisting of GMOs, their production, release and import is prohibited (since the 2013 amendment of the 2010 Law on Food Safety).

11.3 Performance and gaps in biodiversity and forests monitoring networks

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The 2004 Law on Nature Protection contains numerous provisions related to biodiversity monitoring, concerning the monitoring of the state of habitat types, of landscape types and of nature. The Department for Nature within the Administration of Environment at the Ministry of Environment and Physical Planning is the body responsible for the establishment of the biodiversity monitoring system and the National Biodiversity Information System, as an integral part of the Environmental Information System. However, due to the limited human, technical and financial capacities, the National Biodiversity Information System established in 2011 under a UNDP project is currently not in operation. The methodology for monitoring the state of nature has not been developed and a monitoring system has not been established across the country.

Biodiversity monitoring activities are mainly carried out, depending on available resources, in three national parks (Mavrovo, Pelister, and Galičica), and under various projects implemented by other organizations (e.g., monitoring of the ecosystems of the lakes Ohrid and Prespa, populations of the Prespa trout).

Since 2010 Galičica National Park has been carrying out a long-term monitoring of non-animate nature, forest plant communities and habitats, herbaceous plant communities and habitats, plant and animal species. Among the projects by NGOs, most important are long-term monitoring activities carried out by the Macedonian Ecological Society, including the continuous monitoring of vulture species (since 2003), and of the Balkan lynx (since 2006) under the multinational Balkan Lynx Recovery Programme, supported by the MAVA Foundation. Macedonian Ecological Society has also developed its own biodiversity monitoring database. Winter census of waterfowl in the three natural lakes, as well as some artificial lakes and fishponds, is not carried out on a continuous basis, but with interruptions depending on the possibilities for financing, but with increased intensity in the last few years. Hunting associations and hunting concessionaires monitor the game's numerous conditions.

Under the ongoing IPA Twinning Project "Strengthening the capacities for effective implementation of the acquis in the field of nature protection" (November 2017 – August 2019) implemented by Ministry of Environment and Physical Planning, a draft national biodiversity monitoring programme is expected to be prepared, together with monitoring protocols for 20 habitats, 20 species and 20 of birds of EU interest harmonized with the requirements of the Habitats and Birds directives, nature inventories in two pilot sites (Pelister National Park, and Lake Prespa - Monument of Nature), draft studies for nature valorisation and draft management plans for two potential Natura 2000 sites. Moreover, the project will support establishing a new national information system for natural heritage, including biodiversity monitoring.

Within various projects, studies are carried out on certain specific changes that influence the state of the forests. Thus, in Pelister National Park, the revitalization of the old Molika forest is monitored by monitoring the course of the molybdenum renewal process.

No national forest inventory has been carried out so far, and forestry operations planning is based on ground inventories. Forest health state monitoring within the reporting period has regularly been carried out by the Faculty of Forestry of the Ss. Cyril and Methodius University in Skopje, based on annual contracts with the Ministry of Agriculture, Forestry and Water Economy.

According to the 2018 NBSAP for 2018–2023, the establishment of the monitoring system for biological diversity (Action 14.3) is planned for the period between 2020 and 2023.

11.4 Trends in development and management of protected areas

National protected area network

The Law on Nature Protection constitutes the legal basis for the designation of protected areas, of six different protective regime categories, which were harmonized with the IUCN protected area management categories.

In 2017, the national network of protected areas included 86 areas with a total area of 229,719 ha and covers about 8.93 per cent of the country territory (Table 11.2). National parks covered almost 4.5 per cent of the territory, monuments of nature 3 per cent, while protected areas of other categories accounted approximately 1.4 per cent of the territory.

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A specific category is the multipurpose area, which is not excluded from the economic use (in line with IUCN category VI) and which comprises larger natural complexes of e.g., forests or meadows and can serve as an ecological corridor to ensure the integrity of the ecological network.

According to official statistics, despite the increase in the number of protected areas (from 81 in 2012 to 86 in 2017), the total area under legal protection decreased from 232,495 ha in 2012 to 229,719 ha in 2017 (which means a decrease by 2,776 ha). Hence, as at 2017, the share of protected areas in the country territory accounted for only 8.93 per cent, while the CBD Aichi Target 11 stipulates, that by 2020 at least 17 per cent of terrestrial and inland water areas shall be included in effectively and equitably managed, ecologically representative and well-connected systems of protected areas.

Table 11.2: Protected areas, 2012, 2014, 2016 and 2017, number and ha

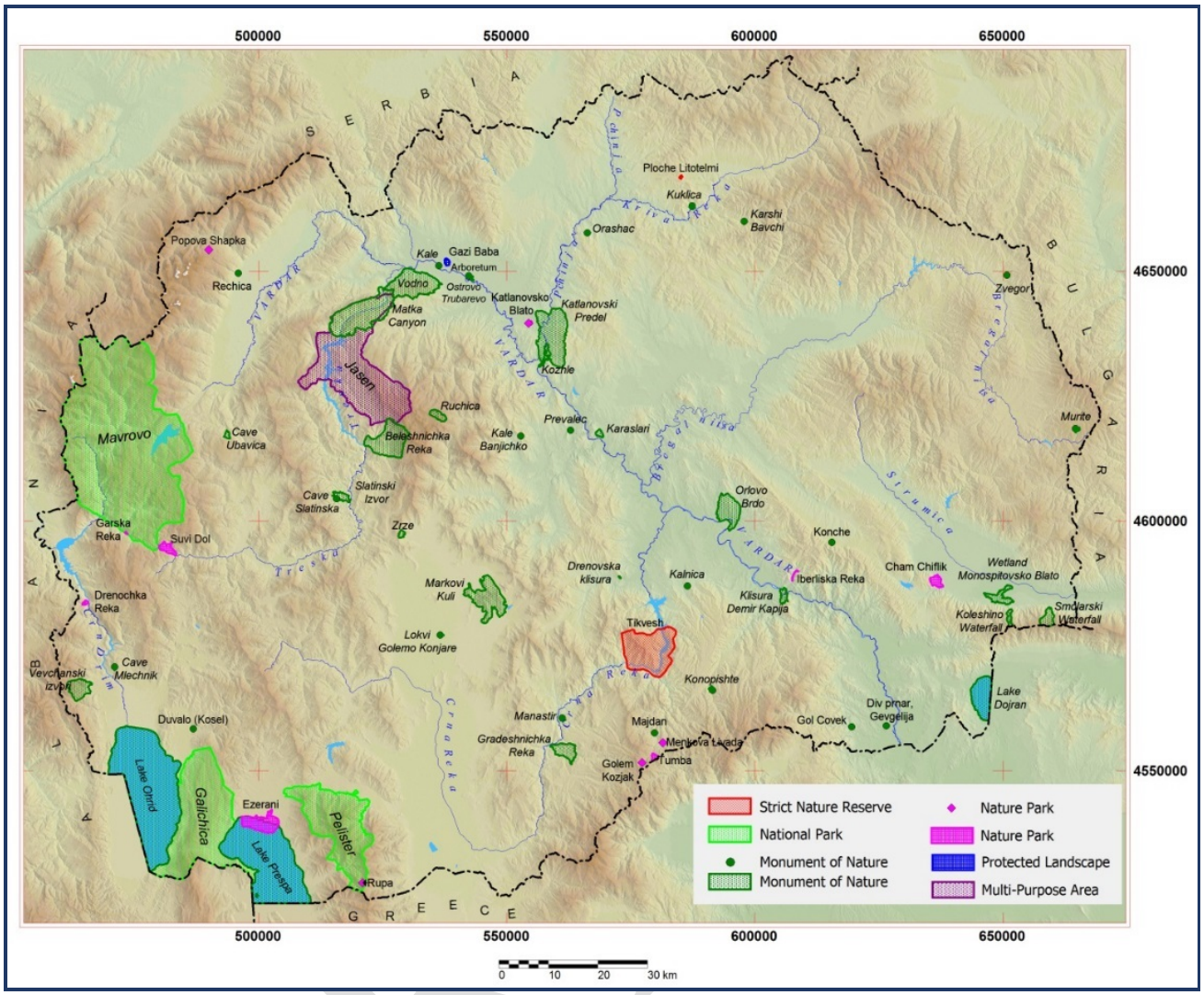
	Number				Area (ha)				Percentage of territory in 2017
	2012	2014	2016	2017	2012	2014	2016	2017	
Ia: Strict Nature Reserve	2	2	2	2	10 673	10 023	7 787	7 714	0.3
Ib: Wilderness Area	0	0	0	0	0	0	0	0	0
II: National park	3	3	3	3	115 713	115 602	114 870	114 937	4.47
III: Monument of Nature	57	67	67	67	70 424	71 396	78 968	78 939	3.07
IV: Nature Park	15	12	12	12	3 376	2 763	3 045	3 086	0.12
V: Protected Landscape	3	1	1	1	5 387	102	108	102	0
VI: Multipurpose Area	1	1	1	1	26 923	26 923	25 305	24 941	0.97
Total	**81**	**86**	**86**	**86**	**232 496**	**226 809**	**230 083**	**229 719**	**8.93**

Source: Fifth National Report to the Convention on Biological Diversity, 2015 and National Strategy for Nature Protection and Action Plan (2017–2028). Second Environmental Performance Review of the former Yugoslav Republic of Macedonia.

Most alerting is the decreasing area of strict nature reserves from 10,673 ha in 2012 to 7,714 in 2017 (a decrease of 28 per cent and encompassing only some 3.4 per cent of the total protected areas in 2017). Strict nature reserves ensure the highest legal protective regime, restrict human interference and economic uses, and are therefore crucial for the conservation of natural ecosystems, habitats and species diversity, as well as preservation of naturally ongoing processes, and serve as reference areas for scientific research and monitoring. The area of three national parks (Galičica, Mavrovo and Pelister) constitutes half of all protected areas in the country, while the high share (some 34 per cent of the total protected area) of monuments of nature results from such designation of the vast aquatic ecosystems of the three largest natural lakes (Ohrid, Prespa, and Dojran). Furthermore, a striking disparity in the current distribution and size of protected areas between the western and eastern regions of the country is visible (map 11.1). Moreover, the current national protected area network is still not a 'network' in the common meaning of this term, its current scattered spatial pattern is insufficient to ensure the ecological continuity and connectivity, as linking ecological corridors are still missing. The only exception could be the Multipurpose Area Jasen, that serves as a corridor linking the adjacent areas of two monuments of nature (Beleshnichka Reka and Matka Canyon).

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Map 11.1: Geographical distribution of protected areas



Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The national protected area network is not coherent since it includes areas proclaimed in different periods, in accordance with different categorization systems resulting from changes in the still evolving nature conservation legislation. Consequently, the current network includes protected areas proclaimed in accordance with the old (no longer valid) categorization, two new areas recently proclaimed in accordance with the new categorization, some already re-proclaimed, and some currently being subject to the re-proclamation procedure while some other new areas are currently in the process of proclamation. The Law on Nature Protection requires the revalorization and re-proclamation of protected areas.

Hence, the national protected area network can best be described as being still (since 2005) in a transitional phase of development, while the expected accession to the European Union would then require the designation of Natura 2000 sites, upon the full transposition of the EU biodiversity-related acquis into the national legal framework.

Re-proclamation process

The Ministry of Environment and Physical Planning is responsible for the revalorization of protected areas that have been placed under protection before the enactment of the Law on Nature Protection and drafting new acts of proclamation in accordance with the provisions of this Law. Both above tasks were expected to be completed within six years since the entry of the Law into force (in 2005), therefore prior to 2011. However, the process of revalorization and re-proclamation of protected areas has not been completed.

Since 2011 (which marked the original deadline, set up by the Law on Nature Protection) the process of protected area revalorization and re-proclamation has been very slow, with only six areas re-proclaimed: four monuments of nature (Slatinski Izvor, Lake Dojran and Lake Prespa in 2011 and Vevcanski Izvori in 2012) and two nature parks (Prespa in 2012 and Gazi Baba in 2015). Revalorization and re-proclamation of a protected area is an indispensable precondition for its proper delineation, preparation and adoption of a management plan, and setting a management body. At December 2018, studies of valorisation for natural heritage sites are being prepared for Osogovo Mountain and Šar Planina, National Park Pelister and Lake Prespa Monument of Nature. In addition, in 2018, the study on valorization of Dojran Lake has been prepared.

According to the 2018 NBSAP for 2018–2023, finalization of the process of protected areas re-designation (Action 11.1.2) is due to be completed by 2023.

Management plans

According to the Fifth National Report, management plans have been prepared and adopted for two national parks and one nature park with the support of foreign donors. The management plan for Pelister National Park was prepared under a Swiss-supported project (later approved by the Ministry of Environment and Physical Planning, and adopted in 2005), for Ezerani Nature Park under the GEF/UNDP/ Ministry of Environment and Physical Planning project for Prespa Basin protection (adopted by the Municipality of Resen, which in 2012 was entrusted by the Ministry of Environment and Physical Planning the mandate of Ezerani managing body), and for Galičica National Park under the KfW-funded project "Transboundary Biosphere Reserve Prespa Park – support to Galičica National Park" (adopted in 2012). The latter became subject to amendments, on the motion of the Government, in order to accommodate the implementation of five infrastructure development projects concerning three tourism development zones, construction of a ski centre, and construction of the express road A3 Kosel-Ohrid.

Furthermore, draft management plans were prepared for the monuments of nature Matka Canyon, Lake Tikvesh, Smolare, Koleshino Waterfalls and Markovi Kuli, as well as for the Multipurpose Area Jasen (under the GEF/UNDP/ Ministry of Environment and Physical Planning project), for Mavrovo National Park (under UCODEP/ Ministry of Environment and Physical Planning project), and for the Lake Prespa Monument of Nature (under Swiss Agency for Development and Cooperation (SDC)/UNDP Project for Lake Prespa revitalization). But, a draft management plan cannot be adopted prior to the completion of the re-proclamation procedure for the area concerned.

Another obstacle for the development of protected area management plans is the absence of a land cadastre, which would allow assessing both the land-use (e.g., forest, agricultural land) and land ownership of particular real estate properties concerned, and the accurate delineation of protected area boundaries, which could then be officially recorded. Similarly, both land ownership and protected area boundaries are not clearly marked on the ground. Moreover, the absence of a land cadastre is an impediment for the management of forests and protected areas, also for law enforcement, as protecting forests against illegal logging, and enforcement of other regulations related to the legal protective regime is problematic when ownership boundaries are not clearly marked and cannot be referred to.

According to the 2018 NBSAP for 2018–2023, the finalization of the process of protected areas re-designation (Action 11.1.2) is due to be completed by 2023 and the adoption of management plans for national parks and/or other protected areas (Action 11.4.2) is also planned to be completed by 2023, which would therefore be problematic, as the preparation and adoption of management plans for areas re-proclaimed as late as in 2023 would hardly be possible in the same year.

Advisory bodies

Pursuant to the Law on Nature Protection, each protected area is required to have two advisory bodies: a scientific council (with the exception for protected areas smaller than 100 ha, and of category VI protected areas), and a council of stakeholders, the latter allows for the involvement of the local communities in e.g., consultations on draft protected area management plans. Either very few or no councils of stakeholders for protected areas have been established so far.

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11.5 Trends in development and management of ecological networks

Plans for the extension of the national protected area network

The 2004 Spatial Plan stipulated for the further development of the national protected area network. Based on scientific assessments as many as 265 sites would become legally protected by 2020, under different categories, best corresponding to their natural values and features. As for the ultimate network composition, the Plan specified "5 national parks covering a total area of 188,196 ha, 8 strictly protected natural reserves with an area of 13.682 ha, 38 scientific and research natural reserves – 11,836 ha, 6 areas with special natural properties – 13,966 ha, 1 specific landscape of 200 ha, 26 specific natural reserves – 5,155 ha, 14 individual flora and fauna species – 2,645 ha and 167 monuments of nature covering an area of 62,886 ha". Among its priorities, the Plan emphasized the need for the designation of two new national parks: Jakupica with a proposed area of 28,000 ha, and Šar Planina with 51,858 ha.

