UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

2nd ENVIRONMENTAL PERFORMANCE REVIEW

The former Yugoslav Republic of Macedonia

UNITED NATIONS

ECE/CEP/164

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

ENVIRONMENTAL PERFORMANCE REVIEWS

The former Yugoslav Republic of Macedonia

Second Review

UNITED NATIONS
New York and Geneva, 2011

Environmental Performance Reviews Series No. 34

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The United Nations issued the first Environmental Performance Review of the former Yugoslav Republic of Macedonia (Environmental Performance Reviews Series No. 17) in 2002.

This volume is issued in English only.

ECE/CEP/164

UNITED NATIONS PUBLICATION
Sales No E.12.II.E.1
ISBN: 978-92-1-117054-2
e-ISBN: 978-92-1-055182-3
ISSN 1020-4563

Foreword

Environmental Performance Reviews (EPRs) for countries in transition were initiated by environment ministers at the Second Ministerial Conference "Environment for Europe" (Lucerne, Switzerland, 1993). Subsequently, the UNECE Committee on Environmental Policy decided to make the EPRs a part of its regular programme. The first cycle of reviews covered 24 countries of the UNECE region.

At the Fifth Ministerial Conference "Environment for Europe" (Kyiv, 2003), the ministers affirmed their support for the EPR Programme, in particular as an important instrument for countries with economies in transition, and decided that it should continue with a second round of reviews. This support was recently reconfirmed at the Sixth Ministerial Conference "Environment for Europe" (Belgrade, 2007). This second round, while taking stock of the progress made since the first review, puts particular emphasis on implementation, integration, financing and the socio-economic interface with the environment.

Through the peer review process, EPRs also promote dialogue among UNECE member States and the harmonization of environmental conditions and policies throughout the region. As a voluntary exercise, an EPR is undertaken only at the request of the country concerned.

The studies are carried out by international teams of experts from the region working closely with national experts from the reviewed country. The teams also benefit from close cooperation with other organizations in the United Nations system, for instance the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), as well as with the Organisation for Economic Co-operation and Development (OECD), World Health Organization (WHO) and other organizations.

This is the second EPR of the former Yugoslav Republic of Macedonia published by UNECE. The review takes stock of progress made by the country in the management of its environment since the country was first reviewed in 2002. It assesses the implementation of the recommendations in the first review (annex I). This second EPR also covers ten issues of importance to the country related to policymaking, planning and implementation, the financing of environmental policies and projects, and the integration of environmental concerns into economic sectors, in particular the sustainable management and protection of water resources, pollution prevention and control, waste management, forestry, biodiversity and protected areas, and health and environment issues.

I hope that this second EPR will be useful in supporting policymakers and representatives of civil society in their efforts to improve environmental management and to further promote sustainable development in the former Yugoslav Republic of Macedonia, and that the lessons learned from the peer review process will also benefit other countries of the UNECE region.

Ján Kubiš
Executive Secretary
Economic Commission for Europe

Preface

The second Environmental Performance Review (EPR) of the former Yugoslav Republic of Macedonia began in May 2010 with a preparatory mission. During this mission, the final structure of the report was discussed and established. A review mission took place from 25 January to 3 February 2011. The team of international experts taking part included experts from Bulgaria, Germany, Portugal and the United States of America, as well as from the secretariats of the United Nations Environment Programme (UNEP), the World Health Organization (WHO) and the United Nations Economic Commission for Europe (UNECE).

The draft EPR report was submitted to the former Yugoslav Republic of Macedonia for comment and to the Expert Group on Environmental Performance for consideration in April 2011. During its meeting on 4 May 2011, the Expert Group discussed the report in detail with expert representatives of the Government of the former Yugoslav Republic of Macedonia, focusing in particular on the conclusions and recommendations made by the international experts.

The EPR recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the special session of the UNECE Committee on Environmental Policy on 26 May 2011. A high-level delegation from the former Yugoslav Republic of Macedonia participated in the peer review. The Committee adopted the recommendations as set out in this report.

The Committee on Environmental Policy and the UNECE review team would like to thank the Government of the former Yugoslav Republic of Macedonia and its experts who worked with the international experts and contributed their knowledge and assistance. UNECE wishes the Government of the former Yugoslav Republic of Macedonia further success in carrying out the tasks involved in meeting its environmental objectives, including the implementation of the recommendations in this second review.

UNECE would also like to express its appreciation to the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and to the German Federal Environment Agency for their support to the EPR Programme through the Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia; to the Governments of Portugal and the United States of America for having delegated their experts for the review; to UNEP and WHO, and the United Nations Development Programme for their support of the EPR Programme and this review.

Team of experts for the second EPR of the former Yugoslav Republic of Macedonia, 2011.

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Information cut-off date: 30 May 2011

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LIST OF ABBREVIATIONS

BAT	Best available technology
BOD	Biological oxygen demand
CARDS	Community Assistance for Reconstruction, Debt and Stabilization (EU)
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CORINE	Coordination of information on the environment
CPH	Centre of Public Health
DEM	Data exchange module
DNA	Designated National Authority
EEA	European Environmental Agency
EIA	Environmental impact assessment
EIB	European Investment Bank
EIP	Environmental Investment Programme
EIS	Environmental information system
EPA	Environmental Protection Agency
GEF	Global Environmental Facility
GHG	Greenhouse gas
GIS	Geographic information system
GMM	Genetically modified microorganism
GMO	Genetically modified organism
HMA	Hydrometeorological Administration
IBA	Important Bird Area
IEP	Integrated environmental permit
IFI	International financial institution
IPA	Important Plant Habitat
IPA	Instruments for Pre-Accession Assistance (EU)
IPPC	Integrated pollution prevention and control
LEAP	Local Environmental Action Plan
LSGU	Local self-government unit
LWM	Law on Waste Management
MAC	Maximum allowable concentration
MDGs	Millennium Development Goals
MEA	Multilateral environmental agreement
MEIC	Macedonian Environmental Information Centre
MoAFWM	Ministry of Agriculture, Forestry and Water Management
MoEPP	Ministry of Environment and Physical Planning
MoH	Ministry of Health
MoTC	Ministry of Transport and Communications
NBIS	National Biodiversity Information System
NEAP	National Environmental Action Plan
NEHAP	National Environmental Health Action Plan
NPAA	National Plan on Adoption of the Acquis Communautaire
NSEA	National Strategy for Environmental Approximation
NSSD	National Strategy for Sustainable Development
NSSEI	National Strategy on Environmental Investments
NWFP	Non-wood forest product
NWMP	National Waste Management Plan
ODS	Ozone-depleting substance
PA	Protected Area
POP	Persistent organic pollutant
PWC	Public water company

RIA	Regulatory impact assessment
RIMSYS	River Monitoring System Project
RRR	Reduce, reuse and recycle
SAA	Stability and Association Agreement (EU)
SAP	Stabilization and Association Process (EU)
SEE	South-East Europe
SEI	State Environmental Inspectorate
SENPI	State Environment and Nature Protection Inspectorate
SIS	Spatial Information System
SoE	State of the environment
SSHI	State Sanitary and Health Inspectorate
SSO	State Statistical Office
UNCCD	United Nations Convention to Combat Desertification
UNCT	United Nations Country Team
UNDAF	United Nations Development Assistance Framework
VOC	volatile organic compound
WFP	Water Framework Directive (EU)
WMD	Waste Management Department
WWTP	Wastewater treatment plant

SIGNS AND MEASURES

..	not available
-	nil or negligible
.	decimal point
°C	degree Celcius
$	dollar
Ci	Curie
GWh	gigawatt-hour
ha	hectare
kg	kilogram
kJ	kilojoule
km	kilometre
km^2	square kilometre
km^3	cubic kilometre
kgoe	kilogram of oil equivalent
ktoe	kiloton of oil equivalent
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
l	litre
m	metre
m^2	square metre
m^3	cubic metre
MW	megawatt
PJ	petajoule
ppm	parts per million
s	second
t	ton
TJ	Terajoule
toe	ton of oil equivalent
tofe	ton of fuel equivalent
TWh	terawatt-hour

CURRENCY CONVERSION TABLE

Exchange rates (period average) Monetary unit: Denar

Year	denar/US$	denar/Euro
2000	65.75	60.73
2001	68.01	60.91
2002	64.49	60.98
2003	54.16	61.26
2004	49.31	61.34
2005	49.27	61.30
2006	58.73	61.19
2007	44.64	61.17
2008	41.83	61.52
2009	43.94	61.28
2010	46.38	61.48

Source: UNECE common database accessed in June 2011

EXECUTIVE SUMMARY

The first Environmental Performance Review (EPR) of the former Yugoslav Republic of Macedonia was carried out in 2002. This second review intends to measure the progress made by the country in managing its environment and in addressing upcoming environmental challenges since the first EPR.

To fight its difficult economic situation, after gaining its independence in 1991, the former Yugoslav Republic of Macedonia carried out regulatory and structural reforms in order to correct its macroeconomic instability and facilitate the transition to a market economy. The Government's stabilization programme, initiated at the end of 1994 with the assistance of financial institutions and international donors, succeeded in restoring economic stability. In the mid-1990s gross domestic product (GDP) growth began to pick up. GDP grew 15.4 per cent between 1996 and 2000, but this development was disrupted by the 2001 internal conflict.

The Government pursued a range of economic reforms which were aimed at stimulating economic growth and improving the living standards of the population through development of the private sector, improvement of the investment climate and greater job creation. GDP growth again turned positive in 2002, and a strong 4.5 per cent annual average growth continued until 2008. Sustained growth and economic stability with low inflation rates came to an end during the exceptional year 2008, with the international financial crisis. The country experienced sudden and steep recession in 2009, when GDP went from 5 per cent to 1 per cent growth, and ended the year with decreasing foreign direct investment (FDI), reduced credit, and a drop in exports.

Policymaking framework for environmental protection and sustainable development

The country has made considerable progress in strengthening environmental legislation and policies since the first EPR. Due to the high priority placed on transposing EU legislation, the former Yugoslav Republic of Macedonia has put emphasis on the drafting and updating of its legislation and policies to meet EU requirements.

This progress, however, means that most of the already limited financial and human resources are mainly devoted to making rather than implementing policy. Indeed, the recent EU assessment as part of the integration process confirms that the country is moving in the right direction, but a lot still needs to be done to improve implementation and to meet EU environmental standards. For example, the National Strategy for Sustainable Development (NSSD) represents a valuable guiding document for the country, but has not yet been implemented.

A positive development is the ongoing decentralization process. This process, among other things, increases the responsibilities of municipalities in environmental management. One way to ensure the effectiveness of decision-making at the local level is through the adoption and updating of the necessary strategic and planning documents at the local level, especially Local Environmental Action Plans.

At the same time, increased responsibilities are often matched only by limited resources and capacity at the local level. This mismatch is unlikely to be bridged in the future, unless the Ministry of Environment and Physical Planning (MoEPP) is able to ensure qualitative supervision and assistance to municipalities during the decentralization process.

Compliance and enforcement mechanisms

Since the first EPR, the Government has focused on improving compliance by, among other things, strengthening enforcement. To this end, the Environmental Inspectorate and other enforcement bodies have been strengthened, a credible enforcement record is being created and efforts are made to ensure that fines and other sanctions are effectively applied.

In accordance with the Law on Environment, various instruments for environmental management have been introduced since the first EPR. These include environmental impact assessment (EIA), strategic environmental assessment (SEA), integrated pollution prevention and control (IPPC), prevention and control of major accidents involving hazardous substances and environmental monitoring systems.

Further work is needed in order to apply effectively these instruments. To improve the quality of SEA and EIA documentation, professional services preparing such documentation need further specialized training courses and practical exercises. Environmental concerns are still not covered in the phase of identification of the interaction between project activities and impacts on human, economic and social life.

EIA follow-up activities need to be strengthened in order to better monitor and evaluate the impacts of a project or plan. The list of control actions could include site visits to verify documents and assess whether measures taken are effectively preventing, reducing or eliminating adverse environmental impacts.

The current trend of accelerating the decentralization process puts additional stress on local government. Therefore, in order to strengthen the national environmental management system, it is important not only to reinforce the central administration but also to increase the implementation capacity of local authorities and to develop solid links between the two.

Monitoring, information, public participation and education

Since the first EPR the country has made progress in developing a centralized, strategic monitoring programme; in further developing a national environmental information system; and in improving collection of data on discharges of pollutants. Specifically, the former Yugoslav Republic of Macedonia strengthened the legal and regulatory basis for environmental monitoring, especially on air pollution, with the adoption of the Law on Environment and laws and by-laws on specific environmental media. At the same time, it increased the number of stations under the State Automatic Monitoring System for Air Quality from 4 to 15. These stations measure key air pollution parameters, including ground-level ozone, fine particles ($PM_{2.5}$), coarse particles (PM_{10}), ozone (O_3) and heavy metals. A total of 18 hydrological stations that monitor nearly all surface water going to neighbouring countries were upgraded and automated.

However, more still needs to be done by the Government as a whole and by individual public authorities to make environmental monitoring an effective information and policy tool. For example, the number of air quality stations in the country is insufficient, further modernization of water monitoring stations is necessary and a lake monitoring programme is yet to be adopted. There is a general lack of data on urban wastewater quality and on the quantity and quality of industrial wastewater. Observation and examination of groundwater is also not performed systematically.

Furthermore, coordination and cooperation between institutions managing environmental data in the country remains unsatisfactory. Many institutions manage a large amount of small, unconnected and unsynchronized databases. No harmonized criteria and standards for the design of environmental information systems and reliability of data management methods have been established. There is no real-time access to data via the Internet.

At the same time, despite the requirements of the Law on Environment and obligations under the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), the country has not published a national state-of-the-environment (SoE) report since 2000. Although, pursuant to the same law, the publication of regional SoE reports remains optional, no such reports appear to have been published or planned so far. MoEPP is currently revising a Rulebook on the Content of the State of Environment Report that was adopted in 2006 but has never been applied.

The country has also made some progress in the area of environmental education and training. For example, the Law on Environment has provisions to ensure that every curriculum for primary or secondary schools contains teaching methods and issues in the field of environment. In practice, however, mandatory and optional training in environmental issues in schools are insufficiently linked and coordinated, precluding the interdisciplinary approach necessary for understanding environmental issues. There is no training in the State universities of

specialists in environmental areas, such as environmental monitoring, management and law. Moreover, the country does not yet have an institutional platform where the Ministry of Education and Science and MoEPP could discuss environmental education issues.

Implementation of international agreements and commitments

Since the first EPR the former Yugoslav Republic of Macedonia has taken major steps to strengthen its participation in international environmental cooperation. It has acceded to nearly all important global and regional environmental agreements. Despite the progress achieved, the country has not yet ratified the Convention on the Protection and Use of Transboundary Watercourses and International Lakes. Ratification of the Convention is important for the protection of the country's transboundary waters, especially as regards the cross-border aspects of water management in the river basin of the Vardar River and Lake Dojran.

However, some challenges remain to effectively implement and comply with the obligations of some multilateral environmental agreements (MEAs), especially those that were recently ratified. MoEPP has been designated as the national focal point and competent authority for most of the ratified regional and global environmental conventions. However, some of the departments and units responsible for specific environmental conventions do not always have sufficient capacity to ensure compliance with the conventions' obligations.

In order to accelerate the progress of the accession process, the Government recognizes the importance of maximizing the impact of available external assistance, increasing its effectiveness and ensuring greater ownership by further strengthening the national coordination mechanism. EU assistance through the Instrument for Pre-Accession Assistance (IPA) has become a predominant source of development assistance in recent years. The environment is a priority area in IPA planning. In 2008 and 2009, donor meetings were held and it was proposed to introduce a programme-based approach (PBA) in five selected sectors, including agriculture and environment, in order to further strengthen and improve coordination mechanisms aimed at increasing the effectiveness of external assistance.

Yet challenges still remain in the coordination and streamlining of investment activities in the environment sector. Coordination between ministries and stakeholders regarding planning and selection of environmental projects in line with national priorities is rather poor. Within MoEPP, internal coordination among the departments is often weak when it comes to the development of project proposals. Units within MoEPP which are responsible for planning, implementation, monitoring and evaluating projects do not have sufficient capacity to deal with the growing number of projects.

Economic instruments and expenditure for environmental protection

Since the first EPR, the country has made some progress by introducing a large number of economic instruments in its primary and secondary legislation. There is a need, however, to improve the way these instruments are used. Some of the environmental economic instruments do not provide an incentive for environmental behaviour change. Many instruments are not effective either because the charge base is not correct — the charge level is either too low or non-existent — or the charge is not collected at all.

Often, payments are merely used as revenue collection instruments, even when there might be a possibility to change consumption patterns at the same time. The excise tax based on the value of the car is not an environmental tax, although it could become one if the tax were based on engine emissions. Similar problems hinder the environment-related pricing processes for water provision and wastewater.

An important issue is to make the provisions on economic instruments of existing laws operational. The Ambient Air Law has provisions for air emission charges, but the air emissions charge rulebook, where charges are defined, is missing and as a result the otherwise well-defined environmental law cannot be used.

Municipalities have to make important and complicated decisions when deciding on the water and waste charge tariff levels. They also have to deal with social and equality concerns while taking into consideration the local

political situation when issuing tariffs. Municipalities do not necessarily have sufficient expertise to solve issues like this on their own.

Prevention and control of environmental pollution

The 2005 Law on Environment, with its provisions on integrated pollution prevention and control, has contributed to a considerable improvement in environment management. Before the introduction of the Law, there were no permits for air emissions or for solid waste production. Companies dealing with chemicals had permits for import and use, but not for disposal of products. Following the adoption of the law, companies need to have an integrated environmental permit (IEP) describing obligations, such as limit values of emissions into the air or water, as well as solid waste management procedures, a deadline for adjustments to operational plans to comply with legislation, and reporting obligations.

Despite this positive step, the capacity at the central and local level to process applications and monitor their implementation is still limited, and as a result the applications of some larger emitters (energy production and metal industry) are not yet processed. Some MoEPP units have no staff to meet their obligations, while others have very limited staff. Municipalities have extended responsibilities on environmental management, but are even more understaffed. A great deal of effort is needed to strengthen central, regional and municipal administrative structures.

Furthermore, major remaining legal gaps to implement IPPC are the development of regulations on water and the updating of Maximum Allowable Concentrations (MACs) for emissions into air and water from point sources. There are also some major strategies and action plans to be developed, namely those established in the Laws on Ambient Air and on Water and Soil. Sectoral legislation needs to be updated to support the required adjustments to the operational plan. A good example to follow is the legislation on waste, which has been improved in the last couple of years and is quite developed.

Sustainable management of water resources

The country has developed an appropriate framework for sustainable water management, through the reorganization of MoEPP and the adoption of the 2008 Law on Water and of the second National Environmental Action Plan (NEAP), accompanied by strategy papers, recommendations and support reports from international institutions. Thus, environmental concerns have been embedded in legislation for the most part. Implementation is the next step that is required to achieve integrated water resources management based on the principles of sustainable development for river basins and transboundary international cooperation.

Effective water governance requires adequate implementation and enforcement capacity at the national and local levels. Efforts to reach this objective are undermined by capacity deficiencies in key institutions and the fragmented management of water between sectors and institutions. Although the water management sector of MoEPP has been strengthened, there are still overlapping responsibilities and competencies between different ministries and a lack of institutional coordination.

Wastewater treatment from point sources (municipalities and industry) remains a big challenge because only 10 per cent of existing settlements have access to mechanical and biological treatment of wastewater. Bigger cities have no sewage treatment plants. The average rate of wastewater collection in sewerage collection systems is around 60 per cent for households.

In response to climate variability and climate change, water uses, especially those for agriculture, may increase, while total national water availability (especially in the Vardar River as the main catchment area in the country) is expected to decrease.

Waste management

Significant progress in waste management has been achieved since the first EPR, particularly in the development of the policymaking and legal framework, with the adoption of the 2004 Law on Waste Management, the National

Waste Management Strategy for the period 2008–2020 and the National Waste Management Plan for the period 2009–2015. Additionally, a considerable amount of secondary legislation has been adopted. Waste management is viewed both by the Government and MoEPP as one of the two top environmental priorities of the country, alongside water management. Significant institutional progress has been achieved with the establishment of the Department of Waste Management under MoEPP, although it remains understaffed.

Despite the progress achieved, there are still major challenges affecting waste management. Unregulated/unlicensed municipal disposal sites, illegal dumpsites and industrially contaminated hot spots pose major threats to public health and the environment. Also high on the priority list remain organizational and staffing issues, cost recovery and financing of services and investments, and most phases of technical management from collection to final disposal of hazardous and non-hazardous waste. Shortcomings in the generation and sharing of reliable data on all aspects of waste management undermine efforts for the formulation and implementation of an effective evidence-based waste management policy.

At the time of the second EPR review all but one of the country's municipal disposal sites operated without licences or any sort of supervision or monitoring. Extensive parts of the country's rural areas and villages are not covered by any waste collections services or, if they are, coverage is not frequent. The majority of medical waste, even if separated at source, is disposed at municipal disposal sites, with Drisla landfill being the only exception. At the same time, such disposal sites are also grounds for economic activity by the informal sector and, often, human communities are developed in the vicinity of these dumpsites. Furthermore, some municipal landfills are inappropriately situated, for example on riverbanks and transboundary waters, thus causing adverse impacts, including transboundary pollution.

One possible long-term solution for this problem is to move from municipal-level to regional-level landfills. This is an approach currently followed by the Government: two concession-based and two public regional landfills were in advanced negotiations at the time of the second EPR. Waste collection, transportation services and landfill operation are expected to be run by the private sector. The successful establishment and operation of the first regional landfills are particularly important as they may set an example for the remaining municipalities in the country.

Forestry, biodiversity and protected areas

Since the first EPR, the former Yugoslav Republic of Macedonia has made much progress in establishing a comprehensive legal framework and strategies for sustainably managing its forests, conserving biodiversity and protecting its natural heritage. New laws and rulebooks are filling major legal, regulatory and policy gaps, e.g., the Law on Nature Protection, the Law on Forests and the Law on Hunting.

The national goals to sustainably manage State-owned forests and to certify national high forests will not be realized until the necessary land and resource information systems are established and functioning. These include a real estate cadastre of State-owned lands and a comprehensive forest inventory. To remain up to date, this inventory should be accompanied by the introduction of an ongoing integrated monitoring programme to track conditions of forest resources, including forest health, timber volume, wildlife habitat, non-wood forest products, and other key resources.

The only current environmental or sustainable development indicator pertaining directly to forest conditions is "Forest Fires". A broader suite of indicators is needed that monitor trends of stressors (including impacts of climate change); the condition, health, and productivity of forests; non-wood forest products; and social and economic conditions related to forest management, including forestry sector jobs. These would establish the baseline data for practising adaptive management, which is the primary mechanism for achieving sustainable forest management.

The country has not yet prepared its National Red List of Threatened Species and Red Books, even though these are identified as top priorities in the Biodiversity Strategy and Action Plan. The scientific community does not appear to agree on the status of these species. This may be due to a lack of sufficient data for each of the many

endemic and threatened species. Temporary protection measures may not be affording adequate protection of the invaluable biodiversity the country currently supports.

The funding of Protected Areas is inadequate and unstable. The Law on Nature Protection established a set of potential funding sources; however, these are very limited. Furthermore, the system of Protected Areas is not yet fully compliant with the Law on Nature Protection. Areas for improvement include re-evaluation of existing Protected Areas to conform with International Union for Conservation of Nature (IUCN) categories, the development of management plans for all Protected Areas within two years of proclamation and the establishment of a system of Protected Areas to ensure the representativeness of the country's diverse habitat types and ecosystems.

Human health and the environment

Improvements in key health indicators have been reported in the country since the first EPR. Yet, the national evidence base that links health and environmental risks is too weak to be useful for policymakers to set priorities. Public funding for research in environmental health is limited, and data on exposure is seldom linked to data on health outcomes, resulting in very limited risk assessment activities. The country reports on only 11 of the 29 indicators in the WHO Environment and Health Information System database.

At the same time, the burden of disease from environmental health risks is estimated to have been as high as 15 per cent of the total burden of disease in the country in 2004. Particular attention is needed in response to environmental hot spots, waste management (including medical waste), health service hygiene and maintenance, air pollution, water and wastewater, as well as systematic information elaboration and sharing on environmental exposures and health effects.

In the national health institutes, activities are not yet based on longer-term sustainable programmes. Through EU financing mechanisms, the opportunity to raise awareness of the importance of environmental health in projects and initiatives exists. However, funding opportunities from other sectors on issues that are relevant to environmental health are rarely explored. For example, health services adjustments, renovations of infrastructure and new constructions could benefit from clean development schemes and higher energy efficiency.

INTRODUCTION

I.1 Physical context

The former Yugoslav Republic of Macedonia is a landlocked country in the middle of the southern Balkan Peninsula. 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 territory of the country is 25,713 km^2.

The country's physical geography is defined by the central Vardar River valley and high mountain massifs along its 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. More than 30 per cent of the land area is situated above 1,000 m and 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, bisecting the entire country, passing through the capital Skopje and finally flowing to the Aegean Sea., is the longest and the most important river in the country. 301 km of its 388 km total length are within the country's borders.

Three large natural tectonic lakes, Lake Ohrid, Lake Prespa and Lake Dojran, lie on the southern border. Lake Ohrid, situated at an altitude of 693 m, is the deepest (depth 286 m) lake in the Balkans, and has a total area of 349 km^2. Two-thirds of the Lake belongs to the former Yugoslav Republic of Macedonia and the rest to Albania. Isolated by surrounding mountains, Lake Ohrid contains a unique collection of plants, animals and endemic species. Lake Prespa (altitude 845 m), also a transboundary lake, is situated to the east of Lake Ohrid. More than two-thirds of its 274 km^2 of total area belongs to the former Yugoslav Republic of Macedonia, while the rest is shared between Albania (49 km^2) and Greece (47 km^2). Lake Dojran, located in the south-east of the country, is the smallest of these three major lakes. The 43 km^2 of is area are shared between the former Yugoslav Republic of Macedonia (27 km^2) and Greece.

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. In 1963, Skopje was heavily damaged by a major earthquake, which killed over 1,000 people and destroyed about 80 per cent of its buildings.

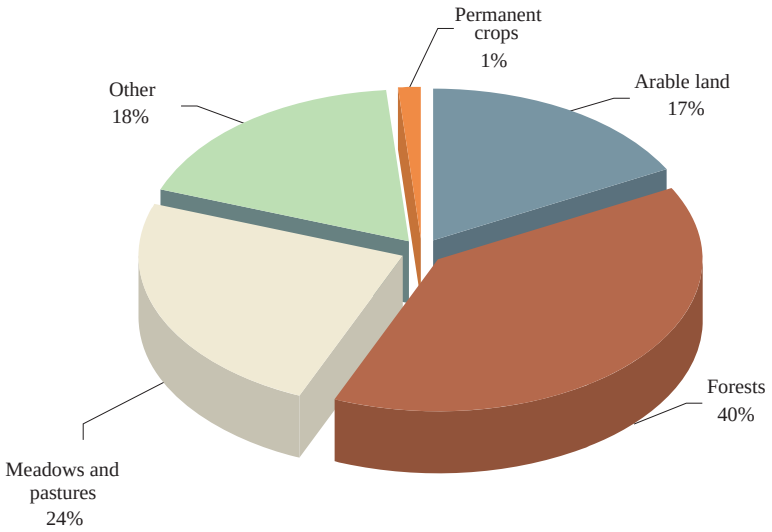
The country is also at the junction of two main climatic zones between the Mediterranean and continental climates. Along the valleys of the Vardar and Strumica rivers the climate is temperate Mediterranean, characterized by long and dry summers and mild and rainy winters. The interior of the country 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 oscillations: 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.

Forests cover 40 per cent of the country, as compared with 24 per cent for meadows and pastures. About 17 per cent of the land is arable, and 1 per cent is under permanent crops (Figure I.1). Agricultural output is diversified; the leading position in the planted arable land areas belongs to grains (mainly wheat). The rest is shared between vegetable growing, vineyards, fruit and tobacco cultivation.

The former Yugoslav Republic of Macedonia does not have any sources of crude oil or of natural gas. It is strongly dependent on energy imports, relying on other countries to cover its entire demand for oil and petroleum products, natural gas as well as electricity. On the other hand, the country has significant mineral resources such as iron, copper, lead, zinc and nickel.

Figure I.1: Land use



Source: FAO Statistical database, 2008.

I.2 Human context

In 2009, the current population was 2.05 million and the average population density was 79 inhabitants per km^2, a value well below the average of 124 inhabitants per km^2 in the UNECE Region. The territorial distribution of the population is uneven. Some 67 per cent of the population lives in urban areas, mainly in the five largest cities: in the capital Skopje (pop. 530,258), in Kumanovo (pop. 107,211), in Bitola (pop. 93,646), in Tetovo (pop. 89,513) and in Prilep (pop. 76,427). (table I.1)

According to the latest 2002 census, 64 per cent of population are Macedonians and 25 per cent are Albanians, while Roma, Serbs and Turks taken together make about 8 per cent of the total population. Most of the inhabitants of the former Yugoslav Republic of Macedonia are Christian Orthodox (64 per cent), the second biggest group consists of Muslims (33 per cent), while Catholic, Protestant or other smaller religious groups account for the rest of the population. The official and most widely spoken language is Macedonian, which uses the Cyrillic alphabet and belongs to the Eastern branch of the South Slavic language group. Other spoken languages include Albanian, Roma, Serbian, Turkish and Vlach. According to a 2001 amendment to the Constitution, any language spoken by at least 20 per cent of the citizens is also an official language, together with its alphabet. At the moment, only Macedonian and Albanian fulfil this requirement.

Life expectancy has been on the rise, and in 2008 average life expectancy at birth was 74.2, broken down as 76.5 and 72.4 expectancy for women and men, respectively. Infant mortality decreased significantly, falling almost 40 per cent between 2000 and 2008, from 17.2 per 1,000 live births in 2000 to 10.5 in 2008. Over the same period, the total fertility rate dropped from 1.9 to 1.5 children per woman, reaching the average level for the UNECE Region. This trend, combined with the birth rate decrease from 12.7 per 1,000 in 2000 to 10.9 in 2008, has brought significant changes in the ageing and age structure of the population. As a result, in the period 2000-2008, the share of the 0-4 age bracket out of the total population decreased from 22 per cent to 18 per cent, while the share of the over-65 age bracket increased somewhat.

The adult literacy rate was 97 per cent in 2008. Primary education is free and the length of compulsory education is 12 years. The latest primary and secondary school enrolment ratios were 92 and 84 per cent, respectively.

The Human Development Index (HDI), calculated by the United Nations Development Programme (UNDP), combines indicators of life expectancy, educational attainment and income into a composite human development index. It is expressed as a value between 0 and 1, where the value 1 represents the best attainable human development. The country's HDI value for 2010 was 0.701, positioning the country at 71 out of 169 countries within the high human development category. The country's HDI value remains below the average of 0.717 for European and Central Asian countries, but close to Bosnia and Herzegovina's (68th) and Georgia's (74th) results.

Table I.1: Demographic and health indices, 2000–2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Population (in millions)	2.026	2.034	2.031	2.026	2.032	2.036	2.040	2.043	2.046	2.053
Birth rate, crude (per 1,000)	12.7	12.4	12.0	11.7	11.5	11.3	11.1	11.0	10.9	..
Total fertility rate	1.9	1.7	1.8	1.8	1.5	1.5	1.5	1.5	1.5	..
Life expectancy at birth (in years)	73.0	73.2	73.3	73.5	73.6	73.8	73.9	74.1	74.2	..
Life expectancy at birth: female (in years)	75.2	76.1	75.6	75.7	75.8	75.9	76.2	75.8	76.5	..
Life expectancy at birth: male (in years)	70.8	70.9	70.6	70.9	71.5	71.6	71.7	71.8	72.4	..
Percentage of population under 15 years old	22.3	21.8	21.3	20.7	20.2	19.7	19.2	18.7	18.3	17.9
Percentage of population above 64 years old	10.1	10.4	10.6	10.7	10.9	11.0	11.2	11.3	11.5	11.6
Death rate, crude (per 1,000 people)	8.4	8.5	8.5	8.6	8.7	8.8	9.0	9.1	9.2	..
Mortality rate, infant (per 1,000 live births)	17.2	..	..	..	..	12.6	11.8	11.1	10.5	..

Source: UNECE database, World Bank database, 2010.

I.3 Historical and economic context

Ohrid Agreement

The former Yugoslav Republic of Macedonia remained largely peaceful during the wars that took place in the region following Yugoslavia's dissolution and the country was mostly spared from violence, except in 2001, when it suffered a short internal conflict. The conflict broke out in March 2001 and ended with international facilitation five month later, in August 2001, when the Ohrid Framework Agreement was signed. The main elements of this Agreement provided an expansion for the rights of ethnic Albanians, through recognition of new official languages, equitable representation of minorities in the public administration, and mechanisms to protect their interests in the legislative process. Considerable efforts and progress have been made by successive governments in implementing the Agreement.

Towards European Union membership

Relations between the European Union (EU) and the former Yugoslav Republic of Macedonia have progressively evolved over the years. European integration has been at the top of the Government's agenda ever since the independence of the country, and membership of the European Union remains a strategic goal of the country.

In 2001, relations between the country and the EU started to be developed in the context of the Stabilization and Association Process (SAP). As a long-term commitment to the region, both in terms of political effort and financial and human resources, SAP enabled a progressively closer relationship with the EU. Based on incentives and obligations, this contractual relationship includes the Stabilization and Association Agreement (SAA) and an assistance programme: the Community Assistance for Reconstruction, Development and Stabilization (CARDS) programme. SAA, which was signed in April 2001 and entered in force three years later, is based on the gradual implementation of a free trade area and reforms in order to move forward EU standards.

In December 2005, considering substantial progress made in implementation of both, Ohrid and SAA agreements, the European Council granted candidate status for EU membership to the former Yugoslav Republic of Macedonia, albeit without a clear date to start the negotiations. The country is the third country to emerge from the former Yugoslavia that has become a candidate, after Slovenia (already a member since 2004) and Croatia.

Photo I.1: Castle in Skopje

Parallel to the EU negotiations, the former Yugoslav Republic of Macedonia became a full World Trade Organization (WTO) member in April 2003. The country has been seeking NATO membership since 1999, when it joined the Membership Action Plan.

Economy

The former Yugoslav Republic of Macedonia was the least developed of the Yugoslav Republics. After gaining its independence in 1991, the country faced contracted Gross Domestic Product (GDP), high unemployment and hyperinflation. To fight the dismal economic situation country carried out regulatory and structural reforms which were aimed at correcting the macroeconomic instability and facilitate the transition to a market economy. The Government's stabilization programme, initiated at the end of 1994 with the assistance of financial institutions and international donors (International Monetary Fund and World Bank), succeeded in restoring economic stability. In the mid-l990s the GDP growth began to pick up. GDP grew 15.4 per cent between 1996 and 2000, but this development was disrupted by the 2001 internal conflict.

The 2001 Ohrid Agreement enabled the cessation of hostilities and although direct damages from the conflict were limited, its effects to economy were clear. The decreased trade, intermittent border closures, increased deficit, spending on security needs, and investor uncertainty caused the economic output to contract by 4.5 per cent in 2001. Foreign direct investment into the country dropped markedly from US$ 447 million in 2001 to US$ 106 million in 2002 and the current account deficit reached almost 10 per cent of the GDP.

Government pursued a range of economic reforms which were aimed at stimulating economic growth and improving the living standards of population through development of the private sector, improvement of the investment climate and greater job creation. GDP growth turned positive in 2002 and a strong 4.5% annual average growth continued until the 2008. Sustained growth and economic stability with low

inflation rates came to the end during the exceptional year 2008 with the international banking crisis. The country experienced sudden and steep recession in 2009 when GDP went from 5 per cent growth to 1 per cent decrease ended with decreasing FDI, reduced credit, and a drop in exports.

Several reforms were launched, focused on improving the conditions for doing business, mainly through reduced bureaucratic procedures and substantial tax-cut reforms (a flat tax rate of 10 per cent and zero taxation on reinvested profit). One of the immediate effects of these reforms was that country's ranking position in World Bank's "ease of doing business"-index jumped from 92nd in 2006 to 32nd in 2010 (out of 185 countries) and with only 4 days necessary to register a company hence recognized as the third overall "top reformer" country .