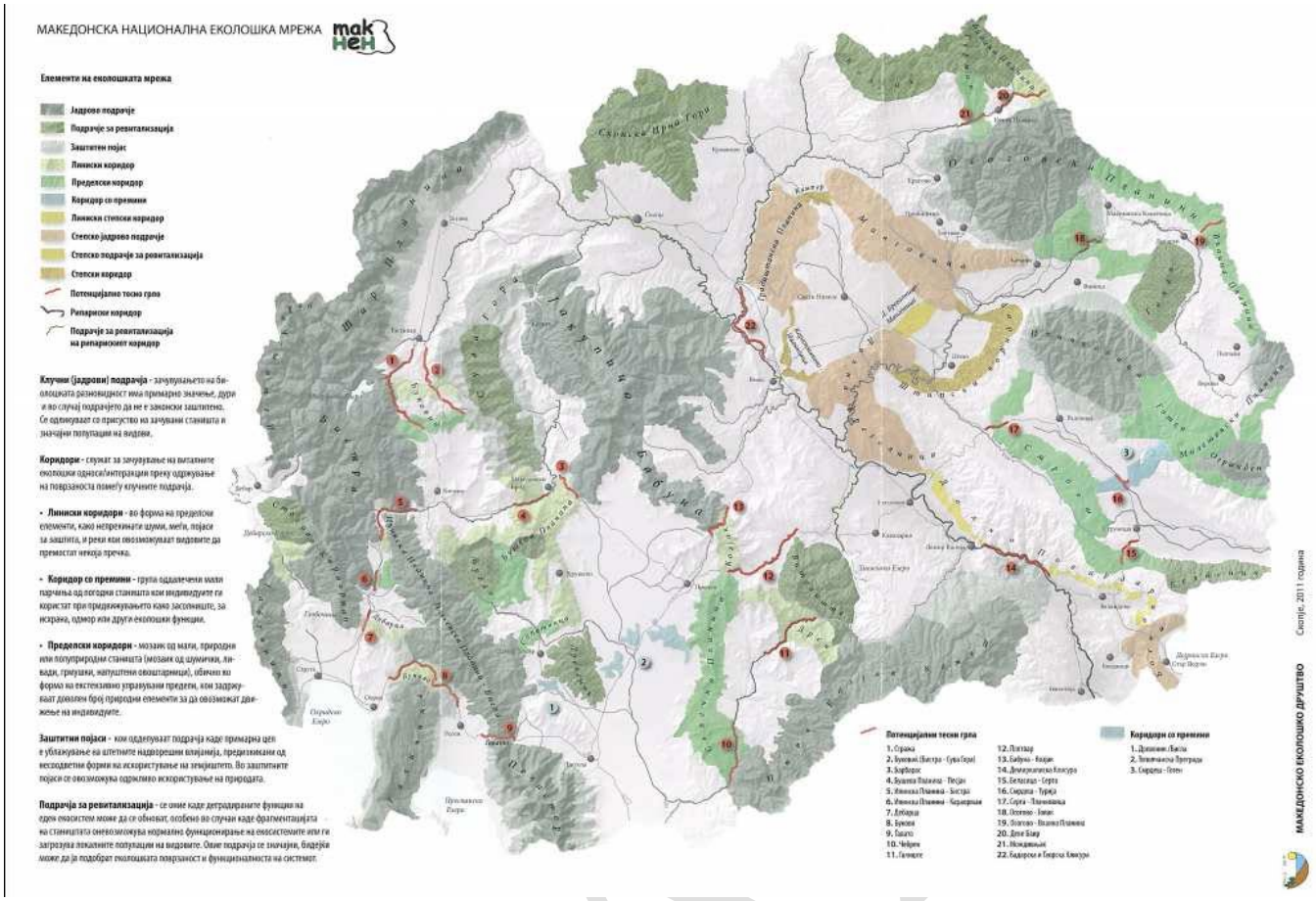
Should the Plan be fully implemented, in 2020 the national network of protected areas would stretch over 298,566 ha, which would then account for 11.61 per cent of the country territory, which would still be less than the 17 per cent minimum threshold value stipulated by the CBD Aichi Target 11.

According to the 2014 Fifth National Report to the CBD, another proposal for the establishment of an ecologically representative and more spatially coherent national network of protected areas was developed in 2010–2011 by the Macedonian Ecological Society, according to which the National Ecological Network (MAK-NEN) is proposed to include 99 protected areas (34 areas existing at that time, 42 new areas proposed for protection by the 2004 Spatial Plan, and 23 newly identified areas). Moreover, additional 91 localities were proposed for proclamation as "natural rarities".

The concept was based on the outcomes of expert studies undertaken by the Macedonian Ecological Society, concerning the distribution of Corine land cover key habitat types, and modelling of the suitability of habitats to support the populations of large carnivores, and the distribution of key carnivore species in the country. The brown bear (*Ursus arctos*) was taken as a model and flagship species, for the identification of 13 core areas of the network (capable to maintain viable brown bear populations, including areas already protected either at the national level, or by different international instruments), 26 ecological corridors (incl. 12 linear, 11 landscape corridors, and 3 stepping stone areas), buffer zones and restoration areas. A map of the proposed National Ecological Network was drafted (Map 11.2), additionally the guidelines for the protection and maintenance of identified migration corridors for the brown bear (consisting of larger uninterrupted tracts of well-preserved forest habitats, or the mosaic of smaller natural and semi-natural habitats) were provided under the Brown Bear Corridors Management Plan.

Map 11.2. Proposed scope of the National Ecological Network

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Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations. Note: The map was produced in the framework of the Project for Development of the National Ecological Network (MAK-NEN), implemented in the period 2008–2011 by the Macedonian Ecological Society (MES) and ECNC–European Centre for Nature Conservation in cooperation with the Ministry of Environment and Physical Planning. The Project was supported by the BBI Matra Fund of the Netherlands Ministry of Economic Affairs, Agriculture and Innovation and the Ministry of Foreign Affairs.

The proposed MAK-NEN was expected to encompass some 20 per cent of the country territory (which would then meet the requirements of the CBD Aichi Target 11) and facilitate the implementation of the Law on Nature Protection, requiring the establishment of a national ecological network of interconnected or spatially close ecologically important areas, linked by ecological corridors. Moreover, the MAK-NEN concept stipulated the proclamation of several new, bigger areas in the still less protected north-eastern part of the country.

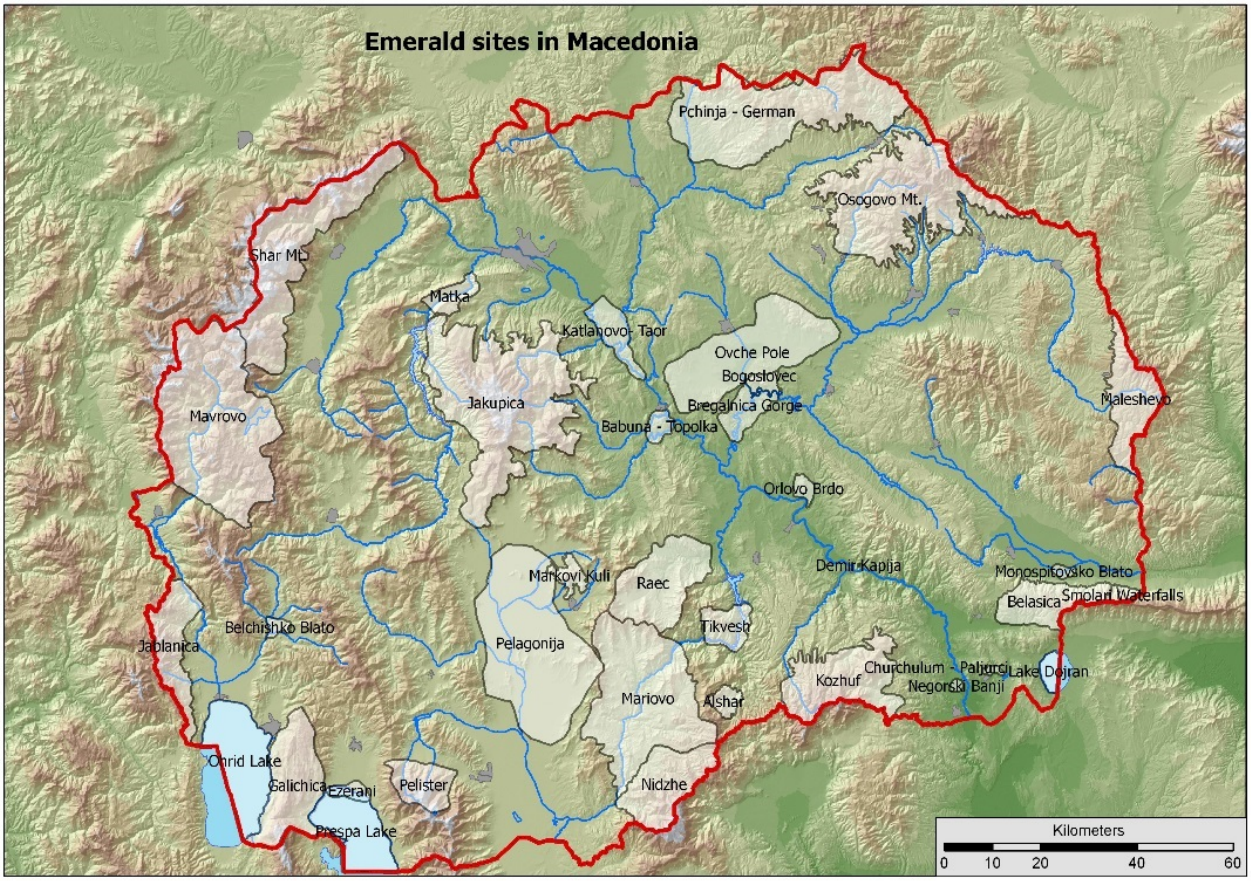
The MAK-NEN proposal, submitted in 2013 to the Government, is still in the process of consultation with other sectors. Presumably, the decision on the ultimate size and composition of the national network of protected areas was planned to be taken upon the prior completion of assessments towards the identification of areas most suitable for their possible future designation as Natura 2000 sites (Sites of Community Interests and Special Protected Areas) which, pursuant to the Law on Nature Protection, shall become part of the national ecological network. However, according to the 2018 NBSAP for 2018–2023, the adoption of MAK-NEN and its incorporation in planning documents was expected in 2018 (Action 10.5), while the identification of potential Natura 2000 sites is due to be completed by 2022 (Action 11.2).

National Emerald network

According to the 2012 Action Plan for Implementing the Programme of Work on Protected Areas of the CBD, 35 areas of special interest for conservation of biological diversity were included in 2008 in the national Emerald network, covering 29 per cent of the country (map 11.3). Almost one third (12 out of 35) of areas of special interest for conservation were areas protected at that time, namely a strict nature reserve (Tikvesh), three national parks (Galičica, Mavrovo, and Pelister), seven monuments of nature (Lake Dojran, Markovi Kuli, Matka Canyon, Lake Ohrid Orlovo Brdo, Lake Prespa, and Smolari Waterfalls), and a nature park (Ezerani). Identification of

areas of special interest for conservation was prepared in accordance with the provisions of the 1979 Convention on the Conservation of European Wildlife and Natural Habitats, based on the criteria given in the 1989 Recommendation No. 16 and on the habitats and species listed in the 1996 Resolution No. 4 and 1998 Resolution No. 6 of the Convention. Of a number of 187 endangered habitats requiring specific conservation measures listed in the Resolution No. 4, 32 endangered habitats have been identified in the country. According to the Resolution No. 6, which lists 927 European species requiring specific habitat conservation measures, as many as 167 species are present in the country: 7 invertebrates, 13 fish, 3 amphibian, 7 reptile, 115 bird, 17 mammal and 5 plant species.

Map 11.3: National Emerald Network



Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Important Bird Area network

The Important Bird Area network in the country comprised 24 areas in 2010. In 2011 an inventory of Important Bird Area was published. According to the BirdLife International Data Zone, as at December 2018 the country harbours 22 Important Bird Areas with the total area of 681,388 ha (which accounts for 26.5 per cent of the country territory). Identification of Important Bird Areas can largely facilitate the selection of potential Sites of Community Importance under the Birds Directive. The Ministry of Environment and Physical Planning was not involved in activities on Important Bird Areas. The EU IPA project "Strengthening the capacities for the implementation of Natura 2000" recommended to revise the Important Bird Areas network in the country.

Important Plant Area network

According to the Fifth National Report, 42 Important Plant Areas were identified in the country in the frame of a project implemented by the Macedonian Ecological Society and Plantlife International in 2002–2003. Between 2007 and 2009 species and habitats were identified for each area, while activities aimed at the areas' protection were undertaken in several pilot areas (e.g., Shar Planina, Pelister, Ilinska, Plakenska, Judovi Livadi, Pehchevo

and Osogovo Mountains). The designation of Important Plant Areas is one of the tools for the implementation of the CBD Global Strategy for Plant Conservation 2011–2020. The Ministry of Environment and Physical Planning was not involved in activities on Important Plant Areas.

World Heritage sites

As at December 2018, one site has been inscribed on the World Heritage List under the Convention concerning the Protection of the World Cultural and Natural Heritage. The Natural and Cultural Heritage of the Ohrid region World Heritage "mixed criteria" property, has been inscribed in 1979 for its natural values, then extended and inscribed additionally under the cultural criteria in 1980, the area of this property accounts for 83,350 ha. Activities are ongoing to extend the World Heritage status to the remaining one third of the Lake Ohrid, located in Albania and to strengthen the governance of the transboundary natural and cultural heritage if the Lake Ohrid region.

The country is considering the nomination of three areas to the World Heritage List, including two properties selected under the natural criteria: Cave Slatinski Izvor, and the Markovi Kuli massif, both inscribed on the Tentative List since 2004.

According to the 2018 NBSAP for 2018–2023, intensified cooperation with UNESCO with regard to areas from the Tentative List (Action 11.3.2) is planned for 2018–2020, as well as on the possible inclusion of the old beech forests into the "Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe" transboundary World Heritage property (currently involving already 12 other countries).

World Network of Biosphere Reserves

In 2014, the bilateral (Albania and the former Yugoslav Republic of Macedonia) transboundary Ohrid-Prespa Biosphere Reserve was nominated under the UNESCO Man and Biosphere (MaB) Programme. The Ohrid-Prespa Biosphere encompasses the total area of 446,244.52 ha (386,915.21 ha terrestrial; 59,329.31 ha aquatic), divided into three functional zones: the core area of 14,339.25 ha (13,457.81 ha terrestrial; 881.44 ha aquatic), buffer zone of 140,479.27 ha (82,124.45 ha terrestrial; 57,506.51 ha aquatic), and transition area of 291,426.01 ha (291,332.96 ha terrestrial; 941.36 ha aquatic).

The identification of other areas suitable for the MaB nomination as biosphere reserves is planned until 2020, according to the 2018 NBSAP for 2018–2023 (Action 11.3.3).

Ramsar sites

As at 2018, the country harbours two sites designated as Wetlands of International Importance (Ramsar Sites) and included in the Ramsar List under the Convention on Wetlands of International Importance especially as Waterfowl Habitat, of the total surface of 21,616 ha. Lake Prespa site (18,920 ha), designated in 1995, provides important feeding areas for large numbers of the Dalmatian pelican (*Pelecanus crispus*, NT) breeding in nearby Greece; while Lake Dojran (2,696 ha), a shallow eutrophic lake shared with Greece and surrounded by swamps, hosts many protected bird species, and is the wintering area for over 100 individuals of the Dalmatian pelican.

Nomination of Lake Ohrid for wetland of international importance in accordance with the criteria of the Ramsar Convention was planned for 2018, according to the 2018 NBSAP for 2018–2023 (Action 11.3.1).

Balkan Green Belt network

The Balkan Green Belt, coordinated by EuroNatur in partnership with IUCN and other organizations, is part of the European Green Belt Initiative, a grassroots movement for nature conservation and sustainable development along the former Iron Curtain, carried out under the patronage of IUCN. Activities under the Balkan Green Belt initiative include campaigns and preparation of feasibility studies for the designation of transboundary protected areas, wildlife migration ecological corridors linking protected areas, as well as trainings aimed at the protection of large carnivore species, capacity building for local partner NGOs, and implementation of transboundary nature conservation projects. The Balkan Green Belt partnership involves the German Federal Agency for Nature Conservation, Friends of the Earth Germany, IUCN, and numerous local partner organisations. Balkan Green

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Belt projects receive financial support of e.g., the MAVA Foundation, the German Federal Agency for Nature Conservation and Lufthansa.

In the former Yugoslav Republic of Macedonia, the Balkan Green Belt includes 11 already protected areas. (three national parks, three natural lakes and other lower category protected areas) as well as several areas currently proposed for protection, including the mountain ranges of Šar Planina, Jablanica, Nidze, Kozhuf, Belasica, and Osogovo Mountains (map 11.4).

Map 11.4: The Balkan Green Belt



Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Natura 2000

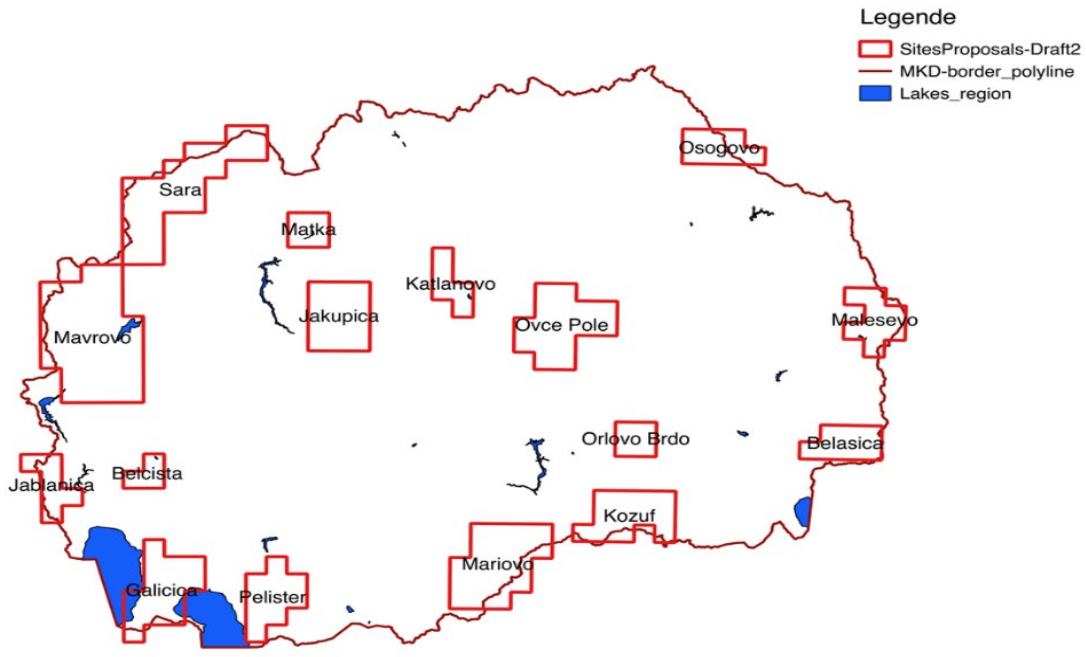
The main objectives of the IPA project "Strengthening the capacities for implementation of Natura 2000" (2016–2017) were achieved through strengthening the administrative capacities on central and local levels for implementation of the legislation on nature protection, with a particular focus on the requirements of the Birds and Habitats directives. Within the project, a draft law on nature was prepared, which transposes the provisions of both directives. The project outcomes include the Natura 2000 national website (www.natura2000.gov.mk), five thematic brochures on Natura 2000, draft reference lists of birds, species and habitats, a plan for the implementation of Birds and Habitats directives, a public information and consultation programme, a study for the development of the GIS for protected natural areas in accordance with the Natura 2000 requirements, and certifying 20 trainers for Natura 2000 purposes.

Moreover, an important result of the project was the identification of the first 11 areas with high potential for their future designation as Natura 2000 sites, including eight potential Sites of Community Interest under the Habitats Directive (Galičica, Jakupica Mountains., Mariovo and Kozuf, Mavrovo, Ovce Pole, Pelister, Šar Planina, Ubavica Cave), and three potential Special Protection Areas under the Birds Directive (Lake Dojran, Lake Ohrid, Lake Prespa) (map 11.5). The plan for necessary field research work was prepared. In addition, work is ongoing to identify three new potential Natura 2000 sites in the Eastern part of the country.

The IPA Twinning Project "Strengthening the capacities for effective implementation of the acquis in the field of nature protection" is implemented from November 2017 until November 2019, in partnership with the Finnish Institute for Environment and the State Service for Protected Areas of Lithuania. The project aims to strengthen the administrative capacities of the Ministry of Environment and Physical Planning for the implementation of legislation in the area of nature protection. Project activities include preparing draft management plans and valorization studies for two protected pilot areas and potential future Natura 2000 sites (National Park Pelister and Lake Prespa Monument of Nature). Moreover, a draft national methodology and protocols for monitoring of minimum 20 habitats, 20 species and 20 birds of EU interest, with an assessment of the conservation status. A draft five-year national biodiversity monitoring programme and at least four draft by-laws to the Law on Nature Protection, taking into account the Habitats and Birds directives, would be prepared, as would be a plan for engaging stakeholders in the implementation of Natura 2000.

According to the 2018 NBSAP for 2018–2023, the identification of potential Natura 2000 sites is due to be completed by 2022 (Action 11.2).

Map 11.5: Areas with high potential for designation as Natura 2000 sites



Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

11.6 Legal, policy and institutional framework

Legal framework

The 2004 Law on Nature Protection regulates the protection of nature, biological and landscape diversity, inside and outside protected areas, also as "natural rarities". It determines the competences of authorities, general

measures to be undertaken (incl. restrictions and prohibitions on e.g., land-use, use of nature, exploitation of natural resources). It contains provisions on the protection and conservation of wild species of plants, fungi and fauna (including provisions on the red list and red book of threatened species), introduction and re-introduction of species, control of alien species, CITES-related provisions on trade in endangered species, breeding of animal species, lists of protected species, and on measures for their protection the protection of habitats and ecosystems, and monitoring of their status.

The Law provides for the establishment of the national ecological network, incl. ecological corridors, defines the categories of protected areas, provides a legal basis for mutual agreements on harmonized management plans for transboundary protected areas, determines the legal protective regime in protected areas of all management categories, the procedure for their proclamation, indicates possible functional zonation pattern, including outer buffer zone, of protected areas, defines procedures related to protected area management planning, and determines the competences of the guard service. The Law contains provisions on the proclamation, protection and management of 'natural rarities', e.g., rare, endangered and endemic species, plant communities, relief forms, or speleological objects, which are not a protected area category. It also contains provisions on the protection of landscape diversity, valuation of landscapes and monitoring of their state, with the view on possible proclamation as protected areas.

The Law provides the legal basis for the establishment of Public Institution – National Park and its bodies, for the establishment of cadastres of protected areas, and of natural heritage; for keeping records on protected species, establishment of the national biodiversity information system, and monitoring of the state of nature, including monitoring of species, habitats, ecosystems, and landscapes. It also requires the adoption and implementation of a national strategy for nature protection, indicates possible funding sources for implementation of the Law, including various fees, and payments for ecosystem services, and determines the misdemeanour sanctions for the infringement of the provisions of the Law.

However, several provisions of the Law are not enough clearly formulated. For example, provisions related to granting temporary protection for species being evaluated for their proclamation as strictly protected or protected, and for areas proposed for protection that undergo the procedures of valorization and proclamation as protected areas are neither precise enough, nor sufficient to be effective. The term "temporary protection" is not further defined, the Law neither determines bodies responsible for its enforcement, nor indicates possible administrative measures which could ensure this protection (e.g., by preventing natural resource exploitation, or construction in sites concerned, for instance by including temporary restrictions in spatial development and land-use plans) other than including such temporarily protected species or areas into the Records for the protection of nature and the Cadastre of protected areas. Moreover, the Law contains a misleading formulation, which defines the period of the temporary protection of species and areas either "until the proclamation", which ensures protection, or for a specified length of time (a maximum period of six months from the day of adoption of the act for placing species under temporary protection, and one year from the decision on granting temporary protection for areas). The Law does not mandate the competent body issuing a decision on temporary protection, to decide which of the two above optional lengths of the temporary protection period applies in a particular case. Due to the above, the "temporary protection" term does not imply any legal obligations.

When adopting the Law in 2004, the common expectations were that procedures for the designation of species as protected would not last longer than six months, and no longer than one year in case of areas proclamation, which did not prove to be realistic. Due to the above, the interpretation of the provisions as limiting the temporary protective periods to either 6 months (for species) or 12 months (for areas) are legitimate, with all possible adverse effects for species and areas concerned. For instance, areas with high natural and/or landscape values (in particular situated inside protected areas) are extremely attractive for tourist and recreational infrastructure development, which can immediately decrease these values. In the above described legal situation, the decision on placing an area under temporary protection for its future proclamation as protected area can mean a specific 'death sentence' for its natural and landscape values, effective one year later.

The above statement is even better justified in the light of challenges, that resulted from the formulation of some of the transitional provisions of the Law, determining the deadline for the implementation of the provisions requiring the revalorization of all protected areas existing in the country (in order to justify their 're-proclamation' as protected areas under the new Law), within 6 years from its entry into force (therefore, by the end of 2010). The deadline has not been kept, as at December 2018 the protected area revalorization and re-proclamation

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process has not yet been completed. Revalorization studies have not yet been prepared for all protected areas designated before 2005, and the progress is very slow (within the reporting period, since 2011 only six areas have successfully been re-proclaimed). Furthermore, the delay in re-proclamation is an obstacle for the development and adoption of long-term management plans for all not-yet-re-proclaimed protected areas.

The completion of the revalorization and re-proclamation procedures for protected areas designated earlier than in 2005 is probably a much more urgent priority than launching the valorization and proclamation procedures for any newly proposed area. Hence, the valorization and official proclamation of new protected areas might not be feasible within the temporary protection period (of 12 months validity), which exposes all newly proposed areas to unsustainable natural resources use and unplanned infrastructure development.

Similarly, other deadlines set up by the Law have not been kept, in particular concerning the adoption of the list of endangered species and of the red book of species (by the end of 2007), and the adoption of the national strategy for nature protection (by the end of 2009). As at December 2018, the list of endangered species has not yet been adopted (in consequence the corresponding red book cannot be published), while the National Strategy for Nature Protection was adopted as late as in 2018.

Another challenge is that the full implementation of the Law requires the adoption and implementation of bylaws, while not all of them have so far been prepared and adopted. According to the Gap Assessment Report of September 2016, only 22 out of over 60 (approximately one third) required bylaws to the Law were in force at that time, while the 2018 NBSAP mentions around 50 bylaws prescribed, and only 17 adopted (approximately one third).

The Law has been amended several times (no less than 17 times since 2011), also with the objective to provide for its approximation with the EU legislation on nature (in particular with the provisions of the Habitats and Birds directives). A draft law concerning the protection of nature is under preparation, expected to ensure the transposition of the EU nature-related acquis and planned to be adopted in 2019.

Other legal acts relevant for the protection and sustainable use of nature include 1996 Criminal Code, 1998 Law on Pastures, 2005 Law on Environment, 2007 Law on Agricultural Land, 2008 Law on Waters, 2008 Law on Fishery and Aquaculture, 2009 Law on Forests, 2009 Law on Hunting, 2009 Law on Organic Agricultural Production, 2010 Law on Agriculture and Rural Development, 2012 Law on Tourist Development Zones, 2012 Law on Mineral Resources, 2014 Law on Spatial and Urban Planning and 2014 Law on Mountain Trails.

At December 2018, the process of adoption of a new law on nature was ongoing, including with a view to harmonize the national legislation on nature protection with the Birds and Habitats directives.

Policy framework

The 2006 Strategy for Sustainable Development of Forestry, valid until 2026, includes numerous objectives and measures, the implementation of which could strengthen the conservation of biodiversity, e.g., increase the forest land cover, improve the health state and other qualities of forests, and protect the natural forest genetic resources. Furthermore, the Strategy stipulated the improvement of the state of the game species, the reintroduction of the extinct native game species, and introduction of other game species, as well as setting up and updating the game species database (by regions and by hunting areas); strengthening capacities of the State Forestry and Hunting Inspectorate and the Forestry Police. The Strategy assumed also the establishment of the National Forest Inventory and Monitoring Systems on forestry recourses, upgrading the Cadastre of the forests, and a number of measures for the conservation and restoration of the biological and landscape diversity, e.g., by incorporating conservation objectives into forestry practices, analysing the state and development of the protected forest networks, promoting the restoration of forest biodiversity in degraded forests, natural methods of forest regeneration, using native tree species for re- and afforestation works, inventorying protected areas of management categories III and IV, and increasing in the state budget funding for activities related to biodiversity conservation measures implemented in protected areas.

No reports on the progress in implementation of the 2006 Strategy achieved up to date are available. However, since 2011 the intensity of afforestation activities significantly decreased from 2,081 ha in 2011 to 553 ha in

2017, no national forest inventory has been carried out, and the forest monitoring practices can hardly be perceived as an operational and effective 'system' in the common understanding of this term.

The 2012 Action Plan for Implementing the Programme of Work on Protected Areas of the Convention on Biological Diversity (2012 PoWPA) for a period of five years (valid until June 2017) referred to the national targets concerning protected areas set up by the 2004 NBSAP for 2003–2013 and the 2004 Spatial Plan, which were as follows:

- Strengthening administrative capacities at all levels for conservation and management of protected areas;
- Establishing strategic approach to protected areas financing;
- Improving the national legislation for conservation and management of protected areas;
- Increasing the involvement of indigenous, local communities and other stakeholders in the management of protected areas;
- Establishing a national representative network of protected areas;
- Expanding the system of protected areas;
- Increasing scientific research and monitoring activities in the protected areas;
- Incorporating climate change aspects into protected areas management;
- Improving communication, education and public awareness.

The 2012 PoWPA analysed the progress achieved and defined next steps to be undertaken to ensure the satisfactory implementation of the global CBD PoWPA in the country, also indicating responsible bodies, institutions and organizations, timeline for particular measures implementation, and their indicative budget. The planned next steps included:

- Establishing a national representative network of protected areas (by 2014);
- Extending the system of protected areas (by 2015);
- Establishing a coherent ecological network in accordance with EU Natura 2000 criteria (by 2016);
- Preparing the management plans for protected areas (by 2017);
- Strengthening the capacity for the planning and management of protected areas (by 2015);
- Assessing the level of ecosystem fragmentation in the country (by 2013);
- Defining possible migration routes ("bio-corridors") of plant and animal species threatened by the climate change (by 2014);
- Proclaiming protected areas of the management categories V and VI on the previously defined corridors (by 2015).

The Fifth National Report did not provide any assessment of the progress in the implementation of the 2012 PoWPA. However, none of the planned activities has been finalized within the originally set timeline, and no considerable progress in achievement of these plans to date can be noted. The possible reasons could be:

- Lack of human, technical and financial capacities for biodiversity monitoring, nature conservation measures, as well as for planning, establishment and management of protected areas, both at central and local levels;
- Unsatisfactory effectiveness of protected area management;
- Insufficient involvement of indigenous and local communities, and other relevant stakeholders in the management of protected areas;
- Overlapping competences concerning the management of forests and pastures in protected areas of the Ministry of Environment and Physical Planning and Ministry of Agriculture, Forestry and Water Economy;
- Lack of public awareness of ecosystem services provided by protected areas.