In spite of satisfying results in attracting investments, slight job creation and high unemployment rate remain major concerns. The registered unemployment rate was 32 per cent in 2008, while UNECE region average rate was 8 per cent and 16 in the other ex-Yugoslavia countries.

The former Yugoslav Republic of Macedonia is a small, open economy, relatively well integrated into international trade. Its gross domestic product (GDP) is about US$ 9.3 billion, and the exports-to-GDP ratio reached to 39 per cent in 2009. Agriculture and industry used to be the most important sectors in the past, but services have now gained importance attaining 61 percentage-share of the total GDP in 2009. (Figure I.2)

The country exports relatively low value-added products: food, beverages tobacco, textiles, iron and steel, while its imports includes mostly machinery, automobiles, chemicals and fuels. In 2009, over half (53.6 per cent) country's total trade was with the EU 27 countries and its top-5 trading partners were Germany, Greece, Italy, Russia and Serbia.

1.4 Political organization and institutions

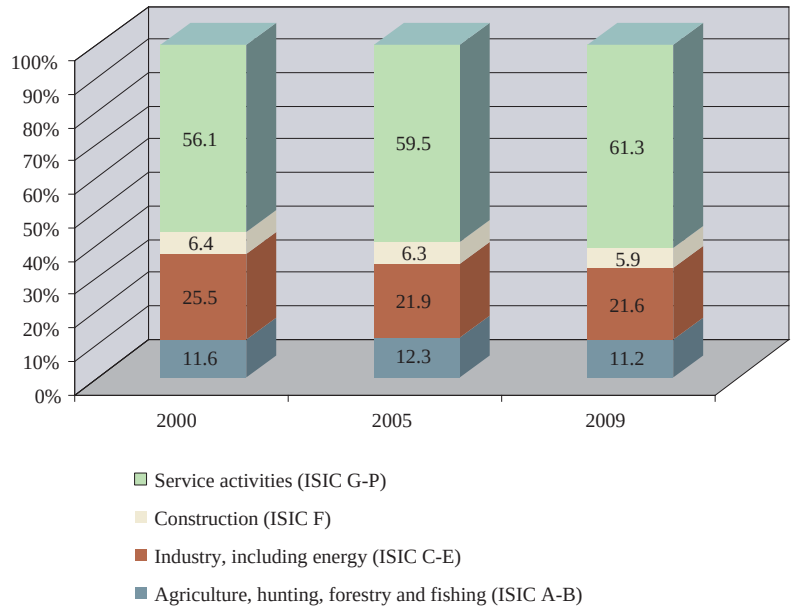
The former Yugoslav Republic of Macedonia is a multi-party parliamentary democracy, its political system is based on the division of power in the executive, legislative and judicial branches.

Executive branch

Executive power of the former Yugoslav Republic of Macedonia is divided between the President and the Government.

The President is the head of State and represents the country at home and abroad. The President nominates a negotiator, a mandator, to form the government. The President is also the commander in chief of the national armed forces. He is elected through direct and general elections, by a majority-vote open to each citizen above 18 years old. The current length

Figure I.2: GDP by sector in 2000, 2005 and 2009, as percentage of total GDP



Source: UNECE Statistical database, 2010.

Table I.2: List of Ministries

Ministry of Defense
Ministry of Interior
Ministry of Justice
Ministry of Foreign Affairs
Ministry of Labor and Social Policy
Ministry of Finances
Ministry of Education and Science
Ministry of Economy
Ministry of Agriculture, Forestry and Water Supply
Ministry of Transport and Communications
Ministry of Health
Ministry of Culture
Ministry of Local Self-Government
Ministry of Environment and Physical Planning

Source: The former Yugoslav Republic of Macedonia Government's website

of the mandate is five-years after which president can be re-elected only once. Last presidential elections were held in April 2009, next ones will be in 2014. The President may negotiate international agreements on behalf of the country, appoints and recalls national ambassadors and performs other duties defined by the Constitution.

The Government is constituted by the Prime Minister, 4 Deputy Prime Ministers and 18 others ministers among which 3 are currently without portfolios. 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 stating the budget.

Legislative branch

The country has a unicameral parliamentary system. The Parliament or Assembly, the "Sobranie" of 120 members, holds the legislative power and is the representative body of the citizens. The representatives are elected from party lists at general and direct elections and serve four year terms. The organization and functioning of the Assembly are regulated by the Constitution and by the Rules of Procedure. The last election took place in 2008, the next will be held in 2012.

The Assembly is situated in Skopje and its powers include passing laws and resolutions, ratifying international agreements and amending the Constitution (the President, the Government, at least 30 members of Parliament or 150,000 citizens may propose changes to the Constitution). The Assembly also appoints the judges of the Constitutional Court, the members of the Judicial Council, judges of the ordinary courts and the ombudsman.

Judicial branch

The judicial power is independent and exercised in compliance with the Constitution, domestic legislation and ratified international agreements. The judiciary system consists of 27 courts of the first instance and 3 courts of appeal, a Supreme Court, an Administrative Court, a Constitutional one and a Judicial Council.

The Supreme Court is the highest court in the country, it is 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. It is 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 three branches of government. The Court also

decides on the answerability of the President of the Republic. Its 9 judges are appointed by the Assembly and serve 9 years, without the possibility of re-election.

The State Judicial Council is an independent body of the judicial system. It governs the ethical conduct of judges, proposes to the Assembly the election or dismissal of judges and evaluates their work. The Council is composed of 15 members; the Minister of Justice and the President of the Supreme Court are automatically appointed. 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.

Table I.3: Selected economic indicators, 2000–2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP (% change over previous year)	4.5	-4.5	0.9	2.8	4.1	4.1	4.0	6.1	5.0	-0.9
GDP at current prices, millions of NCUs	242,859	240,241	250,647	258,369	272,462	295,052	320,059	364,989	411,728	409,100
GDP at current exchange rate, millions of US$	3,694	3,532	3,887	4,771	5,526	5,988	6,568	8,177	9,843	9,311
GDP at current prices and PPPs, millions of US$	12,249	12,088	12,542	13,053	14,282	16,044	17,919	19,961	22,101	22,238
GDP per capita at current prices, NCUs	119,847	118,060	124,071	127,476	134,053	144,853	156,876	178,601	201,147	199,308
GDP per capita at current prices and PPPs, US$	6,045	5,940	6,209	6,440	7,027	7,877	8,783	9,768	10,797	10,834
Inflation, GDP deflator (% change over the previous year)	8.2	3.6	3.4	0.3	0.8	3.8	3.3	7.4	7.5	0.3
Consumer price index, (% change over the previous year)	6.6	5.2	2.3	1.1	-0.6	-0.7	3.3	2.8	7.2	-0.6
PPI (% change over the previous year, annual average)	9.1	2.8	-0.6	0	0.9	3.2	3.9	1.6	8.1	-6.2
Registered unemployment (% of labour force, end of period)	32.2	30.5	31.9	36.7	37.2	37.3	36.0	34.9	33.8	32.2
Current account balance (millions of US$ at current exchange rate)	-98.0	-236.0	-377.0	-184.0	-453.0	-158.0	-56.0	-247.0	-1,210.0	..
Current account balance (millions of NCUs at current exchange rate)	-6,443.4	-16,051.3	-24,311.4	-9,964.9	-22,337.3	-7,784.7	-2,729.0	-11,025.0	-50,611.4	..
Current account balance (as % of GDP)	-2.7	-6.9	-9.9	-4.0	-8.4	-2.7	-0.9	-3.1	-12.7	..
Foreign Direct Investment in the country (millions of US$ at current exchange rate)	215.0	447.0	106.0	118.0	323.0	97.0	424.0	320.0	598.0	..
Cumulative Foreign Direct Investment (millions of US$ at current exchange rate)	215.0	662.0	768.0	886.0	1209.0	1306.0	1730.0	2050.0	2648.0	..
Foreign Direct Investment abroad (as % of GDP)	-0.02	0.03	0.00	0.01	0.02	0.05	0.00	-0.01	-0.14	..
Foreign currency reserves (in convertible foreign currencies, end of period, millions of US$)	..	..	..	..	..	1,278.1	1,643.7	1,917.4	2,000.4	1,905.3
Gross external debt, millions of US$	1,548	1,494	1,641	1,840	2,789	2,997	3,308	4,139	4,678	5,505
Gross external debt, millions of NCUs	102,177	101,116	105,332	99,755	137,957	148,150	160,646	184,814	195,776	242,701
Exports of goods and services (% of GDP)	48.9	42.9	38.2	38.1	39.9	44.1	46.6	52.4	50.9	39.2
Imports of goods and services (% of GDP)	63.1	56.3	57.8	54.5	60.1	61.1	64.5	70.8	76.2	60.8
Ratio of gross debt to exports (%)	85.7	98.6	110.5	101.2	126.5	113.5	108.1	96.6	93.4	150.8
Ratio of gross debt to GDP (%)	41.9	42.3	42.2	38.6	50.5	50.1	50.4	50.6	47.5	59.1
Exchange rate (XR), NCU per US$	66.01	67.68	64.19	54.21	49.46	49.43	48.56	44.65	41.85	44.1
Population (millions)	2.026	2.034	2.031	2.026	2.032	2.036	2.04	2.043	2.046	2.053

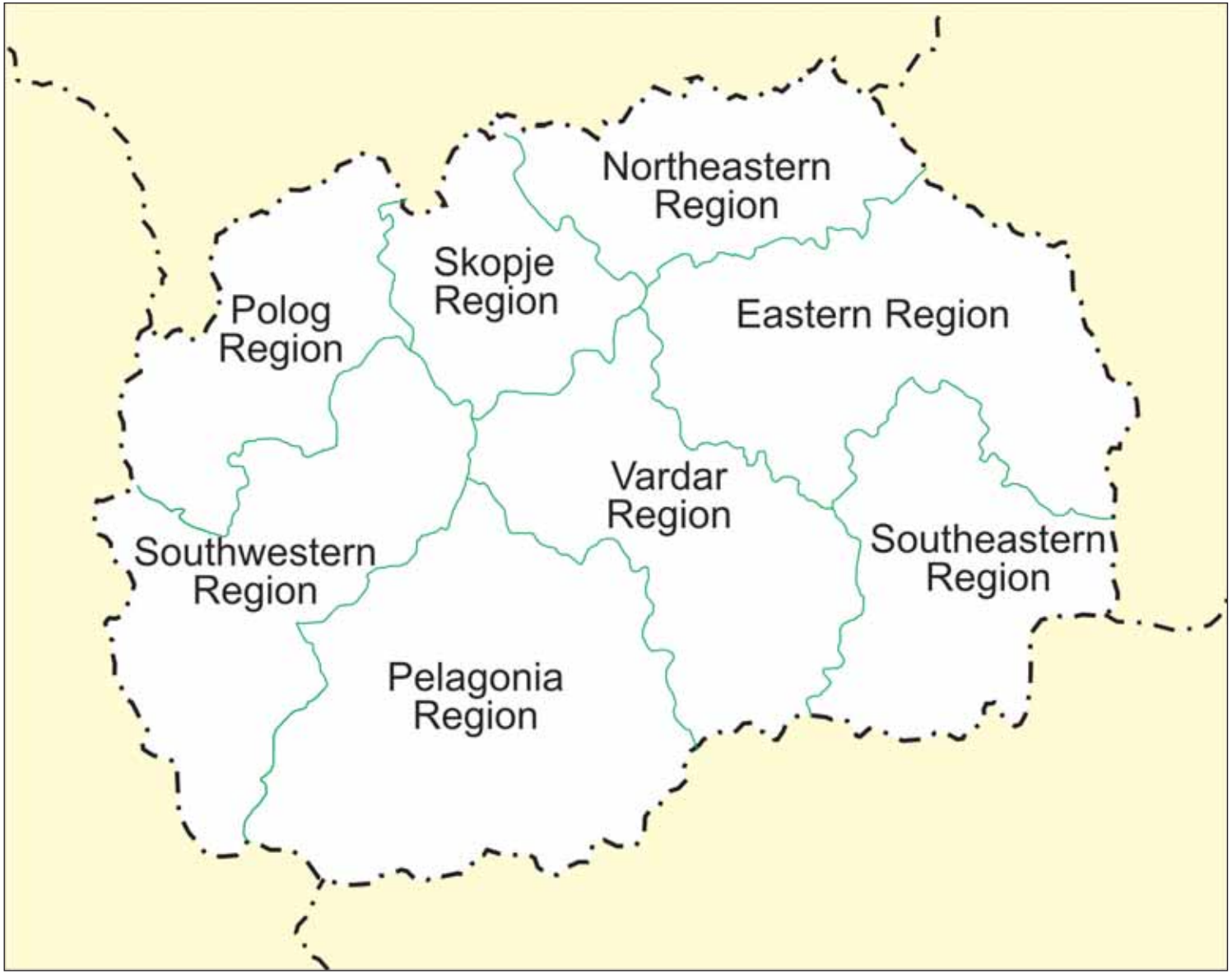
Source: UNECE database, World Bank database, National Bank of the former Yugoslav Republic of Macedonia

Map I.1: 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.

Map I.2: Statistical regions of the former Yugoslav Republic of Macedonia



Source: MoEPP, 2011.

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

PART I: POLICYMAKING, PLANNING AND IMPLEMENTATION

Chapter 1

POLICYMAKING FRAMEWORK FOR SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL PROTECTION

As it was described in the first EPR of the former Yugoslav Republic of Macedonia, the Constitution of the country contains provisions regarding environment protection (Articles 8 and 43). Since that time, environmental protection in the country has been subject to the process of decentralization. Amendment XVII of the Constitution of the former Yugoslav Republic of Macedonia specifies that "in units of local self-government, citizens directly and through representatives, participate in decision-making on issues of local relevance particularly in the fields of public services, urban and rural planning, and environmental protection."

1.1 Legislation

Since the first EPR, the country has developed an impressive amount of new legislation, particularly within the framework of its accession process to the European Union (EU) (Annex IV). Overall, environmental legislation is in place in several areas but still needs further development, in particular with regard to enabling legislation. The country faces difficulties with implementation and enforcement legislation due to limited financial resources, especially at the local level.

Law on Environment

The 2005 Law on Environment contains the fundamental environmental protection principles, which provide a basis for determining procedures for management of the environment and which are common to all laws regulating specific environmental media.

The Law, which owing to its extension and scope can be almost considered as a Code for the Environment, replaces the previous Law of 1996 with a completely new approach. The new Law contains provisions on all sectors covered by EU legislation on the environment transposing it into national legislation, namely, access to environmental information, public participation in environmental decision-making, environmental monitoring, procedures for environmental assessment, integrated pollution, prevention and control, prevention and control of accidents involving hazardous substances and environmental liability. In addition, the Law contains provisions with regard to monitoring the work of the local self-government units (LSGU) from the aspects of LSGU jurisdiction and organizational set-up, particularly that of the inspection authorities. Finally, the Law also contains the legal basis for adoption of the subsidiary legislation needed to implement the Law's provisions and thus necessary for the direct harmonization and implementation of EU environmental legislation.

Including several aspects of environmental protection in a single Law is definitely a valid approach, as it helps ensure coherence within the system and facilitate access to legislation for citizen who do not have to read several documents but can find most of the information in one. The Law is complemented by and further specified in several thematic rulebooks and by-laws relating to the different topics covered.

Law on Nature Protection

The 2005 Law on Nature Protection contains provisions which transpose the EU principles for nature and forestry. The protection of nature is carried out through biological and landscape diversity protection and natural heritage protection, in and outside protected areas. With regard to species, the Law regulates the issues of the introduction of non-indigenous species into nature and the reintroduction of extinct indigenous species; trade in endangered and protected wild species of plants, fungi and animals; protection of species enjoying protection under international agreements; the keeping and breeding of wild animal species in captivity; as well as special protection of designated wild species included in the Red Book and Red Lists.

The Law also regulates the temporary protection of endangered wild species until their designation, via the adoption of a separate act by the Ministry of Environment and Physical Planning (MoEPP). The Law specifies the prohibited activities related

to strictly protected wild species. These include indigenous wild species that are endangered or rare, but not threatened with extinction in the territory of the country; wild species that are not endangered, but could easily be confused, due to their appearance, with certain endangered species; and wild species for which the relevant manner of protection is stipulated under international agreements. The use of protected wild species may be carried out in a manner and to an extent that will not endanger the favourable status of their preservation. The Law also regulates the protection of habitats and ecosystems, incorporating provisions that provide for the favourable status of habitat preservation, habitat monitoring, preservation of environmentally important areas, and establishment of an environmental network. The protection of habitats and ecosystems is carried out through measures and activities for nature protection, sustainable use of natural resources and spatial planning and development. The protection of ecosystems is provided through habitat type protection, via determination of the status of their preservation.

In addition to the laws, an expert basis for nature protection is also provided in the Strategy for Biological Diversity Protection in the country and the Action Plan adopted by the Government in January 2004. The Strategy defines an integrated approach towards protection and sustainable use of the components of biological diversity, while the Action Plan presents specific meansures that need to be implemented for the purpose of achieving the goals set in the Strategy.

Law on Waste Management

The legal framework for waste management has been established by the 2004 Law on Waste Management. Relevant EU directives have been transposed in the Law on Waste Management (LWM), also taking into consideration the local conditions. The Law regulates issues concerning the framework Policy on Waste; on Hazardous Waste; on Landfills; Waste Oils; PCB/PCT; on Incineration of Non-hazardous Waste; on Incineration of Hazardous Waste; on Hazardous Substances Containing Batteries and Accumulators; on Packaging and Packaging of Waste; on End-of life Vehicles; and on Waste from the Ttitanium Dioxide Industry. The Law on Waste Management also provides grounds for the adoption of several secondary legislation acts (Chapter 8).

The Law incorporates the basic principles of waste management (principle of environmental protection in waste management - waste minimization, precautionary principle, closeness, service universality, “polluter pays” principle, system of deposit, etc.). Waste management, as a public service, is based on the principle of service universality (non-discrimination, sustainability, quality and efficiency, transparency, affordable price and full coverage of the territory).

The issue related to the management of sludge from urban wastewater treatment is regulated in the Law on Water. Moreover, separate laws have been adopted for packaging and batteries and accumulators, the Law on Management of Packaging and Waste Packaging in 2009, and the Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators in 2010. Secondary legislation based on these laws has been adopted as well. In a procedure for preparation is the Law on Electric and Electronic Equipment and Waste from Electric and Electronic Equipment which is expected to be adopted by the end of 2011.

Law on Water

The Law on Water introduces the approach of integrated water management and harmonization of national legislation with the relevant EU legislation. The Law covers all aspects of water management: water resource use and allocation; protection against and control of pollution; protection against harmful effects of water; and sustainable water management planning.

The Law on Water is a framework law and contains general standards and principles, rights, obligations and powers of State administrative bodies, local self-government units, as well as the rights and obligations of legal entities and natural persons in the domain of water management. The Law regulates issues referring to all surface and ground waters; water management facilities and services; institutional set-up and water management financing, as well as conditions for, manner of and procedures for the use or discharge into water, and international cooperation in the area of water management. The Law on Water establishes legal grounds for the adoption of the relevant secondary legislation (Chapter 7).

Law on Chemicals

The new Law on Chemicals, adopted in 2010, establishes a system for chemicals management and for the preparation of the former Yugoslav Republic of Macedonia for the REACH chemical management system. Moreover, the Stockholm Convention on Persistent Organic Pollutants; the Vienna Convention for the Protection of the Ozone Layer; and the

Montreal Protocol on Substances That Deplete the Ozone Layer are integral parts of the national legal framework. Relevant strategic and planning documents in this area (National Implementation Plan for the Reduction and Elimination of VOCs; State Programme for the Gradual Elimination of Ozone-layer-depleting Substances) contain strategic goals for management with chemicals in the territory of the country (Chapter 4).

Law on Protection from Noise in the Environment

The 2007 Law on Protection from Noise in the Environment gives MoEPP general competence for the reduction of noise in the environment, but also specifies that some activities are to be implemented jointly, in cooperation and consultation, or through some planning document to be adopted in accordance with other authorities, especially the other ministries, City of Skopje and LSG units.

Law on Ambient Air Quality

The 2004 Law on Ambient Air Quality establishes the system for the management of ambient air quality. It includes activities directed towards avoidance, prevention or alleviation of the hazardous effects of air pollution through assessment of ambient air quality; determination of emission limit values and quality values; planning of ambient air protection; establishment of ambient air monitoring and information systems; as well as protection of ambient air quality in the course of emission control from stationary or diffuse sources of pollution.

The Law on Ambient Air Quality defines the obligation for the adoption of the National Plan for Ambient Air Protection and the Programme for Ambient Air Pollution Reduction and Quality Improvement. The Law also stipulates an obligation for the adoption of programmes for pollution abatement and ambient air quality improvement in the territory of local self-government units, in zones and agglomerations where one or more pollutants are found to be above the air quality limit values, plus the margin of tolerance, or such values are between the air quality limit values and the air quality limit values, plus the margin of tolerance.

According to the Law, the Plan and the Programmes should be adopted within six years after the Law enters into force. So far, the country has not complied with this requirement. The elaboration of the National Plan for Emission Reduction and the National Plan for Ambient Air Protection is only planned for 2011. On an annual basis, MoEPP adopts the Programme for the Operation of the Automatic Ambient Air Quality Monitoring Network.

Legislation on Genetically Modified Organisms

The 2008 Law on Genetically Modified Organisms (GMOs) regulates issues regarding biological security, particularly in connection with the management of products containing GMOs and genetically modified micro-organisms (GMMs); intentional release of GMOs in the environment or the release of products that contain GMOs on the market; as well as the import, export and transboundary movement of GMOs and GMMs. Legislation and measures for approval have been established in order to act accordingly with intentional release of GMOs or GMMs and in order to ensure proper assessment of the risk of the approval of experimental or commercial release of GMOs or GMMs into the environment. In order to fully transpose Directive 2001/18/EC of the European Parliament and of the European Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and to repeal Council Directive 90/220/EEC - Commission Declaration, the country will have to take steps for the management of risks arising from the use of GMOs in research or industrial facilities.

MoEPP adopted the National Framework for Biological Safety ensuring the status of biotechnology and the Strategy for the Implementation of the System for Biological Safety in the country. However, no real steps for the implementation of this framework have been taken. Nevertheless, the aspect of implementation of the Law on GMOs depends on the existence of a reference laboratory for detecting the existence of GMOs in products or processes.

The Law on Nature Protection defines the measures and activities necessary to prevent negative effects of GMOs with regard to the sustainable use of biological diversity, human health and the environment. The Law for the Safety of Food, Products and Materials Which Are Exposed to Food contains a definition of food that contains or consists of GMOs, which reads “food produced with application of innovative technology, which is not available for consumption of the general public.” The Law prohibits the production and marketing of unsafe food, but this provision does not concern GMOs. The 1998 Law on Pharmaceutical Medicines, Substances for Additional Treatment and Medical Supplies requires labelling of the external packaging of medicines containing GMOs. In addition, the Law on Environment, the 2005 Law on Plant

Photo 1.1: Skopje-the Capital city

Protection and the 2008 Law on Animal Breeding contain elements concerning GMOs, but without specific expressions where GMOs are mentioned.

1.2 National and Local Action Plans

Second National Environmental Action Plan

The first National Environmental Action Plan, adopted in 1996 as highlighted in the first EPR, was an outdated document for the needs of the country, as a result of which a recommendation was made that a new NEAP should be adopted. Unfortunately, before preparing a new NEAP the country did not carry out an assessment on the implementation status of the first NEAP.

The Government adopted the second National Environmental Action Plan in 2006. The document, prepared by MoEPP in coordination with different ministries, provides general guidelines and directions for the country in the area of environment until 2011. In addition to setting general objectives and goals in different sectors, NEAP also envisages specific measures and actions that need to be implemented in order to achieve said goals.

NEAP represents the Government's approach and response to environmental problems in the country. In the area of environment, the process of EU approximation poses significant requirements for the country, in terms of not only financing but also capacity-building, institutional restructuring and strengthening. As confirmation of this, the Government, through MoEPP, has developed a roadmap for approximation of the area of environment to EU legislation.

NEAP also provides a basis for the local environmental action plans (LEAP), which are developed along the lines of NEAP, taking into consideration the local conditions of each municipality.

On the one hand, NEAP sets the principles and priorities for action by MoEPP, and on the other side it provides a solid basis for proving the relevance of proposed projects and actions for donor assistance, especially by NGOs.

Compared to the first NEAP, the one adopted in 2006 is a completely new document rather than a mere update. In particular, this document also stipulates the necessary instruments for implementation and monitoring of its goals. Despite the relevant provisions, and in particular the plan for annual reporting to the Government on NEAP implementation, there is no actual monitoring of NEAP implementation. This is partly due to a lack of human resources in MoEPP, leading to a lack of communication from relevant bodies (such as other ministries, NGOs, donors) which are supporting NEAP implementation mainly through projects. In fact, MoEPP does not have sufficient capacity to properly monitor NEAP implementation and remain abreast of any NEAP-related activity implemented by other bodies.

Local Environmental Action Plans

As of January 2011, 64 municipalities out 85, including the City of Skopje, had developed local environmental action plans. Most of the four larger municipalities have greater economic and human capacity and have developed their LEAPs, while smaller municipalities are lagging behind in the preparation of this document. There are a number of good examples of Local Environmental Action Plans prepared in the last three years, after the adoption of the Methodology for the preparation of LEAPs by MoEPP, based on Article 64 of the Law on Environment, such as LEAP for the municipalities within the City of Skopje, for example Aerodrom, Ilinden, Gjorce Petrov, and other municipalities, such as Novaci, Vasilevo, Brvenica. Twenty LEAPs prepared by 1998 are particularly outdated since they were developed prior to the preparation of the MoEPP Methodology for the Preparation of LEAPs, based on the DPSIR approach.

The Government and in particular MoEPP is financially supporting the municipalities in the preparation of the LEAPs. In addition to these national resources, the international donor community is active in this field (Chapter 4).

MoEPP has prepared a methodology for LEAP preparation based on the DPSIR approach (Driving forces, Pressures, States, Impacts and, Responses). The methodology is used by municipalities in preparing the LEAP, and it can be seen that in recent years, the quality of LEAPs has improved and they are becoming increasingly relevant.

Box 1.1: LEAP of the Municipality of Aerodrom

The LEAP for the Municipality of Aerodrom was prepared in accordance with the methodology established by the Law on Environment and based on guidelines set out in international documents on environment. During the preparation of the LEAP for the Municipality of Aerodrom, besides the provisions of the sub-legislation on the Methodology for LEAP preparation, the municipality took into account the provisions laid down by the environmental framework laws as well as the Law on Local Self-Government, which determines the competencies of municipalities, including responsibilities for the protection of environment and nature.

The preparation of the LEAP for the Municipality of Aerodrom was financed by the Ministry of Environment and Physical Planning.

- The process of preparing the document has gone through various forms of participation:
- Surveying the public and the major industrial polluters, located in the territory of the municipality and the definition of priority environmental issues;
- Informing the public about the beginning and conduct within the project through TV and radio shows, recorded interviews with the completion coordinator, and publication of the official website of the Municipality of Aerodrom;
- Collecting data from relevant sources, processing them and setting up a database (fill-themed tables DPSIR);
- Holding meetings of working groups and the Local Planning Committee on further steps and preparation of materials;
- Planning and developing the Action Plan;
- Establishing mechanisms for monitoring and evaluating the implementation of the Local Environmental Action Plan.

Based on the assessment, the problems identified and the SWOT analysis, the LEAP sets an implementation plan and lists defined priorities for each of the following areas:

1. Horizontal priority;
2. Thematic area of waste;
3. Thematic area of media pollution: 1. Air Quality; 2. Water management; 3 Noise;
4. Thematic area of quality of life: 1 Urbanization of the municipality; 2.Land use and development of agricultural economy; 3. Biodiversity;
5. Thematic area of strengthening public awareness;
6. Thematic area of application of renewable energy sources.

The document also includes indicators and a plan for monitoring and evaluating the LEAPs

1.3 National strategies and policies

National Strategy Sustainable Development for the period 2010-2030

Since sustainable development is a fundamental EU goal, the former Yugoslav Republic of Macedonia, after being awarded candidate status for EU membership in December 2005, was obliged to prepare a national strategy for sustainable development. In January 2010, the Government adopted the National Strategy for Sustainable Development for the period 2010-2030, which aims at setting out a vision, mission and objectives for economically, socially and environmentally balanced development for the next 20 years.

Based on this Strategy, the Government established the National Council for Sustainable Development, No. 8/2010, which is chaired by the Deputy Prime Minister of the Government responsible for economic issues and composed of representatives of nine State bodies, the Assembly, Academy of Science and Arts, three faculties, the Economic Chamber and NGO DEM, a network of NGOs in the country. In support of the Council's expert, logistical and technical activities, the establishment of an office for sustainable development has been envisaged, with the Ministry of Environment and Physical Planning to carry out these activities in the meanwhile. The Council has not met so far.

The NSSD respects the strategic directions that have already been set in different sectors, but also provides strong cross-cutting links essential for sustainable development. It analyzes the main constraints for making the former Yugoslav Republic of Macedonia sustainable, which are identified as:

- Limited understanding and awareness of, and commitment to, the concepts and principles of sustainable development (SD);
- Partially developed SD supporting policy framework;
- Partially developed SD supporting legal and regulatory framework;
- Weak capacity for the cross-cutting and integrated working approach that SD implies;
- Weak capacity in public organizations and institutions for SD-based strategic work, planning, administration (including processing of SD-based applications and projects), and enforcement;
- Not readily available domestic and foreign funds and investments for SD projects and activities and a weak banking sector in terms of processing SD-based projects;
- Weak engineering and construction capacity for implementing SD-based projects.

Therefore, the Strategy sets two main actions to overcome those constraints:

- Short, medium and long-term objectives, which address the important issue of EU accession in a timely fashion:
- Seven strategic thrusts, which are based on guiding principles and are designed to cover the three main pillars (economic, social and environmental sustainability), namely:

1. Ensuring EU accession, a key issue;
2. Raising awareness and commitment to sustainable development covering all walks of life;
3. Introducing E-government as the key SD implementation tool and the key booster of the commercial process;
4. Streamlining the public sector through organizational development and institutional strengthening based on the concepts and principles of SD, including cross-cutting and integrated strategic and participatory work. This is also to ensure that SD activities and projects can be processed and approved expeditiously;
5. Streamlining the banking, funding and financial infrastructure in the same context, so that investment and running costs are readily available for SD projects and activities;
6. Streamlining the private sector so that the private sector is developing based on SD principles, and that engineering, construction and other supporting private companies have the capacity to plan, design and implement/ construct projects and activities based on the principles of SD;
7. Identifying a number of demonstration and pilot projects early on during implementation of the NSSD. These should be used as practical demonstration of costs and benefits of SD based development. They will function as integrated and good examples in the awareness-building and commitment-raising activities. Furthermore, they will provide guidance and inspiration in relation to the municipalities and the private sector, which will have the main role and functioning in relation to the operational part of making the country sustainable

From the above, it is clear that the Strategy sets a very ambitious goal and provides some principles and guidance on how to achieve it, but still needs to be fleshed out befire it can become fully operational.

National Strategy for the Clean Development Mechanism for the First Commitment Period under Kyoto Protocol, 2008-2012

The Government adopted the National Strategy for the Clean Development Mechanism for the First Commitment Period under Kyoto Protocol, 2008-2012 in February 2007.

The goal of the National Strategy for the Clean Development Mechanism (CDM) is to facilitate transfer of investment and technologies through CDM for implementation of projects that reduce greenhouse gas (GHG) emissions and contribute to the country's national sustainable development priorities. The Strategy outlines a course of action that the Government, together with its national and international partners, will pursue during the first commitment period of the Kyoto Protocol (2008–2012) to achieve this goal. Inter alia, one of the priority areas identified in the Strategy for implementation of CDM projects in 2008–2012 is the forestry sector.

Similarly to all other countries in South-Eastern Europe, the former Yugoslav Republic of Macedonia has not yet registered and implemented any CDM project while, at the moment, it has five project proposals under validation.

The country, with the necessary support of the international community, has also developed two other documents in the field of climate change:

- Strategy for Climate Change, approved by the Government in 2008;
- National Strategy for Adaptation of Health Sector to Climate Change, which is going through an approval procedure led by the Ministry of Health with the support of WHO.

National Environmental Investments Strategy for the period 2009-2013

In April 2009, the Government adopted the National Environmental Investments Strategy for the period 2009-2013 (NEIS). The Strategy for Environmental Investments identifies the condition and problems in the area of environmental infrastructure, as well as priorities, measures and activities for the realization of environmental investments in the country.

The NEIS comprises three pillars:

- Definition of a funding budget from national and international sources;
- Allocation of these funds to clearly defined and agreed priorities;
- Institutional strengthening and changes to ensure efficient and effective NEIS implementation.

In the Strategy, non-investment measures are also defined as a prerequisite for smooth NEIS implementation, in relation to institutional strengthening.

Despite its adoption in April 2009, at this stage it is not possible to evaluate whether the Strategy will be implemented and the investment made. Above all due to the financial crises, which hit the country particularly hard, the availability of planned funds for environmental investments is lacking at the moment.

National Strategy for Waste Management for the period 2008-2020

The Strategy for Waste Management reflects the national policy in waste management and represents the basis for preparation and implementation of an integrated and cost-effective waste management system. With this strategic document, the country defines the directions in waste management for the coming twelve-year period (2008-2020). The Strategy recognizes that the harmonization of legislation with the Acquis Communautaire represents only a useful tool in the establishment of an efficient and sustainable waste management system (Chapter 8).

National Waste Management Plan for the period 2009 – 2015

In addition to the Strategy, in 2009 MoEPP adopted the National Waste Management Plan for the period 2009 – 2015, which represents an amendment and supplement of the National Waste Management Plan for the period 2006-2012 as based on the National Waste Management Strategy.

The National Waste Management Plan has been developed to gradually implement the required improvements of the present problematic solid waste management system in the country by setting main goals, objectives and targets in the process of establishing the waste management system, and by defining the main activities and tasks in the legal, institutional, organizational, technical, and economic fields in the over six-year period.

The purpose of the National Waste Management Plan is to provide an adequate environmental policy, decision-making framework, economic basis, public participation and gradual establishment of the technical infrastructure for carrying out waste management operations in order to implement the waste management system in compliance with EU legislation and with the EU Sixth Environmental Action Programme (2002-2012), taking into account its priority in waste management, i.e. the thematic strategy on sustainable use of resources and thematic strategy on waste prevention and recycling.

The Plan foresees a complex of measures in order to eliminate or mitigate environmental impacts caused by the existing improper waste management operations, and to carry out the preparation and implementation of an integral, cost-effective and sustainable waste management system, taking into account key EU principles of waste management.

National Program for Adoption of the Acquis Communautaire

The National Program for Adoption of the Acquis Communautaire (NPAA) is a key document for the EU integration process. Adopted for the first time in 2001 by the Government, it is revised annually. The Plan reflects the dynamics of harmonization of national legislation with EU legislation as well as the necessary adjustments and strengthening of national institutions and resources.

NPAA is a comprehensive long-term document that defines the dynamics of the adoption of the Acquis Communautaire (EU legislation), strategic guidelines, policies, reforms, structures, resources and deadlines to be realized /implemented by the former Yugoslav Republic of Macedonia in order to fulfil the requirements for EU membership

The core functions of NPAA are to:

- Establish plan and timescale for approximation and for adoption of the EU Acquis and determine the competent institutions and authorities for preparation and implementation thereof;
- Determine the necessary administrative structures for implementation of the EU Acquis into national legislation;
- Determine budget resources and foreign assistance funds necessary for implementation of the anticipated tasks.

The two main features of NPAA are its capability to serve as a basis for:

- Monitoring progress made by the country yearly;
- Formulating the position papers and negotiation positions of the country upon commencing the accession negotiations.

The short-term and medium-term EU priorities with regard to the process of integration are defined in the Accession Partnership, a document produced by the EU. It is a mean of realizing the European perspective of the western Balkan countries within the framework of the stabilization and association process. The concrete activities for achievement of the Accession Partnership's priorities are integrated in NPAA.

NPAA represents a control mechanism in the monitoring of the process of legislation harmonization. Chapter 27 on the Environment refers to the provisions of the Stabilization and Association Agreement (SAA), which establish the basis for obligations concerning the harmonization of national legislation, the implementation deadline, the competent body, the overview of the relevant EU legislation, as well as the overview of the existing national legislation and the planned legal acts to be adopted.