The Strategic Plan of the Ministry of Environment and Physical Planning for 2016–2018 contains several objectives and measures of particular importance for the conservation of biodiversity, concerning e.g.:

- Valorization and revalorization of protected areas, and protected area proclamation process;
- Increased level of protection of national parks, and increased percentage of categorization of natural rarities;
- Strengthening the Ministry of Environment and Physical Planning capacities for the development of the monitoring and information system;
- Improvement of the monitoring system, and establishing the national information system on the environment;
- Biodiversity monitoring;

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- Improvement of the spatial information system;
- Regular preparation of reports on the state of the environment, environmental indicators, statistics, annual reports and topical reports.

As at December 2018, no reports on the progress in implementation of the Ministry of Environment and Physical Planning Strategic Plan are available.

The 2018 National Strategy for Nature Conservation for 2017–2027 determines seven national strategic objectives related to the protection of geodiversity, heritage, biological and landscape diversity, incl. their protection and conservation, monitoring, research and inventory, incorporation of the nature conservation policy into strategies, plans and programs of other sectors, improvement of the legislative framework in line with EU legislation and relevant international treaties, provision of appropriate institutional framework and strengthening the administrative capacities, as well as continuous and still increasing funding. The Action Plan accompanying the Strategy details numerous actions (19 actions concerning geology, geomorphology and hydrology, 5 landscape diversity, 29 biological diversity, and 6 for the development of the geographic information system), with the indication of the responsible body, and timeline for the implementation of a particular activity. For instance, the development of management plans for the most important types of landscapes shall be completed by 2027, preparation of red lists and red books of species by 2023, development and implementation of red species conservation plans between 2024 and 2027, establishment of a state monitoring system for the Balkan lynx by 2027, and the identification of potential Natura 2000 sites by 2022.

The process of revision of the first 2004 NBSAP for 2003–2013 started in January 2013. For the definition of national targets, consultations with relevant stakeholders were carried out; the goals of the first NBSAP, the status and the trends of biological diversity in the country, threats to biological diversity, and guidelines for the implementation of the CBD Aichi targets were reviewed. The evaluation of the implementation of the 2004 NBSAP shows that 64 actions (less than 30 per cent of the total) were fully implemented, 56 (26 per cent) partially implemented, and 96 actions (over 44 per cent) remained as pending ones, mostly due to the limited capacities and lack of financial resources, insufficient co-ordination and cooperation within the Ministry of Environment and Physical Planning and with other sectoral ministries, and the generally low positioning of biodiversity conservation among the most urgent political priorities.

The 2018 National Biodiversity Strategy and Action Plan (NBSAP) for 2018–2023 defines 19 national strategic targets, corresponding to the CBD Aichi Targets. Among 19 national strategic targets of the 2018 NBSAP, most relevant for this chapter are those directly related to biodiversity conservation and the development of protected area networks, e.g., the national strategic target No. 10 concerning habitats, No. 11 protected areas, No. 12 species, and No. 15 concerning the protection of species and ecosystems in a cross-border context (in cooperation with neighbouring countries). The Action Plan part of the 2018 NBSAP details the extensive set of planned actions, related to each of the 19 national targets, also with the indication of responsible bodies, and timeline for the implementation of a particular activity. For example, the designation of new protected areas, stipulated by the 2004 Spatial Plan, other strategic documents and relevant studies is planned for the period between 2018 and 2023, the same timeline has been set for the finalization of the process of protected areas re-designation, and for the adoption of management plans for national parks and other protected areas (which could be problematic, as the preparation and adoption of management plans for areas re-proclaimed as late as in 2023 would hardly be possible in the same year 2023). Similarly to the 2018 National Strategy for Nature Conservation, the identification of potential Natura 2000 sites is expected to be completed by 2022, while the red lists are to be completed and adopted, and red books published by 2023.

Since the current NBSAP planning horizon (2018–2023) is shorter than of the 2018 National Strategy for Nature Conservation (2017–2027), the timelines or deadlines for the completion of several 2018 NBSAP actions, which are overlapping with those listed under the 2018 National Strategy, are not always harmonized, as deadlines set by the 2018 NBSAP are sometimes shorter. For example, the preparation and implementation of action plans for conservation of threatened species identified in red lists (2018 NBSAP Action 12.4) is to be completed by 2023, while according to the 2018 National Strategy, this activity (numbered 1.3.4) is planned to be implemented much later, between 2024 and 2027. Even though the 2018 NBSAP National Target 11 stipulates the increase in the share of protected areas in the total country territory from the current (2017 data) 8.82 to 15 per cent, by 2023 (through implementing Action 11.1.4), the corresponding CBD Aichi Target 11 would not yet be met, as it requires including at least 17 (not 15) per cent of terrestrial and inland water areas into protected areas, by 2020

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(not by 2023). For obvious reasons, the progress in the implementation of the 2018 NBSAP cannot be assessed in December 2018.

Several species conservation action plans have already been adopted (and possibly also implemented), e.g., Action Plan for Prespa trout adopted in 2008, and action plans for Brown bear, Mountain tea, Stinking juniper, Prespa barbell, Reed beds, and on Caves with focus on bats, all adopted in 2012. Several other plans have already been drafted under different projects, e.g., draft action plan for the protection of the Balkan lynx.

The national wetland policy, or programme for wetlands conservation (which is obligatory for the parties to the Ramsar Convention) has not yet been developed, no measures for their protection and sustainable use have been included in the national spatial plans (however such provisions are sometimes present in protected area management plans, e.g., for the Nature Park Ezerani). According to the 2018 NBSAP for 2018–2023, the identification of the most affected lowland and mountain swamps and wetlands, and the development of a plan, and the implementation of action plans for their conservation (Actions 10.4.1, 10.4.2, and 10.4.3) is due to be achieved by 2023.

Sustainable development goals and targets relevant for the chapter

The current stance of the former Yugoslav Republic of Macedonia vis-à-vis selected targets under Goals 2, 6, 11 and 15 of the 2030 Agenda for Sustainable Development is described in box 9.1.

Box 9.1: Targets 2.5, 6.6, and selected targets under Goal 15 of the 2030 Agenda for Sustainable Development

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Target 2.5: By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

As at 2013, the Gene Bank of the Institute of Agriculture, which functions as a national gene bank, secured the collection of 2,666 samples of 89 species (8 cereal, 5 leguminous plant, 3 industrial plant, 28 vegetable, 21 forage crop, 13 fruit crop and 11 medicinal and aromatic plant species). Works on the programme for native varieties protection in accordance with the Regulation (EC) No 870/2004 of 24 April 2004 establishing a Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture were ongoing. Moreover, the genetic material (in seed doses, embryos and egg cells) of the two native domestic animal species (Ovchepolska sheep and the local Balkan goat) was conserved.

Hence the value of the Indicator 2.5.1 (number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities) accounted for 91 in 2013. The country data in the FAO Global Databank for Animal Genetic Resources give the value of zero, both for the number of local breeds classified as being at risk of extinction and for those of being not-at-risk of extinction, and the value of seven for the number of local breeds classified as being at unknown level of risk of extinction. The indicator 2.5.2 (proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction) cannot be produced because of missing data on population of local breeds. Moreover, breed-related information remains far from complete with the risk status for many of the reported breeds not known.

Goal 6: Ensure availability and sustainable management of water and sanitation for all
Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Not enough data are available to properly assess the value of Indicator 6.6.1 (change in the extent of water-related ecosystems over time). However, negative trends in the extent of the lake and wetland ecosystems have been observed, due to global climate changes and the ongoing land uptake, threatening the remains of the marsh ecosystems in the lowland regions of the country. As at 2018, a national wetland policy or a programme for wetlands conservation has neither been adopted nor implemented.

Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Within the reporting period the value of Indicator 15.1.1 (forest area as a proportion of total land area), increased from 38.18 per cent (as at 31 December 2011) to 38.95 p.e. cent (as at 31 December 2017).

As at 2018, some 86 per cent of the freshwater key biodiversity areas in the country were covered by protected areas, but only 21 per cent of terrestrial ones. These values remain almost unchanged since 2000 leading to conclusion that more efforts are necessary to achieve the target, which is measured by the global Indicator 15.1.2 (proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type).

Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

The implementation of the 2006 Strategy for Sustainable Development of Forestry is on-going; however, there are no reports assessing the progress made. The progress towards sustainable forest management (global indicator 15.2.1) cannot be assessed due to the general lack of data on forest resources, given that the national forest inventory has not yet been carried out and the national forest monitoring system is not operational. However, in 2018 the national forest certification system was for the first time endorsed within the Programme for the Endorsement of Forest Certification (PEFC).

Even though the afforestation and reforestation work slowed down in the recent years, the area of forests is still increasing. However, even if most of the protected areas are covered by forests, reporting on the proportion of forest area within legally established protection areas is not done. This is because the lack of forest inventory, the use of too general forest classification (for economic and social purposes), which lead to the conclusion that that more efforts are required to advance the conservation of forest biodiversity. Concerning the proportion of area covered by a long-term management plan, the country reports around 92 per cent since about 90 per cent of the forest area is state property managed by the Public Enterprise Macedonian Forests. Overall, the country is progressing towards achieving target 15.2.

Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

As at 2018, the value of global indicator 15.3.1 measuring the proportion of land that is degraded over total land area, has been calculated only for the land covered by forests, where degraded forests account for over 4 per cent of the total forest area.

Target 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

The value of global indicator 15.4.1 measuring the coverage by protected areas of important sites for mountain biodiversity, accounts for some 23 per cent of Mountain Key Biodiversity Areas and remains unchanged since 2006.

As at 2017, the value of the Mountain Green Cover Index (global indicator 15.4.2) for the former Yugoslav Republic of Macedonia accounted for 96.5 per cent.

Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity, and, by 2020, protect and prevent the extinction of threatened species

The IUCN Red List Index (global indicator 15.5.1) aggregating change in extinction risk across groups of species cannot be calculated for the former Yugoslav Republic of Macedonia, as it would require the production of at least two editions of national Red Lists with the use of IUCN criteria, while no national Red Lists have been adopted up to date.

Target 15.6: Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

The former Yugoslav Republic of Macedonia is not yet a party to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture.

The country should consider acceding to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture

Target 15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

There are no data and adequate monitoring in place to assess the proportion of wildlife that was poached of illicitly trafficked, as the reliable data on the game species populations are non-available. The country is Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora since 2000 although it was never represented in the meetings of the Convention.

Target 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive species on land and water ecosystems and control or eradicate the priority species

The 2004 Law on Nature Protection contains provisions related to the prevention of the introduction of allochthonous species, control of their populations, or their eradication. Furthermore, the 2018 National Biodiversity Strategy and Action Plan (NBSAP) for 2018–2023 includes the National Target 8 "Develop and establish appropriate policy for recording, control and protection

of non-native and invasive species" and defines several actions to be undertaken. First steps in the implementation include the identification of alien species, in particular invasive ones, and assessment of possible threats, which is due to be completed by 2021, followed by the preparation and adoption of a national list of invasive species, which is planned for 2021–2022. As at 2018, not much data on invasive alien species are available, no related national monitoring system is in place, and no measures are implemented.

The country should implement state monitoring and research programmes on these species as an indispensable next step towards achieving target 15.8.

Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

As at 2018, no positive examples of such integration of biodiversity values can be quoted. However, the 2018 NBSAP for 2018–2023 includes the National Target 2, concerning the gradual integration of biological diversity values into the policies of economic development on national and local levels (including poverty reduction, environmental accounting, national and local development plans).

The country should implement the 2018 NBSAP, which will facilitate the achievement of Target 15.9, provided the National Target 2 is implemented by 2020.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning develops and implements national policies on nature protection, protection of biological and landscape diversity, and protection of natural heritage, as well as the control and supervision over the enforcement of the provisions of the 2004 Law on Nature Protection. The main responsibility for protected areas and biodiversity conservation issues is delegated to the Department for Nature under the Administration for the Environment. The Department for Nature is divided into four units:

- Unit for Natural Heritage Protection and Natura 2000
- Unit for Biodiversity and GMO
- Unit for Space Planning in Protected Areas and Geodiversity

The staff of Department for Nature accounts for 16 employees. The competences of the Unit for Natural Heritage Protection and Natura 2000 (8 employees) include e.g., the coordination of activities for preparation of strategies, programs and plans for nature protection, as well as activities related to Natura 2000; issuance of permits for conducting scientific research in nature; conducting procedures for protected area proclamation, for the adoption of management plans for protected areas; providing expert support for entities responsible for the management of protected areas, and keeping the Register of Protected Areas. The Unit for Biodiversity and GMO (4 employees) is responsible for e.g., coordination of research towards the scientific valorization of areas and sites valorisation of sites harbouring endemic, relict, rare and endangered wild species; coordination of projects for restoration and revitalization of degraded natural habitats, re-introduction of endangered wild species into their natural habitats, implementation of other measures for biodiversity conservation, and coordination of activities related to GMOs.

The competences of the Unit for Space Planning in Protected Areas and Geodiversity (3 employees) includes issues related to planning and management in protected areas, issuance of consent for the adoption of local spatial development plans (in case such plans concern the territory of a protected area), identification, valorization and protection of the geological and geo-morphological heritage.

Other relevant sectors and institutions include the Department of Spatial Planning, Department for Water, Department for Environment, MEIC, the Office for Spatial Information System, and the State Environmental Inspectorate.

Ministry of Agriculture, Forestry and Water Economy

The competences of the Ministry of Agriculture, Forestry and Water Economy include the development and implementation of other important policies for biodiversity conservation, concerning e.g., agricultural land

management, rural development, forestry (including the management, protection and use of forests, afforestation, reforestation), hunting and fishing, and melioration (the latter policy has great influence on wetland ecosystem protection issues). The Unit for Regulation and Use of Forests, Unit for Afforestation and Cultivation of Forests, Unit for Forest Protection from Biotic and Abiotic Factors, and the Unit for Hunting, Regulation of Hunting Grounds and Game Concessions are relevant for biodiversity management. The State Forestry and Hunting Inspectorate (a separate legal entity within the Ministry structure) controls the implementation of laws concerning forests and hunting. It employs one hunting inspector and some 13–14 forestry inspectors. Other important partners for biodiversity protection within the Ministry's structure are the Department of Livestock Breeding, and the Administration of Seeds and Seeding Material, responsible for the protection of agro-biological diversity.

Public Institutions - National Parks

National parks function as separate Public Institutions supervised by the Ministry of Environment and Physical Planning, with duly mandated administrative bodies, responsible for the management and monitoring of the park area and natural resources, law enforcement, facilitation of the scientific research, and the implementation of protective measures, prescribed in national park management plans. Forests and land classified as the forest land within the borders of protected areas are entirely managed by the entities responsible for the management of the certain protected area. Such entities are required to include certain elements of the forest management planning practice into protected area management plans.

They are mainly self-financed. As the national park administrations in general do not receive funding from the state budget or the budget of the local self-government, their operational capacities to a great extent depend on revenues from economic activities, including income from the use of natural resources, in particular forests (revenues from timber harvesting in the course of sanitary cutting), supplemented or superseded by growing incomes from the tourist services sector. Therefore, the vast majority of nature research and conservation projects in protected areas depends mainly on external funding sources (e.g., EU funds, foreign donors), while the self-government and state budget funding remain limited.

Another common challenge for national park management is the lack of competent and skilled personnel, capable of carrying out nature research and monitoring activities. The number of staff in 2016 for the Public Institution Galičica National Park was 20 employees, Public Institution Mavrovo National Park - 70, and Public Institution Pelister National Park - 21.