Every year, NPAA contains a list of legislation and policies that the country needs to adopt for improving its approximation to EU standards, and great efforts are made to produce and update as many documents as possible. This sometimes gives the impression that such an amount of legislation cannot be really thoroughly prepared and learned by the relevant people in MoEPP and other stakeholders, so that implementation is often lacking.

National Set of Environmental Indicators

In September 2008, the Government adopted the National Set of Environmental Indicators including 40 indicators, which was published in November 2008 in two languages. The set mainly corresponds to EEA indicators data sets, and represents the basis on which the country will assess the state of the environment and the impact of legislation and policies.

2005 Strategy on Raising Public Awareness

The 2005 Strategy on Raising Public Awareness sets short and medium-term goals as to how to structure and improve the ministries' performance in raising environmental awareness of the relevant target groups, decision-makers in industry and the general public, as well as short-term and medium-term communication goals in order to improve communication between

all stakeholders in the field of environmental management with a focus on EU-MoEPP, inter-ministerial communications and communications with the ministry itself.

The strategies for strengthening the communication capacities of the Ministry and for raising awareness have been developed in parallel with the Environmental Communication Strategy. It applies a holistic approach by developing in parallel an internal as well as an external communication strategy, resulting in two different strategy papers.

Vision 2008 Communication Strategy

This is a basic mid-term strategy (Mother Strategy). It has been designed for external and internal MoEPP communication, including definition of mission statement, styles of communication and guidelines for policy marketing. All strategic issues addressed in this document are the basic layer or the fundament of all awareness and promotion activities of the Ministry in a five-year period. A yearly update of this Strategy according to monitoring and implementation progress will be necessary. This Strategy in particular was related to the impacts of designing policies and communicating policies at the same time. The model entails high involvement of stakeholders from NGOs and from the private sector

Vision 2008 enables the Ministry to play a proactive role in national environmental improvement and in the upcoming EU membership negotiations and reduce institutional dependency on donor funding and external technical assistance, while at the same time enabling mobilization of domestic and external funding for environmental investments. In is intended to bring benefits in terms of improved performance of the public administration as well as the development of democracy in the country on the way to full EU membership.

Awareness strategies

There are three topical daughter strategies based on the communication and management styles defined in Strategy 1.

Together, these four strategies constitute a comprehensive and integrated approach towards a sustained improvement in MoEPP communication capacity. The result is an integrated communication model.

Environmental Monitorintg Strategy

The objective of the 2006 Environmental Monitoring Strategy is to streamline MoEPP tasks with regard to environmental monitoring. This also includes the design of a monitoring system that would comply with EU monitoring and reporting requirements.

Based on the assessment of current monitoring systems and the evaluation of current data management systems, the Environmental Monitoring Strategy specifies activities which need to be pursued in order to develop effective and cost-efficient environmental monitoring and earmarks investment for environmental monitoring. In addition to the internationally accepted DPSIR model, the Strategy also deals with self-monitoring and reporting requirements, as well as the establishment of the environmental information system that is described in greater detail in the Environmental Data Management Strategy. It highlights the concept of goal-oriented monitoring; and presents planning schemes to develop the monitoring of environmental quality (water, air, biosphere, noise, nature, soil) and the monitoring of emissions, in particular wastewater, exhaust air and waste. It puts monitoring into the respective framework of legal, institutional and technical issues, and provides guidance as to references. However, the core pieces of the present Strategy are modules which specify important environmental goals for all environmental media. The purposes and objectives of monitoring are identified, aiming at the specified goals, and, the required activities are deduced.

Strategy on Environmental Data Management

The 2005 Strategy on Environmental Data Management provides a step-by-step plan for the implementation of a standardized architecture for software and data structures that can accommodate data from multiple regulatory programs—such as air pollution control, water pollution control, soil and noise control and hazardous waste management—and that can provide integrated (i.e. cross-program) access to data. In parallel with the technical roadmap that guides the implementation of the necessary Environmental Information System (EIS) modules, the Environmental Data Strategy addresses the human factor challenge of how to avoid frictions between the parties concerned and build cooperation while at the same time motivating users. Users will require special training in parallel with the hardware and software installation, but they must also be motivated and informed about the benefits of using EIS in their daily work. EIS sets a data management approach that

promotes efficient, well-integrated data management within each environmental program area and also facilitates cross-program data viewing and multi-program retrievals.

The Strategy on Environmental Data Management provides the guiding principles and framework for implementing a national environmental data management program. Future environmental protection depends on modernized and highly unified data services to maintain reliable, secure, and efficient information-sharing in the face of the expected growth in demand for such services. The primary goal of the data management program is to provide reliable information available quickly. The achievement of this primary goal requires the following specific goals:

- The establishment of an environmental information system (EIS);
- An increase in data sharing;
- The improvement of data availability in terms of timeliness, access, and quality;
- The promotion of collaboration on data management activities;
- The provision of maximum benefit with existing data infrastructure.

Spatial Plan

The 2004 Spatial Plan incorporates emphasized strategic development connotation and defines and establishes the basis and at the same time feasible goals and directions for development, especially with regard to the necessary qualitative and quantitative structural changes and the relevant and adaptable spatial planning solutions and options. This document constitutes a foundation for the organization, development, use and protection of space in the country, covering a 20-year period. The Study on the Environment and Nature Protection, carried out within the framework of the Plan, specifies the goals and planning guidelines for environment protection, as part of the overall activities in the field of spatial planning.

Plan for Institutional Development of National and Local Environmental Management Capacity for the Period 2009-2014

The Plan for Institutional Development of the National and Local Environmental Management Capacity for the Period 2009-2014 aims to determine the relevant functions and to suggest an institutional development plan for central administrative bodies and bodies of local self-government with competences in the area of the environment, within the medium term. The plan sets differentiation and grouping of specific activities into a general framework of functions in competence of certain central or local bodies, so that these bodies could subsequently develop the necessary administrative capacity to carry out individual activities or, based on the workload, carry out activities using existing administrative capacity. It aims to establish a plan for an efficient national environmental management system and for the strengthening of the central administration, ensuring practical implementation of harmonized legislation and of strategic plans and programmes. The plans identifies priorities and measures aiming at facilitating the process of transfer of competences from central to local level, increasing the implementation capacity of local self-government, and developing solid ties between central government and local self-government.

National Environmental Health Action Plan (NEHAP) (1999)

This 1999 National Environmental Health Action Plan (NEHAP) recognizes the linkage between the environment and health: it formulates guidelines aimed at overcoming environmental health problems, and identifies priorities and actions that treat, among other issues, the institutional set-up, stressing the need for the establishment of inter-sectoral cooperation, reform of environmental health services and capacity-building, information systems strengthening, development of criteria and procedures for the assessment of environmental impacts on human health and their integration in decision-making processes, and establishment of control measures,

Strategy on Improvement of Energy Efficiency by 2020

The objective of the 2010 Strategy on Improvement of Energy Efficiency by 2020 (SIEE) is to develop a framework for accelerating adoption of energy efficiency practices in a sustainable fashion through implementation of a series of programs and initiatives that are linked to the reduction of import dependence, energy intensity, non-productive use of electricity, establishment of a favourable climate for maximizing the involvement of and opportunities for the private sector complementary advocacy, and training activities. The final result of achieving this objective will be the realization of over nine per cent energy savings till 2018, comparing to average consumption in the observed five-year period (2002-2006), with continued promotion of energy efficiency and monitoring and verification until 2020. This is an important task for the country on the way to sustainable development of the country's economy and fulfilment of commitments

on the way to EU accession, and will serve as the first benchmark in the realization of the planned measures. With the Second National Energy Efficiency Action Plan (2018-2020) the Government will develop additional measures to reach 14.5 per cent savings in 2020, which means that the country will approach the EU target in 2020 of achieving savings of 20 per cent. The objective of the elements incorporated into the SIEE is to stimulate a progressive transformation of the market. The development of an adequate policy framework is intended to stimulate the demand for more energy-efficient technologies and services. As this demand grows, it should encourage the formation of energy service companies and companies that provide more efficient equipment and accompanying maintenance.

1.4 Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning (MoEPP) performs environmental tasks related to the legal harmonization process; the preparation of national strategies and action plans; inspection and enforcement including intervention if needed against the bigger polluters; and nationwide monitoring, information systems and cadastres.

MoEPP sets the overall framework for policies and legislation, sometimes however giving the local self-government units (LSGUs) a certain amount of leeway with regard to implementation while ensuring due consideration of specific local conditions. Moreover, international coordination is managed at the national level both in relation to EU and international conventions and in relation to assistance provided through the international or bilateral donor community.

MoEPP has grown significantly in recent years in terms of human capacities. Nevertheless, for the purpose of efficient implementation of environmental legislation, appropriate solutions will need to be identified to strengthen administrative capacities in MoEPP (especially in areas defined by the approximated environmental laws, and ratified international agreements), but also in other ministries that manage sectors closely related to environment and nature protection and improvement. This is especially connected with employment of new specialized staff and training of employees in legislative drafting, projects, and development of strategies and policies.

From 01.01.2011 onwards, MoEPP shall be responsible for overall water management, including river basin management and the permit issuing system.

At present, MoEPP is organized into nine departments or sectors further broken down into units as well as three bodies within MoEPP as constituent parts, i.e. the State Environmental Inspectorate, the Administration for Environment, and the Office for the Spatial Information System. These bodies function as separate entities under MoEPP supervision, and operate in accordance with legal regulations and other legal acts governing environmental issues. In the performance of its duties, the Minister is further assisted by a Deputy Minister, a State Secretary and thematic State advisors.

The Sector of EU (former Department for Legislation and Standardization) is now responsible for approximation, monitoring and reporting to the Commission. The Sector for EU (SEU) has the responsibility to coordinate all policy and legislative work in MoEPP, including EU approximation. The SEU - Unit for harmonization with EU legislation and negotiation is responsible for coordinating MoEPP's work on preparation of legislation in line with the EU acquis . The coordination and monitoring of the EU integration is within the SEU - Unit for coordination monitoring and evaluation of the progress made.

A separate Sector on Cooperation and Project Coordination is responsible for Instruments for Pre-Accession Assistance (IPA) and for international cooperation. The Sector for Sustainable Development and Investments is also active and involved in the preparation of technical documentation, and will be in further implementation of IPA capital infrastructal investments/projects. The new structure separates funding from the policy/legislation preparation.

The country's priority on EU integration and accession places pressure on the production and updating of legislation and policies to meet EU standards. This means that most of the already limited financial and human resources are mainly devoted to making rather than implementing policy. Moreover, implementation and monitoring responsibilities are scattered among different departments and parts of the Ministry, making coordination and coherence extremely difficult and time-consuming.

<u>State Environmental Inspectorate</u>

The State Environmental Inspectorate (SEI) is a body within MoEPP (Chapter 2). It inspects the enforcement

of technical and technological measures for protection against air, water and soil degradation and pollution of flora and fauna, protection of geodiversity and biodiversity, and areas protected by law (national parks, monuments of nature, forest park, ornithological reserves, etc.), protection of the ozone layer, protection from harmful noise in the environment, and protection from ionizing radiation.

As of January 2011, SEI consisted of the Director, who coordinates the activities of the Inspectorate, 13 State inspectors for the environment located in Skopje-5, Tetovo-3, Bitola-1, Gostivar-1, Strumica-1, Stip-1 and Veles-1. At the same time, as a transitional measure, five of these inspectors act as State nature protection inspectors (Skopje-3, Strumica-1 and Bitola-1). SEI is also composed of a Technical Secretary in Skopje and a younger collaborator for administrative issues in Gostivar. These staff members are mainly administrative and technical workers, and do not perform inspection duties.

In addition to the central office in Skopje, SEI has10 branch offices. These offices often lack the necessary technical equipment for performing the inspections: in particular, the IT infrastructure and other instruments for data collection and analysis are lacking or obsolete. To solve this situation, SEI has developed a project to allow the procurement of some technical equipment as well as computers for communication and information-sharing between the central office and the branch offices. SEI is seeking funding from the IPA budget.

The procedures for inspection supervision by State environmental inspectors and State nature protection inspectors are defined by the Law on Environment and the Law on Nature Protection. At the same time, other laws determine the specific jurisdiction of inspection supervision in accordance with subject matter.

The current organigram is under revision with a new “regional” approach relying on decentralization of both types of inspectors (nature protection and environment protection). Moreover, the plan foresees that environmental inspectors will have to specialize in one of the sectors among IPPC, Seveso and waste management.

In addition to the National State Inspectors, 50 per cent of municipalities (approx. 45) have appointed local environmental inspectors. The work of the local inspectors is supervised by the State inspectors, and comes under the areas for which the LSGUs have jurisdiction.

Office for Spatial Information System

The establishment of Office for Spatial Information System (SIS) is one of the basic mechanisms for ensuring a basis for mapping the geolocation of the systematized data and information with regard to the environment, precisely, environmental media and areas. Establishing SIS should be the basic function of the Office for SIS.

This system basically features a few functions, such as:

- A mapping basis for daily evidence and management of data and information obtained from the environmental media databases, which are maintained and managed;
- A basis for the adoption of strategic decisions in the area of environmental protection and management;
- Media for presentation of data and information

The Office for SIS has played a minor part in the performance of MoEPP functions. It seems that MoEPP has failed to take into account the importance of this function so far. The capacity of this Office should therefore be strengthened with additional human resources as well as the equipment needed to establish environmental spatial information and maintain the information system.

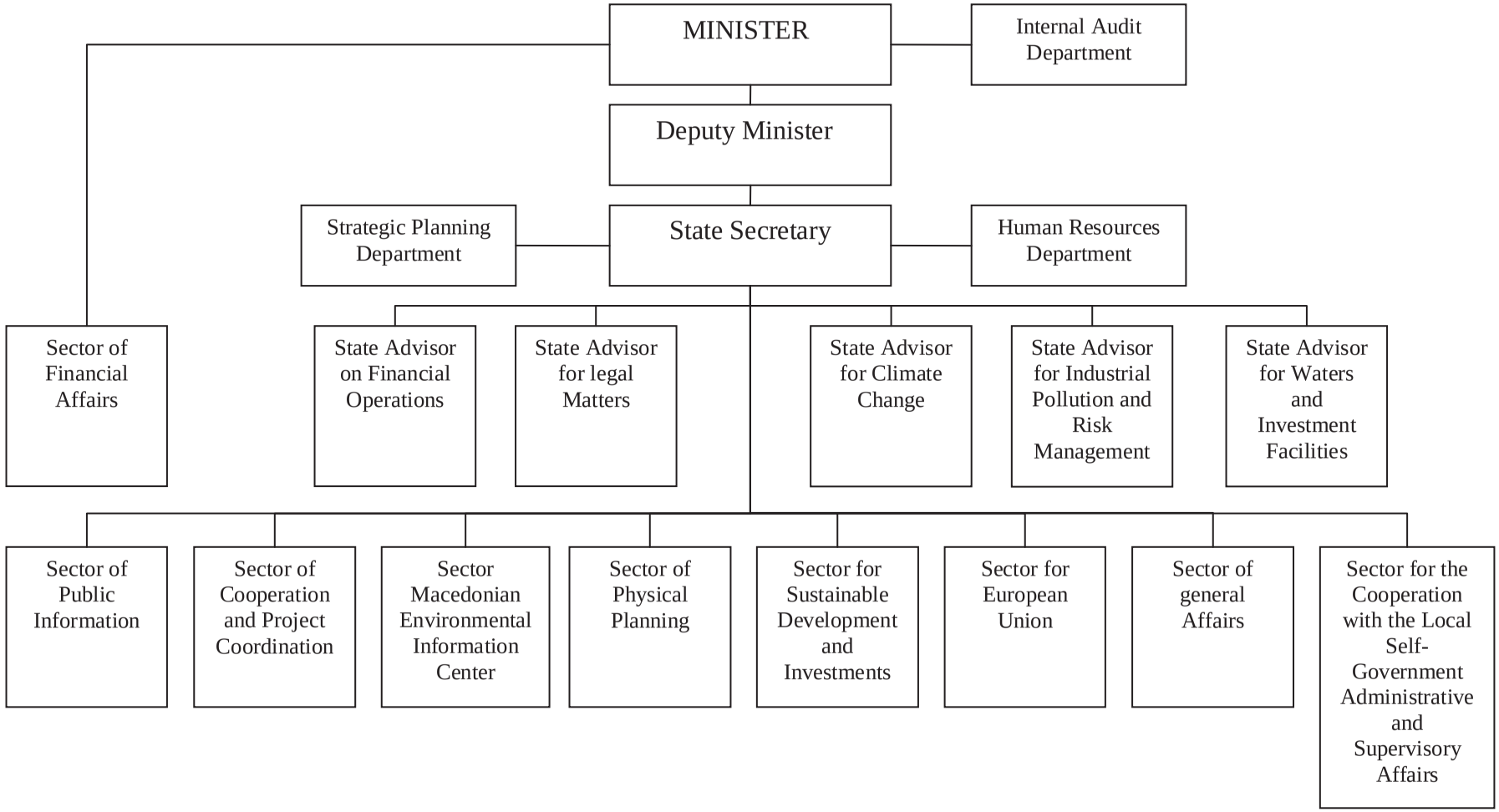
Administration for Environment

The 2005 Law on Environment, for the purpose of carrying out expert activities related to environmental media and areas, prescribes the establishment of the Administration of Environment (AE) as a body responsible for expert activities in the area of environment.

The Administration of Environment performs professional activities in the area of nature protection, in waste, water, air, soil, noise protection and in other environmental areas. It will also regulate the environmental impact assessment (EIA) procedure for projects and the procedure concerning integrated environmental permit issuing and compliance permit issuing; it will manage the Cadastre of Environment and the Register of Pollutants and Polluters, including their characteristics. The Administration of Environment will be responsible for the monitoring of environmental performance as well as for permit issuing procedures and other activities stipulated by law.

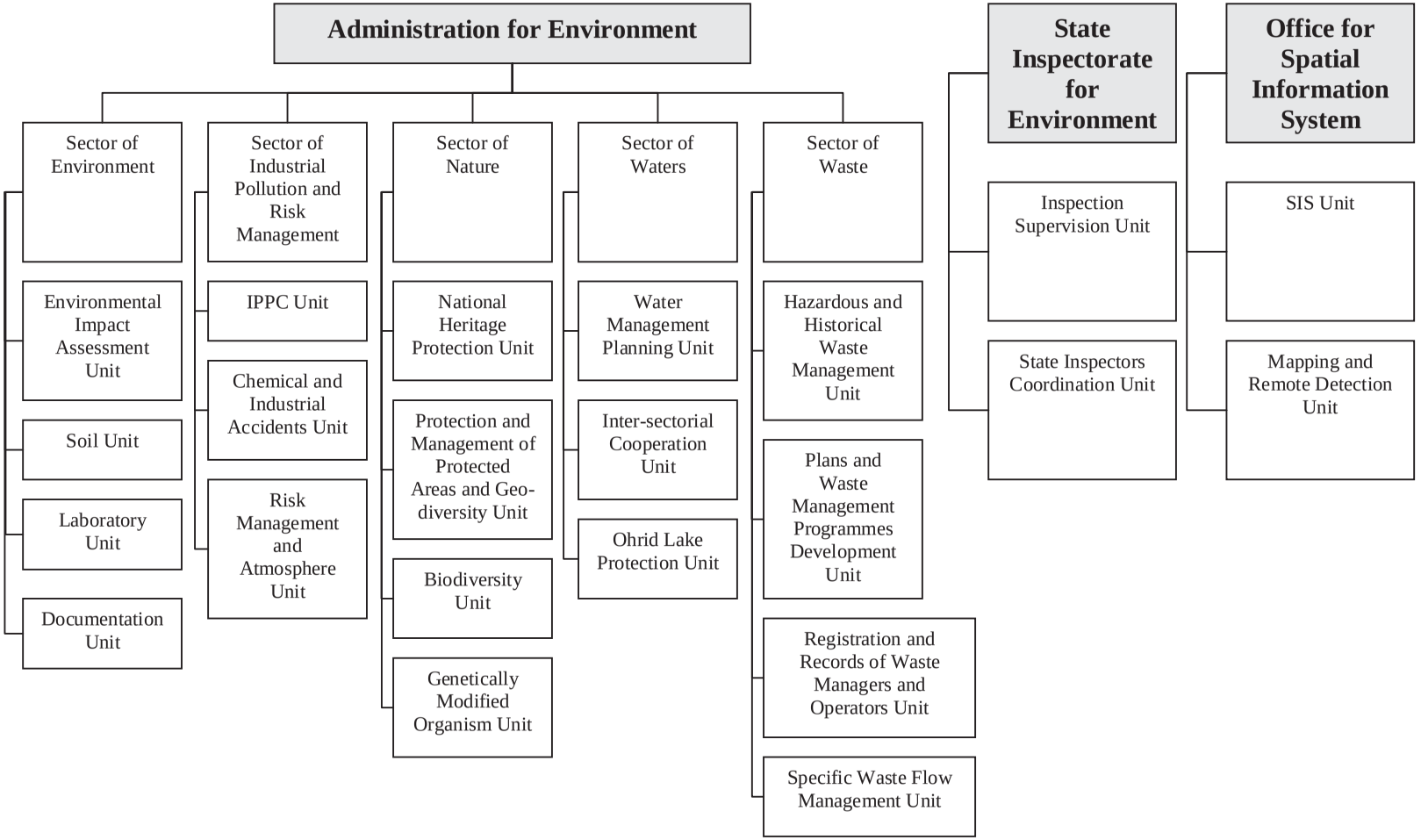
The Administration for Environment is an integral part of MoEPP. The Director is appointed by the

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



Source: Ministry of Environment and Physical Planning, 2011.

Figure 1.2: Bodies subordinated to the Ministry of Environment and Physical Planning



Source: Ministry of Environment and Physical Planning, 2011.

Government and as of January 2011, he supervises more than 60 people working in the Administration. Although appointed by the Government, AE is under MoEPP administrative supervision.

The Administration for Environment started with a staff of about 25-30 people and is growing both in terms of human capacity as number of units.

The training needs of AE staff are not decided independently by the administration but are planned within the broader MoEPP institutional development strategy in accordance with the National Plan for Approximation of Acquis at central level by the Ministry's Office of Human Resources. This is particularly problematic since the AE staff is more geared to implementation of the policies and legislation: its training needs are different from those of other units in the ministry, where the focus is on policy-making or international relations.

It is clear from the list of new legislation and policy documents presented above that the country's priority on EU integration and accession puts pressure on the drafting and updating of legislation and policies to meet EU standards rather than on its implementation. This means that most of the already limited financial and human resources are mainly devoted to policy-making.

The former Yugoslav Republic of Macedonia is the only country in South-East Europe (excluding Bosnia and Herzegovina) not to have established an Environmental Protection Agency (EPA). Several EU countries have established such an institution separately from the authority responsible for environment management although sometimes strictly connected to the former– as in the case of Austria for example where UBA is a separate company entirely owned by the Government represented by the Ministry of Environment. EPAs in other EU countries typically have the following statutory mandates:

- Implementing environmental laws;
- Informing the public about environmental protection;
- Providing scientific support to the Government;
- Liaising with EEA when preparing the state of the environment reports or other environmental assessments.

At the moment, the above functions are performed by the Administration for Environment, the State Inspectorate and the Office of Spatial Information and some departments of MoEPP. Merging these bodies and grouping the functions in a single entity could improve performance and efficiency while at the same time displaying the political commitment to implementation of environmental legislation in the country.

Other key governmental institutions

In addition to MoEPP as the administrative body with the lead role in the field of environment, certain State administrative bodies have jurisdiction in terms of environmental management.

The Ministry of Defence, through the Directorate for Protection and Rescue, has jurisdiction over civil protection. The main responsibility for the preparation of emergency plans for installations containing hazardous substances lies with operators of installations that have such substances. These are under the direct control of the Directorate for Protection and Rescue (DPR) and the Environmental Administration.

The Ministry of Interior has jurisdiction over the system of public security, production, trade, storage and protection from flammable liquids, gases, explosives and other hazardous materials, and is tasked with assisting during natural disasters and epidemics.

The Ministry of Economy has jurisdiction over geological research and the exploitation of mineral and raw materials and energy; it is also responsible for consumer safety and issues related to the World Trade Organization. The Ministry is generally responsible for the implementation of provisions concerning permitted levels of sound and exhaust systems of motor vehicles and products that are marketed.

The Ministry of Agriculture, Forestry and Water Management (MoAFWM) has jurisdiction over agriculture and forestry as well as care of water amelioration systems; use of agricultural land, forests and other natural resources; hunting and fishing; cattle protection and plant protection; and meteorological, hydrological and meteorological processes. MoAFWM is responsible for plant protection products, seeds and new forms of reproduction, and has the authority to oversee nitrate pollution originating from agricultural activities and prevention of pollution from pesticides. According to legislation, MoAFWM should direct its activities to raising farmers' awareness of the need to take steps to prevent pollution from nitrates, through the implementation of certain measures or through the implementation of good agricultural practices.

The Ministry of Health (MoH) has jurisdiction over the protection of the public's health from contamination by monitoring the air, water, land and life products; protection of the population from infectious diseases, the impact on dangerous gases, ionizing radiation, noise, hygiene –epidemiological status. It is also responsible for food safety, hence the safety of water intended for human consumption and bathing. In addition, MoH is responsible for the safety of pharmaceutical products. According to the new Law on Water, the Food Directorate (FD) within MoH undertakes activities for the identification and monitoring of water bodies intended for human consumption and for the monitoring of the sanitary and protective zones around these bodies. The State Sanitary and Health Inspectorate (SSHI) within MoH monitors surface water bodies and recreational basins, and bathing zones. According to the Law on Sanitary and Health Inspection, until now, SSHI has been tasked with monitoring sanitary protection zones of water bodies intended for human consumption. Now, FD shall take over these activities. Thus, overall competence for monitoring sanitary and health protection zones lies with FD, while SSHI will inter alia monitor cases where conditions have been detected that could lead to the endangerment of human health. SSHI shall determine the measures to be taken to prevent and combat any such problems and alleviate their consequences. The National Institute for Health Protection within MoH is competent for monitoring the sanitary safety of water. Monitoring includes bathing water, drinking water and water bodies intended for human consumption. The Law on Chemicals apportions responsibilities for the management of chemicals. Administrative and expert activities or the management of chemicals lies within the purview of the Drug Biro (DB), a body within MoH. DB is responsible for managing dangerous substances; issuing licenses for the import and export of chemicals; and deciding which chemicals are suitable for trade. Approval of the registration of chemicals is the responsibility of the MoH Committee for Chemicals, while DB is responsible for acceptance, notification, risk assessment and classification of chemicals. Risk assessment of the danger of chemicals and their classification is the field of the Committee for Chemicals. DB is responsible for accepting notifications for new substances that have not been previously registered and for supervising the quantities of substances that are marketed.

MoH, in accordance with MoEPP and MoAFWM, determines the national inventory of new and already classified substances that are in circulation in the country. The Institute for Health Protection carries out chemical analysis of chemical substances. The laboratory within the Faculty of Pharmacy is accredited to perform chemical analysis and laboratory analysis of chemicals and products/biocides and to decide on the classification of chemicals.

The Ministry of Transport and Communications (MoTC) has jurisdiction with regard to inland navigation; residential-communal affairs, such as communal infrastructure; and works such as water supply, sewage systems, wastewater collection drainage and treatment; as well as protection measures from noise originating from the performance of activities in navigation and construction. MoTC is responsible for communal infrastructure, which includes water supply, collection and treatment of wastewater. Moreover, the State communal inspectorate is explicitly tasked with monitoring public water supply systems and systems for collection, drainage and wastewater treatment for compliance with technical standards and with overseeing operations within the undertakings performing such public activities.

The Ministry of Foreign Affairs has jurisdiction in cases of cross-boundary pollution and international cooperation on the environment.

Decentralization

According to the Law on Local Self-Government, the local self-government units (LSGUs) are competent for regulation and performance of affairs of public interest of local relevance, specified by law.

The LSGUs are responsible for general environmental protection measures within water, air, nature, noise and ionizing radiation. Moreover, they are also responsible for organization and management of environmental activities (infrastructure for water supply, wastewater collection and treatment), municipal waste management and space planning, and recreational areas development.

In addition to the above, LSGUs are also responsible for issuing Type B environmental permits relating to the siting and building of industrial facilities; strategic environment assessments (SEAs) on local strategies, plans and programmes; as well as inspection and enforcement, and monitoring in the territory of the Municipality.

The above-mentioned activities lead to the conclusion that the LSGUs and the City of Skopje are obliged to provide, within their budgets, financial resources for environment and nature protection and improvement.

Given the fact that decentralization is a very recent process, many weaknesses still need to be resolved, such as insufficient local financial resources, a lack of technical capacity for the inspection of 'Type B Permit' installations, roles and the distribution of responsibilities between the City of Skopje and its 10 municipalities

As said above, MoEPP sets the overall framework for policies and legislation, sometimes however leaving the LSGUs some leeway in terms of implementation while ensuring due consideration of specific local conditions.

In order to assist LSGUs with this process and ensure a coherent approach to decentralization in environmental management, MoEPP has established a Sector/department for Communication with Local Self Government in addition to decentralized structures of the State Inspectors for Environment. The sector is trying to cope with this new process in the country, but the number of municipalities to be assisted and the variety and growing number of topics that are subject to decentralization pose a real challenge in the view of the Department's limited capacities.

So far, more than 50 per cent of the municipalities have environmental inspectors and staff devoted to environment. There are limitations on the implementation of the decentralization process in the country due to budget and human capacity constraints in several municipalities. In order to address these limitations, some municipalities are coordinating their efforts and capacities in terms of environmental decentralization. In particular, some municipalities are sharing staff devoted to environmental management and adopting coordinated plans on certain topics. Municipalities participate in tendering for concessions related to the collection, transport, and disposal of municipal waste, and the remediation of illegal dumpsites. MoEPP issues the concessions.

Climate change

A National Committee on Climate Change composed by representatives of the different groups was established via governmental decision in order to advise and provide strategic guidance on the necessary measures in terms of both mitigation and adaptation to climate change.

1.5 Conclusions and recommendations

Overall, the country has made valuable progress in preparing environmental legislation and policies since EPR1. Nevertheless, much remains to be done, especially with regard to implementation, for the country to meet EU environmental standards. The recent EU assessment as part of the integration process confirms that the country is in the right direction for complying with EU standard legislation on environment, but a lot still needs to be done with regard to institutional and legislative development.

The National Strategy for Sustainable Development (NSSD) potentially represents a very valuable guiding document for the country, but it yet to be implemented. Moreover, it is to be valid until 2030, which on the one hand is a fair period of time for achieving all the envisaged activities, but on the other hand should not be seen as something binding national planning for such a long period of time, especially considering how fast things are developing in this part of Europe.

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 country's priority on EU integration and accession puts pressure on the drafting and updating of the legislation and policies to meet EU standards. This means that most of the already limited financial and human resources are mainly devoted to making rather than implementing policy. Moreover, to facilitate relationships and cooperation with other EU countries and institutions, a similar institutional approach to other States should be put in place.

Recommendation 1.2
The Government should consider merging the Administration for 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.

Considering the decentralization process which is ongoing in the country and the growing responsibility

municipalities will be assuming in environmental management, decision-making at the local level must be coherent and conscious. This can only be achieved if the necessary strategic and planning documents at the local level, especially LEAPs, are adopted and updated.

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 ongoing decentralization process requires great efforts by the country: in particular, environmental management must take place at the municipal level in a consistent and harmonized way. Given the overall responsibilities of MoEPP in this respect, there is a need to ensure qualitative supervision and assistance to municipalities in the decentralization process.

Recommendation 1.4
The Ministry of Environment and Physical Planning, should consider strengthening the Sector for Communication with Local Self government both in terms of number and knowledge of human capacities to be assigned.

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) Sttrengthening capacity, with an emphasis on providing sufficient financial resources for realization on 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 on the National Plan on Adoption of the Acquis Communautaire, and cooperation with international donors towards the preparation for accession negotiation process.

Recommendation 1.6
The Ministry for Environment and Physical Planning should strengthen the Sector for European Union (EU) and other sectors responsible for specific areas within the Ministry in the process of approximation of EU acquis and fulfilling the obligation, which derives from EU Acquis.

Chapter 2

COMPLIANCE AND ENFORCEMENT MECHANISMS

2.1 Developments since the first EPR

From the first EPR up to now, the Government of the former Yugoslav Republic of Macedonia has focused on strengthening the Environmental Inspectorate and other enforcement bodies; establishing a credible enforcement record; and ensuring that fines and other sanctions are effectively applied and have a dissuasive effect.

In accordance with the Law on Environment, various instruments for environmental management such as environmental impact assessments, strategic environmental assessments, integrated pollution prevention and control, prevention and control of major accidents involving hazardous substances, and environmental monitoring systems have been introduced.

According to the Second National Environmental Action Plan (NEAP, 2006-2011), the instruments and mechanisms for implementation of the environmental policies that have been established are the monitoring and information systems, Integrated Pollution Prevention and Control (IPPC) and voluntary arrangements, inspection and enforcement, environmental impact assessments, strategic environmental assessments, access to information and public participation, decentralization and the role of local self-governments, acceleration of environmental project preparation at the local level, etc.

2.2 Mechanisms for compliance and enforcement of environmental policies, strategies, plans, and legislation

Inspection and supervision of the enforcement of environment legislation are performed by the State Environmental Inspectorate (SEI) within the Ministry of Environment and Physical Planning (MoEPP). With respect to matters for which municipalities, the City of Skopje and the municipalities of the City of Skopje are responsible, inspection and supervision of the enforcement of environment legislation and regulations adopted are handled by authorized environmental inspectors. The legal bases are:

- The Law on Environment (Art. 208: type of inspection and planning);
- The Ordinance on the content of the annual report on the performed inspection supervision, as well as on the manner and term of the report delivery;
- The Ordinance on the content of the annual plan on inspection.

The Environmental Inspectorate is responsible for compliance, checking and enforcement of laws, sub-laws and regulations. Since January 2007, the Inspectorate's activities have been planned on the basis of annual and monthly working plans, with the exception of on-site visits on an ad hoc basis and in emergencies.

The advantage of such an organization is the possibility to link and coordinate the proceedings of all inspections in emergency interventions, as well as ensure more efficient sanctioning of violators by simultaneous enforcement by several laws. Inspectors have the obligation and duty, in case of non-compliance, to apply sanctions to offenders or to press administrative and criminal charges. Inspectors still have a role in informing/advising, as well as carrying out inspections.

Activities for control of the operating installations, according to the transposed criteria are:

- Conducting on-site visits;
- Monitoring compliance with of Environmental Quality Standards;
- Considering environmental audit reports and statements;
- Considering and verifying self-monitoring by operators;
- Assessing activities and operations carried out at the installations controlled;
- Checking the premises and relevant equipment and adequacy of environmental management;
- Checking relevant records kept by the operators of the installations controlled.

On-site visits to installations are a main tool in the hands of inspectors to ensure compliance with legislation. Environmental inspections are performed as routine and non-routine inspections (legal basis - Art. 208 of

the Law on Environment). SEI is authorized to carry out inspection supervision at any time and directly on location, without prior announcement (legal basis - Art. 208 in the Law on Environment). SEI is entitled to:

- Request that results from investigations, analyses and measurements conducted by the operator be submitted to the authority;
- Take samples, analyze and measure substances released in the environment, as well as noise and energy;
- Take samples and analyze materials and products used or processed, as well as waste products.

The reporting system of monthly, quarterly and annual reports and information for activities on SEI have to be available on the web page: www.moepp.gov.mk in the section devoted to the State Environmental Inspectorate, and they are available on the Macedonian version of the web page. Some information is also provided in the English version as well.

These details of environmental inspections carried out are relevant to Recommendation 2001/331/EC of the European Parliament and the Council on Minimum Criteria for Environmental Inspections (RMCEI)

The main activity of SEI is to carry out checks, investigations and audits of locations. These represent three types of activities:

- Preventive (in the process of permit issuing under IPPC, so-called environmental permits, authorizations, emission limit values);
- Penalties (imposition of penalties, decommissioning of operations or activities);
- Remedial (imposition of activities for remediation, elimination of deficiencies and their causes).

Certain infringements of current legislation are handled by SEI through administrative procedures. These are the following types of procedures:

- Penalties (fines);
- Remedial (remediation actions, compromise).

SEI produces monthly, periodical and annual reports which provide a basis for its work. There is no information for the period 2001-2004. The collection of such information began at the end of 2003. For the period before, there were only seven inspectors and no information was gathered. Enforcement of the new environmental legislation effected started in 2004 – 2005. For 2004, there is no annual report. Data for the period 2005-2010 are given below. Annual information for 2005, 2006 and 2008 is available in English, but the information for 2007, 2009 and 2010 is available only in Macedonian.

In the course of 2005, SEI handled a total of 1,071 inspections, and prepared 970 Records of Findings. In general, problems were related to air pollution through emissions from major industrial facilities and traffic, followed by problems caused by excessive noise levels from small-scale production facilities, workshops and catering facilities (cafeterias, restaurants, nightclubs and discotheques), then nature degradation by sand extraction from lakes, wood-cutting within national parks, municipal waste, construction waste-related issues, as well as other types of waste throughout the country, and the issue of radiation from the antenna columns-base stations of the two mobile operators. Soil pollution was reported, concerning various discharges of oil, industrial slag from different industrial facilities, as well as water pollution, including primarily recipients (lakes, rivers and other watercourses).

Within the scope of activities of the State Inspectorate, direct contacts with several citizens were realized and inspections were carried out via telephone calls. Responses by e-mail were sent to many citizens, and from November onwards, appeals, suggestions and others may be forwarded by electronic means directly to the State Environmental Inspectors. In 2005, the Inspectorate made an intervention in accordance with the new Law on Nature Protection which went into effect on 1 July 2005. This involved a badly damaged SUV on the slopes of Shar Mountain concerning Avto Cajka - Tetovo and its driving up the peaks of Shar Mountain without permission, upon which a decision was rendered that the vehicle had to be removed. The Inspectorate has also established several contacts with non-governmental organizations (NGOs), the most active cooperation being carried out with the Skopje-based NGO Eko-Misija (Eco-mission).

The structure of SEI activities in the course of 2006 was approximately the same as in 2005, except for the beginning of IPCC implementation. In 2006, SEI handled 1619 cases; prepared 1265 reports and made 389 ordering/prohibiting decisions; presented 42 violation charges and 1 criminal charge; and submitted 369 notifications/requests. In terms of trends, there was an increase in the number of cases, reports and decisions adopted through administrative procedures and a drop in the number of criminal charges, while the number of violation charges notes also went up.

In the course of 2007, SEI took up a total of 1,529 cases and produced a total of 1,190 minutes /protocols

for findings/with conclusions; issued 240 decisions for ordering/prohibiting specific activities; initiated 19 requests for initiation of misdemeanour proceedings; and initiated 5 requests for criminal proceedings. Eight conclusions for termination of proceedings were issued, and a total of 277 reports/requests were submitted.

In the course of 2008, SEI took up a total of 1,394 cases and produced a total of 1,013 minutes with conclusions; issued 267 decisions for ordering/ prohibiting certain activities; initiated 39 requests for initiation of misdemeanor proceedings before the Basic Courts and the MoEPP Misdemeanor Commission; and initiated 18 requests for criminal proceedings before the competent basic courts. Seven conclusions for termination of proceedings were issued and a total of 296 reports/requests were submitted.

In the course of 2009, SEI took up a total of 1,600 cases and produced a total of 1,394 minutes with conclusions; and issued 329 decisions for ordering/ prohibiting certain activities; initiated 48 requests for initiation of misdemeanor proceedings; initiated 6 requests for criminal proceedings before the competent basic courts; and drew up 26 orders to pay for fines totalling €35,000. In all, 285 notifications/ requests were submitted to various legal entities and individuals.

In the course of 2010, SEI took up a total of 3,049 cases and produced a total of 2,899 minutes with conclusions; issued 584 decisions for ordering/ prohibiting certain activities; initiated 26 requests for initiation of misdemeanor proceedings; and initiated 4 requests for criminal proceedings with the competent basic courts. In all, 82 notifications/requests were submitted to various legal entities and individuals.

According to the Work Plan for 2008, the number of installations and legal entities where SEI carries out supervision has been fixed (with exceptional minor corrections), and thus according to the frequency of inspection supervision based on the experiences of environmental inspectors of EU Member States, a figure of regular routine inspection supervisions was reached which was not supposed to be carried out upon previous years.

Photo 2.1: Patrol boats

In 2008, SEI initiated the process of establishing a informal network for information exchange and coordination between environmental inspectorates at central and local levels. This network is operational, and several meetings have been held.

SEI has started to conduct regular inspections in the facilities identified as A-IPPC (Integrated Pollution Prevention and Control) installations throughout the country. According to the systematization of job posts, State Evironmental Inspectors are assigned by municipalities and A-IPPC installations, so every inspector has approximately the same number of municipalities and installations to inspect. In the course of 2008, supervisory visits were conducted in municipalities that have not assigned authorized environmental inspectors for B-IPPC installations, which number around 400 throughout the country. At the moment, the expectation is about 200 B--IPPC installations.

In practice, plans for inspections are prepared in correlation with the number of installations, using software for considering the risk (high, medium or low) and frequency of inspection in IPPC and SEVESO installations or according to responsibilities under different laws and other supervisory bodies dealing with protected areas, air, noise and waste. From the practice of the inspectors in Macedonia, there are 8 statistical regions and the SEI inspectors cover 117 A-IPPC and 11-SEVESO installations as well as 84 protected areas.

The country is following the Recommendations of EC 2001/331/EC on the set of minimum criteria for inspection of the environment in EU member countries. All obligations undertaken in the context of activities aimed at approximation with the EU require efficient implementation, monitoring and enforcement of environmental legislation. The system of inspection and enforcement copes with the complex task of improving implementation and enforcement of legislation, in parallel with the revision of national legislation, i.e. laws and by-laws. It is crucial to ensure that the process of approximation with the EU is understood and followed, not only by the representatives of the central government but also by local government staff. The experience of former candidate countries which are now EU Member States indicates that this task must not be underestimated, as it can cause significant delays in real progress towards EU accession.

In full compliance with the recommendations contained in in the reports of the EC and the completed Peer Review under the EU process on the Inspectorate, the Inspectorate has initiated efforts to draft a separate Law on the State Environmental Inspectorate. SEI has striven to enhance transparency (cooperation with citizens, industry and civil societies, etc. Particular emphasis must be placed on the protection of environment, as well as the training of staff from inspection offices for the environment on the local level and cooperation with partner inspectorates from the region and the EU and inspectorates under other bodies in the Government, other relevant institutions such as police, customs, the Crisis Management Centre and the Directorate for Protection and Rescue.

2.3 Environmental enforcement authorities

The Ministry of Environment and Physical Planning (MoEPP) is the governmental body responsible for developing and implementing environmental policy.

At present, MoEPP has some 200 civil servants in all, organized into nine specialized sectors. Within the MoEPP there are three public bodies: the Administration for Environment (AE), which at the moment has about 65 civil servants in all; the State Inspectorate of Environment (SEI), which at the moment has about 22 civil servants, and the Office for Spatial Information System.

AE is divided into five sectors: environment, industrial pollution and risk management, nature, water and waste (Figure 2.1). These sectors are involved in the practical implementation of the Government's environmental policy and the legal mechanisms for achieving this policy.

SEI supervises reports by citizens and legal entities or on official duty, during which it prepares records of statements. In certain cases, the procedure continues with the decision-making concerning measures to protect the environment or prohibit certain activities. When individuals cause harm to or endanger the environment, thus breaching legal norms, SEI submits requests for initiation of misdemeanor proceedings before the MoEPP Misdemeanor Commission or the competent courts, or in some cases criminal proceedings before the Public Prosecutor. SEI monitors the enforcement of technical and technological measures for protection of air, water and soil; prevention of degradation and pollution of flora and fauna; protection of geo-diversity and biodiversity, and areas protected by law (national parks, monuments of nature, forest parks, ornithological reserves etc.); protection of the ozone layer; protection from harmful noise in the environment; and protection from ionizing radiation.

SEI operates in accordance with legal regulations and other legal acts governing environmental issues in accordance with the Law on Environment and the Law for Nature Protection. At the same time, other laws determine the specific jurisdiction of inspection supervision depending on subject matter.

According to the Law on Environment (LoE), performance of inspection is a planning instrument aimed at preventing negative environmental impacts. In particular, LoE imposes an obligation for SEI to prepare an Annual Plan on Inspection Supervision of the Environment. This instrument contains a plan for inspection supervision of the authorized local environmental inspectors, which should be adopted by the mayor. This enables SEI, as the authority responsible for the prevention of harmful environmental impacts, to decide which installations or areas of the country's territory are not sufficiently covered by inspection supervision, and to ensure equal levels of prevention and protection of accidents or other negative impacts on the environment and nature. SEI and local environmental inspectors are henceforth obliged, as from the end of January in the current year, to submit annual reports for the performance of inspection supervision for the previous year. This makes it possible to verify the implementation status of the Plan and to assess the degree of compliance of legal entities and natural persons, as arising from the laws in the field of environment and nature.

The State Environmental Inspectorate is part of four networks, which started networking as from 2001 via BERCEN - Balkan Environmental Regulatory Compliance and Enforcement Network. After that it was ECENA - Environmental Compliance and Enforcement Network for Accession and at the moment it is RENA - Regional Network for Accession. From May 2006, SEI has been a member of EU-IMPEL - Implementation and Enforcement of Environmental Law. The criteria for environmental inspection have been transposed into two rulebooks for annual plans and annual reports. SEI has been participating in EU GREENFORCE for Nature Protection Inspectorates from December 2007 and the worldwide network INECE (International Network of Environmental Compliance and Enforcement) from 2005.

A new project is under preparation and will be financed by the EU through the IPA Fund for Enforcement of Environmental Legislation on the central and local level. The project will start in 2012 and will last 18 months. It covers practical implementation of inspections in general for all laws and especially for IPPC installations. The country will receive equipment and software for general administrative procedures as well.

SEI structure and management

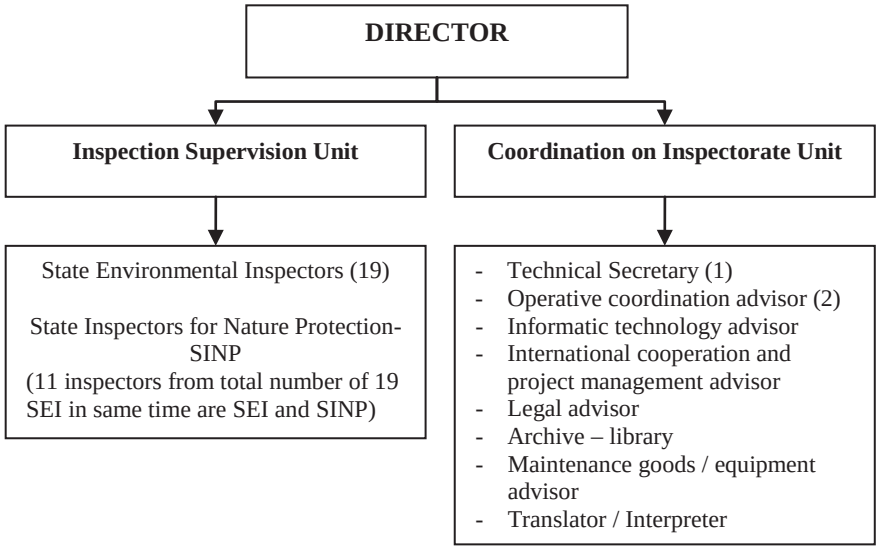
Environmental inspection is organized on two levels:

- Central level – the State Environmental Inspectorate in the Ministry of Environment and Physical Planning (established 1996). The Director of the State Inspectorate is the only person with a political function appointed by the Government. He reports to the Minister, who submits the corresponding reports to the Government for adoption. The State Environmental Inspectors number 19 and are allocated as follows: Skopje - 5 persons, Tetovo - 3 persons, Gostivar - 2 persons, Bitola - 1 person, Veles - 1 person, Stip - 1 person, Gevgelija -1 person, Kavadarci - 1person, Kumanovo - 1 person, Ohrid – 1 person, Strumica - 1 person, and Probistip - 1 person. At this level, 11 of the State Environmental Inspectors are appointed as State Inspectors of Nature Protection (SINP). There is one technical secretary and two junior administrative advisers.
- Municipal level – There are 85 (84+1-Skopje City Parliament) municipalities in the country that are authorized to have Environmental Inspectors. Some fifty per cent of the municipalities have appointed authorized environmental inspectors. The competent authority is the Mayor of the Municipality, who has two options: to mandate existing communal inspectors to cover environmental issues; or to employ new inspectors. It is possible to mandate more than one inspector, but there is no economic justification for this as there are not enough installations to inspect.

The State Environmental Inspectorate did not have a separate budget, which is of great importance for proper institutional management. At first, SEI had a special planned budget for different activities in 2010 totaling 2.2 million denars. For 2011, the budget is 1.6 million denars. Generally, it covers expenses for SEI offices (heating, phone, rent for office space, electricity, water and others). A certain amount is for the publication of various reports, guidance, for IMPEL network membership, organization of national training courses, bilateral or multilateral meetings with partner inspectorates from other countries, technical and safety equipment, business trips, etc.

The budget is not sufficient and does not allow the adminstration to function independently. There is a

Figure 2.1: SEI structure



Source: Ministry of Environment and Physical Planning, 2011.

lack of vehicles and technical and safety equipment. The budget does not include health or life insurance. Out of all 34 members of the IMPEL EU network, only the former Yugoslav Republic of Macedonia has failed to make any membership payments in the last 2-3 years. No hard copy reports /CD/ or leaflets have been published to promote the work of the Inspectorate

The minimum educational requirements for inspectors are: - university degree and one year's experience for State Environmental Inspectors; for SINP - university degree and three years' experience; and for the authorized inspectors (municipal) - university degree and one year's experience.

Responsibilities of Environmental Inspection, legal basis:

- Law on Environment (Chapter on Supervision);
- Law on Waste Management and Law on Ambient Air Quality (Chapter on Supervision);
- Law on Nature Protection and Law on Water (Chapter on Supervision);
- Law on Noise Protection in Environment (Chapter Supervision);
- Law on General Administrative Procedure and Law for Inspection Supervision.

The responsibilities of the State Environmental Inspectorate can be summarized as follows: supervision of installations with A-integrated environmental permit/A-adjustment permit and B-integrated permit/ B-adjustment permit (if the installation is located within a nature protected area).

SEI has a right to ascertain:

- Whether monitoring is performed on the sources of emission;
- Whether monitoring is performed in compliance with the conditions contained in the integrated environmental permit;
- Whether the devices and instruments used in monitoring are approved through the procedure of verification and regularly maintained;
- Whether the data obtained from monitoring are submitted in a manner and under the conditions prescribed by the responsible body;
- Whether the necessary data is submitted to the developer of the Register of Pollutants and the Cadastre of Environment.

SEI has a right:

- To ascertain whether a study on the EIA of the project has been prepared and submitted to the responsible body and a decision has been made on the approval of the project implementation;
- To carry out inspections and verify whether the project is carried out in compliance with the measures specified.

For the investigation of accidents, SEI collaborates with the relevant authorities such as police, customs, Department for Protection and Rescue, Centre for Crisis Management, courts-judges, public prosecutors and other authorities (local/municipal, governmental/ State inspectorates and NGOs, public, foreign institutions/networks, Interpol, etc.).

SEI has begun an initiative to establish an informal network information exchange and coordination ties between environmental inspectors at the central and local level. In 2010, the legal status of this network was specified. This development is highly significant in terms of implementing the legislation in practice and also in the field of educating and training inspectors.

The organizational system that has been established benefits from the process of control and the exchange of information. However, there is a dearth of trained civil servants. Technical resources available for expertise and laboratories are insufficient. In the former Yugoslavia Republic of Macedonia, there are still not enough accredited Environmental Laboratories under ISO 17025.

Local Self-government Units

According to the Law on Local Self-government the Local Self-government Units (LSGUs) have territorial jurisdiction for certain specific aspects of environmental management at local level and within the area under their jurisdiction. Their mandate in the field of environment is also determined by other laws: the Law on Environment, the Law on Waste Management, the Law on Water, the Law on Ambient Air Quality, the Law on Nature Protection, the Law on Genetically Modified Organisms (GMOs), and the Law on Protection of the Environment from Noise. Each of these instruments determines responsibility for implementation of the laws on local level of LSGUs. The jurisdiction and liability of the LSGUs for the implementation of laws in the field of environment flow from two basic principles, which are part of the EU principles.

Other institutions

Other institutions with some responsibilities for the implementation and enforcement of environmental legislation are: the State Market Inspectorate, the State Sanitary and Health Inspectorate, the Phytosanitary Administration, the State Inspectorate of Agriculture, and the Food Directorate. They perform inspections and supervise trade in products, semi-products, raw material, chemical substances, packing of products and appropriate usage of labels that contain information on environmental impacts; trade in products, semi-products, and raw materials intended for use by man (food and drinks), and their packing and appropriate labeling with labels containing information on environment impacts.

In accordance with the Law on Environment, the following commissions have been established for the purposes of SEAs and EIAs:

- The Commission for the Examination of Projects' Environmental Impact Assessment;
- The Commission for them Examination of Strategic Environmental Assessment.

These two bodies conducted their first respective professional examinations in 2009. Members consist of MoEPP experts for air, waste, water and biodiversity. According to their competencies, they review SEA and EIA documentation and issue statements and proposals for the final opinion. These Commissions act as supporting bodies for the Minister of Environment and Physical Planning for the process of issuing permits for development.

In 2008, the Misdemeanours Commission was established within MoEPP on the basis of the Law on Environment. The work of this body is also regulated by the Rulebook on keeping unique records on misdemeanors, sanctions imposed and decisions reached in misdemeanour proceedings, and accessing information contained in the records. The Rulebook on the Form and the Content of the Notice for Fixed Penalty Collection has also been adopted. The practical work of this Commission starts when the payments, which have to be paid by persons as a result of a sanction, are more than eight days late, via a request from SEI to the Misdemeanour Commission for the opening of misdemeanour proceedings.

As a demonstration of the work and administrative capacity of the Commission, a large number of charges for initiation of misdemeanour proccedings were submitted to the Commission by the State and local environmental inspectors, as well as by police officials. For instance in 2010, 85 requests for misdemeanour proceedings were received by State and local environmental inspectors, communal, State market inspectors and police officers. Forty-five decisions on cases were issued. The cases were based on non-compliance with the Law on Waste Management, the Law on Environment, the Law on Ambient Air Quality, and the Law on Protection against Environmental Noise.

2.4 Assessment tools

Strategic Environmental Assessments (SEAs)

With regard to SEAs, the Law on Environment contains general stipulations that each strategic,

planning and programme documents of the State administrative bodies or LSGUs (hereinafter: planning documentation) shuld be subject to SEAs.

The Law emphasizes that the details for SEAs have to be developed in secondary legislation. In 2007, the Government adopted the list of criteria for determining whether a given planning document is likely to have a significant impact on the environment. Also in 2007, two subsidiary acts were adopted for determining the procedure for performing SEAs. The Government determined the planning documentation, which is subject to SEA, via the Decree on the strategies, plans and programmes, and their amendments for which the SEA procedure must be carried out. Changes in the secondary legislations were made at the beginning of 2011.

The general obligation for the performance of SEAs is the responsibility of MoEPP (Sector for Sustainable Development and Investments), and all other State administrative bodies and LSGU entities are obliged to perform the SEA procedure if they are competent for the adoption of some of the plans stipulated in the above-mentioned Decree.

A special web page was created for the SEA process and is available at www.sea-info.mk. This may be singled out as a very good approach for popularization and for the provision of adequate information to the public and concerned parties.

The practical implementation of the SEA procedure began in mid-2009. The procedure starts with a request for an opinion on whether or not SEA is necessary. The intermediate steps follow general practice – screening, scoping, preparation of the report, and quality assessment and public participation. To date, some 300 requests have been submitted. Of these, 224 are under consideration and 45 have been completed with a "final opinion", 44 with a positive opinion and only one with a negative opinion, namely, for the draft SEA report on a national energy strategy. This decision was considerably influenced by NGOs in the country. After the insertion of the remarks provided from the MoEPP and other parties, the final SEA report on the national energy strategy was approved.

A total of 300 requests seems too much for such a small country. However, this total includes not only strategic documents of State structures – short-, medium- and long-term, but also different planning documents and their prolongation or modification in agriculture, waste management, water management, urban planning, regional development, transport, tourism, land use, etc., which can be developed by private entities.

Under the MATRA project for building capacity for SEA application at the national and local level, two pilot SEA procedures were carried out – for the Prespa Park River Basin Management Plan and for the Master Urban Plan of Skopje. A brochure for the main steps of the procedure was also issued. During the project implementation phase, it became clear that procedural guidance was needed that would describe all aspects of data management and procedures for consultation with neighbouring States for documentation with a transboundary impact.

The Protocol on Strategic Environmental Assessment (2003) to the Espoo Convention on Environmental Impact Assessment in a Transboundary Context has not yet been ratified. Under the National Programme for Adoption of the EU Acquis, ratification of the Protocol is due by the end of 2012. The requirements of the Protocol have been incorporated into the Law on Environment.

The success of SEA also depends on the adoption of the List of Experts on SEA, which has a legal basis and obligations in the Law of Environment. Adoption of the List increases the efficiency and independence of the State administrative bodies for the implementation of the overall procedure.

The number of SEA submissions depends on the activity of State structures and the business climate in the country. The relevant Ministries whose plans or programmes are likely to have an impact on the environment have been identified as the Ministry of Agriculture, Forestry and Water Economy, the Ministry of Transport and Communication, the Ministry of Economy, the Ministry of Health, and the Ministry of Local Self Government. The plans and programmes which are expected to be prepared within 14 different sectors (energy, mining, water and waste management, transport, local and regional development, agriculture, forestry, fishing, industry, telecommunication, tourism and land planning and land use) are already identified and will require the SEA procedure if they have an environmental impact.

Environmental Impact Assessments (EIAs)

The legal framework for EIA is well along. The Law on Environment gives detailled instructions for the steps and conditions involved in carrying out the procedure, including notification, screening, scoping, content of the study for EIA, and requirements for

the expert preparing and assessing the quality of the documentation. The public's access to EIA documents and information is described in a different article, and covers all steps as well as the public hearing. The procedure is finalized with the issuing of a decision on whether to grant or reject the application for the project implementation. The legal effect of the decision is also determined by the Law. Practice shows that implementation is consistent with all these legal requirements.

Following the Law on Environment, two pieces of secondary legislation have been adopted. The Decree for Determining the Projects for which an Environmental Impact Assessment Shall Be Carried Out also includes an Annex I stipulating the activities for which EIA is mandatory and an Annex II mentioning activities for which screening is necessary, as well as a definition of any change to or extension of projects. The Ordinance for Regulating the Procedure for Carrying out Environmental Impact Assessments regulates the procedure for carrying out EIAs under the Law on Environment. It regulates inter alia the content of the notification of intent to carry out a project, the screening procedure, the content of the EIA study, and the procedure for informing the public as well as public participation.

Up until now, the existing framework has been supplemented by the adoption of five subsidiary acts and seven technical guidelines. Thus, the total number of secondary legislative acts is seven. Simultaneously, in order to outsource certain aspects of EIA procedure, a List of EIA Experts was adopted.

As a body within MoEPP, AE is competent to perform the EIA procedure. The Sector for Environment-Department for EIA is the administration's competent organizational unit for the performance of EIAs. Besides EIA, this department is also tasked with assessing the development of elaborates for environmental projects, also tasked with assessing environmental projects, which currently is the main activity carried out by the Department. The Department covers the EIA procedure for the country as a whole, but in addition, the LSGUs are obliged to shoulder their environmental responsibilities and provide all necessary data and enable public consultation within the EIA procedure. LSGUs are competent for assessing the environmental protection elaborates based on article 24 of the Law on Environment. The important role of the LSGUs is reflected by the fact that a decision on the approval of elaborates for environmental protection is a precondition for launching the relevant project.

Practical implementation of the EIA procedure began in 2007-2008. The procedure starts with notification. The intermediate steps follow general practice: screening, scoping, preparation of the EIA study, quality assessment, and public participation and public hearing. A special commission composed of representatives of the different units within MoEPP examines the EIA documentation and prepares the draft consent decision. To date, 16 full EIA procedures have been finalized by the issuing of a consent decision. Decisions on the need for EIAs have been issued for about 50 cases.

Consent decisions may contain conditions and measures. They may be appealed to the Minister of Environment and Physical Planning or to the courts, and are valid for two years. The provisions and mechanisms for monitoring implementation of conditions and measures are not sufficiently clear. SEI verifies whether for the project to be implemented the decision on granting consent has been issued; monitors whether the mitigation measures proposed in the EIA study have been implemented; and limits or prohibits implementation of the project without the decision to grant consent.

The UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, February 1991) was ratified in 1999. The requirements of the Convention have been incorporated into the Law on Environment. The transboundary aspects of the EIA procedure are included for both cases, when the country is a party of origin or an affected party.

So far, no EIA procedure has been carried out in a transboundary context. However, in its capacity of Party of Origin, the country has sent three notifications (one to Greece, concerning the Corridor 10 project, one to Serbia concerning the wind farms project, and one to Albania for the Kicevo railway project), while as Affected Party it has received only one notification from Greece on the project for upgrading and extending the Kozani-Florani-Niki highway.

Practice at central level shows that implementation is consistent with all these legal requirements. The steps of the procedure are followed precisely. The announcements for public participation in the EIA procedure are clearly written and contain all necessary information. Some of the experts working on EIA exchange experience with experts from neighbouring and other countries, which may be viewed as a good approach for meeting EU requirements.

There are no methodologies for different software models which predict and estimate the emissions, waste generation and other impacts based on the proposed technological process. This gap was also confirmed by the NGO.

There is no factual and administrative linkage between the plans, investment proposals and installations, which are respectively subject to SEA, EIA and IPPC. Thus, within the context of the environmental assessment and permit issuing process, there is no clear picture for the development of a given project from start to finish.

EIA elaborates

According to the provisions of Article 24 of the Law, investors whose activities or works do not comprise projects that are subject to an EIA procedure according to the Law and regulations adopted on the basis of this Law, shall develop an EIA elaborate and submit it to MoEPP for approval. An elaborate is something different from typical EIA, and there is no equivalent in the common EIA practice in the EU countries. EIA elaborates apply to a large number of existing activities, even for small ones (e.g. bakeries, garages, places for washing the cars). The total number of requests for EIA elaborates is very high – about 7,000. Elaborates are finalized via the issuing of an opinion and consent for acceptance or non-acceptance. Finally, SEI inspects the conditions set out in the opinion.

General Environmental Audits

Environmental audits are not actively applied in the country, despite the existence of relevant provisions under Chapter XIII in the Law on Environment.

Voluntary agreements

Bodies and organizations representing certain interests, groups of operators and individual operators may conclude voluntary agreements with the State administrative body responsible for environmental affairs in order to attain a level of protection in a particular environmental medium higher than the one foreseen by the Law on Environment and special laws. There is no evidence that voluntary agreements are actively applied in the country.

Environmental labeling

According to the Law on Environment, eco-labels may be awarded to legal entities and natural persons who/which produce consumer goods or provide services that are less polluting and thus contribute to the protection and improvement of the environment.

In 2005, the Committee for Granting a National Environmental Label was established. Since that time, eight criteria for environmental labels have been developed and introduced. These are for hand and dishwashing detergents, tourist accommodation services, textile products, furniture, indoor paint and varnish, tissue paper, footwear and soap, shampoo and hair conditioner. The Department for Standards within MoePP's EU Sector is responsible for implementing activities related to environmental labeling.

Only one company has applied, but until now, no product or service has been certified with the environmental label.

Environmental management and audit scheme

According to the Law on Environment, the Environmental Management and Audit Scheme (EMAS) can be applied. The Department for Standards within MoEPP's EU Sector is the State administrative body responsible for such matters, and must cooperate with other relevant bodies to establish the standardization system.

To date, four technical committees have been established under the governance of the Committee for Standardization. They are for the adoption and introduction into practice of standards for air, environmental management systems water and waste. Under the work of these committees, 23 environmental standards have been adopted until now. More than 30 companies comply with the ISO 14001 standard.

To give one example of a valid approach: the annual fee for obtaining the adjustment permit with the adjustment plans and integrated environmental permit can be reduced to 20 per cent if the operator has introduced EMAS or ISO 14000 standards.

Compliance assurance: monitoring and reporting; assistance in and facilitation of compliance;

The requirements of Directive 2004/35/EC of the European Parliament and of the Council on Environmental Liability with regard to the prevention and remediation of environmental damage have been transposed to the Law on Environment (Chapter XVI).

Environmental liability is determined on a normative basis, but there is no any specific activity for its

implementation in practice. This area is primarily connected to the industrial sector and regulates the issue of environmental damage caused by certain professional activities - damage caused to water, protected species – nature and soil. The practice within EU countries is also limited and not very clear. There is no separate list of operators that follows under the scope of these requirements. However, MoEPP does keep and regularly update a list of IPPC installations in the country, including ones that are close to protected sites, which it considers to be a valid list for the Liability Directive as well.

No practical cases have been determined following the entry into force of Chapter XVI, as no environmental damage was ascertained as a result of an existing activity. There was no case where any measures were taken regarding remediation and no damage occurred due to the peration of installations in the country. Seven years ago, there was only one case when one truckload of benzene spilled over a road and polluted the roadside. The company responsible was penalized and had an obligation to remedy the soil. However, this is not really a liability activity as prescribed in the Directive.

For future practical implementation, two rulebooks are under adoption:

- Rulebook on the measures for the remediation of environmental damage;
- Rulebook on professional activities the performance of which can cause environmental damage liability as well as the criteria for determining the existence of environmental damage, as well as cases when environmental damage liability is not involved.

Enforcement tools

After an inspection revealing non-compliance, the competent authority, generally SEI, may use the following enforcement mechanisms to ensure compliance with the environmental legislation:

- Production of minutes with certain conclusions which the inspected persons should follow;
- Prescription of the preparation of elaborates on EIA;
- Imposition of penalties and fines
- Issuing of decisions for ordering/prohibiting a specific activity;
- Submission of a request for initiation of misdemeanour or criminal proceedings.

Fines, penalties and non-compliance fees

Chapter XXII entitled “Penalty provisions” of the 2005 Law on Environment defines the cases and the fines to be imposed for infringement of environmental requirements and non compliance with the provisions of the Law. Amounts range from 3,000 to 100,000 denars.

Each specialized law has separate provisions for penalties. In the Law on Ambient Air Quality, this is Chapter IX on “Penalty Provisions”, where fines are specified according to the different kinds of non-compliance with the provisions of the Law. The largest fine is 20,000 denars and the smallest is 500 denars. In the Law on Water, this is Chapter XIII, where the highest fine is €30,000 and the smallest is € 200.

All available information about fines and penalties is included in the annual reports of SEI as a part of its activity. The application of penalty provisions started in 2007 and no data were selected for this year.

There is a possibility for the reduction of the total amount of the penalty by half: for instance, if the penalty is €6,000, only €3,000 may be paid if payment is made within eight days after the summons to pay is issued. This approach is a good payment incentive, and more than 80 per cent of payments due are usually

Table 2.1: Number of inspections and acts adopted through administrative proceedings, 2005-2010

	2005	2006	2007	2008	2009	2010
Cases	1,071	1,619	1,529	1,394	1,600	3,049
Minutes on conclusion	970	1,265	1,190	1,013	1,394	2,899
Decisions	..	389	240	267	329	584
Misdemeanor charges	..	..	19	39	48	26
Criminal charges	..	42	5	18	6	4
Conclusions for termination of the procedure	..	..	8	7	..	..
Reports /Requests	..	369	277	267	285	82

Source: State Environmental Inspectorate, 2011.

paid. The other share goes to the Misdemeanours Commission.

There is no information for the period 2001-2004. Data for the period 2005-2010 are as follows:

- In 2005, the State Environmental Inspectors handled 25 minor offence charges and 10 criminal charges by Ivan Kamenjarski-Skopje, Zivko Mircevski-Skopje, Slavco Ristov-Veles, Zoran Dimovski, M.Sc.-Bitola, Violeta Panzova-Strumica, Bedget Abazi-Tetovo, Darko Blinkov- Skopje and Rudica Serafimovska-Gostivar. Out of 25 minor offence charges, only 2 have been solved, and for the others there has been no response from the competent first instance courts. The same applies to criminal charges - no response from the competent courts (100 per cent unsolved).
- In 2006, the State Environmental Inspectors presented 42 violation charges and 1 criminal charge (JKP Tetovo).
- For 2007, there are no data for penalties.
- From 15 September 2008, when the application of payment orders/fines was introduced, 65 payment orders have been received.
- In 2009, SEI drew up 26 orders to pay, with fines totalling €35,000.
- In 2010, supervisory activities related to the Law on Environment show the following:
  - Cases: 3,041 (959- Law on Waste Management /LWM/)
  - Reports/notes or minutes of conclusions: 3,002
  - Decisions (ordering/prohibiting): 583
  - Misdemeanour charges (courts-Commission): 027
  - Criminal charges: 007
  - Payment account-realized: 010
- Supervisory activities related to the Law on Waste Management show the following:
  - Cases: 959
  - Reports/notes or minutes of conclusions: 959
  - Decisions (ordering/prohibiting): 150
  - Misdemeanour charges (courts-Commission): 021
  - Criminal charges: 005
  - Payment account-realized: 003

Income from penalties flows into the State budget. In the past, there was a special environmental fund which operated using these funds, but it was abolished. At the moment, there is no clear evidence about the use of these finances – whether they are used for environmental ends or are spent for some other purposes.

2.5 Emission standards and their enforcement

The country does not have a separate system for the enforcement of environmental legislation or determination of data from inspection supervision, on a law-by-law basis. The practice is to present data in a much more general form. For the last year, there are details for waste and general Law on Environment on-site inspection and acts according to previous laws. For 2011, there are detailed tables using a law-by-law system, and practically a much clear picture of general enforcement of all legislative acts, including the Law on Air Quality and the Law of Water.

The enforcement of emission standards is primarily done through the issuing of IPPC permits. In this connection, inspections under the Law on Ambient Air Quality are part of the general IPPC on-site inspection process. The Law on Water is very new, and only entered into force in January 2011. For the time being, there are no data on enforcement in practice.

2.6 Conclusions and recommendations

Despite progress made since the first EPR, further work is needed in order to apply in practice the provisions of the legislation elaborated. SEA and EIA documentation, such as reports, studies and elaborates, are frequently of poor quality. Environmental concerns are not covered in the phase of identification of the interaction between project activities and impacts on human, economic and social life. Special training courses and practical exercises are needed to optimize use of different tools and techniques for environmental appraisal of the project by practitioners.

Recommendation 2.1.

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

Special attention should be paid to the introduction of EIA follow-up activities (monitoring and evaluation of the impacts of a project or plan through the

environmental performance of the project or plan). The control might also include verification of documents and site visits for checking the results of the implementation of measures for prevention, reduction or elimination of significant adverse environmental impacts and for assessing their effectiveness. This would make it possible to retrace consistency between the planned activities, working project preparation, real construction works and operation of the facilities.

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.

It is of crucial importance that MoEPP and SEI work together in order to enable the performance of inspection tasks falling under the competence of the local self-government in cooperation with MoEPP. The full equipment of the Inspectorate with technical means, protection equipment and vehicles is of great importance.

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.

Recommendations from the first EPR of the former Yugoslav Republic of Macedonia that are still valid and have to be implemented

One of the priorities in the area of environment is the necessity to strengthen the national environmental management system and reinforce the central administration. Considering that the bulk of legislation concerns compliance with the EU Acquis, certain efforts are crucial for ensuring its practical implementation, as well as ensuring the necessary capacity and institutional structure for the process of identification, adoption and implementation of the strategic plans and programmes. Simultaneously, the decentralization process entails identification of priorities and measures aiming at facilitating the process of transfer of competencies from central to local level, thereby increasing the implementation capacity of local self- government, as well as developing solid links between central government and local self-government.

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 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 exchange of information and joint site visits or inspections.

Chapter 3

MONITORING, INFORMATION, PUBLIC PARTICIPATION AND EDUCATION

3.1 Introduction

The first Environmental Performance Review (EPR) of 2002 emphasized the need to develop a centralized, strategic monitoring programme, to further develop a national environmental information system, and to improve collection of data on discharges of pollutants. To ensure broad public access to information and public participation in decision-making processes, the country was recommended to prepare relevant legislation, to publish State-of-the-Environment Reports and environmental indicators in the State Statistical Yearbook, and to build the capacities of governmental officials and NGOs.