The Government established the Public Enterprise responsible for the management and protection of the Multipurpose Area Jasen (category VI).

Public Enterprise Macedonian Forests

As at 31 December 2017, 88.88 per cent of forest areas were in state ownership, while privately owned forests accounted for 11.12 per cent of the total. State owned forests are managed by the Public Enterprise Macedonian Forests in accordance with forest management plans, approved by the Ministry of Agriculture, Forestry and Water Economy. Some 90 per cent of the state forests is used for economic purposes, while the remaining 10 per cent is included in protected areas. The Public Enterprise issues permits for forestry activities conducted in privately owned forests, which do not have management plans. It is practically self-financing from revenues from the sales of timber and primary wood processing.

Public Enterprise Macedonian Pastures

The Public Enterprise Macedonian Pastures, and its 17 regional offices manage most of the pasture land, which is in state property. It coordinates its activities with the Ministry of Agriculture, Forestry and Water Economy. Management objectives of the Public Enterprise Macedonian Pastures include encouraging and providing support for the cultivation (or re-introduction) of traditional agricultural and land-use practices in meadows and pastures (e.g., haymaking, sheep grazing) which largely enhances the protection of biodiversity and nature, and prevents the natural succession of shrub and forest vegetation over the abandoned, previously grazed and mowed meadows, situated in remotely located rural areas (e.g., high mountain regions), rapidly depopulating due to the extensive migration from villages to urban settlements. Pastures are available to users through separate agreements signed for a 5-year period.

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Local self-government units

Local self-government units can be involved in the management of protected areas (of categories other than the national park and multipurpose area), on the basis of the consent by Ministry of Environment and Physical Planning. For example, the Municipality of Resen has been mandated by the Ministry of Environment and Physical Planning as the managing body of two protected areas, Nature Park Ezerani and Monument of Nature Lake Prespa, for which purposes the municipality established within its administrative structure a special Department of Environment (including the ranger service, employing four nature rangers), as the special unit for management and implementation of nature monitoring and protection programmes, prescribed in management plans of these two areas. There are also municipalities, which had been mandated the right to manage a protected area, but have not yet established a special authority or ranger service within their structures, e.g., the Municipality of Vevchani (which manages the Monument of Nature "Vevchani Springs"), of Novo Selo (Monument of Nature "Smolare Waterfall"), or the Municipality of Dojran (Monument of Nature Lake Dojran). Some other municipalities, which capacities do not allow the establishment of a special authority or service for the management of protected areas within their structures, decided to delegate the management rights and duties to CSOs, which is e.g., the case in the Municipality of Makedonski Brod (which concluded agreement on the management of the Monument of Nature "Slatino Springs" to the Speleological Society "Ursus Speleos"), or the Municipality of Kratovo (which transferred the management rights for the Monument of Nature "Kuklica" to the Izvor – Kratovo CSO). Numerous other protected areas have no own management bodies (in particular not the smaller ones).

Furthermore, the legislation includes many optional competences of the local self-government units, including the establishment of local monitoring networks, or the preparation of local reports on the state of environment. However, examples of such activities are absent.

National Council for Nature Protection

Pursuant to the 2004 Law on Nature Protection, a national council for nature protection shall be established as an advisory body to the Minister of Environment and Physical Planning. The competences of the council include the review and issuance of opinions on the implementation and further development of the 2004 Law, and acts on the proclamation of protected areas, on the adoption of the list of endangered species (red list) and protective measures to be implemented for improving the status of endangered species populations (prescribed in the red book), as well as on the adoption of strategic documents related to nature protection and on the establishment of the national ecological network.

At 2018, a national council for nature protection has not been established.

Academic and scientific research institutions

Given that the national biodiversity monitoring system is not operational at present, the most valuable source of data, and expertise on nature conservation issues are the academic and scientific research institutions, gathering biodiversity data acquired through the field research and nature inventory works on selected priority species and ecosystems. The most important academic and/or research institutions include the Macedonian Academy of Sciences and Arts, and the University of Ss Cyril and Methodius in Skopje (in particular its Institute of Biology under the Faculty of Natural Sciences and Mathematics, the Faculty of Forestry, and the Institute for Agriculture), the Hydro-biological Institute in Ohrid, and the Macedonian Museum of Natural History in Skopje (established and funded by the Ministry of Culture), which is also involved in research on species taxonomy.

Civil society organizations

The whole multitude of crucially important biodiversity monitoring and nature protection projects is implemented by several environmental CSOs, among which the most skilled, experienced and prominent is the Macedonian Ecological Society. Other CSOs that participate in various nature protection projects include the Society for research and protection of biodiversity and sustainable development BIOECO, Society for Study and Protection of Birds in Macedonia, Macedonian Mycological Society, Speleological Society Peoni, Movement of ecologists, Society for protection of nature in Macedonia.

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Regulatory, economic, fiscal and information measures

Regulatory measures

The 2008 Order prohibiting collection for use and trade in native wild growing fungi – morels of the genus Morchella, Verpa and Pitchoverpa, No. 161, for a 5-year period was issued to protect their natural habitats and conserve deciduous plantations from deliberate forests fires. Prohibition for collection refers to burnt or degraded areas and applies during summer period (from 1 June to 30 August) (Amendments Nos. 56/2009 and 53/2010). Amendments in the period of morel collection were introduced in 2012 (Amendment of Order No. 108/2012), by which prohibition covered the period from 1 June to 30 September.

Information measures

Biodiversity-related data is almost absent in the Statistical Yearbook published by the State Statistical Office, the chapter "Environment and Geography" lists the natural sites of importance, which include strict nature reserves, national parks, and some sites of natural significance), while chapter "Agriculture" provides more complex information on forests, forestry management and afforestation issues, and includes data on the number of hunted game species. The regular publication "Environmental Statistics" presents biodiversity data accompanied by short descriptions for the reference year. MEIC publishes information on initiatives and projects related to nature conservation is available in annual reports "Environment Quality in Republic of Macedonia".

The website of the Ministry is providing access to environmental information and includes a web-link to the National Biodiversity Information System, developed under the GEF/UNDP/ Ministry of Environment and Physical Planning project, however which is not active, given that the system is not operational at December 2018 (mostly for technical reasons). Hence, neither the quantity and quality of data, nor the functionality of the access to database (described in detail in the Fifth National Report to CBD) cannot be evaluated. According to the 2014 Report, the reasons for the above malfunction include the outdated hardware and software, the lack of skilled personnel, and the absence of bylaws required for the system operations. Moreover, quite often the biodiversity information and statistical data officially published considerably differs, depending on the source, which means that the information flow between different authorities (e.g., sectoral ministries and their agencies), scientific research institutes, other institutions, and the State Statistical Office is not yet fully efficient.

According to the 2018 NBSAP for 2018–2023, the development of national registers of natural heritage and cadastre of protected areas (Action 18.4) is still a pending task, planned to be achieved by 2020.

Activities related to ecosystem services are carried out within the ongoing project: "Nature Conservation Program of Macedonia", Phase II, financed by the Swiss Agency for Development and Cooperation (SDC). Identification and mapping of ecosystems have been carried out. Currently, the state and indicators of the ecosystems are being determined and it is planned to develop a pilot mechanism for payment of ecosystem services. A draft version of the ecosystem services brochure has been prepared and initial activities have been launched to develop a long-term capacity building plan for all stakeholders for ecosystem services.

Red Books

As at 2018, the national Red List of species threatened by extinction has not been adopted; consequently, the Red Book for the country cannot be developed and published, despite that the 2004 Law on Nature Protection provides for the adoption of both the red list and red (data) book by the end of 2007. Furthermore, the National Council for Nature Protection cannot support the process of the red lists adoption, as it has been inactivated.

However, several draft red lists for some groups of species do exist, e.g., the draft red list of fungi (213 species) developed with the application of IUCN criteria, and the draft red list of butterflies (69 species), both proposed by the scientists already in 2012. In 2014 the draft red list of Orthoptera (17 species) was proposed,

The ongoing project "Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning" (2016–2020), funded by GEF, will

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support the preparation of the first complete national Red Lists and Red Data Book for 46 reptiles and amphibians and 14 national plant species.

According to the National Strategy for Nature Conservation and the 2018 NBSAP for 2018–2023, the red lists are to be completed and adopted, and red books published by 2023 (2018 NBSAP Action 12.1 Elaboration of red lists and red books).

11.7 Participation in international agreements and processes

Multilateral environmental agreements

The former Yugoslav Republic of Macedonia is Party to several global environmental agreements, relevant for the conservation and sustainable use of natural heritage and biological diversity, such as the Convention on Wetlands of International Importance especially as Waterfowl Habitat since 1995, the Convention on Biological Diversity since 1997, the Convention concerning the Protection of the World Cultural and Natural Heritage since 1997, the Convention on the Conservation of European Wildlife and Natural Habitats and the United Nations Framework Convention on Climate Change since 1998, the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Agreement on the Conservation of Populations of European Bats under CMS since 1999, the Agreement on the Conservation of African-Eurasian Migratory Waterbirds under CMS and the Convention on International Trade in Endangered Species of Wild Fauna and Flora since 2000, the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) since 2002, the Cartagena Protocol on Biosafety to CBD since 2005 (chapter 6).

Bilateral and trilateral transboundary cooperation on biodiversity conservation

The country is a party to bilateral and trilateral environmental agreements signed between 1996 and 2010 (chapter 6), is involved in several transboundary biodiversity conservation programmes and initiatives, and actively cooperates with neighbouring countries on the conservation and harmonized management of shared natural ecosystems. Best known are the initiatives towards the protection and sustainable development of regions including large transboundary natural lakes, i.e. Lake Prespa (shared with Albania and Greece), Lake Ohrid (with Albania) and Lake Dojran (with Greece).

However, there are also other areas situated in shared border regions, important for the conservation of their ecosystems, habitats and species, which cannot be achieved by one country alone, thus requiring cooperation with the neighbouring countries, which relates e.g., to the mountain ranges of Šar Planina, Jablanica and Osogovo.

Cross-border cooperation for nature protection between the former Yugoslav Republic of Macedonia, Albania and Greece has been promoted within the establishment of Prespa Ohrid Nature Trust (PONT) supported by KfW Development Bank and Mava Foundation. PONT's mission is to provide long-term financing for the conservation and sustainable management of biological diversity, natural processes and ecosystem services in Prespa and its wider area for the benefit of nature and people in the region.

The former Yugoslav Republic of Macedonia is participating in the IUCN Biodiversity Task Force of South East Europe – an intergovernmental technical and advisory body of the IUCN Regional Working Group on Environment – that coordinates regional activities, facilitates the implementation of the South East Europe (SEE) 2020 Strategy, supports progress towards international biodiversity commitments and creates a framework for more efficient implementation of biodiversity policies in the framework of accession to the EU.

International projects

The country benefited of international projects, or projects supported by external funding sources, related to biodiversity conservation and protected area management.

Currently ongoing international projects, or projects supported by external funding sources, related to biodiversity conservation and protected area management, implemented in the former Yugoslav Republic of Macedonia include:

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- Ministry of Environment and Physical Planning IPA Twinning Project "Strengthening the capacities for effective implementation of the acquis in the field of nature protection" (2017–2019), in partnership with the Finnish Environment Institute, Metsähallitus, Parks and Wildlife Finland, and the State Service for Protected Areas (Lithuania), financed from the EU IPA;
- Ministry of Environment and Physical Planning IPA project "Strengthening the capacities for implementation of Natura 2000" (2016–2017), financed from the EU IPA;
- Ministry of Environment and Physical Planning IPA project "Improving the Management of Protected Areas" (2017–2019), financed from the EU IPA and implemented by UNDP;
- Ministry of Environment and Physical Planning / Ministry of Agriculture, Forestry and Water Economy / Macedonian Ecological Society project "Nature Conservation Programme– Phase I" (2015–2017), funded by Swiss Agency for Development and Cooperation;
- Ministry of Environment and Physical Planning / Ministry of Agriculture, Forestry and Water Economy / Macedonian Ecological Society project "Nature Conservation Programme– Phase II" (2017–2020), funded by Swiss Agency for Development and Cooperation;
- Ministry of Environment and Physical Planning Project " Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning" (2017-2020), financed by GEF;
- Ministry of Environment and Physical Planning Project "Restoration of the Prespa Lake Ecosystem" (2012–2018), funded by the Swiss Agency for Development and Cooperation and implemented by UNDP;
- Ministry of Environment and Physical Planning regional project in the greater Drin River Basin "Conservation and sustainable use of biodiversity at Lakes Prespa, Ohrid and Shkodra/Skadar (CSBL)" (2012–2017), supported and coordinated by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ);
- Macedonian Ecological Society project "Adriatic Flyways 4 – Macedonia" (2018–2022), funded by MAVA Foundation;
- Macedonian Ecological Society "Balkan Anti-poisoning Project" (2018–2020), funded by MAVA Foundation, and the Vulture Conservation Foundation.

11.8 Assessment, conclusions and recommendations

Assessment

The former Yugoslav Republic of Macedonia has successfully preserved the abundance of wild native species of fauna, fungi and flora, including numerous species categorized by IUCN as globally threatened by extinction, species included into the European Red List, as well as many endemic species (on either regional South-Eastern European, or local scale), including small, but still viable populations of the rare flagship species such as the Balkan lynx and Balkan chamois. The country can be proud for harbouring areas considered as the European centres of endemism. Furthermore, efforts and resources were invested in the approximation of the national legislation on nature protection with the EU nature legislation (e.g., Habitats and Birds directives), as well as preparations for the implementation of the Natura 2000.

However, natural ecosystems are seriously threatened by climate change, resulting in habitat degradation, and increasing threat of forest fires. The last remaining patches of wetland habitats, seriously affected during previously undertaken drainage works, are currently most threatened, together with their flora and fauna. Populations of several rare species are declining in size at an alarming pace, while some other species already became extinct. Biodiversity loss is progressing on a global scale, and the former Yugoslav Republic of Macedonia is not an exception. A good example is the decline in the few small local populations of regionally endemic Balkan chamois, which is not only threatened by poaching, but also remains among the legally hunted game species.

The level of threat to wildlife species occurring in the country cannot be assessed properly because the national biodiversity monitoring system is not operational at present. Consequently, the data on the size, and trends in populations of both the rare and widespread (e.g., game) species, are either non-available or non-reliable. In the absence of regularly updated nature inventories, the 2011 lists of strictly protected and protected wild species could only be based on assumptions and historical data. No national Red List of threatened species has been adopted, and no corresponding Red Book has been published so far. The preparation of the list of alien invasive

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species is planned for the near future, while the control or eradication of already present ones may already be impossible in practice.

Moreover, other tasks remain pending, despite that e.g., the Law on Nature Protection stipulated their accomplishment within the first three to six years since its entry into force. For example, the process of revalorization and re-proclamation of existing protected areas has not yet been completed, which impeded the preparation and adoption of all required management plans for protected areas. Another obstacle for the development of management plans is the absence of a land cadastre, which would allow to determine the land-use and land ownership. Similarly, the country has not yet prepared the national inventory of forest resources, which is required by the 2009 Law on Forests. The National Biodiversity Information System established in 2011 is not operational at present.

In 2017, protected areas covered 8.93 per cent of the country territory, which is well below the minimum value of at least 17 per cent indicated in the CBD Aichi Target 11. The area of three national parks constitutes almost a half of all protected areas in the country, while strict nature reserves currently account for only 3 per cent of the total protected area. Moreover, the current national protected area network does not ensure the ecological continuity and connectivity, as linking ecological corridors (both in-country, and transboundary ones) are still missing. Concerning international designations, in 2018 the country had only two Ramsar sites, one UNESCO MaB Biosphere Reserve, and one site inscribed on the World Heritage List, while two other sites with high potential for nomination under the 'natural' WH criteria remain on the Tentative List since 2004.