The country has made some progress in the above-mentioned areas as well in the area of environmental education and training since the first EPR. However, much still needs to be done by the Government and specific public authorities to make environmental monitoring an effective information and policy tool, to promote public participation in decision-making, and to introduce the sustainable development principle into education and training at various levels.

3.2 Environmental monitoring

Air monitoring

The Macedonian Environmental Information Centre (MEIC) of the Ministry of Environment and Physical Planning (MoEPP) currently operates a State Automatic Monitoring System for Air Quality consisting of 15 stations for ambient air quality in 10 cities and locations. Network design started with the establishment of four automatic air quality monitoring stations in 1998 in Skopje. In 2002, three additional monitoring stations were installed, in Kocani, Kumanovo and Kicevo. In 2004, the following stations were established: one additional monitoring station in Skopje (measuring air pollution caused by traffic); two monitoring stations in Veles and Bitola; one in Tetovo; and one in the rural environment – the village of Lazaropole to monitor transboundary air pollution. MoEPP also operates a mobile monitoring station in Kavadarci. Map 3.1 presents the distribution of automated stations in the country and the type of individual stations.

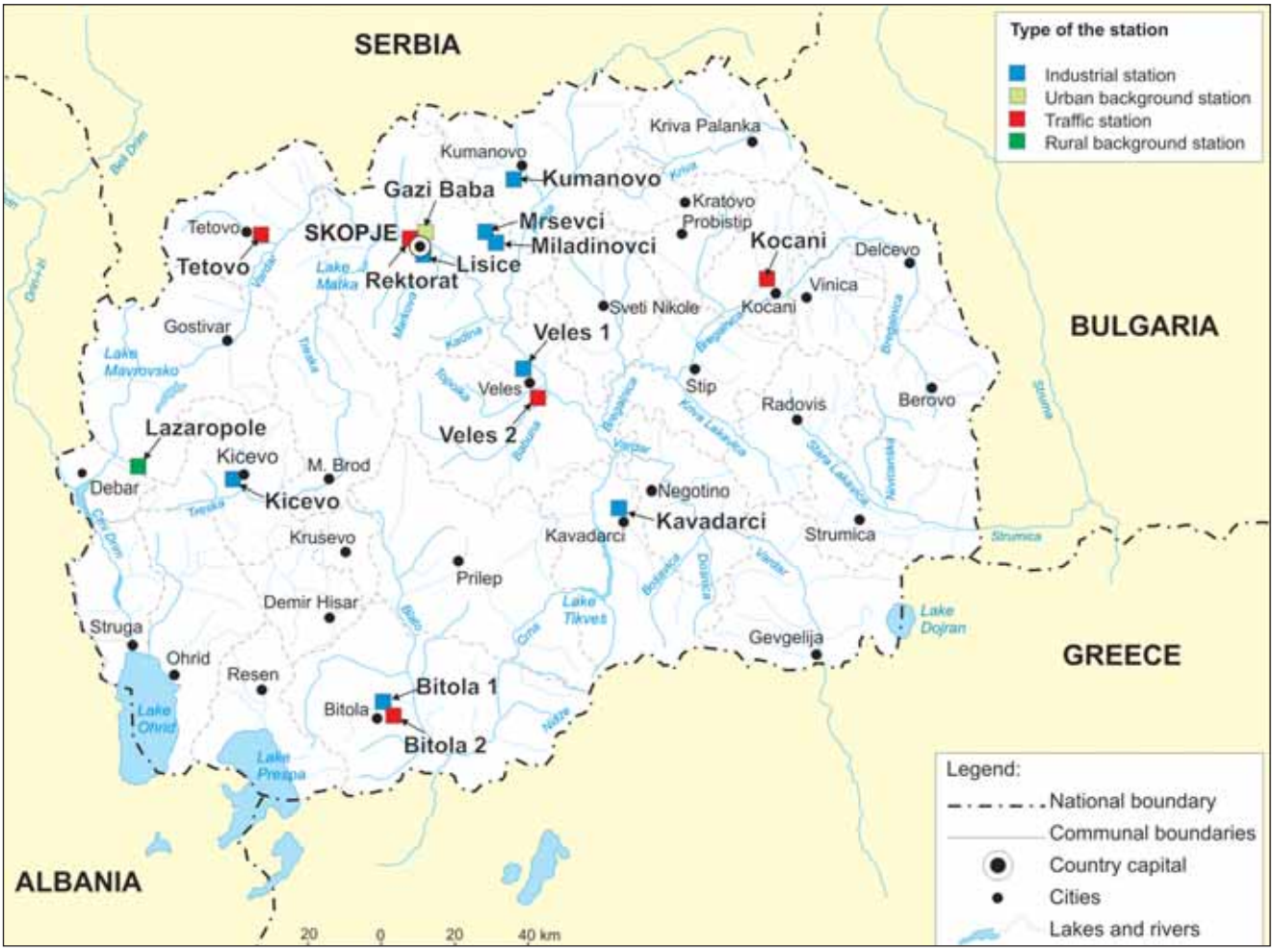
Almost all monitoring stations measure ecological and meteorological parameters. In relation to ecological parameters, SO_2, NO, NO_2, NO_x, CO, PM_{10} and O_3 are measured as a rule. Furthermore, heavy metals are measured at some stations. Since 2004, the measurement of BTX (benzene, toluene, ethyl-benzene, o-xylene, p-xylene) have been implemented at two monitoring stations. The following meteorological parameters are measured at all stations: temperature, humidity, pressure, wind direction, wind speed, and global radiation. MoEPP expects to start monitoring some volatile organic compounds (VOCs) and PM2.5 at some stations in 2011-2012 thanks to an ongoing twinning donor project.

The MoEPP Central Environmental Laboratory performs analyses of air-quality samples. The MoEPP Mobile Emission Monitoring Laboratory assists the MoEPP Environment Inspectorate in measuring emissions. The staff of both laboratories received proper training on data handling, including data quality assurance.

In 2008, MoEPP compared air monitoring requirements in the EU air directives with the current station configuration and numbers of different types of stations in the country[1]. It concluded that the minimum requirements given in these directives for the number of monitoring stations for the protection of human health and ecosystems by basic pollutants are fulfilled in each zone (Western and Eastern) and the Skopje agglomeration. However, two new stations in the suburban area have to be set up for ground-level ozone, and two new stations should be set up for particulate matter and nitrogen dioxide, respectively, in urban background areas. As a follow up, MoEPP

[1] Improved preliminary assessment report on air quality for sulphur dioxide, nitrogen dioxide, nitrogen oxides, carbon monoxide, particulate matter, and ozone in Republic of Macedonia, 2008, Skopje.

Map 3.1: Distribution of automated air-quality monitoring stations by station type



Source: Ministry of Environment and Physical Planning, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

plans to establish two additional automated air monitoring stations in 2011.

Regional Centres of Public Health (CPH) under the Ministry of Health run their own air quality monitoring network in 10 cities. The CPH in Skopje measures concentrations of SO_2 and black smoke at 7 measuring points, precipitation at 30 points, and, periodically, CO and lead at 4 points. The CPH in Veles measures SO_2, black smoke and precipitation at 3 points, and cadmium, lead and zinc at 1 point. The CPHs in Kumanovo, Kocani, Tetovo, Bitola, Ohrid, Prilep and Stip monitor precipitation only. All regional CPHs stations are manual, providing mean daily values.

The gradual development by MoEPP of a modern air monitoring network led to the discontinuation, in 2009, by the Hydrometeorological Administration (HMA) of its manual, outdated air-quality measurements that had been performed at 9 stations in Skopje and 10 stations in other cities. Measurements covered SO_2 and black smoke only at these stations. The HMA monitoring network could not comply with the requirements of the 2009 Rulebook on the methodology for air quality monitoring[2].

According to the Law on Ambient Air Quality[3], municipalities can establish local air quality monitoring network, but until now not a single local monitoring station has been established. Weak political support and insufficient resources at the local level are often presented as a main reason for the lack of development in this direction.

On the basis of observation results of the State Automatic Monitoring System for Air Quality, MEIC/MoEPP publishes daily text reports on exceedances of measured parameters on the Ministry`s web page. Data are also delivered to the State Environment

[2] Official Gazette No. 138/2009
[3] Official Gazette Nos. 67/04, 92/07 and 35/10

Photo 3.1: Public awareness campaign on waste management

Inspectorate (SEI) under the MoEPP and the City of Skopje. Once data from the monitoring network have been validated, MEIC/MoEPP publishes monthly reports demonstrating the exceedances of measured parameters in tabular and graphic forms. These reports are delivered to municipalities, the City of Skopje, the Institute of Public Health and regional CPHs. They are also uploaded on the Ministry`s web site.

The Law on Ambient Air Quality sets legal requirements for self-monitoring of ambient air quality by enterprises. So far, only two polluting companies in the country (the OKTA Refinery and a Cement Plant "Usje" - Skopje) have introduced automated self-monitoring for emission measurements. The OKTA Refinery and the thermo power plant REK Bitola have self-monitoring for air quality measurements. For several companies, emission and air quality monitoring is performed by contracted laboratories. Many companies, although they are subject to the IPCC system, do not monitor their emissions and rely on estimates and calculations. This frequently poses problems when determining real amounts of pollutants emission and, therefore, when planning emission reduction strategies.

Pursuant to the Law on Ambient Air Quality, polluters submit emission data on a monthly basis to MoEPP. MEIC/MoEPP publishes emission measurement data in its annual reports, which are uploaded on the Ministry's web site.

Surface water monitoring

The Hydrometeorological Administration (HMA) monitors discharge and water level at 57 gauging stations on rivers: 45 stations in the River Vardar basin, 9 in the River Crn Drim basin, and 3 in the River Strumica basin.

HMA monitors surface water quality at 20 measuring points located on rivers, lakes and reservoirs. Sampling and analyses are performed monthly. Physical-chemical, toxic-chemical, and saprobiological parameters are measured such as Ph value, visible waste substances, considerable smell, colour, dissolved oxygen, saturation with oxygen, BOD, permanganate index, rate of biological productivity, total soluble substances, total suspended substances, ammonium ion, nitrates, iron, lead, zinc, cadmium, chrome Cr+6, indicators of oxygenic regime, indicators of mineralization, toxicity of chemical compounds and

coliform bacteria. In 2010, HMA started monitoring four times per year (by season) in transboundary waters a number of organic micro-pollutants: pesticides (organochlorine and organophosphorus), polychlorinated biphenyls, poliaromatic hydrocarbons and phenol compounds.

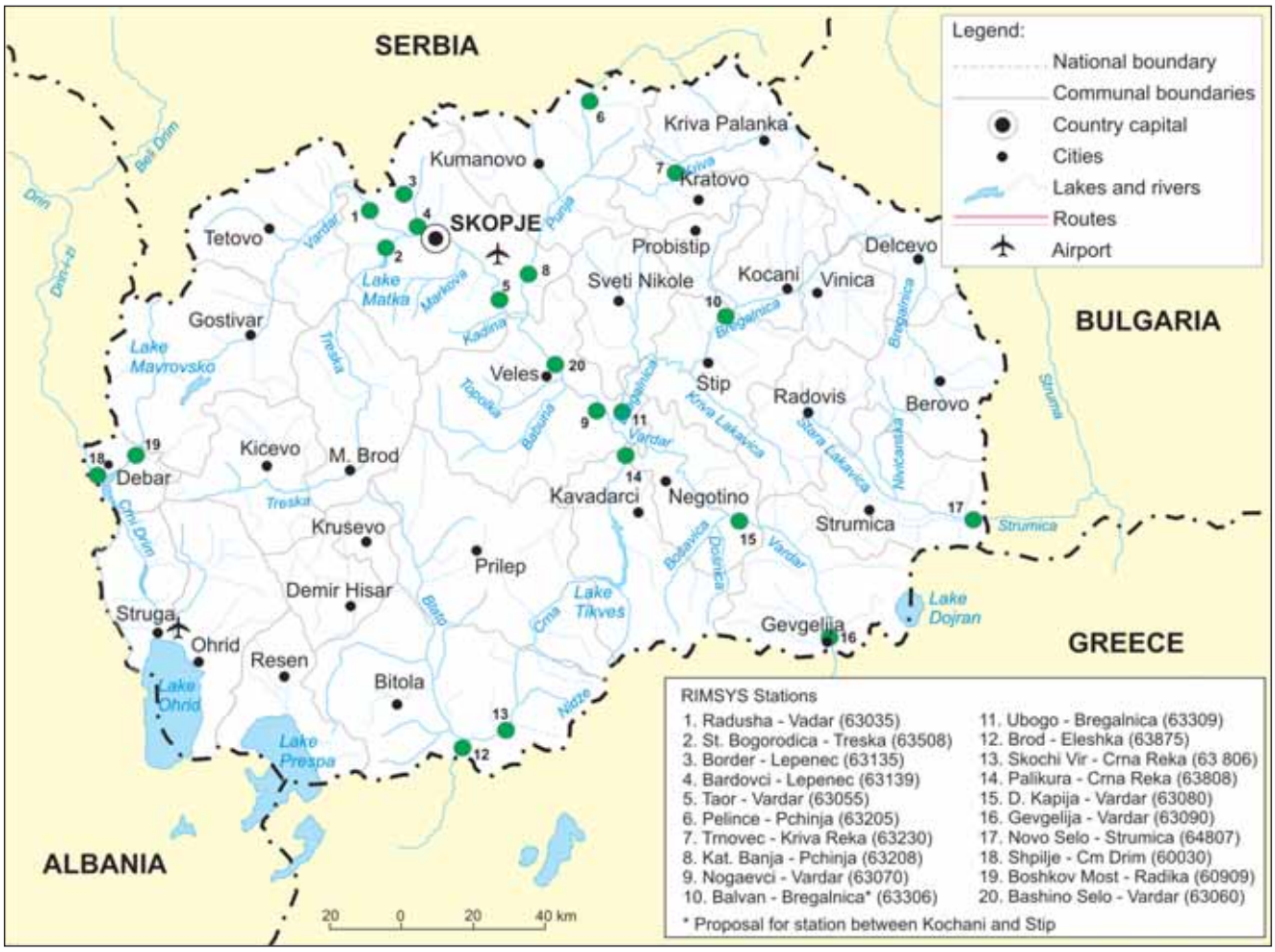
Modernization of the HMA hydrological network began in 2000 under a Swiss-backed project called the River Monitoring System Project (RIMSYS). The project objectives were to establish good operating practices in the areas of water discharge measurement, water sampling, chemical analysis, and the processing and publishing of monitoring data. This project covered a total of 18 hydrological stations of the main State network of hydrological stations throughout the country. These hydrological stations monitor 98 per cent of total amount of surface water from the country going to neighbouring countries. The distribution of the existing and two proposed additional RIMSYS stations is presented on map 3.2.

The RIMSYS water monitoring stations were each equipped with an automatic sample collection device. The stations perform water discharge measurement (with sensors installed at the stations) and water quality measurement (with sensors at the stations and/or water sampling with subsequent analysis in the environmental laboratory equipped by the donor). The outputs from these two chains are combined into load calculation and integrated data processing and management. Monitoring data is uploaded on the HMA web portal (www.meteo.gov.mk).

The HMA budget supports the operation and maintenance of the RIMSYS stations. However, further extension of this type of stations in the country is not ensured. Non-provision of the necessary funds from the State budget to match the proposed funding offered by the Swiss Government led to the discontinuation of the RIMSYS project.

The Hydrobiological Institute (in Ohrid) of the Ministry of Education and Science monitored a

Map 3.2: Distribution of monitoring stations of the River Monitoring System Project



Source: Hydrometeorological Administration, 2011.

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

broad range of physicochemical and microbiological parameters in the waters of Lake Ohrid and its tributaries until end 2002. Since 2003, its monitoring programme has been significantly reduced due to insufficient financing. At present, it takes samples 4 times a year at 30 observation points in the littoral zone of the lake. In 2005, the Institute prepared, in cooperation with other relevant institutions, a draft water monitoring programme for consideration by MoEPP. No progress has been made with the adoption of the proposed programme so far.

The Hydrobiological Institute monitors sporadically (i.e. under international projects) physicochemical and microbiological parameters in the waters of Lakes Prespa and Dojran.

The institutions of the Ministry of Health (MoH) are responsible for monitoring drinking water. The Republic Health Institute, for instance, performs monitoring of drinking water quality in Skopje. Professional communal services, regional CPHs, in cooperation with the Republic Health Institute, monitor the quality of drinking water in other cities. In rural settlements, drinking water quality control is done by the regional CPHs and their 21 local branch offices (hygiene epidemiological surveillance stations).

The regional CPHs also monitor the quality of bathing water. The 2008 Law on Water Management made self-governments responsible for this type of monitoring once MoH, in cooperation with MoEPP, identified bathing waters and parameters to monitor and adopted a relevant rulebook. As they do not have capacity to perform these tasks, self-governments will probably have to make the necessary arrangements with the regional CPHs so as the latter will continue monitoring bathing water on behalf of self-governments.

The Law on Water Management[4] obliges wastewater generator operators to install, operate and maintain measuring devices, as well as to perform wastewater quality analysis. In practice, however, this Law is not respected. Only the laboratory of the Water Supply and Sewage Utility in Skopje performs the required analyses. As a result, there is a general lack of data on urban wastewater quality in the country. The situation seems to be similarly unsatisfactory in terms of monitoring the quantity and quality of industry wastewater.

[4] Official Gazette No. 87/08, Official Gazette No. 6/09 and Official Gazette No.161/09

There is no regular monitoring of irrigation water in canals and in the pipelines, and there are no reliable data on consumed irrigation water. Furthermore, data on diffuse sources (agriculture, atmospheric deposition, etc.) are still not calculated.

Groundwater monitoring

Groundwater observation and examination are not performed systematically and continuously, except as a result of local demand for certain regions. Overall, there are no sufficient and reliable data on groundwater quantities and quality. In 2004-2009, HMA monitored groundwater quantity only at 34 measuring points compared to 115 points in the 1980s. In 2010, however, the number of points increased to 71 and by 2015 HMA plans to take samples regularly at 150 points.

Soil and land monitoring

There is no continuous measurement and assessment of the state, quality and changes in soil throughout the country. This is due to a large extent to the lack of legislation regulating soil management and protection. As a consequence, neither maximum permissible concentrations in soils for different purposes nor soil monitoring requirements have been established.

There have been some ad hoc soil monitoring activities in the country since the first EPR. In 2004 and 2005, the CPH in Veles conducted monitoring of soil pollution by heavy metals in the Municipality of Veles, one of the most contaminated areas in the country due to the long operation of the lead and zinc smelter. Case studies in the area of monitoring soil degradation and protection were prepared under recent EU projects on a national waste management plan and within the framework of a project with the Japan International Cooperation Agency (JICA) on capacity-building in the field of management of mining-related pollution.

MEIC/MoEPP publishes some data and information related to soil degradation and contamination, land use change, erosion, salination and organic matter decline in its annual reports. These originate from published papers, mainly scientific publications and books by individual authors or groups of authors, measurements from some institutions in agriculture, forestry and the water economy, as well as from environmental statistics.

Monitoring of biodiversity, including forests

The country does not yet have a national forest inventory. The Ministry of Agriculture, Forestry and

Water Management has developed a methodology for such an inventory to be included in an upcoming rulebook.

Under a contract with the above Ministry, the Faculty of Forestry-Skopje is implementing a country-wide programme of measures and activities for data collection in relation to the extent of damage to the forest and keeps a register of the extent of such damage.

Pursuant to the Law on Nature Protection,[5] MoEPP is obliged to organize monitoring of the status of nature that should include measurement, assessment and control of the state of species, their habitats, habitat types and environmentally important areas. Furthermore, methodology for monitoring performance and a national monitoring programme have to be adopted.

However, monitoring of natural heritage and biodiversity in the country has not yet been established. In particular, administrations of protected areas do not report results of their monitoring activities to MoEPP. State and scientific institutions carry out only partial investigations of the state of individual components of biodiversity.

Since 2008, the Balkan lynx (Lynx lynx martinoi) has been monitored in the National Parks of Mavrovo, Pelister and Galicica. The Prespa trout (Salmo peristericus) has been monitored in the Prespa region and parts of Pelister National Park since 2009. Monitoring of 8 plant species, 8 animal species, 12 invertebrates and major habitat types started in Galicica National Park in 2010. An ornithological society, a fishing association and NGOs (e.g. the Macedonian Ecological Society) conduct voluntary monitoring in their areas of interest.

Within the framework of the ongoing UNDP/GEF Project: "Integrated Ecosystem Management in the Prespa Lakes Basin of Albania, FYR of Macedonia and Greece (2006-2011)", a study on the Transboundary Prespa Park Monitoring has been launched. The Study focuses on seven thematic areas requiring monitoring at the transboundary level, namely water (quantity/quality), aquatic vegetation and habitats, forests and terrestrial habitats, fish and fishery, birds and other species, socio-economic characteristics, and land use. Current activities aim, in particular, at identifying locations and areas under reed, species composition and structure of reed vegetation; determining population trends for endemic fish species in Lake Prespa, population trends for Prespa trout, chub, barbell and carp, as well as the trend for introduced fish species and qualitative and quantitative fish species composition, used by cormorants as food; monitoring bat populations in certain caves, the status of the populations of winter migratory birds and waterfowls in the Prespa Park, as well as activities concerning man and brown bear interaction.

In 2010, MoEPP published an ad hoc report and national catalogue (checklist) of species called Assessment and Evaluation of Biodiversity on National Level. No national Red List of threatened species or Red Data Book has been published so far.

Waste

Based on the requirements of the 2004 Law on Waste Management[6] and the 2005 Law on Environment that imposed self-monitoring by enterprises, the country has established a monitoring (routine data collection) system on various waste streams. It is based:

For municipal, non-hazardous and hazardous waste on:

- Yearly reports from legal entities and natural persons, holders of waste to municipalities for non-hazardous waste and to MoEPP for hazardous waste on generated, transferred and received waste;
- Yearly reports from municipalities to MoEPP on transported municipal and non-hazardous waste, and disposed municipal, non-hazardous and inert waste;

For landfills on:

- Yearly reports from the Drisla landfill to MoEPP on accepted municipal, non-hazardous and inert waste, general data on the landfill and its activities (on the situation with other landfills in the country, see Chapter 8);

For utilized vehicles and their parts and materials on:

- Yearly reports to MoEPP from legal entities and natural persons which/who cover vehicles utilized, the quantity of hazardous materials and parts, and the quantity and type of non-hazardous materials treated, recycled and landfilled.

Parallel to these data flows, there has been statistical data collection by the State Statistical Office (SSO) from public and private companies on generated,

[5] Official Gazette Nos. 67/04, 14/06 and 84/07

[6] Official Gazette No. 68/2004

treated and disposed municipal waste and some industrial waste. This activity started in 2008 and is conducted every second year. In 2011, statistical data collection on industrial waste will cover energy, mining and, possibly, recycling waste. In 2012, SSO plans to start data collection on construction and demolition waste.

In spite of good progress made in the country, the lack of a coordinated approach between MoEPP and SSO leads to inconsistencies between similar waste data series published by these public authorities.

Noise

To implement the 2007 Law on Environmental Noise Protection, MoEPP has been entrusted with collecting data for noise exposure indicators. A network of authorized and accredited laboratories for noise exposure assessment is under establishment to obtain data for noise exposure indicators at major roads, major railways and airports, agglomerations and settlements. Laboratories for noise measurements are located in CPHs and consultant companies for environmental risk assessment. Some of them have already been accredited by the National Institute of Accreditation.

Radiation

According to the Law on Protection against Ionizing Radiation and Radiation Safety,[7] the Republic Health Institute is responsible for monitoring ionizing radiation in the environment (air, precipitation, soil, grass and water). It also monitors radioactive contamination in domestic, imported and exported food, cosmetics, drugs and construction material, and issues certificates of compliance. Approximately 2,000 samples per year are analyzed, mostly for alpha and beta activity; others for total uranium. The Institute prepares annual reports on the results of these activities and provides information to the public.

3.3 Information management and reporting

Information management

MEIC/MoEPP is responsible for data collection, analysis, reporting and dissemination of information on the state of and trends in the environment. It manages databases on air, wastewater and waste on the basis of data submitted by companies. Box 3.1 presents an example of a company's environmental reporting.

Box 3.1: Environmental reporting by the Pivara Skopje AD brewery

Based on the results of its established monitoring programme, the company submits to MoEPP: (a) quarterly reports on air emissions and wastewater quality; and (b) annual reports on soil pollution, indoor and outdoor noise, and ionizing radiation. The company's own accredited laboratory measures wastewater quality, while an external accredited laboratory measures other parameters.
Source: Pivara Skopje AD, 2011

Funds permitting, 3 CPHs (Skopje, Bitola and Kumanovo) monitor noise twice a year in 4 cities: Bitola (at 8 measurement points), Kicevo (at 8 points), Kumanovo (at 10 points) and Skopje (at 14 points). However, the general public in these cities is not informed about the status of noise exposure. In other cities, institutions authorized to measure the level of noise do it only upon a complaint by legal entities or natural persons. Although required by legislation, strategic noise maps (number and percentage of people exposed to 55 dB (A) and more in major agglomerations, around major roads, major railways and major airports) have not yet been prepared.

For the purpose of providing an integrated system of noise monitoring, MoEPP plans to establish a State noise monitoring network and adopt a programme for its operation in the near future.

MEIC/MoEPP operates a database on air quality, the Cadastre of Air Polluters and Pollutants, the Cadastre of Wastewater and Solid Waste Generators, the CORINAIR (CORe INventory AIR emissions) Inventory and the Greenhouse Gases (GHG) Inventory.

The database for air quality is based on data from the State Automatic Monitoring System for Air Quality. It also provides the functionality of importing all validated air quality data from the manually operated monitoring networks. This option is not in use, however, because the export is in a limited number of formats. There is an option to export validated data from the database to a suitable DEM (Data Exchange Module) format for reporting air quality data to EEA annually.

[7] Official Gazette No. 48/2002

The Cadastre of Air Polluters and Pollutants contains data on air pollutants and polluters. This database contains data for 2004/2005 from some 1,600 entities on their emissions of five pollutants: CO, NO_x, SO_2, VOC and TSP, as well as data on entity location, description of the technological process, general data for the business subject, electricity consumption, etc. The data stem from the replies to a dedicated questionnaire by business subjects, emission measurements and estimation. In 2010, the database was updated with data for the years 2008 and 2009.

The Cadastre of Wastewater and Solid Waste Generators, a self-standing database, has been under development since 2004. It contains data on activities and installations, which pose or may pose a threat to the environment. The Cadastre covers:

- Production and industrial entities – 437
- Public enterprise – 123
- Transport companies – 18
- Hotels, resorts -74
- Medical facilities (public health institutions, hospitals, clinics, polyclinics, laboratories and veterinary stations) - 287
- Services (dry cleaning and other cleaning services) - 61.

The CORINAIR Inventory covering emissions of main air pollutants (CO, NO_x, SO_2, VOC and total suspended particles-TSP) was established in the country in 2004-2005. It is used for both national needs and for reporting under the Convention on Long-Range Transboundary Air Pollution (CLRTAP) and to the European Environmental Agency. The most recent cycle of CORINAIR inventory was finished in 2010.

The national greenhouse gas (GHG) inventory was prepared for the years 1999-2002 (with 2000 as base year) under the second national communication to the UNFCCC (2008).

An inventory of substances belonging to the group of greenhouse gases (GHGs Inventory) was prepared for the first time in 2002. In 2008, a Second National Communication on Climate Change was produced covering both direct GHG and non-direct GHGs (HFCs, PFCs, SF6, CO, NO_x, SOx and NMVOCs). No other update of th**e** GHG inventory has been established since then because of the lack of funds.

All the above-mentioned databases are in fact "locked in", not-interconnected databases. There is no real-time access to data via Internet.

The development of a National Biodiversity Information System (NBIS) started in 2010 under the UNDP/GEF project on "Strengthening the ecological, institutional and financial sustainability of the system for protected areas".

MoEPP recently started developing an Environmental Spatial Information System (SIS). The efforts of a dedicated MoEPP Office for SIS have resulted so far in the development of a digital terrain model (DTM) with 20-meter resolution orthophoto for the whole country in a ratio of 1:50,000 as a basis for the development of a thematic CORINE LAND COVER map of the country in a ratio of 1:100,000. These two products may be used for spatial recording of data, space planning and development in the country.

The country has not yet established a pollutant release and transfer register, a national emission ceilings inventory, and an inventory of large combustion plants.

At the moment, the Ministry of Health does not have an environmental health information system establishing links between environmental conditions, population exposures and health effects. Environmental monitoring and epidemiological data collected by different actors do not have the necessary coherence to be related to each other and to enable the identification of links between exposures to environmental hazards and health effects. Some studies that have been undertaken recently (such as those carried out in Veles by the State Public Health Institute on the health effects of exposure to lead in children) together with a newly adopted Health Statistics Law may serve a useful starting point for the creation of an integrated environmental health information system in the country.

Environmental statistics

The State Statistical Office (SSO) collects statistical environmental data through regular surveys with different periodicity (annual, biennial and ad hoc). Statistical forms/questionnaires are the main tool for data collection. All forms have been developed following agreed methodologies, classifications and manuals. In 2008, a framework for the development of waste statistics was worked out on the basis of the relevant EU regulation and standards.

Since 2007, SSO, jointly with MoEPP, has been producing every second year a publication on "Environmental Statistics in the Republic of Macedonia" in both a hard copy and an electronic version.

In 2010, SSO published a statistical compendium called Sustainable Development, 2010 as a first attempt in the country to promote the sustainable development concept from a statistical point of view. The publication follows the structure of the set of indicators defined in the EU strategy for sustainable development. SSO intends to supplement future publications with indicators that will result from the adoption of the National Strategy for Sustainable Development and from the establishment of a national set which will reflect the national priorities for sustainable development.

Annual SSO publications (Statistical Yearbook and Macedonia in Figures) include basic environmental statistics.

All of the above publications are freely available on the Internet.

Environmental reporting

Since 2002, MoEPP has been preparing annual reports, some in print runs of 500 copies, on the basis of processed data on several environmental media.[8] Hard-copy reports are submitted to other monitoring institutions and made available to the public in the Public Relations Unit. They are also uploaded on the Ministry's web site.

In September 2008, the Government adopted a National Set of Environmental Indicators including 40 indicators that were developed on the basis of a core set of EEA indicators. The indicators were published by MoEPP in 2008 in Macedonian and English and uploaded on the MoEPP web site. The next publication (scheduled for 2010) is expected to be published in 2011. Country statistical and environmental experts participate actively in the UNECE Joint Task Force on Environmental Indicators.

In spite of the requirements of the Law on Environment (see section 3.6) and the obligations under the Aarhus Convention, the country has not published a national State-of-the-Environment (SoE) Report. The last such report dates back to 2000. MoEPP intends to publish a national SoE report in 2011. Although, pursuant to the same law, the publication of local SoE reports remains optional for municipalities and the City of Skopje, no such reports appear to have been published or planned so far.

3.4 Public participation

Non-governmental organizations

The country has a vast network of active environmental non-governmental organizations (NGOs) that are engaged in raising environmental awareness of the public, education and training and environmental improvements in specific areas such as nature conservation. An example of a widely recognized NGO effort in the country to facilitate access of the general public to environmental information is presented in Box 3.2.

Country environmental NGOs have established a nationwide coalition – Aarhus Family. They actively promote the implementation of the Aarhus Convention in the country. An example of NGO activities in this regard is presented in Box 3.3.

MoEPP cooperates actively with environmental NGOs. It regularly circulates information on its activities

[8] *Annual Report on the State and Quality of Environment*

Box 3.2: Center for Electronic Communication - Eko.Net

The Center is promoting the use of Internet as a means of fast and efficient communication between the environmental NGOs and all interested citizens and institutions. The main goal of Eko.Net is to enhance the influence of the environmental NGOs and to improve their use of Internet. It provides environmental NGOs with a possibility to promote their activities to the public. Eko.Net also gives them an opportunity to exchange information between each other. These aims are realized through:

- Updating of the web portal www.eko.net.mk, which has a database on the environment that is updated continuously;
- Distribution of environmental news electronically and in printed form.

The Center for Electronic Communication also offers services as follows:

- Training of members of environmental NGOs for basic use of Internet and enhancement of computer skills designed to meet the needs of the legal entities and natural individuals which/who order such service;
- Web design, creation and development of web sites and portals.

Source: www.eko.net.mk.

Box 3.3: Florozon – Skopje's activities to promote access to justice on environmental matters

Since 2007, the NGO Florozon - Skopje has carried out activities for strengthening capacities to ensure better practical application of the right to access to justice on environmental matters. Representatives from national courts have benefited from the programme (e.g. judges, presidents of courts), as well as lawyers and representatives of the Ombudsman, the Ministry of Justice and MoEPP who took part in training seminars. To enable easier access to justice, Florozon has opened a Centre for Access to Justice and the Implementation of the Aarhus Convention. The Centre acts nationwide, for the benefit of all individuals and legal entities. It offers free legal advice and free legal representation in cases where the right to a healthy environment has been violated.

Source: Ministry of Environment and Physical Planning

Table 3.1: Financial support to NGOs from the MoEPP investment programme, 2007, 2008 and 2010

	2007	2008	2010
Amount in MKD	8,880,000	21,350,000	23,660,000
Equivalent in Euro	144,390	347,154	384,715
Share in total investment	12%	21%	38%

Source: Ministry of Environment and Physical Planning, 2011

among 56 NGOs. MoEPP invites representatives of the NGO community to discuss draft laws, plans and programmes. Furthermore, it provides NGOs with substantive financial support for their projects. Table 3.1 presents data on the amounts of the financial support provided to NGOs and the share of this support in MoEPP annual investment programmes over the past few years.

Access to information

MoEPP has established a Sector of Public communication (SPC) to provide environmental information to the public. Within the SPC, there are "public" computers and a library, facilitating citizens' access to information. MoEPP has significantly upgraded its web site (www.moepp.gov.mk) and regularly uploads there a vast variety of information including a list of entities which possess environmental information with details of the information held by each of these entities, information on legislation, policies, plans and programmes as well as data on monitoring activities and environmental impact studies. With a rapid telecommunications development in the country (see table 3.2), Internet has become a powerful source of a speedy access to information.

SPC/MoEPP has organized numerous awareness-raising campaigns on specific topics. In 2004, campaigns were run on waste management, nature protection and the phasing-out of lead in petrol, and in 2007, there was a campaign on environmental impact assessment (EIA) and integrated pollution prevention and control (IPPC). A green Eco-bus, a technically equipped mobile public communications office, and other innovative means have been used as specific tools for communication with and approaching citizens. Public awareness-raising is also promoted through cooperation with the electronic and printed media.

Table 3.2: Telecommunications development per 100 inhabitants, 2003–2009

	2003	2004	2005	2006	2007	2008	2009
Internet users	19.07	24.44	26.45	28.62	36.30	46.04	51.77
Personal computers	5.82	6.89	22.15	26.50	36.76	..	..
Mobile cellular subscriptions	38.26	48.50	55.57	62.02	87.97	96.38	95.14
Fixed telephone lines	25.88	26.42	26.22	24.09	22.73	22.39	21.41

Source: United Nations Statistics Division, International Telecommunication Union, 2011

SPC/MoEPP organizes various events and campaigns to celebrate the days of the eco-calendar, as follows:

- 21 March, Day of Spring – Ecology Day
- 22 April, Earth Day
- June, Environment Day
- 16 September, Ozone Layer Day
- 22 September, Day Without Car
- 11 December, Day of Mountains.

It organizes annual International Exhibitions of Children's Art on Flora and Fauna, and Eco-Champion contests for local governments, business, media and individuals for achievements in waste management, environmental education and information, and nature conservation. SPC/MoEPP publishes promotional materials like Citizens' Guidelines with information on MoEPP activities and a leaflet Save Money and Fuel by Protecting the Environment. MoEPP partly finances a monthly magazine Ecology published by an NGO Eco-Centre.

MEIC/MoEPP annually publishes leaflets for the general public on the state of air and water quality in the country, emissions into the air, hydrological conditions of surface water and some other environmental topics.

Nevertheless, national NGOs complain about the lack of both information on MoEPP project activities and a list of the distribution of responsibilities among MoEPP staff (to facilitate direct requests for information) on the MoEPP web site.

Environmental decision-making

As part of the Regulatory Impact Assessment (RIA) process, MoEPP prepares RIA forms on draft laws. These forms are regularly uploaded on the public web site ENER, which was designed to provide the private sector and the general public with access to all legislation that is being developed in the country. MoEPP also uploads draft environmental laws on its own web site for comments by the public.

In addition, MoEPP has organized several workshops to discuss draft environmental laws. Representatives of the interested parties including local self-government, public enterprises, industry associations (three chambers of commerce), other interested private legal entities, NGOs, and scientific and expert organizations have taken part in these workshops. Their comments have been taken into account in the drafting process. Examples of legal acts that have undergone the public consultation process include the 2009 Law on Packaging and the 2010 Law on Management of Batteries and Accumulators, and Waste from Batteries and Accumulators.

MoEPP has also consulted with NGOs on some draft strategic environmental plans and programmes (see Box 3.4 for an example). Local self-governments involve NGOs and other stakeholders in the development of Local Environmental Action Plans (LEAPs). Nevertheless, public is frequently not involved in the discussions of sectoral strategic plans and programmes that may have a substantive environmental impact. This is explained by the lack of clearly defined procedures in relevant by-laws.

Representatives of major groups are the members of the National Council for Sustainable Development established by the Government in 2010.[9] The Council is chaired by the Deputy Prime Minister of the Government and is composed of representatives of nine State bodies, the National Assembly, the Academy of Science and Arts, three faculties, the Economic Chamber and the NGO DEM (a network of country NGOs). The Council has not yet met (see Chapter 1).

Public participation in EIA seems to be well organized at the national level despite relevantly low public interest in this procedure. In compliance with the EIA requirements as stipulated in the Law on Environment, the MoEPP Administration on Environment:

(a) Publishes notifications about proposed projects in two national daily newspapers and on the MoEPP website;
(b) Publishes decisions on the need for EIA for the relevant proposed projects in two national daily newspapers and on the MoEPP website;
(c) Announces that EIA studies are being prepared and are available to the public in two national daily newspapers, local radio/TV stations, and uploads non-technical reports of the studies on the Ministry's website;
(d) Announces the time and the place of the public hearing on EIA studies, to be organized by investors upon the request of concerned/ interested parties, in two daily newspapers and a local radio/TV station;
(e) Publishes decisions granting approval or refusal of project realization in two national daily newspapers and on the Ministry's website.

The number of EIA studies that are considered annually is small. In all, 16 decisions of "full" EIA were taken during 2006-2010 by MoEPP. Even fewer public hearings were organized at the request of interested members of the public. From 10 to 30 persons generally attend public hearings. National NGOs complain about insufficient quantity and quality of data and information provided to the public in many EIA studies. This may explain, to some extent, the frequent inactivity of members of the public during the hearings.

[9] Official Gazette No. 8/2010

Box 3.4: Public participation in NEAP-2

A draft version of the second National Environmental Action Plan (NEAP-2) was presented to a broad group of stakeholders in June 2005. Representatives of all stakeholders were also invited for a two-day workshop for further presentation and discussion. Thereafter, comments and feedback were analyzed, ad hoc intra-ministerial and inter-ministerial consultations were held, and the revised draft version was submitted to the NEAP-2 Steering Committee for comments before complete finalization. Prior to its submission to the Government, NEAP-2 was made available to the public through the Ministry's web for comments, and discussions were also organized with representatives of local self-governments, industry, NGOs, the scientific sector, etc. Subsequently, the NEAP was presented to the Government which adopted it on 29 March 2006.

Source: Second National Environmental Action Plan. 2006

In general, the country complies with legal requirements regarding public participation in the permit issuing process. MoEPP publishes applications for integrated environmental permits (A-IPPC permits) on its website and in two national daily newspapers, and allows, within 15 days, the concerned public to access the relevant information. It informs members of the public whether or not their opinions were taken into consideration during permit-issuing. On the other hand, no information is available on the compliance of local self-governments with the legal obligation to ensure public access to all relevant information within the procedure for granting permits (B-IPPC) under their jurisdiction.

3.5 Environmental education and education for sustainable development

Preschool and school education

In preschools throughout the country, child development programmes cover such environment-related issues as safety of immediate surroundings, clean air and water, and hygiene. These issues are promoted through games and play. The Bureau of Educational Standards of the Ministry of Education and Science provides methodological guidance to preschool educators to this end through pedagogical commissions.

In primary schools, environmental issues are dealt with in specific courses: Nature in the first year; Natural Sciences from the second to the sixth years, and Biology, Chemistry and Geography from the seven to the ninth years. Optional environmental courses are also available for students of the seventh to the ninth years in many schools. Overall, it appears that both mandatory and optional training in environmental issues is insufficiently linked and coordinated, precluding the interdisciplinary approach necessary for understanding environmental issues.

In agricultural, veterinary and body-care vocational training schools and in high schools (gymnasiums), environmental issues are covered under the Biology course. According to the Concept of High School Education that is being prepared by the Ministry of Education and Science, an additional course on Ecology will be introduced into high school curricula in the near future.

Box 3.5: Green Package

In 2006-September 2008, the Regional Environmental Centre for Central and Eastern Europe (REC) - Country Office Macedonia implemented the project "Green Package" - training in sustainable development in primary schools of the country. In connection with this project, a multimedia educational package on environment and sustainable development called the "Green Package" was produced. It is intended for use in schools and contains diverse training materials, such as a teacher's manual, information brochures for students, a DVD with an educational content, a CD-ROM containing lessons on different topics related to the environment, a game involving examples of environmental problem-solving and other printed materials. The Package was published in Macedonian and Albanian. Immediate target groups included students (aged between 10 and 15), teachers from the fifth to the ninth grade, while the indirect target group included the families of 25,000 students covered by the project. The Green Pack was produced in 1,800 copies and distributed to all schools in the country.

In 2009, the REC Country Office Macedonia launched the project "Green Package Junior" intended for students aged 5-10. The immediate target group includes 350 primary schools with some 100,000 students and 500 to 550 teachers. New games and multimedia tools are under elaboration as part of the Green Package aimed at improving the environmental awareness and knowledge of the young.

Source: Regional Environmental Centre for Central and Eastern Europe - Country Office Macedonia. 2011.

Table 3.3: Number of graduates of State universities by selected environmental curricula, 2007–2008

Name of school and curriculum	2007	2008
Interdisciplinary Studies in Living Environment Engineering, Skopje:		
Environmental engineering	21	19
Faculty of Agriculture Sciences and Food, Skopje:		
Eco-agriculture	4	12
Usage, regulation and protection of land and water	2	..
Faculty of Forestry, Skopje:		
Greenkeeping and maintenance of natural environment	20	13
Total	**47**	**44**

Source: State Statistical Office, Skopje, Graduated Students, 2008, 2009

The Regional Environmental Centre (REC) country office and environmental NGOs are actively promoting environmental education in the country. For instance, REC is helping to distribute multimedia educational package ("Green Packs") on environment and sustainable development for teachers of primary schools and their students and to organize training for teachers (see box 3.5).

Higher education

The number of State universities in the country that have introduced environmental curricula has increased slightly over the past several years. While only three State universities were training environmental specialists in the mid-2000s (see the number and type of environmental graduates in 2007-2008 in table 3.3), in the 2008/2009 scholastic year, already four State universities were training some 400 students in total in environmental engineering, land and water protection, eco-agriculture, and forest protection (table 3.4).

There appears to be no training in the State universities of specialists in such important environmental areas as environmental monitoring, management and law. The Ministry of Education and Science does not have information on environmental courses available at State universities for students in non-environmental disciplines. There are no data on the number and type of environmental specialists trained in 16 private universities in the country. Nor is there any evidence that higher education institutions have started to promote the sustainable development concept in curricula.

Retraining

The Agency of Civil Service is responsible for so-called generic training (mainly IT and financial issues) of national civil servants. Pursuant to current legislation, central public authorities may spend only a negligible share (0.05 per cent) of their annual budgets on substantive (specialized) staff training. As

Table 3.4: Number of students (at all levels) enrolled in undergraduate studies on environment at State universities in 2008/2009

Name of school/curriculum	Students
Faculty of Mechanical Engineering - Skopje:	
Energy and environmental engineering	14
Energy and environment	125
Interdisciplinary Studies in Living Environment Engineering, Skopje:	
Environmental engineering	27
Faculty of Agriculture Sciences and Food, Skopje:	
Usage, regulation and protection of land and water	12
Eco-agriculture	82
Faculty of Forestry, Skopje:	
Greenkeeping and maintenance of natural environment	134
Total	**394**

Source: State Statistical Office, Republic of Macedonia, Enrolled Students at School Year, 2008/2009, Skopje, 2009.

a result, substantive training depends heavily on the availability of foreign grants or training workshops organized sporadically under international projects. Although MoEPP is preparing an annual staff training plan, in accordance with the requirements of the 2000 Law on Civil Servants,[10] limited statistics are available on the actual number of staff trained and the type of training they received.

In 2009, the Government adopted a Strategy for Civil Servants Training in 2009-2011 and an Action Plan for Implementing and Monitoring of the Civil Servants Training Strategy.[11] Neither the Strategy nor the Action Plan promotes environmental training throughout the national civil service. Furthermore, the Action Plan is not supported by a sufficient budget even for generic training. Under present conditions, not only are environmental civil servants in the country not systematically updated and familiarized with new legal and regulatory documents and good practices on the environment, but civil servants in economic, social and sectoral ministries and services remain generally untrained on environmental subjects.

3.6 Legal and policy-making framework

Environmental monitoring

With the adoption of the Law on Environment and its amendments,[12] as well as specific environmental media laws, the country made significant progress in strengthening the legal and regulatory basis for environmental monitoring and reporting, especially on air pollution.

The Law on Ambient Air Quality[13] establishes requirements for: (a) limits and target values of ambient air quality and alert thresholds; (b) emission limits and target values for exhaust gases and vapours from stationary sources and from mobile sources, and (c) contents of harmful and target values of substances in fuels. The Law allows the establishment of stricter emission limit values in a given zone and agglomeration, depending on the nature of ambient air pollution and sources of emission, at the proposal of the Council of the Municipality or the Council of the City of Skopje.

The Law establishes that the legal entities and individuals possessing or using certain installations that are sources of ambient air pollution must install and maintain in proper functioning condition the measuring instruments to monitor the emissions at the source. If the installation is part of the monitoring network, the owner has an obligation to provide regular monitoring, measurement and processing of data on emissions from the source of pollution; to submit the data to MoEPP on a monthly basis; and to keep data on emissions for at least five years, after which they will be archived. The Law specifies the form and contents of data presentation and the manner of data recording. Installations not covered by the national or local monitoring networks have to control both sources of emissions and the quality of the ambient air in the area of the installation. This can be done by the installation's own services or through scientific or professional organizations or other legal entities, provided they have been accredited for ambient air quality monitoring.

To help implement the Law on Ambient Air Quality, several regulations have been adopted by the Government, including a Decree on the limit values of the levels and types of polluting substances in the ambient air and alert thresholds, deadlines for limit values achievement, margins of tolerance for the limit values, target values and long-term targets[14] (albeit its actual implementation started in 2007), a Rulebook on the methodology for ambient air quality monitoring,[15] and a 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 [16]. During the last few years the Institution of Standardization has endorsed 70 standards for air quality and air emissions using the relevant ISO and CEN standards as reference.

The 2010 Law Amending the Law on Ambient Air Quality[17] established explicit reporting obligations to the Executive Body of the Convention on Long-Range Transboundary Air Pollution (CLRTAP), EEA and other relevant international organizations. That same year, MoEPP adopted a Rulebook on the form, methodology and manner of keeping and maintaining the Cadastre of Air Polluters and Pollutants.[18] Additional rulebooks whose adoption is pending in 2011 aim at establishing requirements for entities performing ambient air quality monitoring and for

[10] Official Gazette No. 59/2000 of July 22, 2000
[11] http://www.respaweb.eu/en/documents/folder/&tid=17&print=1#
[12] Official Gazette No. 53/05, 81/05, 24/07 and 159/08
[13] Official Gazette No. 67/04, 92/07 and 35/10
[14] Official Gazette No. 50/05
[15] Official Gazette No. 138/2009
[16] Official Gazette No.141/2010
[17] Official Gazette No. 35/2010
[18] Official Gazette No. 92/2010

installations submitting data for emissions into the ambient air from stationary sources.

To implement the water monitoring provisions of the Law on Water Management[19], a Rulebook for the preparation of information and cartographic overviews of activities for water monitoring was adopted in 2009.[20] Based on the Law on Hydro-meteorological Activity, a Rulebook on the procedures and manner of monitoring and measurement of the quality features of waters in the hydrological stations network was adopted.[21] It defines analytical methods for determining the content of substances in surface and ground water.

Following the adoption in 2007 of the Law on Protection against Environmental Noise, the Government adopted several regulations for noise monitoring.[22]

In 2006, the Government adopted a National Environmental Monitoring Strategy. This instrument focuses on three main issues: institutional issues; monitoring methods and parameters; and reporting obligations. To implement it and better coordinate monitoring activities, MoEPP commenced a process of establishing a State monitoring network on the environment covering air, water, biodiversity, waste and noise. In 2010, it set up a working group composed of representatives from relevant institutions in these environmental areas. This body reviewed the existing monitoring stations and parameters used by MoEPP, the Republic Health Institute (RHI) and the Hydro-meteorological Administration (HMA) with a view to integrating these stations into a single State network. NEAP-2 envisaged the development by 2011 of a National Environmental Monitoring Programme to implement the above Strategy. MoEPP has prepared a draft decree to this end, which is under consultation with relevant monitoring institutions in the country and is expected to be adopted in the course of 2011.

[19] Official Gazette No. 87/08, Official Gazette No. 6/09 and Official Gazette No.161/09

[20] Official Gazette No. 148/09

[21] Official Gazette No.33/2010

[22] These include, in particular, rulebooks on the application of noise indicators and noise measuring (2008), on the locations of measuring stations and measuring points (2008); limit values of environmental noise level (2008); manner of monitoring and procedure for delivery of monitoring information and data on noise (2009); maximum permissible noise levels (2010); strategic noise maps and action plans for noise (2010).

Information management

The Law on Environment obliges the Government to establish an environmental information system that should provide relevant comprehensive, accurate and publicly accessible information on the state of the environment. To implement this requirement, in 2005 the Government approved a Strategy for Environmental Data Management in the country. The Strategy set up an institutional, technical and technological framework for the development of a National Environmental Information System (NEIS), tasked with providing optimized environmental data flow between all relevant institutions and integrating all available environmental data into a single functional whole. According to NEAP-2, this system should be fully operational in 2011.

MoEPP has made some efforts to achieve this target. All environmental data and information obtained by various monitoring networks and self-monitoring originating from different institutions, entities and bodies are henceforth submitted to MEIC/MoEPP. The latter has established and maintains relevant and adequately processed databases (see section 3.3 above). Nevertheless, coordination and cooperation between relevant institutions managing environmental data in the country remain unsatisfactory. Many institutions manage a large amount of small, mutually unconnected and unsynchronized databases, inadequate for meeting wider needs and requests. No harmonized criteria and standards for the design of environmental information systems and reliability of data management methods have been established. There is no agreed format for the submission of environmental data to MEIC/MoEPP from data collectors.

In 2010, a Law on the Ratification of the Protocol on Pollutant Release and Transfer Registers (PRTR) was adopted.[23] A draft Rulebook on the form, contents, methodology and manner of keeping a Register on emissions and transmission of pollutants was prepared, and is currently the subject of interdepartmental consultations.

Environmental reporting

The Law on Environment introduced a requirement for MoEPP to publish every fourth year a state-of-the-environment (SoE) environmental indicator and annual reports. Based on this Law, the Rulebook on the Content of the State-of-the-Environment Report was adopted in 2006. It followed the 2003

[23] Official Gazette No.135/2010

UNECE guidelines for the preparation of national SoE reports[24]. This Rulebook is being amended and supplemented by details on methodology and manner of SoE report development. Another set of relevant UNECE guidelines[25] is used in the process. While the SoE report has not yet been prepared, MoEPP has been regularly publishing an annual report and in 2008 published the first indicator report (see section 3.3 above).

Public participation

In 2004, a Strategy for Communication on Environment and an Environmental Awareness Strategy were adopted by the Government to guide MoEPP activities in these two areas in 2004-2008. NEAP-2 prescribed a set of specific actions to implement this Strategy, most of which MoEPP has put into operation through campaigns and other dedicated activities (see section 3.4 above). No follow-up communication and awareness-building strategies have been adopted since 2009, however.

The country has gradually established a supportive legal and regulatory basis for public access to environmental information and participation in environmental decision-making. Key legislation includes the Law on Environment and the Law on Access to Information of a ublic Character.[26] Provisions regarding access to information related to specific environmental media are included in the Law on Waste, the Law on Nature Protection, the Law on Ambient Air Quality, and the Law on Water.

According to legislation, the Government is obliged, inter alia, to publish and keep a list of subjects possessing environmental information with details on the information held by each of the subjects. Subjects possessing environmental information must appoint a person responsible for implementing the right for access to environmental information and must provide premises in which the requesting parties shall be able to review or gain an insight into the required environmental information. These requirements were made operational through by-laws.[27] A detailed description of the relevant legislation and regulations was submitted by the country to the Meeting of the Parties to the Aarhus Convention.[28]

Despite the progress made, there are still some obstacles in implementing the above legislation in the country caused, for instance, by the ongoing process of decentralization that is changing the established responsibilities of public authorities and by the insufficiency of resources needed for dissemination of data and information, and in establishing and equipping information focal points.

NEAP-2 planned to prescribe in secondary legislation the public consultation procedures as required by the EU EIA and SEA directives, including details on the manner in which public participation shall take place; the manner in which information regarding the EIA and SEA is to be published; and procedures for ensuring that the results are taken into account when taking the final decision. The MoEPP prepared ordinances regulating the procedure for carrying out EIAand SEA including public consultation procedures. Although these ordinances have never been adopted, they are used by the relevant staff of the MoEPP in their practical work.

Environmental education

The Law on Environment establishes the responsibility of the Ministry of Education and Science to ensure that every curriculum for primary or secondary schools contains teaching methods and issues in the field of environment. The local self-government units must, in their territories, promote the development of environmental education and public awareness.

At the same time, neither the laws on primary and higher education of 2008 nor amendments to these laws and a series of rulebooks on education adopted thereafter contain any references to environmental education. No institutional platform is in existence in the country for the discussion of environmental

[24] *Guidelines for the Preparation of Governmental Reports on the State and Protection of the Environment*, 2003 (ECE/CEP/113)

[25] *Guidelines for the Preparation of Indicator-based Environmental Assessment Reports*, 2007 (ECE/BELGRADE.CONF/2007/INF/6)

[26] Official Gazette No. 13/06

[27] For instance, by a Decision on publishing a list of subjects that possess environmental information (Official Gazette, no. 82/07) and a Rulebook on the Manner and Procedure for providing access to environmental information (Official Gazette, no. 93/07)

[28] Implementation Report Submitted by the former Yugoslav Republic of Macedonia at the third meeting of the Meeting of the Parties to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 2008 (ECE/MP.PP/IR/2008/MKD)

education issues between the Ministry of Education and Science and MoEPP.

The country has not adopted a national strategy on education for sustainable development (ESD) recommended by the UNECE Strategy on ESD. Moreover, no interagency commission or expert group involving all stakeholders has been established at the national level to develop such a national strategy.

3.7 Conclusions and recommendations

With the adoption of the Law on Environment and laws and by-laws on specific environmental media, the country made significant progress in strengthening the legal and regulatory basis for environmental monitoring, especially on air pollution. It increased the number of stations under the State Automatic Monitoring System for Air Quality from 4 to 15. Key air pollution parameters are measured including ground-level ozone, small particles PM10, O_3 and heavy metals. A total of 18 hydrological stations that monitor nearly all amount of surface water going to neighbouring countries were upgraded and automated. A monitoring (routine data collection) system on various waste streams has been established.

At the same time, the density of air quality stations in the country is insufficient. Further modernization of water monitoring stations is necessary. No progress has been made with the adoption of a lake monitoring programme, as proposed by relevant monitoring institutions in 2005. There is a general lack of data on urban wastewater quality and the quantity and quality of industry wastewater. Observation and examination of groundwater are not performed systematically. There is no continuous nationwide measurement and assessment of the state, quality and changes in the soil. The country does not yet have a national forest inventory. Furthermore, monitoring of natural heritage and biodiversity in the country has not yet been established.

The Ministry of Environment and Physical Planning (MoEPP), the institutions of the Ministry of Health, the Ministry of Agriculture, Forestry and Water Economy and its Hydro-meteorological Administration, the State Statistical Office and other organizations and institutions in the country are dealing with monitoring and data collection on environment. To better coordinate these activities, the Government adopted a National Environmental Monitoring Strategy in 2006. To implement it, MoEPP set up a working group composed of representatives of relevant institutions. This working group reviewed the existing monitoring stations and parameters with a view to integrating these stations into a single State network. MoEPP prepared a draft decree to this end, which is under consultation with relevant monitoring institutions in the country.

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 technical requirements, budgets and performance indicators, to establish reliable and sustainable monitoring systems for all media.

The Law on Environment obliges the Government to establish an environmental information system on the state of the environment. To implement this requirement, the Government approved in 2005 a Strategy for Environmental Data Management in the country. MoEPP has made some efforts to implement this Strategy: all environmental data and information obtained by various monitoring networks and self-monitoring originating from different institutions, entities and bodies are henceforth submitted to MoEPP; and databases on air quality and emissions, greenhouse gas emissions, wastewater polluters and solid waste have been established.

Nevertheless, coordination and cooperation between relevant institutions managing environmental data in the country remains unsatisfactory. Many institutions manage a large amount of small, mutually unconnected and unsynchronized databases, inadequate for meeting wider needs and requests. No harmonized criteria and standards for the design of environmental information systems and reliability of data management methods have been established. There is no agreed format for the submission of environmental data to MoEPP from data collectors. All MoEPP databases are in fact "locked in", not-interconnected databases. There is no real-time access to data via Internet.

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.*

Since 2002, MoEPP has been preparing annual reports on the basis of processed data on several environmental media. Since 2008, a national set of environmental indicators has been published every second year. Since 2007, the State Statistical Office (SSO), jointly with MoEPP, has been producing every second year a publication on Environmental Statistics. In 2010, SSO published a statistical compendium Sustainable Development, 2010 as a first attempt in the country to promote the sustainable development concept from a statistical point of view.

At the same time, despite the requirements by the Law on Environment and obligations under the Aarhus Convention, the country has not published a national state-of-the-environment (SoE) report since 2000. Although, pursuant to the same law, the publication of regional SoE reports remains optional, no such reports appear to have been published or planned so far. MoEPP is currently revising a Rulebook on the Content of the State of Environment Report that was adopted in 2006 but has never been used.

<u>Recommendation 3.3:</u>
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 Law on Environment establishes the responsibility of the Ministry of Education and Science to ensure that every curriculum for primary or secondary schools contains teaching methods and issues in the field of environment. At the same time, neither the laws on primary and higher education of 2008 nor amendments to these laws and a series of rulebooks on education adopted thereafter contain any references to environmental education. As a result, both mandatory and optional training in environmental issues in schools are insufficiently linked and coordinated, precluding the interdisciplinary approach necessary for understanding environmental issues. There is no training in the State universities of specialists in such important environmental areas as environmental monitoring, management and law. The situation with regard to the training of civil servants in environmental subjects in the country is unsatisfactory.

No institutional platform is in existence in the country for the discussion of environmental education issues between the Ministry of Education and Science and MoEPP. The country has not adopted a national strategy on education for sustainable development (ESD), as recommended by the UNECE Strategy on ESD. Moreover, no interagency commission or expert group involving all stakeholders has been established at the national level to develop such a national strategy.

<u>Recommendation 3.4:</u>
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.

Chapter 4

IMPLEMENTATION OF INTERNATIONAL AGREEMENTS AND COMMITMENTS

4.1 Major developments since the first EPR in 2002

Since the time of the first Environmental Performance Review (EPR) in 2002, major steps have been taken to strengthen the country's participation in international environmental agreements. The status of the former Yugoslav Republic of Macedonia as a candidate for accession to the European Union (EU) since 2005, has contributed largely to the country's progress in terms of implementation of international agreements and commitments.

As of today, the country has ratified nearly all relevant global and regional environmental agreements. However, there remain some challenges in terms of effective implementation and compliance with the obligations of the multilateral environmental agreements (MEAs) in the country, especially recently ratified agreements.

Environmental cooperation at global and regional levels is to a large extent influenced by the country's future EU accession. The Government has confirmed its commitment to EU accession through the development of the relationship with the EU and has made EU membership a top-priority national goal. The country applied for EU membership in March 2004 and was granted the status of candidate country in December 2005.

In order to accelerate the progress of the accession process, the Government recognizes the importance of maximizing the impact of available external assistance, increasing its effectiveness and ensuring greater ownership by further strengthening the national coordination mechanism. Various international partners in the past years have provided an important amount of support for the country. However, the aid structure has undergone substantial changes and some donors are reducing their activities or changing the area of focus; moreover, EU assistance through the Instrument for Pre-Accession Assistance (IPA) has become a predominant source of development assistance.

Donor coordination between the Government and the donor community has improved steadily and reflects national development priorities and increased national ownership of the development agenda. In 2008 and 2009, donor meetings were held and it was proposed to introduce a programme-based approach (PBA) in five selected sectors, including agriculture and environment, in order to further strengthen and improve coordination mechanisms aimed at increasing the effectiveness of external assistance.

4.2 Framework for international cooperation

Institutional framework

The responsibilities in the area of international environmental cooperation are mostly concentrated within MoEPP. Among these responsibilities are development and implementation of the environmental policy and coordination of activities under the National Programme for the Adoption of the Acquis Communautaire (NPAA) for Chapter 27 – Environment. The Department for Projects Cooperation and Coordination within MoEPP has overall responsibility for international cooperation and has two divisions: the Division for Bilateral and Multilateral Cooperation, and the Division for Pre-Accession Assistance (IPA funds). EU coordination processes within MoEPP is dealt by the Sector for EU. Focal points for international agreements are experts responsible for the relevant clusters, e.g. biodiversity, chemicals and climate change, etc. within MoEPP. In terms of international environmental cooperation, MoEPP shares responsibility with the Ministry of Foreign Affairs, which has also jurisdiction for MEA ratification.

To respond to the increased needs arising from the EU integration process, the Secretariat for European Affairs (SEA) was established as a separate expert service of the Government in 2005 to provide support and coordination to governmental institutions with regard to EU integration. Among its tasks are the coordination of foreign aid from the EU and its Member States (IPA funds) and other foreign aid assistance.

Photo 4.1: Lake Ohrid - a transboundary lake

Furthermore, all ministries have sectors or units for European integration and IPA coordinators. They have established strong communication and cooperation channels with SEA and also contribute to the development of inter-institutional relations. Additionally, these structures provide a foundation for the communication and coordination of IPA funds. The MoEPP, through its IPA coordinator, has good cooperation and coordination with SEA and participates actively in the Working Group on Chapter 11 – Rural Development (Working Group for the preparation of the National Programme for Adoption of the Acquis and preparation of the negotiating stands for EU negotiations). Cooperation with the SEA in regard to EU integration process is done trough the Department for EU.

Donor coordination is of great importance in the preparation of programme assistance. Recent proposals by the international community call on the Government to establish the management capacity to coordinate donor activities. The role of the Government's Secretariat for European Affairs in leading overall donor coordination has improved since the end of 2008 and needs to be further strengthened, while the individual ministries would need to take the lead in managing sector-level coordination. The introduction of the Programme-Based Approach (PBA) has been instrumental in strengthening donor coordination, as well as leadership and ownership of the country's development agenda. This is particularly important, given that environment has been identified as one of the five priority development areas in which progress is needed. Assessment and PBA implementation plans are being developed for the five priority areas by senior-level working groups consisting of Government representatives and international partners. These PBA implementation plans will ensure consistency with the national development priorities and the EU accession agenda of the country by establishing a single results framework.

In view of the above, it is vital that MoEPP, together with other Ministries, departments and stakeholders in the environment sector, continues to improve its coordination efforts to ensure a smooth mechanism for international environmental cooperation. Furthermore, requests for foreign aid from international and

bilateral donors can be further improved between the departments within MoEPP with a view to avoid submission of similar requests to different donors.

Policy framework

EU membership can be considered as the overall strategic objective for current development policies in the country, and strategy documents such as the second National Environmental Action Plan are aimed at the requirements in the EU acquis and harmonization of environmental policies.

In order to meet the criteria for full membership, the second National Programme for Adoption of the Acquis Communautaire (NPAA) was adopted in April 2007. It comprises the plans for harmonization of national legislation with EU legislation, the necessary dynamics of institutional strengthening for implementation of the legislation, the necessary resources for realization, and an Action Plan. NPAA is a powerful instrument for monitoring the whole association process, to be used by the Government as well as by the European Commission. It helps to answer questions posed by the Commission on the basis of which the Commission prepares annual progress reports. NPAA Chapter 27 addresses the achievements and the remaining obligations in the field of the environment. Several other important strategic policy documents in various environmental sectors have been adopted, clearly defining the Government's environmental policy, including:

- Vision 2008 - The Roadmap of the Ministry of Environment and Physical Planning;
- 2007 National Strategy for Clean Development Mechanism;
- 2006 National Environmental Action Plan;
- 2008 National Strategy for Environmental Approximation;
- 2008 National Strategy for Waste Management
- 2010 National Strategy for Sustainable Development for the period of 2010-2030;
- 2009 National Environmental Investment Strategy for the period 2009-2013.

The National Environmental Investment Strategy for the period 2009-2013 is based on priorities identified in the above-mentioned national strategic documents and is founded on three pillars: the first is to ensure the necessary funds (€ 205 million) from national and international sources; the second pillar refers to the allocation of the obtained funds according to clearly defined and agreed priorities; while the third refers to the institutional strengthening required to ensure efficient and effective implementation of the Strategy. The Strategy suggests establishing an inter-ministerial task force to address the current lack of coordination and to streamline investment activities. This task force has not been established up until now; coordination for investment planning and implementation among line ministries needs to be strengthened, and the required capacity within the relevant MoEPP departments, including those responsible for monitoring and evaluating the planned investments, is lacking.

Legal framework

Pursuant to Article 118 of the Constitution, 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 be in conflict with this international agreement. The Law on the Conclusion, Ratification and Implementation of International Agreements, No. 5/98, provides the general legal framework.

The Rules of Procedure for the Operation of the Government requires a governmental body to perform a financial analysis before the signature, ratification or adoption of legislation, including international instruments. This procedure, commonly known as the Regulatory Impact Assessment (RIA), [29]has already been mainstreamed into the policy-making process and all ministries are obliged to undertake RIAs during the process of proposing new laws. Along with the proposal, they are obliged to attach a fiscal impact assessment and an assessment of the harmonization of national legislation with EU directives. For example, prior to signing a Protocol on Strategic Environmental Assessment (SEA) to the Espoo Convention, a financial analysis was performed to identify the related costs, benefits and other related impacts. The financial analysis revealed that at the present stage, there would be no financial implications for the country. The country signed the Protocol on 21 May 2003. In the next steps, when the country decides to ratify the Protocol, there will be separate financial analyses regarding the potential financial implications.

According to the 2005 Law on Environment, submission of monitoring data and reporting to international organizations in line with the obligations of ratified international environment-related agreements are the responsibility of MoEPP.

[29] http://www.analyticamk.org/files/ReportNo32.pdf

4.3 International cooperation and donor coordination

European Union

Over the past decade, the EU has delivered substantial support to the country through various programmes such as humanitarian aid and civil protection (ECHO), Obnova, Programme of Community aid to the countries of Central and Eastern Europe (PHARE), or the Emergency Response Programme. In 2001, the CARDS (Community Assistance to Reconstruction, Development and Stabilization) programme was launched to focus on political, institutional and economic transition. In 2007, the new Instrument for Pre-accession Assistance (IPA) replaced CARDS and the other pre-accession programmes. Total EU assistance to the country since 1992 amounts to more than €1.1 billion.

Between 2005-2008, substantial support to the environment sector in the former Yugoslav Republic of Macedonia was provided through the Regional Environmental Reconstruction Programme for South-East Europe (REReP) initiative, which brought together the countries in South-East Europe (SEE) with the international financial institutions (IFIs), the European Commission, the Stability Pact, interested EU Member States and other bilateral donors. The programme aimed to help SEE countries draw closer to EU membership, in particular by helping them meet their obligations under the Stabiliztion and Association Agreement (SAA).

REReP has helped to develop and facilitate implementation of a list of priority environmental investment programme covering SEE countries in the following priority areas:

- Institution-building;
- Civil society support;
- Support to environmental regional and cross-border cooperation; and
- Reduction of environmental health threats and loss of biodiversity.

From the beginning REReP to date, projects worth nearly €55 million have been implemented in the region with the assistance of REC. REReP has also proved to be a successful mechanism for coordinating donor assistance to high-priority regional assistance projects and encouraging regional cooperation on environmental issues. Projects under REReP have supported the SEE countries, including the former Yugoslav Republic of Macedonia, in their EU integration efforts. Major accomplishments have included the drafting and implementation of environmental legislation, the reinforcement of environmental institutions, and efforts to address priority environmental problems.

Work under REReP related to multilateral environmental agreements (MEAs) included the so-called AIMS project (Support to the Acceptance and Implementation of Multilateral Environmental Agreements in South-Eastern Europe), which attempted to increase the level of acceptance and implementation of MEAs in the SEE region. The outputs under this project included country assessments on acceptance and implementation of MEAs, the establishment of regional networks, as well as capacity-building workshops and meetings. The project has indirectly contributed to the improved implementation of MEAs, additional ratifications of MEAs, and the setting of MEA priorities by governments in SEE countries.

Another relevant MEA project under REReP, which built on the outcomes of AIMS, was entitled "Bridging the Gaps: Enhancing MEA Implementation in the Balkans", was originally supported and funded by the Government of Austria. It aimed at building and improving national capacities for the development and implementation of legislation for the enhanced and more effective national implementation of key global and regional MEAs. It was also aimed at integrating the EU environmental Acquis and streamlining reporting and information management systems in the Balkan region.

In view of the changing political situation in the SEE region with respect to candidate countries and potential candidates for EU accession, and as a successor to REReP,[30] the Regional Environmental Network for Accession (RENA) was launched at the end of 2009 and began its activities in the first half of 2010. RENA is financed by EU and managed by the European Commission. Project activities will be implemented through the work of the following four working groups:

- Strategic Investments and Planning (Working Group 1);
- Climate Change (Working Group 2);
- Cross-border Cooperation and Multilateral Environmental Agreements (Working Group 3);
- Environmental Compliance and Enforcement Network for Accession (ECENA) (Working Group 4).

[30] http://web.rec.org/documents/rerep/Decades_Difference_RERePHighlights.pdf

MoEPP has actively participated in the inception meetings and the first meetings of the Working Groups which took place in 2010. Proposed transboundary projects under RENA (WG 3, Sub WG for Nature) include connecting the Korabi Protected Landscape, Mavrovo National Park and Shara National Park (Albania, the former Yugoslav Republic of Macedonia and Serbia) and Lake Dojran (The former Yugoslav Republic of Macedonia, Greece).

Instrument for pre-accession assistance (IPA)

Since 2007, the country has received EU financial aid under the IPA. Total pre-accession funding for the period 2007-2013 comes to €11.5 billion. As an accession country, the country has access to all five IPA components:

- Component I – Transition Assistance and Institution-Building;
- Component II – Cross-Border Cooperation;
- Component III – Regional Development;
- Component IV – Human Resources Development.
- Component V – Rural Development

Components II (cross-border nature protection projects), III (water and waste related projects) and V (projects related to IPPC in the agro-business sector) are the most relevant for the environmental acquis. Projects selected need to be closely linked to the implementation of environmental plans for the relevant sectors (water, waste, etc.) and based on a strategic, integrated and phased approach.

The Central Financing and Contracting Department (CFCD) within the Ministry of Finance is responsible for all tendering, contracting and payment activities related to projects financed under the IPA. The Secretariat for European Affairs has full responsibility for the implementation of overall IPA assistance. Programming, ensuring technical implementation and monitoring project realization of IPA projects in the environment sector are the responsibilities of the IPA Division in MoEPP, led by the IPA coordinator.