In 2018, the country has adopted the National Strategy for Nature Conservation for 2017–2027, and the National Biodiversity Strategic Action Plan for 2018–2023. The two documents are ambitious, however are not fully harmonized, as timelines set for the same activities sometimes differ. A national wetland policy, which is mandatory for the parties to the Ramsar Convention, or a programme for wetlands conservation has not yet been developed, and no measures for the protection and sustainable use of wetland areas have so far been included in the national spatial plans.

The capacities to implement the Law on Nature Protection and other relevant Laws, and of the recently adopted strategic documents are limited, as e.g., in the absence of funding by the state or local self-government units, the operations of national parks (including research, monitoring, and implementation of protective measures in the field) largely depend on own revenues deriving from the use of natural resources, or external (foreign) financial support, while the vast majority of protected areas of other categories has neither budgets, nor management bodies. Another example of limited capacities can be the Department for Nature of the Ministry of Environment and Physical Planning where the staff of all three Units accounts for 16 employees in total.

Conclusions and recommendations

Biodiversity monitoring, inventories and research programmes

The availability of reliable, comprehensive and up-to-date information on biodiversity is a pre-requisite for a proper formulation of national policies, strategies, species conservation action plans and protected area management plans, and for proper setting of hunting quota. The National Biodiversity Information System, once in operation, will not be able to perform its planned policy support tool functions unless it is continuously provided with reliable and continuously updated information, derived from biodiversity monitoring, field inventory works and scientific research. The lack of access to high quality data on biodiversity is an obvious impediment to progress in achieving targets 15.1, 15.2, and 15.5 of the 2030 Agenda for Sustainable Development.

Recommendation 11.1:
The Ministry of Environment and Physical Planning should:

(a) Implement the national biodiversity monitoring programme, with a special focus on rare and threatened flora, fungi and fauna species, plant communities and ecosystems, and invasive alien species;
(b) Mobilize adequate financial resources to ensure the continuation of state programmes related to biodiversity monitoring and research in the long run;

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(c) Complete the inventory and assessment of the status of threatened species, in cooperation with relevant academic and scientific research institutions and environmental civil society organizations;
(d) Adopt the Red List and corresponding Red Book(s), paying due account to the globally applied International Union for Conservation of Nature (IUCN) methodology and criteria, and update the 2011 lists of strictly protected and protected species accordingly.

Recommendation 11.2:
The Ministry of Agriculture, Forestry and Water Economy, in cooperation with the Ministry of Environment and Physical Planning, should:

(a) Implement research on forest ecosystems and habitats, in cooperation with relevant academic and scientific research institutions and environmental civil society organizations;
(b) Carry out a national inventory of forest resources, including scientific studies on the status of game species populations, for setting appropriate hunting quotas.

Development and implementation of policies, strategies, and conservation action plans

The integrity of almost all natural ecosystems in the country is currently threatened, partly due to ongoing climatic changes, but also due to growing anthropogenic pressures. The biodiversity loss continues, and populations of several rare species continue to decline in size. It means that the currently applied management approaches, and strategies do not provide for effective biodiversity conservation. For instance, a national policy or programme on wetland protection is still missing, even though its development and implementation is mandatory. Similarly, only few rare and potentially threatened species are currently covered by the existing species conservation plans, as the threats to species have not yet adequately been researched and assessed. Putting in place new national policies, strategies, and ecosystem or species conservation action plans and monitoring and evaluating the progress in their implementation will facilitate the achievement of the targets 15.1 and 15.5 of the 2030 Agenda for Sustainable Development.

Recommendation 11.3:
The Ministry of Environment and Physical Planning should:

(a) Develop a national policy or a programme for wetlands conservation;
(b) Develop relevant action plans/programmes for ecosystems and species conservation;
(c) Mobilize adequate resources to ensure the implementation of the national policy or programme for wetlands conservation, as well as action plans/programmes for ecosystems and species conservation in the long run.

Strengthening the national protected area network

In 2017, the national protected area network encompasses only 8.93 per cent of the country's territory, which is below the Aichi Target 11 of at least 17 per cent to be conserved by 2020. Simultaneously, this network is currently in a transitional phase of development, given that not all existing protected areas have been firmly enshrined in the network, due to the fact that the procedures for their re-valorization and re-proclamations have not been finalized; while the expected accession to the EU would then require the designation of the Natura 2000 network (probably to some extent overlapping with the currently existing protected areas). Last, but not least, the existing network does not provide for the expected ecological continuity and spatial connectivity. Hence, the achievement of the targets 15.1 and 15.4 of the 2030 Agenda for Sustainable Development requires additional efforts.

Recommendation 11.4:
The Ministry of Environment and Physical Planning should:

(a) Complete the revaluation and reproclamation of existing protected areas;
(b) Proceed with the identification and valorization of areas with high potential for their future designation as Natura 2000 sites, and areas of key importance for the spatial coherence of the future national ecological network;

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(c) Designate new protected areas, and, where deemed necessary, extend the territories of existing protected areas, with a focus on providing for adequate coverage of all main ecosystem types representative of the country, as well as the sufficient inclusion of habitats of all rare and threatened wildlife species.

Establishing a strong institutional framework for nature protection

The Ministry of Environment and Physical Planning develops and implements national policies on nature protection, protection of biological and landscape diversity, and protection of natural heritage, as well as the control and supervision over the enforcement of the provisions of the 2004 Law on Nature Protection. The competences of the Ministry of Agriculture, Forestry and Water Economy include the development and implementation of other important policies for biodiversity conservation, concerning e.g., agricultural land management, rural development, protection and use of forests, forestry (including afforestation and reforestation), hunting and fishing, and melioration. Various other institutions and organizations are involved in activities for biodiversity conservation and nature protection. Concerted efforts to coordinate activities are lacking.

Nature protection is multi-sectoral issue that requires high coordination and collaboration between responsible ministry for environmental affairs and many different sectors such as forestry, agriculture, transport, energy, tourism. Insufficient inter sectoral coordination and cooperation among sectors, as well as overlapping responsibilities, weak communication, lack of capacities at national and local level, lack of financial resources have been identified as main obstacles for implementation of the Convention on Biological Diversity at national level. Usually the benefits acquired from biodiversity and ecosystem services are overlooked and undervalued by decision makers that lead not only to loss of biological diversity loss but have affected adversely environmental human health.

Through the mapping and assessment of ecosystems and their services (Action from EU 2020 Biodiversity Strategy and Convention on Biological Diversity) the role of the implementation by county in legislation and policy in the delivery of ecosystem services would be evaluated (e.g., contribution of Natura 2000 network to the delivery of services, Mapping, Indexing and payment of ecosystem services).

Recommendation 11.5:
The Ministry of Environment and Physical Planning, in collaboration with the Ministry of Agriculture, Forestry and Water Economy and other relevant stakeholders, should:

(a) Establish effective coordination mechanisms with the involvement of all relevant actors for the coherent development and implementation of policies on biodiversity conservation and nature protection;
(b) Establish an effective coordination mechanism for issues related to payment for ecosystem services;
(c) Set up and ensure the operation of a national council for nature protection;
(d) Conduct regular training to develop the capacity of civil servants involved in biodiversity conservation and nature protection activities.

See also Recommendation 6.1 (a).

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ANNEXES

Annex I: Implementation of the recommendations in the second Environmental Performance Review

Annex II: Participation of the former Yugoslav Republic of Macedonia in multilateral environmental agreements

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Annex I

IMPLEMENTATION OF THE RECOMMENDATIONS IN THE SECOND ENVIRONMENTAL PERFORMANCE REVIEW[11]

Chapter 1: Policymaking framework for environmental protection and sustainable development

Recommendation 1.1
The Government should:
(a) Place high priority in implementing the National Strategy for Sustainable Development and develop a related action plan
(b) Establish the Secretariat of the National Council for Sustainable Development.
(c) Periodically review the validity of the strategy and if necessary amend the document should circumstances or priorities change in the coming years.

The implementation of this recommendation is ongoing.

(a) The Government implements the National Strategy for Sustainable Development. However, as of September 2018, the 2010 NSSD still lacks an action plan to implement it. The drafting of an action plan took place in 2015 but the draft was not adopted.
(b) A technical working group was established in 2012 to act as a secretariat of the National Council for Sustainable Development.
(c) An implementation report for NSSD was prepared in 2015 but it is not available to the government ministries and the public.

Recommendation 1.2
The Government should consider merging the Administration for the Environment, State Inspectorate and Office of Spatial Information system in an Environmental Protection Agency, which roles should focus on monitoring state of environment in the country, ensuring implementation of the legislation, providing expert support to the Government and liaising with the European Environment Agency in preparing State of the Environment reports or other environmental assessments.

The recommendation was not implemented.

Recommendation 1.3
Municipalities, which have not yet developed a local environmental action plan should do so as soon as possible taking into account the National Strategies and any other relevant document.

Municipalities, which already have a local environmental action plan should consider updating it in order to make it more in line with the current priorities of the country.

The recommendation has been partially implemented.

Before 2012 some local environmental action plans (LEAPs) were developed and some others were updated. However, no LEAP has been adopted after 2013. The Ministry of Environment and Physical Planning does not have data on valid and updated LEAPs.

Recommendation 1.4

[11] The second review of the former Yugoslav Republic of Macedonia was carried out in 2011.

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The Ministry of Environment and Physical Planning, should consider strengthening the Department for Communication with Local Self-government both in terms of number and knowledge of human capacities to be assigned.

The recommendation was not implemented.

Recommendation 1.5
The Government through the Ministry of Environment and Physical Planning and other responsible institutions should place high priority on Chapter 27 – Environment by:

(a) Strengthening capacity, with an emphasis on providing sufficient financial resources for realization of the National Plan on Adoption of the Acquis Communautaire and the National Environmental Investment Strategy.
(b) Establishing a coordination body chaired by the Minister for Environment and Physical Planning for the environmental issues, that will be responsible for coordination of the EU integration, implementation of the National Plan on Adoption of the Acquis Communautaire, and cooperation with international donors towards the preparation for accession negotiation process.

The recommendation has been partially implemented.

(a) Not been implemented.
(b) Implemented. In 2014 the Sector Working Group for Environment and Climate Action under the chairmanship of the Deputy Prime Minister for EU integration was established. The Group includes representatives of ministries, two CSOs and some donors and it discusses programme documents for IPA and policy documents.

Recommendation 1.6
The Ministry for Environment and Physical Planning should strengthen the Department for European Union (EU) and other departments responsible for specific areas within the Ministry in the process of approximation of EU acquis and fulfilling the obligation, which derives from EU Acquis.

The recommendation was not implemented.

Formally, this recommendation was implemented when the number of staff in the Department for EU was enlarged after the IPA Department (previously separate) was brought to this Department. However, the number of people working on EU integration issues and harmonization of legislation decreased.

Chapter 2: Compliance and enforcement mechanisms

Recommendation2.1
The Ministry of Environment and Physical Planning and other relevant environmental authorities should:
(a) Implement the proper steps of the strategic environmental assessment and environmental impact assessment procedures and contribute to better quality of the strategic environmental assessment and environmental impact assessment documentation
(b) Validate different software models to estimate emissions, waste generation and other impacts based on proposed technological processes.
(c) Strengthen the capacity at the local level with regard to the environmental impact assessment procedure

The recommendation was partially implemented:

(a) Implemented. The Ministry of Environment and Physical Planning is responsible for implementing EIA and SEA. The Department for Physical Planning is responsible for the implementation of SEA in a transboundary context. In the period 2013–2016 two SEA procedures in a transboundary context were started (SEA on nature protected areas management plans). The Unit for EIA and Soil Protection is the responsible for EIA implementation. The staff of the unit (3 people) is coordinating each EIA case to ensure a qualitative procedure on EIA. All steps of the EIA procedure are followed, especially the

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involvement of the public (public announcement of the public hearing, access to the EIA documentation, taking record of the public hearing).

(b) Partially implemented. Air quality dispersion models have been implemented in the Ministry of Environment and Physical Planning, as well as regional air quality forecast model. Dispersion models are used to estimate the impact of specific emission sources and source categories to the air quality. However, poor availability of good quality input data has limited the use of dispersion models. Dispersion modelling studies have been made to estimate the air quality impact of energy production and industrial installations and traffic in the City of Skopje.

(c) Partly implemented. LSGUs are not responsible for carrying out EIA procedures but they have to approve environmental elaborates. They take part in EIA procedures where the project would be implemented. However, LSGUs lack training and methodological support for the EIA process.

Recommendation 2.2

The Ministry of Environment and Physical Planning should elaborate a mechanism and create a system for consecutive control of implementation of and compliance with the conditions, recommendations and measures set in the final documents under procedures of strategic environmental assessment and environmental impact assessment.

The recommendation was not implemented.

Recommendation 2.3

The Ministry of Environment and Physical Planning should elaborate and propose to the Government for approval to:

(a) Increase the human and financial capacity of the State Environmental Inspectorate

(b) Develop a network on information exchange and coordination between environmental inspectors of central and local level.

The recommendation was not implemented.

Recommendation 2.2 from the 1st EPR:

The MoEPP should give the highest priority to strengthening its implementation bodies - the Environment Office and the State Environment Inspectorate:

(a) The Administration for the Environment should be reorganized into an Executive Environmental Agency for the implementation and enforcement of environmental legislation and fully oriented to the requirements of environmental management. In this regard, the Agency should, as a minimum, consist of an environmental monitoring centre (providing monitoring of all environmental media), an SEA, EIA and permit issuing division (dealing with single permits: water, waste, chemicals, as well as with integrated permits).

(b) The State Environment Inspectorate should be strengthened at local levels with small units of two or three specialists and appropriate equipment. Coordination among the different inspectorates, especially where they share responsibilities in environmental protection, should be streamlined through a better ex- change of information and joint site visits or inspections.

The recommendation was partially implemented:

(a) Not implemented.

(b) Implemented. Since May 2014 the SEI is an independent legal person at central level. The authorized inspectors for environment at local level are not subordinated to the SEI. Their number and equipment depend on the budget of the municipality. There is an informal communication among the environmental inspectors at central and local level on daily basis (phone talks). Joint inspections are carried out case by case, especially when installation with A-type permit is subject of inspection.

Chapter 3: Monitoring, information, public participation and education

Recommendation 3.1

The Ministry of Environment and Physical Planning should speed up the process of inter-ministerial consultations on the draft decree to establish a national environmental monitoring programme and to submit to the Government for approval. The programme should identify the responsible institutions, regulatory and

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technical requirements, budgets and performance indicators, to establish reliable and sustainable monitor- ing systems for all media.

The recommendation was not implemented.

Recommendation 3.2:
The Ministry of Environment and Physical Planning should continue, in cooperation with other relevant public authorities and other stakeholders, work towards the establishment of an environmental information system that should provide relevant comprehensive, accurate and publicly accessible information on the state of the environment. Future steps should include:

- *Establishment of environmental data and metadata standard;*
- *Establishment of standards to regulate methodologies and procedures in the creation, access, protection and uniformity of environmental information in the related institutions and the country as a* whole;
- *Preparation of appropriate secondary legislation on different environmental areas related to the data acquisition and sharing between the Ministry of Environment and Physical Planning and other stakeholders;*
- *Further development of the web interface that will allow data access via internet in real time that includes import of spatial data that enables geographical information system integration;*
- *Development of web applicative solutions that will integrate the central database with digital vector geographical information system data;*
- *Further development of the National Environmental Database under the Ministry of Environment and Physical Planning, with appropriate application modules, that will enable automated and standardized data gathering and automated data validation according to the Law on Environment.*

The recommendation was not implemented.

Recommendation 3.3
The Ministry of Environment and Physical Planning should:

(a) Complete the Rulebook on the Content of the State of Environment Report, supplementing it, in particular, by recommendations from the Guidelines for the Preparation of Indicator-based Environmental Assessment Reports endorsed by the Belgrade Ministerial Conference" Environment for Europe"
(b) Proceed with the preparation of the national environmental assessment report. Furthermore, the MoEPP should start providing methodological guidance and training to municipalities and the City of Skopje to help them publishing local environmental assessment reports.