IPA strategic planning is laid down in the Multi-Annual Indicative Planning Document over the period 2009-2011. This document is based on the priorities identified in the Progress Reports and the Accession Partnership, and takes into account past and ongoing EU assistance, as well as national planning documents. Projects are proposed by the IPA Unit within MoEPP in cooperation with the other MoEPP departments and the local administration. The staff of the IPA Division has received relevant IPA training to develop, prepare, implement, monitor and evaluate projects and to ensure appropriate project analysis and reporting. Considering the growing number of the IPA projects in the next coming years, the IPA Division is currently not sufficiently and adequately staffed, and several posts within the Division are still vacant.

IPA-funded projects are generally in line with the national priorities defined in the National Environmental Investment Strategy and are mainly targeted at environmental infrastructure investments, in particular waste water collection and treatment, drinking water supply, efforts to combat air pollution, and waste management.

With regard to the Twinning Project "Strengthening the capacity for environmental management on central and local levels" under IPA Component 1 programme of 2008, a consortium of Finland as leading twinning partner and Austria and Italy as junior twinning partners has been selected. The project is ongoing until september 2012.

International (bilateral and multilateral) assistance

The country has received significant bilateral and international development assistance. All major international financial institutions (IFIs) are present in the field, such as the World Bank (WB), the International Monetary Fund (IMF), the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the Council of Europe Development Bank (CEB).

Assistance to the environment sector has been provided by bilateral donors such as Austria (ADA), Germany (KfW and GIZ), Italy, Japan, the Netherlands, Norway, Slovenia, Sweden (SIDA), Switzerland and others. Efforts in the environment sector focus particularly on environmental infrastructure development, such as solid waste and wastewater treatment, and transborder water issues, as well as the strengthening of capacities for environmental management at central and local levels. However, as the EU accession process gains momentum and regional stability has increased, several bilateral partners are considering scaling down or phasing out their assistance in coming years.

A useful source of data in determining the amount of aid which the country has been receiving in recent years is the Central Donor Assistance Database (http://cdad.sep.gov.mk), maintained by SEA, which contains records of recent donor-funded projects carried out or ongoing in the country. Although the

start dates of the projects listed go back as far as 1995, the database was not properly set up until 2003, and is incomplete as far as the early years are concerned. A UNDP project entitled "Capacity-Building Support for the Consolidation of the National Aid Coordination System" provided the required hardware, software and technical assistance to properly set up this tool. Some examples of ongoing projects in the environment sector supported by bilateral donors are described in Table 4.1.

International organizations that provide assistance in environmental protection include UN agencies, the Global Environmental Facility (GEF) and OSCE. To support the country's development agenda and in particular its overarching priority of EU accession, the United Nations Country Team (UNCT), in close cooperation with the Government, civil society stakeholders and the international community, prepared the United Nations Development Assistance Framework (UNDAF) for the period 2010-2015, which represents the joint programming and implementation efforts of UN agencies. The UNDAF outlines three outcomes, including environmental protection, as UNCT's collective priorities.

UNDP is the country's major counterpart for UN support in the energy and environment area and has had a country presence since 1998. For the period 2010-2015, the main objective of UNDP assistance in the area of environmental protection will be to enhance capacities of central and local level authorities to integrate environment and disaster risk reduction into respective development frameworks, and engage communities and civil society organizations (CSOs) more effectively in environmental protection and disaster risk reduction planning, implementation and monitoring, thus laying the foundations for the country's compliance with the EU environmental directives. Activities address climate change adaptation and mitigation, transboundary water management, ecosystem and biodiversity management, pollution mitigation and clean-up. Ongoing projects coordinated by UNDP and other UN agencies include:

4.4 Bilateral and trilateral cooperation

The former Yugoslav Republic of Macedonia participates in bilateral cooperation in environmental protection with a number of countries, with an emphasis on cooperation with neighbouring countries and receiving technical and other assistance from donor countries. The country places importance on signing agreements and memoranda of understanding (MoUs), although the effectiveness of cooperation often depends more on the availability of funds for

Table 4.1: Bilateral donor projects

Project title	Duration, budget, funding
Memorandum of understanding in the field of environment and sustainable development, with the Ministry of Environment, Lend and Sea, Italy including five Anexes*	Duration: from 2006 Budget: 2M Donor: Italy
Strengthening the Capacity of the Ministry of Environment and Physical Planning for Integrated Pollution Prevention and Hazardous Waste Management	Duration: 2010 - 2012 Budget: $ 150,000 Donor: Norway
Gevgelija waste water treatment plant	Duration: 2010 - 2014 Budget: 9,500,000 eur Donor: Switzerland, Greece
Project of Integration of Environment Education in the Education System	Duration: 2010 - 2011 Budget: $ 1.970,037 Donor: Switzerland
Supporting Strategic Environmental Assessment Practice	Duration: 2010 - 2011 Budget: $ 295,000 Donor: The Netherlands
Technical assistance for issuing concession on integral waste management in regions in Macedonia	Duration: 2009 - 2011 Budget: $ 280,000 Donor: Italy
Environmental Protection, economic Development and Promotion of eco-sustainable Tourism in Mavrovo National Park	Duration: 2008 - 2011 Budget: $ 1,469,619 Donor: Italy
Implementation of electric and electronic equipment waste handling and handling of the waste batteries and accumulators	Duration: 2009 - 2010 Budget: $ 110,000 Donor: Slovenia

*for more details please see: www.taskforcecee.com; project are co-financed by Macedonian Government

joint programmes and projects than on the existence of a formal agreement.

Bilateral and trilateral environmental agreements have been signed with Albania, Austria, Bulgaria, Croatia, Czech Republic, Greece, Hungary, Italy, Montenegro, Russian Federation, Slovenia, Turkey, and Ukraine. Cross-border cooperation also takes place under programme component II of IPA and covers cooperation with Albania, Bulgaria and Greece, which includes environmental aspects. 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), Prespa Park and Lake Prespa (Albania and Greece), and Lake Dojran (Greece).

Cooperation with Albania regarding the protection and management of Lake Ohrid was established through the Agreement for the Protection and Sustainable Development of Lake Ohrid and its Watershed, signed by the Council of Ministers of Albania and the Government of the former Yugoslav Republic of Macedonia on 17 June 2004. In concluding the Agreement, Albania and the former Yugoslav Republic of Macedonia agreed to assure an equitable and integrated approach to the protection and sustainable development of Lake Ohrid and its watershed, pursuant to EU standards. Lake Ohrid and the city have been designated as a World Cultural and Natural Heritage Site under UNESCO. Finally, the two States agreed to take measures to meet the conditions for approval of the Council of Europe's proposal to designate the Prespa-Ohrid area as a Euroregion[31] with a view to promoting cross-border cooperation. In order to assure effective achievement of the objectives and commitments specified in the Agreement, the Parties agreed to establish the Watershed Management Committee for Lake Ohrid. This body is responsible for the drafting and application of standards, environmental criteria, and requirements for sustainable development to ensure the integrated protection of Lake Ohrid and its watershed. The Committee is also responsible for completing the legal regulatory framework of the watershed area, as well as drafting and implementing strategies, programmes, and action plans for Lake Ohrid and its watershed. The Lake Ohrid Conservation Project was initiated with support from Switzerland and the World Bank, and the project received financial support from the GEF between 1998 and 2004.

Cooperation between the three countries started in 2000, when a declaration was signed for the protection of the region. The Prespa Park Coordination Committee (PPCC) was a vital instrument over all this years, and was turned 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. This agreement provides clear guidelines for the future development of Prespa Park, defines the members and terms of work of the PPMC, and obliges the State parties to establish an office for the secretariat. A number of projects by international donors have supported the preservation of the Prespa Basin, including UNDP/GEF, UNESCO, KfW and the Galicica National Park, NATO, an Italian NGO and the Netherlands Development Organization.

In addition, bilateral cooperation between the former Yugoslav Republic of Macedonia and Greece is also taking place with regard to 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 Lake Dojran. The Lake has been declared the second RAMSAR site of the former Yugoslav Republic of Macedonia and is has been designated a Natura 2000 site by Greece. Recently, the municipal authorities in Star Dojran met with their Greek counterparts to discuss the problems related to the conservation of Lake Dojran, but bilateral cooperation at government level remains unresolved. A transboundary project for Lake Dojran was recently proposed through RENA.

Key challenges in cross-border cooperation still exist with regard to transboundary waters, including the management of the Vardar River with Greece and the Drin River (Albania, Greece, Montenegro and Serbia). Over the last decade, numerous projects have been carried out in this region, some of major importance and some on a small scale with local benefits. A key driving force relevant for bilateral cooperation regarding these transboundary waters is the EU Water Framework Directive, as well as the UNECE Water Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

[31] In European politics, the term Euroregion usually refers to a transnational co-operation structure between two (or more) contiguous territories located in different European countries.

Table 4.2: Multilateral donor projects

Project title	Description	Duration, budget, funding
Integrated Ecosystem Management in the Prespa Lakes Basin of Albania, Greece and the former Yugoslav Republic of Macedonia	To catalyze the adoption of integrated ecosystem management in the trans-boundary Prespa Lakes Basin of reparian states	Duration: 2006 - 2011 Total Budget: $4,300,000 Funding: GEF/UNDP
Restoration of Golema Reka	To improve the overall environmental status of the Golema Reka, which is the biggest and most important tributary of Lake Prespa	Duration: 2006 - 2011 Total Budget: $3,000,000 Funding: Swiss Development Cooperation/UNDP
3rd National Communication on Climate Change	To support the preparation of the third National Communication on Climate Change in response to the commitments to UNFCCC	Duration: 2011 - 2013 Total Budget: $ 500,000 Funding: GEF/UNDP
Strengthening the Ecological Institutional and Financial Sustainability of Protected Areas	To support national capacities for long-term conservation of biological diversity and nature	Duration: 2007 - 2011 Total Budget: $ 1,030,000 Funding: GEF/UNDP
Mainstreaming SMC Consideration into MDG Based National Development Planning	To establish a cross-sectoral, multi-stakeholder coordinating mechanism; research, analysis and planning support of improved safe management of chemicals governance.	Duration: 2008 - 2011 Total Budget: $ 230,000 Non Core: SAICM Quick Start Trust Fund/UNDP
GEF Small Grants Programme (SGP)	SGP supports activities of non-governmental and community-based organizations towards climate change abatement, conservation of biodiversity, protection of international waters, reduction of the impact of persistent organic pollutants and prevention of land degradation while generating sustainable livelihoods.	Duration: average is 1,5 years Budget: The maximum grant amount per project is $50,000 but averages around $20,000 Non Core: GEF/UNDP
Demonstration Project for Phasing out of PCB‘s and PCB containing equipment	To assist the country to comply with the PCB-related obligations under the Stockholm Convention and reduce at the same time the releases of PCBs into the environment through enhanced national capacity in the management of PCBs-containing equipment and wastes.	Duration: 2008 - 2011 Total Budget: $ 1,785,001 Non Core: GEF/UNIDO

Other examples of transboundary cooperation take place through the regional initiative called Balkans and the Dinaric Arc Initiative, which aims to establish a network of protected areas in South-East Europe. It could potentially encompass parts of Italy, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, the former Yugoslav Republic of Macedonia, Bulgaria and Albania. Subregional meetings have already taken place with support from the Environment and Security Initiative (ENVSEC) and UNEP in order to initiate discussion and facilitate future consultations on the potential for establishing a regional network of protected areas in the Balkans / Dinaric Arc region.

An additional proposed transboundary project includes connecting the protected areas of Korabi Protected Landscape in Albania, Mavrovo National Park and the planned Šar Planina National Park in the former Yugoslav Republic of Macedonia and Mali Sharr National Park in Serbia. UNEP, in coordination with ENVSEC, carried out a feasibility study, and according to the best possible scenario for the further development of trilateral cooperation between the three Governments, the transboundary protected area could potentially become the largest protected area in South-Eastern Europe, and one of the largest in all Europe.

4.5 Cooperation in multilateral and regional environmental agreements

Biodiversity protection and nature conservation

The former Yugoslav Republic of Macedonia is a party to major global and regional conventions, agreements and protocols that relate to biodiversity and nature conservation. MoEPP is the designated focal point and competent authority for most of these

conventions. The country participates actively in the meetings organized by the Conventions' secretariats and complies with most of the obligations under these instruments. Several national committees have been established with the aim of monitoring implementation of the respective Conventions at the national level.

The area of nature protection is regulated by the Law on Nature Protection No. 67/04 which is harmonized with the acquis commuautaire in this area, and it also incorporates the obligations deriving from the ratified international agreements in the field of nature. Full implementation of this Law will be achieved through the adoption of the relevant by-laws.

As the country is a Party to the Ramsar Convention, 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 MoEPP and the National Ramsar Committee (NRC). MoEPP and NRC have prepared five national reports and 14 thematic reports to the Convention. Several international and regional projects concerning wetlands protection in the region have been implemented. The preparation of the sixth national report to the Ramsar Convention COP 11 in June 2012 is already underway. In 2002, an inventory of wetlands was produced.

In 1979, the Ohrid region was added to the UNESCO World Heritage List. The Convention itself was adopted by the country in 1997 with the Ministry of Culture designated as the competent authority, while MoEPP is competent for the segment on natural heritage. In 2010, the Law on the Management of 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 accordance with the provisions of the Bern Convention on the Conservation of European Wildlife and Natural Habitats, four projects that aim to establish the National Emerald Network in the country were implemented between 2002 and 2008. This was an important enabling activity/mechanism for the establishment of a coherent European Natura 2000 network.

For the Convention on the Conservation of Migratory Species of Wild Animals (CMS), MoEPP prepared 5 national reports and 11 thematic reports and preparations are underway for the sixth national report to the next CMS COP. Several international and regional projects concerning conservation of migratory species and their migration pathways have been implemented.

The former Yugoslav Republic of Macedonia ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 2000, and MoEPP, in cooperation with national committees, competent scientific institutions, State inspectorates and Customs Administration has prepared six national reports and four biannual reports on the implementation of the Convention. National reports have not yet been submitted for 2009 and 2010. CITES permits and certificates for import and export are granted on the basis of the Law on Nature Protection, and are currently issued by MoEPP.

The Biodiversity Study – First National Report to the Convention on Biological Diversity (CBD) was completed in 2003. Subsequently, the National Biodiversity Strategy and Action Plan (NBSAP), completed in 2004 with GEF support, defines the priorities for effective and integrated conservation as well as the indispensable actions, projects and programmes for biodiversity conservation. NBSAP covers the period 2004-2008 and almost all strategic goals defined in NBSAP have been implemented. Activities are ongoing for the preparation of the second Action Plan for Biodiversity (2011-2015) and the Programme for the period ranging from 2011 to 2020 which the UN has declared as the Decade on Biodiversity. As the competent authority for implementation, MoEPP has prepared four national reports to the CBD in cooperation with the National Committee for Biodiversity. One of the challenges in fulfilling the Convention's obligations, as identified by the country's last national report to CBD, was the lack of information exchange and communication between the different institutions responsible for biodiversity conservation. Besides MoEPP, which has full authority for the management of protected area and species, the Ministry of Agriculture, Forestry and Water Economy (MAFWE) has responsibility for the management and protection of the forests, and regulation in the field of hunting, fishing and plants protection (Chapter 9).

The 2010 Law on Nature Protection lays down the principles for nature protection and biodiversity conservation, including provisions in accordance with Natura 2000, the Emerald Network (Bern Convention) as well as the Pan-European Biological and Landscape Strategy. The establishment of the Natura 2000 and National Ecological Network is of particular importance, as this will create conditions for the full achievement of international criteria, as well as the

requirements of the relevant EU acquis concerning the protection of natural heritage and conservation of biological diversity. Future steps in this process will be specified in the Action Plan for establishing a Natura 2000 network that is under elaboration. Currently, MoEPP is preparing Project under IPA Component I (2011) for Strengthening the administrative capacities and Implementation of NATURA 2000 in the country.

As a Party to the Cartagena Protocol on Biosafety, the country has been implementing two UNEP/GEF projects: (i) Development of biosafety framework; and (ii) Strengthening of capacity for effective participation in the Biosafety Clearing House, under which the First National Report on the implementation of the Cartagena Protocol on Biosafety was prepared (2010). A web portal has been developed (www.biosafety.gov.mk), and a brochure intended for the responsible State bodies that will use and maintain effectively the Biosafety Clearing House has been published. Activities concerning the commencement of new UNEP/GEF "Project Support to the implementation of the National Biosafety Framework" are underway. This Project will ensure harmonization of the national regulatory regime in order to meet the international obligations under the Cartagena Protocol and guarantee proper implementation of the Law on Genetically Modified Organisms (GMOs). In particular, with respect to the requirements arising from Articles 1 and 2 of the Cartagena Protocol, the former Yugoslav Republic of Macedonia needs to revise the draft national Biosafety Framework developed in the first UNEP/GEF Project; set up a comprehensive framework for biosafety; and ensure adequate protection in the field of safe transfer, handling and use of GMOs.

As a Party to the United Nations Convention to Combat Desertification (UNCCD), the former Yugoslav Republic of Macedonia is obliged to prepare and implement a National Plan for Combating Desertification. Three national reports have been submitted to UNCCD, of which the last one in 2010. MoEPP 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 (MAFWE) and related institutions. the former Yugoslav Republic of Macedonia has accepted a number of obligations under UNCCD; however, it has neither an integrated strategy nor a partial analysis for the various processes of desertification and drought. The process to prepare a national action plan to combat land degradation, desertification and drought 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 in the Republic of Macedonia has been established but has never met. MoEPP is the designated competent authority for the implementation of the Convention and has been involved in some projects and activities, including a training workshop for UNCCD focal points on national reporting in Brussels in June 2010. The issue of land degradation, desertification and drought has been considered an important topic in the country and has been addressed through provisions in Article 191 and 192 for the preparation of the National Action Plan and the National Action Programme on combating desertification and mitigation of drought effects. In this context, strengthening sub-regional, regional and international cooperation helps to achieve synergies and share experience and knowledge. National institutional capacity is also limited and scattered around different institutions, which require training, equipment and guidance to achieve better cooperation.

Water protection

The former Yugoslav Republic of Macedonia has not yet ratified the Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes and its Protocol on Water and Health. The Convention Secretariat has prepared Guidelines for the Convention's implementation, which will assist Governments in their efforts to achieve compliance with the requirements of the Convention. With the support of the Convention Secretariat and Sweden, a workshop concerning the Water Convention was organized in October 2009, in Skopje. This workshop and the Guidelines for the implementation of the Convention are regarded as important steps contributing to the strengthening of the capacity in the context of ratification and implementation of the Water Convention. In January 2011, main responsibilities for water management have been transferred from MAFWE to MoEPP (Chapter 7).

The country has the intention to ratify the Water Convention. Preparatory work is also underway to sign the Protocol on Water and Health and a working group relating to coordination activities is examining the need for the signature of a Protocol between the Ministry of Health and MoEPP.

Air protection, ozone layer protection and climate change

The former Yugoslav Republic of Macedonia has been a party to the Convention on Long-range Transboundary Air Pollution (CLRTAP) since 1997 and its eight Protocols since 2010. The Law Amending the Law on Ambient Air Quality adopted in 2010 transposes parts of EU measures related to air protection and establishes legal basis for reporting to the European Environment Agency (EEA), the executive body of the Convention on Long-range Transboundary Air Pollution (CLRTAP) and other relevant international organizations.

According to the Law on Ambient Air Quality, MoEPP is also responsible for preparing reports on ambient air quality for the purpose of implementing obligations under the Law, as well as reports in accordance with obligations under the ratified international environmental agreements. Available air emission data (according to the CORINAR 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 UNECE, as well as to EEA.

Relevant ongoing projects include: (i) an assistance project to the Western Balkan countries on the ratification and preparation of implementation plans for three CLRTAP Protocols; (ii) a twinning project called "Strengthening the capacity for environmental management on central and local levels in the area of air quality" under IPA component 1 programme for 2008 for the supply of two monitoring stations, an air quality management system and meteorological stations.

The former Yugoslav Republic of Macedonia has ratified the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances That Deplete the Ozone Layer and its amendments. Starting from 1997 and with the creation of the Ozone Unit within MoEPP, the country has managed, with the financial support from the Multilateral Fund of the Montreal Protocol, to phase out over 98 per cent of all ozone-depleting-substances (ODS) consumption identified in the Country Programme for Phasing Out ODS.

The 2006 Country Programme for Phasing Out ODS has proposed several projects for the accelerated phase-out of ODS. All projects are technically and financially supported by the Multilateral Fund of the Montreal Protocol, through UNIDO, as an implementing agency. During the last two years, the main focus has been placed on accelerated elimination of HCFC substances classified in Annex C Group I of the Montreal Protocol, in accordance with the new restrictions required by the Protocol. The implementation of the national HCFC phase-out management plan started at the end of 2010. The Plan contains all aspects necessary for successful fulfillment of HCFC provisions and final elimination of HCFC export, import and consumption in the country.

Import of ODS, used equipment and new equipment is only allowed with a permit issued by MoEPP, which keeps a registry of ODS imports, exports and consumption. The import of used equipment containing ODS classified in Annex A Group I of the Montreal Protocol has been banned as of January 1, 2007, while the import of the substances in Annex A Group I of the Montreal Protocol has been banned since January 1, 2009. During 2010 new legislation fully harmonized with the Montreal Protocol provisions and EU regulation was adopted:

- Order Limiting Import of the Air-conditioners Containing HCFCs (OG of the RM no. 92/10)
- Order Prohibiting the Production and Trade of the Ozone Depleting Substances as well as the Production and Trade of the Products Containing Ozone Depleting Substances (OG of the RM no. 92/10)
- Order Prohibiting Import and Export of the Products Containing Hydrochlorofluorocarbons (HCFCs) (OG of the RM no. 92/10)
- Order Limiting the Import of the Ozone Depleting Substances (OG of the RM no. 92/10)

The country is also a (non-Annex I) party to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. So far, two national communications have been prepared (2003 and 2008). Preparations are currently underway to prepare the third National Communication on climate change.

MoEPP is the key governmental body responsible for coordinating the implementation of provisions deriving from UNFCCC and the Kyoto Protocol, as the National Focal Point for UNFCCC and the Designated National Authority (DNA) for the Clean Development Mechanism (CDM). In January 2000, the first project office was set up within MoEPP, when work began on the First National Communication on Climate Change with the financial support provided by GEF. Furthermore, a National Climate Change Committee has been established as an advisory body

for policy-making related to climate change issues. The Committee is composed of representatives of key governmental agencies, NGOs, private entities and academia.

After COP15 in December 2009, the former Yugoslav Republic of Macedonia aligned itself with the Copenhagen Accord reporting actions and mitigation measures for climate change from the Second National Communication on Climate Change.

At national level, the climate change issue has been integrated into several strategic documents: the 2010 National Strategy for Sustainable Development (adopted in January 2010); the National Strategy for Energy Development until 2030, No.61/2010; and the Strategy on Utilization of Renewable Energy Sources by 2020. In addition, Parliament adopted a resolution for mitigation of the negative consequences of climate change on 1 March 2010.

The former Yugoslav Republic of Macedonia has participated actively in the regional forum on climate change as well as in the work of the relevant working groups on IPA programming and RENA. Also, since the country has the opportunity to take part as an observer at the meetings of the EU Climate Change Committee, national experts have been appointed to four of this body's working groups. As part of regional cooperation, the country has signed the Joint Declaration for the Establishment of a Mediterranean Initiative for Climate Change in 2010, initiated by the Greek Government.

The former Yugoslav Republic of Macedonia ratified the Kyoto Protocol to UNFCCC in 2004 and is eligible for the application of one of the Protocol's mechanisms, i.e. the Clean Development Mechanism (CDM). In order to utilize the opportunities offered by CDM, in February 2007 the Government adopted the National Strategy for the Clean Development Mechanism for the first commitment period 2008-2012 under the Kyoto Protocol. All preconditions for this mechanism functioning have been accomplished, including the designation of MoEPP as the State administrative body responsible for coordinating activities related to the implementation of projects under this mechanism. Also, the necessary procedures have been adopted to implement CDM projects in line with the Kyoto Protocol. Rules and procedures for CDM projects implementation have been adopted.

The Law on Environment further included an article on CDM, spelling out the general functions of the Ministry. Seven non-objection letters have been issued and two letters for CDM projects approval. Regular cooperation and exchange of information is carried out with the stakeholders in this cycle. Three MoUs for carbon funding have been signed (with Italy, Slovenia and the UNDP Millennium Development Fund). Although all the necessary procedures and institutional framework are in place for CDM projects, there is currently a lack of CDM projects in the country. This can be connected with the lack of interest for foreign investments or lack of additionality of the projects.

Hazardous chemicals and waste management

The former Yugoslav Republic of Macedonia is a Party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants. MoEPP is the body responsible for ensuring compliance with the obligations under these Conventions. The country recognizes the benefits of coordinating implementation of the three Conventions, and has envisaged activities to further integrate the implementation of these Conventions.

Developed with support from the Swedish Chemicals Agency, the 2010 Law on Chemicals transposes relevant EU regulations, including REACH, Regulation for the Registration, Evaluation and Authorization of Chemicals. The Bureau for Medicines within 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. It is expected that in the future, the register will be updated with data from all the other Ministries and institutes dealing with chemicals.

Within the framework of the Strategic Approach to International Chemicals Management (SAICM), a national project entitled "Introduction of safe chemical management in the national development planning in accordance with the Millennium Development Goals" was recently implemented. The project was coordinated by MoEPP through its POPs/Ozone Unit, which also facilitates the implementation of chemicals-related Conventions such as the Montreal Protocol and the Stockholm Convention. Within this project, the state of chemicals management was assessed, a final list of priorities in chemicals management was prepared, and a workshop on the role of institutions responsible for chemicals management was organized in February 2010. In addition, a Situation Report and

a National Action Plan on SAICM have been prepared which outline the priorities and actions required with regard to the sound management of chemicals. An important issue identified in the Action Plan is the insufficient capacity for mutual communication and the lack of cooperation among the Ministries and relevant institutions. Separate intersectoral bodies have been established within various projects for the implementation of different chemicals-related Conventions. Such examples are the Steering Committee for the Stockholm Convention, the SAICM Advisory Body, etc. However, although the Law on Chemicals stipulated the establishment of an intersectoral body for chemicals, such a body has not yet been activated (although it was offically established by the Government on 1 December 2009).

Obligations towards the Basel Convention have been incorporated in the 2004 Law on Waste Management. Notifications for import, export and transit of waste circulate without obstacles, and MoEPP 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 recent years.

In 2005, the Government adopted the National Implementation Plan (NIP) for the implementation of the Stockholm Convention, which was prepared with financial support from GEF. A National Project Coordination Unit – the POPs Unit - has been established under MoEPP auspices to manage and coordinate the project on NIP preparation and NIP implementation of the Stockholm Convention. In order to facilitate fast implementation of the action plans under NIP, through grants provision, several projects have been implemented in the field of POPs management and elimination. Among others, the GEF project entitled "Demonstration Project for the Phasing-out and Elimination of PCBs and PCB-containing Equipment" is ongoing with UNIDO as implementing agency. The goal of the Project is to eliminate the effects of PCBs on human health and the environment through the establishment of an environmentally acceptable system for the eliminiation of PCBs and PCB-containing equipment (including capacity-building in terms of legislation, institutional and technical capacities, and public awareness promotion) and assistance in the process of substitution of PCB-contaminated equipment in selected demonstration installations.

The Ministry of Environment and Physical Planning in cooperation with the Ministry of Agriculture, Forestry and Water Economy actively participate in the implementation of the regional project "Capacity Building on Obsolete and POPs Pesticides in Eastern European Caucasus and Central Asian countries". In the frameworks of the project the representatives from Macedonia participated at the public awareness training and training on aspects of management of the obsolete and POPs pesticides. Also, the Ministry of Environment and Physical Planning was hosting the inventory workshop and inventory pilot project under the regional project. The intersectoral working group consisted of the representatives from the environmental and agricultural authorities was established in order to provide integrated approach and mutual action on sound OPs and POPs pesticides management.

In 2010, the country became a Party to the Rotterdam Convention. The Designated National Authorities include MoEPP, the Ministry of Health, and MAFWE. MoEPP has already appointed a focal point, while the focal points from the Ministry of Health and MAFWE are still pending. The requirements of the Convention have been incorporated into the 2010 Law on Chemicals, the 2007 Law on Plant Protection Products, and the 2005 Law on Environment. Under the obligations of the Convention, the country needs to submit import decisions on whether or not it consents to the import into its territory of the hazardous chemicals or pesticides listed in the Convention. It also needs to submit notifications of final regulatory actions to ban or severely restrict a chemical for health or environmental reasons. At present, neither import responses nor notifications have been submitted to the Convention Secretariat. Training and capacity-building are required for the staff of the ministries involved in implementing this Convention.

Transboundary environmental impact assessment - Espoo Convention

The former Yugoslav Republic of Macedonia ratified the Convention on Environmental Impact Assessment in a Transboundary Context in 1999. The requirements of the Convention have been incorporated into the Law on Environment. A completed questionnaire on the level of implementation of the Espoo Convention in the country was submitted to the Secretariat of the Convention for the period 2006-2009. So far, no EIA procedure has been carried out in a transboundary context. However, the former Yugoslav Republic of Macedonia has sent three notifications (one to Greece, concerning the Corridor 10 project, one to Serbia concerning the windfarms project, and one to Albania for the Kicevo railway project), while as Affected Party it has received one notification from Greece on the poject for upgrading and extending the Kozani-Florani-Niki highway.

The Protocol on Strategic Environmental Assessment was signed by the country in May 2003, in Kiev, Ukraine, at the Fifth Ministerial Conference "Environment for Europe". Under the National Programme for Adoption of the EU Acquis, the ratification of the Protocol by the country has been scheduled by the end of 2012.

A multilateral agreement among the countries of South-Eastern Europe for the implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (the Bucharest Agreement) was signed by country in 2008, and ratified in 2010.

Public participation – Aarhus Convention

With reference to the implementation of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, MoEPP has achieved significant results. Two National Reports on the implementation of the Convention were prepared and submitted to the Secretariat of the Convention. A National Strategy and Action Plan on the implementation of the Aarhus Convention was further prepared in 2005. The Law on Environment directly implements the requirements of the Aarhus Convention. The legal obligations on access to environmental information, public participation in the decision making and access to justice are contained in the 2006 Law on Free Access to Public Information, as amended in 2010.

MoEPP has been appointed as the body responsible for implementing the Convention. Practical implementation of the principles of the Aarhus Convention began in 1999, with the establishment of the Public Relations Office within MoEPP. Through the Office, that was upgraded to the Sector for Public Communication, environmental information is distributed to the public as a public service providing easy access to environmental information. Citizens address MoEPP through this Sector with their suggestions and complaints related to certain environmental problems and their resolution. The basic principle of this Sector's operation is interactive communication with the public, i.e. giving information to and receiving information from the public.

The Pollutant Release and Transfer Registry (PRTR) Protocol was ratified by the former Yugoslav Republic of Macedonia in 2010. A Rulebook on the Pollutant Release and Transfer Registry has been prepared, which is currently the subject of inter-ministerial consultation.

Convention on the Transboundary Effects of Industrial Accidents

Regarding industrial accidents, an Action Plan Concerning Basic Tasks for the Implementation of the Convention on the Transboundary Effects of Industrial Accidents was prepared in 2008. The Plan emphasizes the intersectoral approach in the process of industrial accident prevention, control and management. It gives concrete directions and a timeframe for implementation of the Convention's basic tasks. In 2010, the Convention was ratified. For the purpose of further harmonization with the acquis, various secondary legislative acts have been adopted.

The Protocol on Civil Liability for Damage and Compensation for Damage Caused by Transboundary Effects of Industrial Accidents on Transboundary Waters was signed by the former Yugoslav Republic of Macedonia in 2003.

4.6 Sustainable development and the Millennium Development Goals

Sustainable development

In January 2010, the Government adopted the National Strategy for Sustainable Development, which offers a vision and policy for sustainable development for the period until 2030. Based on this Strategy, the Government established the National Council for Sustainable Development, No. 8/10, which is chaired by the Deputy Prime-Minister of the Government responsible for economic issues and composed of representatives of nine State bodies, the Assembly, Academy of Science and Arts, three faculties, the Economic Chamber, and the NGO called the Ecologists' Movement of Macedonia (DEM). The Council will advise the Government on sustainable development policy. In support for the conduct of the Council's expert, logistical and technical activities, the establishment of an Office for Sustainable Development has been envisaged, and MoEPP will carry out these activities until its establishment. It is not foreseen when the National Council plans to hold its first meeting.

The National Strategy for Sustainable Development was developed in response to requirements for EU accession and also in order to meet the requirements of the Commission on Sustainable Development (CSD). MoEPP coordinated the preparation of the Strategy, which was funded and supported by the Swedish International Development Cooperation Agency (SIDA). The Department for Sustainable

Development and Investment within MoEPP is responsible for activities related to sustainable development. The National Strategy for Sustainable Development proposes a set of indicators to monitor progress in achieving the objectives of the strategy and hence progress in ensuring sustainable development in the former Yugoslav Republic of Macedonia.

The most recent reporting to the CSD dates back to 2006 (CSD-14/15); no national reports were submitted for CSD cycles 16/17 and 18/19. The country was a member of the Commission of Sustainable Development from 2005 till 2007 (CSD-13/14/15).

Millennium Development Goals

The former Yugoslav Republic of Macedonia prepared its first Millennium Development Goals (MDGs) Report in 2005, where it identified its national priorities and targets in achieving the MDGs. The 2005 MDG report linked the country's commitment to achieving the MDGs to integration in the EU, as the relevant MDG indicators are largely concordant with the EU economic and social cohesion policies.

The country prepared its second national report on progress towards the MDGs in 2009, which assessed progress achieved to date against the national targets which were adjusted and defined in the first MDG Report in 2005. Regarding MDG-7 "Ensure Environmental Sustainability": the number of protected territories has been steadily increasing; CO2 emissions per capita in the country are lower than in other transition countries; between 1997 and 2007, over 97% of total ODS consumption was eliminated; 88.9% of all households got drinking water from public supply systems, while 59.9% have access to public sewage; the proportion of the population (households) using solid fuels has increased; and deforestation has increased.

The Government, supported by UNDP/The former Yugoslav Republic of Macedonia, has developed a strategic and institutional framework for monitoring, analyzing and reporting on progress towards the achievement of the MDGs. The State Statistical Office plays an important role as a governmental institution responsible for data provision and analysis. In 2006, UNDP and UNICEF supported a project of the State Statistical Office to develop capacities to collect data related to human development and the MDGs. However, there is still a need to develop a functional mechanism between the ministries and the State Statistical Office that would ensure regular data collection as well as sufficient data collection and analysis capacities in the line ministries and other institutions. Additionally, harmonization of the key indicators for sustainable development, included in the National Sustainable Development Strategy and the indicators defined in the MDG Report and MDG 7, would also greatly contribute to ensuring regular monitoring of progress towards the MDGs in the former Yugoslav Republic of Macedonia.

4.7 Conclusions and recommendations

Since the first EPR in 2002, the former Yugoslav Republic of Macedonia has taken major steps to strengthen its participation in international environmental cooperation. Its status of an EU candidate country has largely contributed to its progress in terms of implementation of international agreements and commitments. It has acceded to nearly all important global and regional environmental agreements, and major legislative development and considerable implementation progress have been achieved.

Challenges still remain in the coordination and streamlining of investment activities in the environment sector. Coordination between ministries and stakeholders regarding planning and selection of environmental projects in line with national priorities is rather poor. Within MoEPP, internal coordination among the departments is often weak when it comes to the development of project proposals. Units within MoEPP which are responsible for planning, implementation, monitoring and evaluating projects do not have sufficient capacity to deal with the growing number of projects.

Recommendation 4.1:

(a) The Government should establish an inter-ministerial task force to strengthen coordination and to streamline investment activities in the environment sector;

(b) The Ministry of Environment and Physical Planning should strengthen:

- 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.

Technical and financial assistance to the environmental sector has been provided by many bilateral and

multilateral donors. As the EU accession process gains momentum and regional stability has increased, the aid structure has undergone substantial changes: some donors are reducing their activities or changing the area of focus, while EU assistance through IPA has become a predominant source of development assistance over the next coming years. As a response to the changing structure of donor assistance and the need for increasing aid effectiveness, strengthening national ownership and leadership in the process of programming and coordinating development assistance, a process was initiated in 2008 to introduce the Programme-Based Approach (PBA). "Environment" has been selected as one of the five PBA priority areas, and PBA implementation Plans are under preparation. Within the environmental sector, there remain challenges to fully implement/ operationalize the PBA concept, specifically to draw on international assistance in the most efficient way and to ensure consistency and synergy among projects being developed.