The recommendation has been partially implemented.

(a) Implemented. The Rulebook was adopted in 2017.
(b) Partially implemented. The Rulebook is not widely applied at the local level and it remains up to the LSGU, as an opportunity, to work and develop local assessment report.

Recommendation 3.4
The Ministry of Education and Science, in cooperation with the Ministry of Environment and Physical Planning, media representatives, other relevant public authorities, and stakeholders, should coordinate the development of a national strategy for education for sustainable development.

The recommendation was not implemented.

Chapter 4: Implementation of international agreements and commitments

Recommendation 4.1:
(a) The Government should establish an interministerial task force to strengthen coordination and to streamline investment activities in the environment sector;
(b) The Ministry of Environment and Physical Planning should strengthen:

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- *Its internal coordination mechanism for the preparation and selection of project proposals and strengthen its capacities in the responsible departments for monitoring and evaluation of the planned projects and investments.*
- *Its capacity in regard to forthcoming EU negotiations, especially in line sectors responsible for preparation of implementation plans for investment heavy directives.*

This recommendation has not been implemented.

Recommendation 4.2:
In line with the introduction of the programme-based approach concept for donor coordination and the principles of the Paris Declaration on Aid Effectiveness, the Ministry of Environment and Physical Planning should establish an up-to-date system for implementation, monitoring and evaluation of environment related projects supported by foreign assistance.

This recommendation has not been implemented.

Recommendation 4.3:
The Government should proceed with preparatory work to assess the possibility and feasibility of accession to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes and its Protocol on Water and Health.

This recommendation has been partially implemented. The country has acceded to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes in 2015. The country has not yet become the party to the Protocol on Water and Health.

Recommendation 4.4
The Ministry of Environment and Physical Planning should:

(a) Strengthen its internal capacity, elaborate action plans or strategies to implement the multilateral environmental agreements and continue to attract international assistance for this purpose in order to ensure the proper implementation of the multilateral environmental agreements which have been recently ratified – i.e. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Protocols to Convention on Long-range Transboundary Air Pollution;
(b) Comply with the reporting obligations under those agreements to which the country is already a Party, specifically the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

This recommendation has been partially implemented.

(a) Partially implemented. The mandate of environmental authorities to ensure the implementation of and compliance with obligations deriving from global and regional agreements has not been matched by increased capacity and financial resources. Currently, in addition, no efficient coordination structure between relevant state institutions charged with the implementation of those obligations is established. Furthermore, there are difficulties with the harmonization of obligations under the high number of ratified MEAs. Also, there is no harmonization of activities with other sectors that have or may have impact on biological diversity.
(b) Not implemented. National reporting under the Basel Convention has not been undertaken in recent years, with the last report being submitted in 2002. This recommendation is partially implemented.

Recommendation 4.5
The Government should:

(a) Comply with its reporting obligations and commitments under the United Nations Commission on Sustainable Development;
(b) Establish the Office for Sustainable Development and provide adequate resources for its activities to support the implementation of the Sustainable Development Strategy;

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Until the establishment of the Office for Sustainable Development, the Ministry of Environment and Physical Planning should ensure that the National Council on Sustainable Development meets at regular intervals and establishes a work plan.

The implementation is on-going. A stand-alone SDG implementation plan 2016–2030 is currently under development. The SDG implementation plan, as well as a 5-year Action Plan are being developed under the overall responsibility of the cabinet of the Vice Prime Minister to mainstream the 2030 Agenda for Sustainable Development at the national level.

Chapter 5. Economic instruments and expenditure for environmental protection

Recommendation 5.1
The Ministry of Environment and Physical Planning, in cooperation with other ministries, should, when further developing the current system, clarify the objectives and goals of environmental policies and use economic instruments to attain these goals by

(a) Defining the pollution, emissions or natural use taxes, fees and charges in such a way that they provide an incentive for the polluters and resource users to change their behaviour.
(b) Full cost recovery is applied wherever possible taking into account the needs of deprived groups of society

This recommendation has been partially implemented.

(a) Partially implemented. The polluter pays principle has not effectively been applied.
(b) Partially implemented. Tariff reform in the water sector entered into effect at the beginning of 2018 to ensure the transition to cost-reflective tariffs for water supply, sewerage and wastewater treatment services. There has also been progress with the application of cost-reflective tariffs in the electricity sector. A major unresolved issue is the application of cost reflective tariffs in the municipal waste sector. The application of targeted affordability provisions remains a challenge.

Recommendation 5.2
The Ministry of Environment and Physical Planning should render the existing laws operational by finalizing the missing rulebooks on air and water emission.

The recommendation has been implemented. Emissions of air pollutants from stationary sources and the discharge of water polluting substances are subject to permits and payment of permit fees.

Recommendation 5.3
To find effective economic instruments, streamline their use, make the fees and charges effective and maintaining the effectiveness the Government should:

(a) Conduct studies and analyses on the effects of environmental economic instruments
(b) Use the existing instruments more efficiently and give the correct environmental incentives by using appropriate base or unit on which the charges are levied on
(c) Strengthen the effect of selected economic instruments by raising the levels of charges
(d) Maintain the effectiveness of the charges by applying the inflation corrections to the charge levels
(e) Use the proceeds from levies and charges to the benefit of protecting the environment, e.g. via Environment Investment Programme.

This recommendation has been partially implemented.

(a) Not implemented.
(b) Partially implemented. See implementation of the recommendations 5.1 and 5.2.
(c) Partially implemented. Excise duty rates on petrol and diesel as well as for the other energy products were raised to be better aligned with EU minimum rates. Excise duty rates on motor vehicles and vehicle registration fees remain to be reformed to take into account environmental parameters such as emission standards and age of vehicles.

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(d) Not implemented; but the overall inflation was moderate.
(c) Implemented. Revenues collected from water abstraction charges are earmarked for financing water sector management; revenue collected from vehicle registration fees are earmarked for financing environmental projects.

Recommendation 5.4
To strengthen its capacity and competence to develop, apply and analyze economic instruments used for environmental protection, the Ministry of Environment and Physical Planning, should:

(a) Enable the respective staff to have access to training in environmental economics and the principles of the use economic instruments and their implementation
(b) Conduct studies and analyses on the effects of environmental economic instruments
(c) Compile a centralized database on the national environmental revenues and expenditures
(d) Consider establishing an Environmental Investment Agency

This recommendation has been partially implemented.

(a) Not implemented.
(b) Implemented. There is general access to national and international studies on these issues.
(c) Implemented. The State Statistical Office maintains a database on environmental expenditures and environmental tax revenues.
(d) Not implemented.

Recommendation 5.5
The Government should develop guidelines to assist municipalities with tariff calculation and provide training to this end.

This recommendation has been partially implemented. The Ministry of Environment and Physical Planning has issued guidelines for the setting of cost-reflective waste tariffs in 2013. However, municipalities have not implanted them due to the lack of training. Based on a water tariff study on a basic methodology for full-cost recovery tariffs, the Energy Regulatory Commission has adopted a corresponding tariff methodology for setting water supply, sewerage and wastewater treatment tariffs as from 2018. The Commission has also adopted cost-reflective tariff rules for the electricity sector.

Chapter 6: Prevention and control of environmental pollution

Recommendation 6.1:
The Ministry of Environment and Physical Planning in cooperation with the Ministry of Economy (Standards Commission) should update environmental standards to comply with the EU legislation

This recommendation has been implemented. All European and international standards relating environment are adopted as national standards.

Recommendation 6.2:
The Ministry of Environment and Physical Planning should develop the National Programme for Emission Reduction and promote its adoption.

This recommendation has been implemented. The National Emission Reduction Plan (NERP) covering all large combustion plants in the country was adopted in 2017.

Recommendation 6.3:
The Ministry of Environment and Physical Planning, in cooperation with the Ministry of Local Self-governance and municipalities should:
(a) Reinforce capacity-building for the IPPC Unit staff on technical aspects;
(b) Carry out a survey of existing installations that need a permit (A or B);
(c) Provide technical assistance to assess IPPC applications.

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This recommendation has been partially implemented.

(a) Partially implemented. Capacity of the Ministry dealing with integrated environmental permits (IEPs) remains stale. However, the Association of LSGUs (ZELS) has created a network comprised by LSGUs to train the staff of the municipalities and the City of Skopje, e.g. training on elaborates for environmental protection, support for the issuance of IEPs.
(b) Implemented. The lists of the installations for which A-type or B-type permit is required are provided in Annex I and Annex II of the Decree on the determination of the activities of the installations for which environmental permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued.
(c) Implemented. In the period 2015–2017 a twinning project MK 11/IB/EN/01/R "Strengthening the administrative capacities on central and local level for transposition and implementing new Industrial Emission Directive 2010/75/EU (IED)" has been implemented. The project has developed drafts of primary and secondary legislation in accordance with IED, has provided training on central and local level, as well as assessment of the economic impact of the implementation of IED.

Recommendation 6.4:
The Government should:

(a) Create incentives, such as low interest loans, tax exemptions, or specific funds and other financial mechanisms (awards, etc) to encourage the application of better practices and introduction of clean and modern technologies to enable enterprises to be compliant with requirements of the environmental legislation;
(b) Consider establishing a revolving fund to which companies would apply for low interest loans.

This recommendation has been partially implemented.

(a) Implemented. The business sector can benefit from profit tax exemptions for investments in machinery and equipment, including green technologies.
(b) Not implemented. There is a possibility for domestic commercial banks to on-lend funds received from foreign donors for financing of energy efficiency measures in the business sector and in the household sector. This facilitates access to loans, notably in rural areas.

Chapter 7: Sustainable management of water resources

Recommendation 7.1:
The Government should consider establishing an Environmental Protection Agency with the responsibilities according to the Law on Waters.

This recommendation has not been implemented.

Recommendation 7.2:
The Government should:

(a) Ensure construction of municipal sewage treatment plants with and sewage collection systems for cities over 100,000 equivalents as a first priority and for municipalities over 10,000 equivalents as a secondary priority. Sewage collection systems should emphasize on separating wastewater from storm water, while the storm water should be returned to the hydrological circle by infiltration. Deteriorating drinking water supply systems and sewage collection systems should be repaired or renewed;
(b) Consider establishing of decentralised sewage treatment systems in rural areas.
(c) Ensure that industry apply appropriate wastewater treatment prior to discharge according to national standards.
(d) Close and remediate all landfills along river banks exposed to flooding and infiltration. (e)Ensure special regime of protection of areas of drinking water supply.

This recommendation has been partially implemented.

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(a) Partially implemented. There are currently 24 waste water treatment plants reported to be in function with a total capacity of 525 000 p.e. (24.5 per cent of the required capacity). Since 2011 a treatment capacity for approximately 258.000 inhabitants has been constructed.
(b) Partially implemented. Wastewater treatment plants are not strictly required under the terms of the Directive as they are serving agglomerations of less than 2,000 p.e.
(c) Not implemented.
(d) Not implemented.

Recommendation 7.3:
The Government should:

(a) Ensure rehabilitation of irrigations systems with high water losses and expansion the percentage of closed pipe systems in relation to open systems.
(b) Provide measure devices at irrigation systems for water quantity intake and water consumption from farmers.
(c) Improve data collection on water consumption by different users.
(d) Apply the water-user and water-discharge-pay-principle for all water users and dischargers according to law on waters. The fees must be transparent and related to expenses of provider.
(e) Raise awareness of saving water measures and provide water saving technical devices.

The recommendation has been partially implemented.

(a) Partially implemented. The Ministry of Agriculture, Forestry and Water Economy developed programmes which are not implemented.
(b) Not implemented
(c) Not implemented
(d) Not implemented
(e) Not implemented.

Recommendation 7.4:
The Government should ensure that:

(a) The flood plains are left open from further buildings and constructions and intensive agriculture.
(b) Agricultural lands exposed to erosion have a sufficient buffer strip to rivers and lakes and cultivation is changed into a manner to protect from erosion.
(c) Flood protection includes precise flood predictions and hydrological forecasts.
(d) Ecological improvements on dams like fish ladders and fish ways are taken into account and the environmental flow below dams is in place and inspected.

The recommendation has not been implemented.

Recommendation 7.5
The Government should:

(a) Twin arrangements with countries having experience in implementation of WFD and river basin management should be sought, together with their administrative, financial and political support to assist the country in its task.
(b) Implement measures according to Water Framework Directive as transposed in the national legislation as well as improvements in water quality for example new sewage treatment plant should be investigated before and after in hydro chemical and especially hydro biological controls of success.

The recommendation has not been implemented.

(a) Implemented. Studies and projects with EU or other countries are carried out.
(b) Not implemented.

Chapter 8: Waste management

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Recommendation 8.1:
The Ministry of Environment and Physical Planning should:

(a) Ensure adequate staffing for the Waste Management Department,
(b) Strengthen compliance to reporting requirements from municipal authorities
(c) Streamline data collection and sharing and related procedures in order to achieve higher efficiency in the use of budget and donor resources in cooperation with the State Statistical Office.

The recommendation has been partially implemented.

(a) Partially implemented: the number of staff of the Department for Waste seems to be sufficient, however, the division and organization of work within the Department is not fully adapted to the needs of the Department. More employees are working on permitting, while there are missing capacities in dealing with strategic, legislative tasks and issues related to collective schemes.
(b) Not implemented. A significant part of municipalities is not reporting regularly on waste despite their legal obligation.
(c) Partially implemented. Data collection is operational and regularly provides data on different aspect of waste generation, but an evidence-based data collection will be only operational once the dumpsites are replaced by landfills with adequate measurement gates. The waste management information system and its online reporting tool is not operational.

Recommendation 8.2:
The Ministry of Environment and Physical Planning should:

(a) Ensure that all municipal disposal sites satisfy licensing requirements for their operation,
(b) Expand the mandate of the state inspectorate to clearly include inspections of municipal disposal sites and organise regular inspections of them.

The recommendation has not been implemented.

Recommendation 8.3:
The Ministry of Environment and Physical Planning should assess the effectiveness and impact of grants by the Ministry of Environment and Physical Planning to municipalities for the closure and/or remediation of illegal dumpsites and municipal disposal sites.

The recommendation is not relevant. The grant scheme has been discontinued since 2002. The closure and remediation of illegal dumpsites and municipal disposal sites are planned to be financed from the projects aiming at establishing regional landfills and regional waste management systems.

Recommendation 8.4:
To ensure the successful transition from municipal to regional landfills, the Government should ensure that:

(a) The legal framework is adapted to adequately cover developments on the ground, especially in relation to regional landfills, including agreements with different consumer groups.
(b) Tariff structures reflect and integrate actual collection and transportation costs, in order not to penalise more distant municipalities
(c) Adequate compliance mechanisms for monitoring and penalising illegal disposal of waste are put in place waste collection.

The recommendation has been partially implemented.

(a) On going. The legal framework is adapted to adequately cover developments on the ground.
(b) Not implemented.
(c) Partially implemented. Monitoring and penalizing of illegal waste disposal is not at satisfactory level.

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Recommendation 8.5:
The Government, in cooperation with local authorities, NGOs and other relevant stakeholders, should:

(a) Develop and implement a national policy on recycling, reuse and reduction of waste,
(b) Promote public awareness campaigns on Reduce Reuse Recycle (RRR) practices.

The recommendation has been partially implemented.

(a) Partially implemented. No national policy for recycling, reuse and reduction of waste exists or even has been prepared. The National Waste Management Strategy for 2008–2020 sets the overall goals and basic principles for RRR.
(b) Implemented. Collective scheme operating companies carried out public awareness campaigns. It is also their interest to raise the amount of separately collected waste to fulfil the national targets. In addition to these campaigns targeting public, there were also campaigns for pupils run by the Ministry of Education and Science.

Recommendation 8.6:
The Government should ensure that an adequate system for medical waste management is in place.

The recommendation has been partially implemented. Medical waste management system is operational and compliant with relevant international and EU regulations. However, the incinerator for medicinal waste operating at Drisla landfill is not upgraded and does not ensure adequate capacity and compliance with relate regulations on the long run.

Chapter 9: Forestry, biodiversity and protected areas

Recommendation 9.1:
The Government should complete a land cadastre.

This recommendation has not been implemented. The Government has not yet commenced the work on the development of a land cadaster. The above is a serious impediment for the protected area re-proclamation process, as well as the preparation and adoption of protected area management plans.

Recommendation 9.2:
The Ministry of Agriculture, Forestry, and Water Economy, the Ministry of Environment and Physical Planning and other relevant stakeholders should:

(a) Begin conducting a national inventory of all forests.
(b) Design and conduct an inventory of all ecosystems and their land cover that would support a comprehensive assessment of the representativeness of the protected areas network.
(c) Add environmental indicators that address sustainable forest management including wildfire control system and adaptation to climate change.

This recommendation has not been implemented. The establishment of the National Forest Inventory and Monitoring Systems on forestry recourses, stipulated by the 2006 Strategy for Sustainable Development of Forestry (valid until 2026), remains a pending task. A national inventory of ecosystems is not yet available, the identification, mapping and assessment of the status of the basic types of ecosystems is planned for 2019–2022 (2018 NBSAP, Actions 16.1.1, 16.1.2, and 16.1.3). Environmental indicators related to forestry include fire damages, but do not address sustainable forest management issues, e.g., wildfire control or climate adaptation measures.

Recommendation 9.3:
The Government, in collaboration with the scientific community, should:

(a) Complete the inventory and assessment of threatened species;
(b) Adopt a Red List of threatened species and commensurate Red Books for protecting and conserving these species.

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This recommendation has not been implemented. The Government has not yet completed the inventory and assessment of the status of threatened species populations, and consequently no national Red List of threatened species has been adopted, and no corresponding Red Book has been published thus far. Completion of the above tasks is planned for 2023 (2018 NBSAP, Action 12.1).

Recommendation 9.4:
The Ministry of Environment and Physical Planning in cooperation with the relevant bodies should:

(a) Complete the reevaluation and re-proclamation of all protected areas in accordance with the Law on Nature Protection.
(b) Continue expanding the system of protected areas in a manner that represents the key habitats important for biodiversity conservation and is supported by local rural communities.
(c) Adopt a management plan for each protected area.
(d) Encourage the implementation of the Emerald Network in line with Natura 2000 guidelines and establish the National Ecological Network, which would include the Emerald Network, other important ecological areas, system of ecological corridors, and proposed areas of conservation.

This recommendation has been partially implemented.

(a) Partially implemented. The re-evaluation and re-proclamation of protected areas has not been completed. A few areas were done but none since 2014. Since 2011 (which is the deadline set up by the 2004 Law on Nature Protection) the progress has been slow; between 2011 and 2015 only six protected areas have successfully been re-proclaimed. The finalization of the protected area revalorization and re-proclamation is planned for 2023 (2018 NBSAP, Action 11.1.2).
(b) Partially implemented. Some work has been done, but there have been no new areas notified yet. Since 2011 the national protected area network decreased in size by 4,575.95 ha, despite the increase in number of protected areas (from 81 in 2011 to 86 in 2014). Ten new monuments of nature were designated, but within the same period the number of strict nature reserves, nature parks, and protected landscapes decreased.
(c) Partially implemented. The Ministry of Environment and Physical Planning has not adopted management plans for each protected area. At December 2018, management plans are in force for three sites; two national parks (Galičica, Pelister) and one nature park (Ezerani). Draft management plans were prepared for one national park (Mavrovo), five monuments of nature (Lake Prespa, Matka Canyon, Tikvesh, Smolare, and Koleshino Waterfalls), and one multipurpose area (Jasen), but cannot be adopted prior to the completion of the re-proclamation procedure for the area concerned. The adoption of management plans for national parks and/or other protected areas is planned to be completed by 2023 (2018 NBSAP, Action 11.4.2), hence simultaneously with the finalization of the revalorization and re-proclamation process.
(d) On going. The preparatory works for the establishment of the national ecological network (including ASCIs identified under the national Emerald Network, and taking into account the Natura 2000 guidelines) are ongoing. However, the establishment of the National Ecological Network, through the adoption of MAK-NEN and its incorporation into planning documents, is delayed (it was expected in 2018 according to the 2018 NBSAP, Action 10.5), while the identification of potential Natura 2000 sites (SCIs and SPAs) is currently planned to be completed by 2022 (2018 NBSAP, Action 11.2).

Recommendation 9.5:
The Government should strive to increase funding for management of protected areas according to the Law on Nature Protection and also continue developing the legal and economic framework to diversify funding options for national parks and other protected areas.

This recommendation has not been implemented. Even though the 2004 Law on Nature Protection indicates the State Budget as a possible source of funding for protected area management (also for Public Institutions - National Parks), protected areas most often operate on self-financing basis, and depend on the revenues from either the visitation, or the use of their natural resources, supplemented by external funding sources (e.g., EU funds, foreign donors).

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Chapter 10: Human health and the environment

Recommendation 10.1:
The Government should:

(a) Strengthen the central environment and health function and coordination within the Ministry of Health;
(b) Allocate appropriate human and financial resources to environmental health;
(c) Promote research and systematic sharing of data and information with the aim of contributing to an integrated environment and health information system.

The recommendation has been partially implemented.

(a) Not implemented.
(b) Not implemented.
(c) Implemented. An intersectoral group on air quality meets when there is a pick of pollution and provides the Government with actions and measures to be taken.

Recommendation 10.2:
The Government should:

(a) Update the national environmental health action plan 2 in line with current legislation and circumstances and/or develop a children's environmental health action plan developed, in line with the adoption of the declaration on environment and health at the Parma Ministerial Conference;
(b) Revise urban plans and processes (e.g. transport, construction, urban planning etc), with the aim to improve respiratory health and reduce noise disturbance;
(c) Strengthen the application, control and financial obligations of employers in implementing occupational health measures.

The recommendation has been partially implemented.

(a) Not implemented.
(b) Not implemented.
(c) Partially implemented. The legislation is put in place, but few companies are implemented occupational health measures.

Recommendation 10.3:
The Ministry of Health should:

(a) Manage hospital waste and promote the implementation of hazardous waste management practices according to EU regulations;
(b) Ensure drinking water quality control, in particular in rural areas.

The recommendation has been partially implemented.

(a) See the implementation of the recommendation 8.6.
(b) Implemented. Drinking water quality monitoring is conducted for public water supply systems by regional centres for public health. Control monitoring of municipal public water supply systems is conducted by Institute of Public Health periodically. The access to safe drinking water in rural areas estimates show increase from 81 per cent in 2000 up to 90 per cent followed by a steady decrease as of 2010.

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Annex II

PARTICIPATION OF THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA IN MULTILATERAL ENVIRONMENTAL AGREEMENTS

Worldwide agreements		Former Yugoslav Republic of Macedonia	
Year		**Year**	**Status**
1958	(GENEVA) Convention on the Continental Shelf		
1958	(GENEVA) Convention on Fishing and Conservation of the Living Resources of the High Seas		
1958	(GENEVA) Convention on the Territorial Sea and the Contiguous Zone		
1958	(GENEVA) Convention on the High Seas		
1960	(GENEVA) Convention concerning the Protection of Workers against Ionising Radiations (ILO 115)		
1961	(PARIS) International Convention for the Protection of New Varieties of Plants	2011	Ac
1963	(VIENNA) Convention on Civil Liability for Nuclear Damage	1994	Su
	1997 (VIENNA) Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage		
1968	(LONDON, MOSCOW, WASHINGTON) Treaty on the Non-Proliferation of Nuclear Weapons (NPT)	1995	Su
1971	(RAMSAR) Convention on Wetlands of International Importance Especially as Waterfowl Habitat	1995	Su
1971	(GENEVA) Convention on Protection against Hazards from Benzene (ILO 136)	1991	Ra
	1992 Fund Protocol		
1972	(PARIS) Convention concerning the Protection of the World Cultural and Natural Heritage	1997	Su
	1996 (LONDON) Protocol		
1972	(LONDON, MOSCOW, WASHINGTON) Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and on their Destruction	1997	Su
1972	(GENEVA) International Convention for Safe Containers		
1973	(WASHINGTON) Convention on International Trade in Endangered Species of Wild Fauna and Flora	2000	Ac
	1979 (BONN) Amendment	2000	At
	1983 (GABORONE) Amendment		
1974	(GENEVA) Convention concerning Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents (ILO 139)	1991	Ra
1977	(GENEVA) Convention on Protection of Workers against Occupational Hazards from Air Pollution, Noise and Vibration (ILO 148)	1991	Ra
1979	(BONN) Convention on the Conservation of Migratory Species of Wild Animals	1999	Ac
	1991 (LONDON) Agreement on the Conservation of Populations of European Bats (EUROBATS)	1999	Ac
	1995 (THE HAGUE) Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)	2000	Ac
1980	(NEW YORK, VIENNA) Convention on the Physical Protection of Nuclear Material	1996	Su
1981	(GENEVA) Convention Concerning Occupational Safety and Health and the Working Environment (ILO 155)	1991	Ra
1982	(MONTEGO BAY) Convention on the Law of the Sea	1994	Su
	1994 (NEW YORK) Agreement related to the Implementation of Part XI of the Convention	1994	Ra
1985	(GENEVA) Convention Concerning Occupational Health Services (ILO 161)	1991	Ra
1985	(VIENNA) Convention for the Protection of the Ozone Layer	1994	Su
	1987 (MONTREAL) Protocol on Substances that Deplete the Ozone Layer	1994	Su
	1990 (LONDON) Amendment to Protocol	1998	Ra
	1992 (COPENHAGEN) Amendment to Protocol	1998	Ra
	1997 (MONTREAL) Amendment to Protocol	1999	Ac
	1999 (BEIJING) Amendment to Protocol	2002	Ac
	2016 (KIGALI) Amendment to Protocol		

1986	(GENEVA) Convention Concerning Safety in the Use of Asbestos (ILO 162)	1991	Ra
1986	(VIENNA) Convention on Early Notification of a Nuclear Accident	1996	Su
1986	(VIENNA) Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	1996	Su
1989	(BASEL) Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1997	Ac
	1995 Ban Amendment	2004	Ra
	1999 (BASEL) Protocol on Liability and Compensation	2000	Si
1990	(GENEVA) Convention concerning Safety in the use of Chemicals at Work (ILO 170)		
1990	(LONDON) Convention on Oil Pollution Preparedness, Response and Cooperation		
1992	(RIO DE JANEIRO) Convention on Biological Diversity	1997	Ac
	2000 (MONTREAL) Cartagena Protocol on Biosafety	2005	Ra
	2010 (NAGOYA) Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization		
	2010 (NAGOYA - KUALA LUMPUR) Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety		
1992	(NEW YORK) United Nations Framework Convention on Climate Change	1998	Ac
	1997 (KYOTO) Kyoto Protocol	2004	Ac
	2012 (DOHA) Doha Amendment to the Kyoto Protocol		
	2015 (PARIS) Paris Agreement	2018	Ra
1993	(PARIS) Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction	1997	Ac
1994	(VIENNA) Convention on Nuclear Safety	2006	Ac
1994	(PARIS) United Nations Convention to Combat Desertification	2002	Ac
1997	(VIENNA) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2010	Ac
1997	(NEW YORK) Convention on the Law of Non-navigational Uses of International Watercourses		
1997	(VIENNA) Convention on Supplementary Compensation for Nuclear Damage		
1998	(ROTTERDAM) Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2010	Ac
2001	(STOCKHOLM) Convention on Persistent Organic Pollutants	2004	Ra
2001	(LONDON) Convention on Civil Liability for Bunker Oil Pollution Damage		
2003	(GENEVA) WHO Framework Convention on Tobacco Control	2006	Ac
2013	(KUMAMOTO) Minamata Convention on Mercury	2014	Si

Ac = Accession; Ad = Adherence; Ap = Approval; At = Acceptance; De = Denounced; Si = Signature; Su = Succession; Ra = Ratification.

Regional and subregional agreements		**Former Yugoslav Republic of Macedonia**	
Year		**Year**	**Status**
1957	(GENEVA) European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)	1997	Su
1958	(GENEVA) Agreement - Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts	1998	Su
1968	(PARIS) European Convention - Protection of Animals during International Transport (revised in 2003)		
1969	(LONDON) European Convention on the Protection of the Archaeological Heritage (revised in 1992, Valletta Convention)	2006	Ra
1976	(STRASBOURG) European Convention for the Protection of Animals Kept for Farming Purposes	1994	Su
1979	(BERN) Convention on the Conservation of European Wildlife and Natural Habitats	1998	Ra
1979	(GENEVA) Convention on Long-range Trans-boundary Air Pollution	1997	Su
	1984 (GENEVA) Protocol - Financing of Co-operative Programme (EMEP)	2010	Ac
	1985 (HELSINKI) Protocol - Reduction of Sulphur Emissions by 30%	2010	Ac
	1988 (SOFIA) Protocol - Control of Emissions of Nitrogen Oxides	2010	Ac
	1991 (GENEVA) Protocol - Volatile Organic Compounds	2010	Ac
	1994 (OSLO) Protocol - Further Reduction of Sulphur Emissions	2014	Ac
	1998 (AARHUS) Protocol on Heavy Metals	2010	Ac
	1998 (AARHUS) Protocol on Persistent Organic Pollutants	2010	Ac
	1999 (GOTHENBURG) Protocol to Abate Acidification, Eutrophication and Ground-level Ozone	2014	Ac
	2009 (GENEVA) Amendments to the Text and to Annexes I, II, III, IV, VI and VIII to the 1998 Protocol on Persistent Organic Pollutants		

	2009 (GENEVA) Amendments to Annexes I and II to the 1998 Protocol on Persistent Organic Pollutants		
	2012 (GENEVA) Amendment of the text and annexes II to IX to the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone and the addition of new annexes X and XI		
	2012 (GENEVA) Amendments to the Text of and Annexes Other than III and VII to the 1998 Protocol on Heavy Metals		
1991	(ESPOO) Convention on Environmental Impact Assessment in a Transboundary Context	1999	Ac
	2001 (SOFIA) First Amendment		
	2003 (KIEV) Protocol on Strategic Environmental Assessment	2013	Ra
	2004 (CAVTAT) Second Amendment		
1992	(HELSINKI) Convention on the Protection and Use of Transboundary Watercourses and International Lakes	2015	Ac
	1999 (LONDON) Protocol on Water and Health		
	2003 (MADRID) Amendments to Articles 25 and 26	2015	Ac
1992	(HELSINKI) Convention on the Transboundary Effects of Industrial Accidents	2010	Ac
	2003 (KIEV) Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters		
1993	(OSLO and LUGANO) Convention - Civil Liability for Damage from Activities Dangerous for the Environment		
1994	(LISBON) Energy Charter Treaty	1998	Ra
	1994 (LISBON) Protocol on Energy Efficiency and Related Environmental Aspects	1998	Ra
	1998 Amendment to the Trade-Related Provisions of the Energy Charter Treaty		
1998	(AARHUS) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	1999	Ac
	2003 (KIEV) Protocol on Pollutant Release and Transfer Registers	2010	Ra
	2005 (ALMATY) Amendment on GMOs		
1998	(STRASBOURG) Convention on the Protection of Environment through Criminal Law		
2000	(FLORENCE) European Landscape Convention	2003	Ra

Ac = Accession; Ad = Adherence; Ap = Approval; At = Acceptance; De = Denounced; Si = Signature; Su = Succession; Ra = Ratification.

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