The recommendation is important and a crucial step in building the national development assistance system in right direction. The Government responded positively to the donor proposal and as a result a PBA as a mechanism for aid coordination was introduced. The adoption and process is well underway, and a follow-up Action Plan for 2010 has been proposed for adoption. A task-oriented institutional infrastructure has been put in place, and the Government is regularly informed by SEA.

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.

Despite the major progress achieved by the country in ratifying or acceding to global and regional multilateral environmental agreements, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes has still not been ratified. Ratification of the Convention is important for the protection of the country's transboundary waters, especially as regards the cross-border aspects of water management in the river basin of the Vardar River and Lake Dojran, which require cooperation between the former Yugoslav Republic of Macedonia and Greece.

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;

In view of the obligations that the country has undertaken by means of ratification of a large number of conventions, there is a need for a sufficient level of human and financial resources to provide for a sustained implementation and fulfillment of the obligations of the Conventions. MoEPP has been designated as the national focal point and competent authority for most of the ratified regional and global environmental conventions. Within some of the Departments and units responsible for the specific environmental conventions, there is not always sufficient capacity to comply with the Conventions' obligations, especially with regard to recently ratified Conventions.

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.

In January 2010, the Government adopted the National Strategy for Sustainable Development, which offers a vision and policy for sustainable development for the period until 2030. Based on this Strategy, the Government established the National Council for Sustainable Development. However, this Council has never met yet. The next phase is the implementation of the Strategy. At the same time, the country has not submitted national reports on sustainable development to CSD cycles 16/17 and 18/19.

<u>Recommendation 4.5:</u>
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;
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.

PART II: ECONOMIC INSTRUMENTS AND FINANCIAL RESOURCES

Chapter 5

ECONOMIC INSTRUMENTS AND EXPENDITURES FOR ENVIRONMENTAL PROTECTION

5.1 Macroeconomic background

The economy of the former Yugoslav Republic of Macedonia grew steadily after 2002. Strong annual average gross domestic product (GDP) growth of 4.5 per cent continued until 2008. During the same period, per capita GDP increased by 74 per cent. The openness and small size of the economy makes it dependent on world economic development and vulnerable to external economic shocks. The international banking crisis in 2008 caused the country's GDP to shrink in 2009, and it is not yet known if the country returned to a growth path in 2010.

In the wake of the crisis, the country experienced decreasing FDI, reduced credit, and a slump in export growth when the European Union (EU), the country's main export market, was hit by the recession. The overall slump in exports was worsened by the fall in metal prices, causing income from nickel, one of the country's main exports, to weaken. Official unemployment was 32.2 per cent in 2009, but the severity and consequences of unemployment for the economy may be overstated because the country has a large gray market, estimated at more than 20 per cent of GDP, which is not captured by official statistics and indicators.

5.2 Economic instruments for environmental protection

Background and policy objectives

Since the first Environmental Performance Review in 2002, the former Yugoslav Republic of Macedonia has been engaged in the development of the legal base and policy objectives for its environmental management. The main legal document defining the country's environmental policy is the 2005 Environment Law.

The Environment Law is a comprehensive and very detailed document providing a basis for the development of environmental policy and environmental management and introducing the guiding principles and instruments to be used in the pursuit of policies. In its current form, the Law is all-embracing and its concentration on the very fine details and levels of environmental payments can be a hindrance to its implementation and use in future. In the long run, the levels of payments and fines will require some changes, and changing the secondary legislation defining these details would be easier than amending the Law itself. In certain special areas, the lack of secondary legislation on fees and charges could hinder implementation of the Law.

Unlike the former environmental legislation, the Environment Law and many of the other new laws expressly back the application of the "polluter pays" and the "user pays" principles. The "polluter pays" principle (PPP) requires that the costs of pollution be borne by those who cause it, while the "user pays" principle stipulates that the user must pay the full cost of the goods that he consumes. Both principles are endorsed by the Organisation for Economic Co-operation and Development (OECD) and form the fundamental principles of environmental policy for the EU. Laws also include provisions for fines and penalties in the case of non-compliance and for the use of environmental economic instruments.

The second 2006 National Environmental Action Plan (NEAP) is a core document on how the country is approaching its environmental problems. Among its recommended priorities, related to economic instruments are:

- Integrating environmental policies into other sectoral policies, especially achieving better policy-making by balancing economic efficiency and environmental effectiveness, through economic instruments;
- Ensuring an environmentally sustainable approach integrating environmental considerations into the activities of the various sectors, while at the same time paying attention to social needs and striving for economic growth;

There seem to be concerns in the country that the use of environmental economic instruments could clash

Photo 5.1: Transport infrastructure in Skopje

with social justice, equality and economic growth. The second NEAP stated that "there is a high level of general opposition to economic instruments due to their perceived social and economic impact". This opposition on social grounds is not based on analytical facts, since currently there are no studies concerning the impact of economic instruments on social and economic well-being and therefore no knowledge if better environmental behaviour could be instigated with minimal social problems, especially if possible problems arising from the use of economic instruments are met with social payments targeting the population in the lower-income segment. There is a similar lack of studies concerning the impact of taxes and charges on the economy. However, many international studies have shown and many international organizations such as the United Nations Environment Programme (UNEP) have made the case that well-defined environmental economic instruments do not have an impact on e.g. the economic competitiveness of a country and its economic well-being.

Furthermore, the 2006 NEAP came to the conclusion that the skills and capacities in the Government, including the Ministry of Environment and Physical Planning (MoEPP), to engage into studies like this or in the general development of environmental economic instruments were limited. This capacity gap still appears to be there in 2011, and has hampered the development and use of economic instruments in environmental protection.

Whereas the "polluter pays" and "user pays" principles are well established in current legislation, the law in general is leaning towards the permit issuing process and regulatory instruments. This might be partly targeted to easier application of the regulatory instruments or just to the tradition of environmental management by regulation. Although the country primarily relies on traditional command-and-control methods for its environmental management and has problems in terms of capacities and skills when it comes to developing economic instruments, it nevertheless has an extensive collection of economic instruments in force. These include:

- User charges for municipal services, e.g. charges for water supply, sewage treatment, and waste collection and disposal;
- Charges and fees related to transport;
- Product charges;

- Taxes on the extraction and use of natural resources, e.g. water, land, minerals, flora and fauna;
- Timber and hunting fees;
- Penalties and fines for non-compliance;
- Financial incentives such as grants and soft loans.

Economic instruments

Instruments for water resource management

The Water Law governs the condition of water availability, allocation, and use. It also regulates water pollution and discharges as well as water management structures, services and the financing of water management. Economic instruments with environmental impact incorporated into the Law include user charges for water supply and consumption, sewage and waste-water charges, and penalties.

According to the Water Law, water management is based on a set of principles, of which several are related to economic instruments or economic issues in general: these principles include:

- The "polluter pays" principle: the costs of water restoration shall be born by the polluter;
- The cost recovery principle: the water user shall cover all costs of water services, including environmental and resource costs, in accordance with the "polluter pays" principle;
- The principle of universality of water management services: water management services shall be supplied at an economically acceptable price, with full coverage of the area where the service is provided.

Water management is divided into two major domains; firstly, the provision of the drinking water and sewage service for the population managed by public water companies (vodovods); and secondly, the use of water resources managed by the State with concessions and permits. Both domains use economic instruments in the water resource allocation process.

The public water companies (PWCs), all but one owned by municipalities, are responsible for the supply of water and the collection and treatment of waste water. Water prices are proposed by the water companies and approved by the communal authorities. In 2002, during the first EPR, water tariffs barely met the water companies' operating and maintenance costs and did not allow PWCs to upgrade their distribution networks. In 2009, the Ministry of Transportation and Communication conducted a tariff study and created a detailed methodology for determining the price of drinking water and management of the urban waste water. With the new pricing methodology, water prices should cover all costs incurred and keep PWCs solvent. This seems to be true at least with the Skopje public water company, which had been in deficit in 2005-2006 but turned profitable in 2007, when water prices were raised by 98 per cent.

Since the last EPR, the water metering situation has improved markedly and currently most of the households have water meters installed. The collection rate has also gone up, and in Skopje it is around 80 per cent and there are plans to move to remote meter reading. Skopje has no waste-water treatment plant, but charges for waste water are being paid while some other municipalities charge only for clean water if no waste-water treatment facilities are available. Water losses are still high in the range of 30 per cent.

Water and sewage service charges differ from municipality to municipality. Skopje charges in 2010 for households were: water with sewer 29.39 denars/m^3; water without sewer 17.25 denars/m^3, and sewage only 12.12 denars/m^3. For enterprises, the charges were much higher: water with sewer 65.80 denars/m^3, water without sewer 45.63 denars/m^3, and sewage only 19.17 denars/m^3. In Veles, the water price for households in 2010 was 30.4 denars/m^3 and sewage 5.45 denars/m^3. For an enterprise, water cost 60.25 denars/m^3 and sanitation 8.68 denars/m^3.

Water use management is mostly done by permit issuing, and activities that require permits are listed in Article 28 of the Water Law. These activities include:

- Use of surface and ground water for drinking water supply, irrigation of agricultural land; industrial and technological and commercial purposes; water bottling for commercial purposes, production of electricity and other plant-related purposes; breeding of fish, water birds, fishing; heat absorption from geothermal waters; hydro-geological researches and collection of data;
- Extraction of sand, gravel and stone from the river beds and banks of surface water bodies;
- Discharge into waters and throwing and discharge of materials and substances into surface waters.

Water permit issuing is governed by the EU process for Integration Pollution Prevention and Control (IPPC). Permits give a right to emissions to a certain level, and penalties start only if this level is exceeded. Vodovods obtain their discharge permits from the

Ministry of Environment and Physical Planning (MoEPP). At the moment, Vodovods are not charged for discharges because the rulebook regulating charges is not yet ready. There are about 100 companies in need of permits, and the idea in the new rulebook is that either a Vodovod will charge the upstream polluting company and build a treatment plant or the company can try to find a more cost-effective way to diminish emissions instead of paying high charges (see Water Law, Article 214).

One a permit has been obtained, activities involving the use of water from surface and ground water bodies can be performed upon the granting of a concession for a definite period of time to a domestic or foreign legal or natural entity. Concessions are needed for certain economic activities, and the Environment Law specifies the length of concessions granted. Concessions may be granted for hydropower electricity generation; commercial bottling of water from underground water; breeding of fish and water birds; lake traffic; and for tourism, sports and other recreational services.

Concession holders must pay fees for the right to use resources. In addition to the fee paid for the use of the water on the basis of the water use permit, concession holders also pay a concession fee, depending on the economic activity specified in the concession contract. The concession fee for water use consists of two items: a single fee to be paid upon the granting of the concession, and an annual fee payable once a year for every year of the concession duration. Article 58 of the Law gives the exact details of the amounts payable.

In addition to the permit and the concession fee, water users must pay a water user fee. This fee depends on the purpose for which the water is used, and Article 213 of the Law defines the structure of these fees. Water use fee calculations are based on several very different variables. For example, electricity producers must pay a fee for the use of water in electricity production. This fee for hydropower generators is 1.0 per cent of the generation price of 1 kWh at the boundary of the power station site, and 0.5 per cent of the generation price of 1kWh at the boundary of the power station site.

The amount of the fee for extraction of sand, gravel and stone from the beds and banks of surface water bodies and other areas recorded in the Land Register as “under water” is valued at three per cent of the price per m^3 of sand, gravel or stone.

The fee for the discharge of waste water and for the discharge of waste matter and substances in water has two components: (a) a basic value, which is 1 per cent of the price of the service determined by the provider of the service of collection and treatment of the waste waters; and (b) a variable value, which is measured on the basis of “units of harmfulness”. One unit of harmfulness corresponds to the pollution of one equivalent inhabitant and amounts to 0.4 per cent of the average salary in the former Yugoslav Republic of Macedonia.

Instruments for waste management

The Waste Management Law sets out several principles on which waste management is based. The “polluter pays” principle, which states that the potential environmental and human health costs of waste generation should be reflected in the price of products and in the waste management charges; the principle of universality of service based on the idea of transparent non-discriminatory service provided at an economically acceptable price; and the principle of deposits according to which the consumer pays a deposit on certain products which is returned to him upon restitution of the used product.

According to the Waste Management Strategy for the period 2008-2020, it is in the country’s long-term interests to implement a policy of full cost recovery for all waste management facilities and services as rapidly as economic circumstances and political constraints allow. This would send a clear message to waste producers that the costs of managing their wastes in an environmentally sustainable manner shall be internalized at the market rate for products, thereby encouraging waste producers to reduce the amount of wastes generated and start taking measures to recover and recycle wastes.

Public enterprises provide communal services (mainly in urban areas) and finance the collection, transportation and disposal of waste by means of user fees collected from waste producers. Approximately 70 per cent of the population is served by the public municipal waste collection system, which is run by these public enterprises.

Charges for the provision of the service are set according to the different waste producer categories. These producer categories differ somewhat between communes but the most common groups are generally households, waste from gardens, enterprises, schools and kindergartens. In some communes, these groups might have sub-categories. The waste collection and

disposal charge for households is either based on the floor space area of the dwelling or set per building in rural areas. In Skopje, the charge is 3.59 denars/m^2, whereas in smaller communes like Veles and Kocani, it is 1.50 and 1.8 denars/m^2 respectively. Charges for enterprises, if their waste is collected by municipality, vary from 3.59 denars/m^2 in Skopje to 3.50 denars/m^2 in Veles and Kocani.

Using residential floor space area as a billing base for municipal waste is a practical but not optimal pricing method since it provides no incentive to reduce waste production. However, an even bigger problem is that tariffs are set by each municipality in consultation with the municipal service provider, and in these consultations the tariff is set at a rate that is deemed to be affordable or acceptable rather than at the real cost of providing the services. Tariffs for commercial and industrial waste is generally based either on the m^2 of roofed area or on the flat monthly fee; only rarely are fees based on the size of waste containers or determined on a case-by case basis. Most of the larger industries have their own industrial waste sites.

The low collection rates led to the introduction of a provision in the Municipal Services Law that no municipal service will be provided unless paid for (i.e. the user will not be served), although it seems that for social, hygienic and health reasons, this regulation is not enforced. Enforcement of payments for services cannot be used because of the legislation which gives priority to the protection of the individual beneficiary over public interest and addresses waste management as a social support category.

The collection rate for the charges has improved since the first EPR; it is estimated that in Skopje, the rate is over 70 per cent, while other municipalities have reached collection rates of about 50 per cent. Sources for financing for waste management operations are mainly direct charges for transportation and disposal of waste, but the municipalities are constrained in their ability to raise finance for capital investments in waste management infrastructure and equipment - a situation that is unlikely to change in the near future.

Accomplishing the target of full cost recovery with the relatively low charge tariffs combined with non-enforceable charge collection showing a collection rate much lower than 100 per cent does not seem to be possible, which implies that waste management infrastructure investments must be financed by grants or out the budgets of either the State or municipalities.

Instruments related to transport

The country has several transport-related payments, taxes and charges. Some of these instruments are established primarily to collect revenues, but since they have an effect on transportation costs, they also affect the environment. These instruments include excise tax on fuels and vehicles, road user charges (road tolls), and a vehicle registration payment.

Imported vehicles are subject to an excise tax. Parliament amended the Excise Tax Law (Official Gazette Nos. 32/2010) on 11 March 2010. The basis of the method for calculating excise duty for vehicles was changed from engine displacement to the value of the vehicle. At present, cars up to a price of €3,000 are exempted from the duty, while the rate for cars valued between €3,000 to 4,000 is 0.5 per cent; from €4,000-5,000, the rate is 1 per cent, and from €14,000 to 16,000, the rate is 6 per cent.

In addition to the tax based on the import value of the vehicle and fuel consumption, there is an ownership-based annual charge levied on motor vehicles. The Environment Law stipulates that motor vehicles owners must pay registration charges. Motor vehicles are registered annually, and the fee for the full registration process includes three separate fees – a technical check-up fee; a vehicle insurance fee; and a registration fee. Out of this total fee, the owner pays a registration charge, which amounts to four per cent of the registration fee for vehicles without catalytic converters and two per cent for vehicles with catalytic converters. In the past, revenues collected from registration charges were channelled into the Environment Fund, but since its discontinuation the revenues go directly to the central budget. Government distributes 50 per cent of the revenues to the State Road Agency and 50 per cent to the municipalities for financing road construction and maintenance.

Oil derivatives are taxed by excise tax, and tax is differentiated by fuel type. The excise tax on petrol is around 29 per cent of the retail price, whereas diesel fuel enjoys more preferential treatment, with a tax fixed at only 19 per cent of the retail price. Light heating oil is taxed very lightly, with a rate of only 6 per cent, while heavy heating oil is practically excise tax free. Retail prices also include 18 per cent for a value added tax (VAT), a payment imposed for maintaining the strategic oil reserves, and a special payment for financing environmental activities. Surprisingly, the latter is insignificantly small, ranging from 0.05 to 0.08 per cent of the retail price and it is hard to find a justification why it is at such a low level.

Table 5.1: Oil derivative prices and taxes 2011, in denars and in per cent

	Gasoline 95	Gasoline 98	Diesel	Light heating oil (households)	Heavy heating oil
Retail price	75.00	76.50	64.00	53.00	35.64
Highest production costs	36.87	38.23	38.04	37.65	28.92
Financing environmental activities	0.08	0.08	0.03	0.04	0.05
Oil reserves	0.89	0.89	0.30	0.30	0.74
Excise tax	22.02	21.93	12.17	3.23	0.10
Environmental activities from retail price in %	0.11	0.10	0.05	0.08	0.14
Excise tax from retail price in %	29.36	28.66	19.01	6.09	0.28

Source: http://www.erc.org.mk/ Accessed in February 2011.

Environmental taxes and charges on transportation fuels are of great importance in the Balkan region, where the number of the private vehicles is rising due to growing economic prosperity. The charge for financing environmental activities could easily be used as an environmental tax on fuel consumption. Differentiating the charge paid for gasoline from the heating oil charge would defuse the social impact of higher consumption costs for transportation from heating costs.

The Public Roads Law, No 84/08 plus two amendments in 2009 and 2010, redefined the road tolls, which were introduced already in the 1996 Public Roads Law. The road toll, or road user tax, is collected on certain highways and is based on distance travelled and vehicle category. Vehicles are divided into two categories: motorcycles and cars; and vans and trucks. The van/truck category rate is 30 to 66 per cent higher than the rate for motorcycles and cars. Road toll revenues are channelled through the central budget to the State Road Agency, and are used solely for the financing of State road construction, reconstruction and maintenance. The Law also provides provision for additional revenue for the Agency, stipulating that at least 20 per cent of the revenue collected from the oil derivatives has to be earmarked for the Agency for the aforegoing purposes.

Instruments related to natural resource management

Several economic instruments for natural resource management are in use in the former Yugoslav Republic of Macedonia. Taxes and payments are mainly related to mineral extraction and use, water abstraction and use (see instruments for water management), the use of land and forests, and to fishing and hunting. These taxes and payments are more of a command-and-control nature, whereas the level of payments seems to be have been set haphazardly and there do not seem to be any studies on the environmental effectiveness of the fees or the defined policy objective behind the pricing decision. This type of administrative pricing policy does not necessarily give the consumer or user of the natural resource an incentive to act in an environmentally responsible manner.

The main responsibility for natural resource management lies with the Ministry of Agriculture, Forestry and Water Management, while the Ministry of Economy is solely in charge of the management of mineral resources.

Mineral resources are regulated by the Mineral Resources Law No. 24/07, 88/08, 52/09 and 06/10, and managed by the Mineral Resources Department within the Ministry of Economy. The Department handles the licensing of geological research, awards exploitation concessions, and manages the licensing process for the exploitation of the mineral resources. Two allowances are paid by exploiting companies: an allowance for geological research, and an allowance for the exploitation of the minerals. Revenue from these allowances is divided between the central budget (22 per cent) and the municipality on whose area the concession activity takes place (78 per cent). The Mineral Resources Law also stipulates that four per cent of the funds earmarked for the central budget must be used for recultivation and rehabilitation of the concession area.

The allowance for the exploitation itself has two components: an annual payment for the use of the physical area of activity, and a payment per ton or m^3, which is related to the mineral resource subject to the concession. The detailed prices for these allowances can be found in price lists Nos. -72/07, 19/09 and 105/09. There are no current studies on the amount of mineral resources or mining waste. However,

waste locations are known, and some companies have expressed an interest in reusing the exploitation waste.

Land use and forests are governed by the Forest Law, No. 64/09. The Public Enterprise "Macedonian Sumi" has a price list for forest products of different categories such as firewood and technical timber. It is not clear what methodology is used for price-setting or if prices are designed to contain an environmental incentive.

The Public Enterprise "Macedonian Sumi" is also in charge of arranging hunting in the country. Hunting is regulated by the Hunting Act, No. 26/09. Hunting is organized in game management and hunting areas. Concessions for hunting areas are allocated through a competitive bidding process, and concession holders are responsible for game protection and breeding in their management area. Hunters must obtain a hunting license from the concession holder. Each of the hunting areas has a game management plans establishing quotas for species and number of animals to be hunted annually. Prices for game are established by MoAFWE, and the latest amendment No. 17/10 of the Hunting Act determines the prices of the game animals (see biodiversity chapter).

Recycling

Recycling of polluting materials or materials which can be reused is related to the waste management effort and governed by the Waste Law, and although the Law supports the idea of a deposit refund system there is none available in the country. Most of the recycling is based on "right to return" without a monetary incentive. This applies to used tires, engine oils and car batteries, the return of which the garages accept when the customer buys a similar new product. The municipalities are also providing, in public places, separate containers for the collection of different waste types, e.g. plastic bottles. There is no return or refund system for plastic bottles, but some companies are buying larger amounts of plastic, both bottles and packaging material, in wholesale and exporting the material to be recycled.

Recycling of motor vehicles is well developed. End-of-life-cycle vehicles are demolished by the recycling companies, which pay the owner of the car a small per kg price for the scrap metal.

Some waste products are totally absent from the recycling stream. Glass waste does not have a collection system, and used paper waste, which in many countries is often the first of the recycled materials, is not collected in any organized way. However, some private companies collect and recycle paper, e.g. a paper manufacturer Communa AD in Skopje conducts infrequent collection of paper from offices and containers in the municipalities and recycles paper.

Special case of air pollution management

Management of the air quality is based on the Ambient Air Law, No. 67/04, which has been amended twice, most recently in 2010. The Law regulates the measures for avoidance, prevention or reduction of harmful effects from ambient air pollution on human health, and to environment as a whole. Regulation is achieved by establishing limit and target values for ambient air quality and alert thresholds, with the creation of a system for ambient air quality monitoring and control and monitoring of emission sources. Existing standards relate to concentrations of pollutants in exhaust gases and emissions, and are enforced through environmental inspections.

Table 5.2: Price list for firewood

	Firewood		Other hardwood broadleaf	Soft broad-leafs	Cut down trees	Residues collected after cutting down of trees	
	Beech	Oak				Evergreen	Broadleaf
Ex works price forest road (den/m^3)	2,350	2,450	2,150	2,050	1,550	..	..
Ex works price forest road (den/prm)	1,645	1,715	1,505	1,435	1,085	..	..
Ex works price Warehouse Subsidiary (den/m^3)	2,870	2,970	2,670	2,570	2,070	..	..
Ex works price Warehouse Subsidiary (den/prm)	2,010	2,080	1,870	1,800	1,450	..	..
Price tree stump (den/m^3)	1,200	1,200	1,200	1,200	..	400	800
Price tree stump (den/prm)	847	847	847	847	..	280	560

Source: http://www.mkdsumi.com.mk/admin/documents/cenovnik_za_ogrevno_drvo_en.pdf

Table 5.3: Overall funding commitments and disbursements for environment in NEIS context, 2009-2013 in 2008 million €

		Central budget	Instrument for Pre-accession Assistance IPA	Other donor grants	Own contributions	Total
2009	Comitments	16.87	2.85	2.35	3.63	25.70
	Disbursements	7.95	0.85	0.65	1.02	10.47
2010	Comitments	26.41	10.00	1.63	3.42	41.46
	Disbursements	16.93	0.95	2.35	2.92	23.15
2011	Comitments	29.82	12.72	3.72	10.32	56.58
	Disbursements	19.88	6.76	3.32	9.25	39.21
2012	Comitments	13.71	13.08	4.32	11.98	43.09
	Disbursements	17.18	11.67	5.32	7.56	41.73
2013	Comitments	9.26	12.40	3.66	12.83	38.15
	Disbursements	16.37	9.28	4.06	9.13	38.84
Total	Comitments	96.07	51.05	15.68	42.18	204.98
	Disbursements	78.31	29.51	15.70	29.88	153.40

Source: National Environmental Investment Plan 2009-2013. March 2009.

The Ambient Air Law (Articles 75 to 77) describes penalties and fines that can be levied on natural persons, legal entities, or persons responsible within a legal entity for failing to comply with the provisions of the Law. The range of penalties is wide, starting at €500 and reaching €20,000 for serious infringement of the Law.

In addition to the Ambient Air Law, a substantive body of secondary legislation has developed to cover air pollution, including rulebooks and decrees to regulate measurement of harmful substances; monitoring of ambient air; maximum allowed emissions; and identification of harmful substances.

The country does not have any pollution/emission charges for emissions into the air. The Ambient Air Law handles air pollution through command-and-control permit issuing processes. In the current situation where very comprehensive laws governing air management are in place, air monitoring is well developed; indeed, the country has a comprehensive national inventory on anthropogenic green house gas emissions by source and sink (www.unfccc.org.mk). Moreover, coverage of monitoring stations is adequate and progressing; it is surprising that emission charges are not used for air emission management. All elements for emission management with economic instruments are in place, and the development of air pollution charges would be relatively simple to introduce.

5.3 Environmental financing and expenditures

National Environmental Investment Strategy

The Government is addressing critical environmental issues by means of a National Environmental Investment Strategy for the period 2009-2013 (NEIS). NEIS is based on NEAP and the National Strategy for Environmental Approximation (NSEA). NEIS describes the general envelope of funding allocated to environmental investments. The expected amount of funding disbursed up to the end of the 2013 is €205 million (in 2008 prices and exchange rates). This

Table 5.4: Planned Public Investment Programme (PIP) expenditure by sector, 2008-2010 in millions 2008 €

Sector	2008	2009	2010	Total
Energy	90.4	35.5	8.7	134.6
Transport	94.8	55.7	39.8	190.3
Water Economy	36.1	24.2	18.3	78.5
Communal Services	13.2	7.9	2.7	23.8
Environment	9.5	17.6	17.2	44.3
Other sectors	121.9	135.6	137.3	394.8
Total	**365.8**	**276.5**	**223.9**	**866.2**

Source: Public Investment Programme for the period 2008–2010. Skopje, February 2008.

Table 5.5: Realized environmental investments from the State budget, 2008-2010, current exchange rates

	2008	2009	2010
Environmental investment (million denars)	710.5	637.6	655.3
Environmental investment (million Euro)	11.5	10.4	10.7
per cent of the budget	0.18	0.16	0.16

Source: Direct communication from MoEPP February 2011.

sum is comprised of central budget funds (46.9 per cent of total), EU funds i.e. the Instrument for Pre-Accession Assistance (IPA) (25 per cent), bilateral donors (7.6 per cent) and own contributions (20.5 per cent). This expected level of investment corresponds to up to three per cent of national gross fixed capital formation.

Investment funding is distributed to municipalities or other beneficiaries through competitive published calls or proposal calls. A large share of the funds for the 2009 to 2013 period is being allocated based on limited competition because some investments are allocated between pre-selected priority projects. These projects reflected governmental concern regarding water and waste problems, and included Prilep sewerage and wastewater treatment, Skopje sewerage and wastewater treatment, and a national system for hazardous and clinical waste management.

NEIS also envisages the strengthening of the institutions involved in environmental management through further staffing and capacity-building. The medium / long-term plan includes an establishment of an Environmental Investment Agency.

Sectoral allocation of funding is concentrated on the environmental sectors in most need of improvement. According to NEIS, the bulk of the allocations, at least 88 per cent, of the public investment is committed to the water (56.3 per cent of total) and waste (31.8 per cent of total) sectors through the competent ministries. Financing sources for own contribution can also include central and local budgets or capital investments in through public /private partnership.

Central and local budget

The environmental financing system has changed drastically since the first EPR. At the time (2002), environmental financing was channelled through the independent extra-budgetary Environmental Fund, which was discontinued in 2004 following the recommendation of the International Monetary Fund (IMF) to abolish all “extraordinary” funds. With its termination, Fund functions did not totally disappear since the staff of the Fund moved to the Environmental Investment Programme in MoEPP and took over some of the work of the Fund. The country has two investment programmes: the Government’s Public Investment Programme (PIP) and the Environmental Investment Programme (EIP) managed by MoEPP.

The Public Investment Programme had, for the period 2008-2010, a total estimated expenditure of €866.3 million, out of which 44.3 million or 5 per cent was spent in environmental projects. The projects are grouped into different sectors; energy, transport, water management, communal services and housing, environment, other economic sectors, education and science, health, and non-economic sectors. The biggest expenditure (€205.7 million) went to the non-economy sector.

Investments expenditures going to environment have increased since the last EPR when PIP 2001-2003 allocated only 1.25 per cent of the investments to environment. In the 2008-2010 Public Investment Programme (PIP), this increased to 5.1 per cent of total investment. Total environmental investment from the budget has been at a very low level of 0.16 to 0.18 per cent since 2007.

Total central budget expenditure in 2010 was 99,523 million denars, while MoEPP’s core budget without special funds or donor donations was 308 million denars. The MoEPP share of the total central budget was 0.31 per cent. MoEPP’s financial situation has improved since the last EPR. At the time, the entire MoEPP budget went to cover salaries, social insurance, administration and maintenance. In 2010, administrative costs absorbed about 35.6 per cent of MoEPP’s core budget.

Realized environmental investments calculated at the current exchange rate actually diminished slightly after 2008.

The Environmental Investment Programme (EIP) of MoEPP is managed by the MoEPP Department of Sustainable Development and Investment. This programme is a successor and partial inheritor of

the functions of the Environmental Fund. It supports diverse environmental activities, from financing clean-ups of illegal dump sites to preparation of technical documentation and implementation of projects relating to water quality. The economic downturn in 2008 affected the Programme's financing so much that there were no disbursements in 2009. In 2010, EIP's investments were back at €1 million, about the level of 2007. All revenues used to finance the Programme come from vehicle registration fees. There is also revenue of about €0.5 million collected from the use of fossil fuels in stationary sources. This revenue goes directly to the central budget, and local governments can send their investments proposals directly to the Ministry of Local Self-Governance, which selects the supported projects.

Local governments at the municipal level are responsible for various public services, some of which are directly related to environmental protection. The municipalities have authority over the natural resources in their area and have to provide good-quality service for water supply, waste water and municipal waste management. Municipalities have their own sources of revenue, such as property taxes, communal fees and income from municipal services. Unfortunately, it is very hard to find data on how much of these revenues are used for municipal environmental investments and expenditures. MoEPP does not have municipal data and the State Statistical Office does not keep statistics on total environmental expenditure.

Municipalities

Municipalities have been subsidizing and supporting Public Water Companies (PWCs) in case of insolvency or lack of funding while the Government has been providing grants for the improvement of the water infrastructure. Infrastructure developments are not financed only with water charges, e.g. there is a water and sanitation project which the European Investment Bank (EIB) is supporting with €50 million, and a soft loan from the Japan International Cooperation Agency (JICA) for building a waste-water treatment plant for Skopje which, if built, will reduce 40 per cent of the waste water generated in the country. It is not clear if the PWCs in general lack funds and if their financing falls short in covering the maintenance costs of the distribution network.

The Water Law (Article 205) stipulates the basic provision on how to finance water management. The "user pays" and full cost recovery principles are reiterated, while the point is made that efforts to reach this goal should be based on both economic analysis and due consideration of social issues. This Article also provides that "additional or preventive measures may be financed based on legal acts of the Government, or of the council of the municipalities, councils of the municipalities in the City of Skopje, and the Council of the City of Skopje, within their respective competences."

Financing sources include water use fees; waste water discharge fees; sand, gravel and stone extraction fees; leases for the rented State-owned land, which is recorded as "under water" in the Land Register; contributions on water; the State budget; the budgets of municipalities, budget of the municipalities within the City of Skopje, and the budget of the City of Skopje; and other financing sources in accordance with the Law. The use of funds is strictly regulated by the Law, and it covers water issues from the construction and maintenance to flood prevention, hydro-geological and other research and water protection dimensions.

Other funds

Other financing sources for environment include the EU, international financial institutions, and international organizations.

There is a progressive reduction in the volume of bilateral grants from the EU and other donor countries reflecting the increase in multilateral EU funding. The approximation process with the EU has proved to be expensive. NEIS estimates that the former Yugoslav Republic of Macedonia would need €1 billion to achieve compliance with the relevant directives but that currently only about 20 per cent of this financing is available. The former Yugoslav Republic of Macedonia is an EU accession country, which means that EU funding is increasing while bilateral funding is decreasing.

The former Yugoslav Republic of Macedonia is a candidate country for EU membership. To help the candidate countries with the membership process, the EU has IPA funding available. Assistance received under IPA Regional Development Component 3 can be used to support operations concerning waste management, water supply, urban waste and air quality, rehabilitation of contaminated sites and land, and sustainable energy use. IPA monies are allocated annually, and funding is a co-financing instrument where the EU contribution is at maximum 75 per cent of the project cost with the balance providing by the recipient country. The country's priority areas for IPA funding are water and waste management, road infrastructure, railway reconstruction, and technical

assistance. IPA expenditure is incurred over a multiyear period, and annual expenditure is not always clear. The country's IPA allocations under component 3 for the period of 2007 to 2011 were about €45 million. Funding targets are changing, and lately IPA funding has been moving from transport to environment-related projects.

In 2009, the country received €145 million worth of Foreign Direct Investment (FDI).

5.4 Conclusions and recommendations

Since the last EPR 2002, the former Yugoslavia Republic of Macedonia has created a set of environmental laws and rulebooks. Indeed, the country has a surprisingly large number of economic instruments, but there is a need to address the way these instruments are used.

Some of the environmental economic instruments do not provide an incentive for environmental behaviour change. Many instruments are not effective because the charge base is not correct; the charge level is either too low or non-existent; or the charge is not collected at all. One example of the first is the municipal waste charges billed according to the dwelling m^2; the second would be low water charges; the third would be non-existent waste water charges in some municipalities; and the last would be the low collection rate for existing charges.

Nor is the connection with the intended outcome, existing tax, fee, or charge levels and policies always clear. Often, these payments are merely used as revenue collection instruments even when there might be a possibility to change consumption patterns at the same time. The excise tax based on the value of the car is not an environmental tax although it could be - if the tax were based on engine emissions. Similar problems hinder the environment-related pricing processes for water provision and waste water. The public water companies cannot charge full cost recovery prices because of the social issues involved, or do not charge for waste water effluents if there is no treatment plant, even when this revenue could be directed towards the construction of a waste water treatment plant.

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

An important issue is to make the existing laws operational. The Ambient Air Law has provisions for air emission charges, but the rulebook defining charge levels is not available. In this case, a well-defined environmental law cannot be used because the air emissions charge rulebook, where charges are defined, is missing. The situation is similar with water emission charges, where at the moment the Vodovods cannot be charged for discharges because the rulebook regulating the charges is not ready.

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

There are inconsistencies in the utilization and development of the economic instruments. At the moment, similar environmental issues are not tackled with the same tools. For example, there is a well-functioning recycling effort for tires, car batteries and used engine oils, but paper or glass collection is not available. Nor is the recycling effort is extended to cover all possible recyclable materials, e.g. for plastic bottles. Certain components of the recycling process could also function better if a working refund system could be established, e.g. for plastic and glass bottles.

Sometimes the environmental share of costs incurred is not clear for the consumer and the incentive to behave in an environmentally friendly way is lost. The car registration fee is different for cars with a catalytic converter and cars without a catalytic converter. This environmental element is hidden and lost in the combined fee for the technical check-up and insurance. To give car owners a signal and an incentive to use certain kind of cars, it would be preferable to base fees on easily recognizable features and the cause of emissions i.e. engine size or the fuel used.

Sometimes the environmental portion of a consumer price is too small to give any incentive. A good example of a fee which does not give an incentive is included in the gasoline retail price - the financing of environmental activities accounts for 0.11 per cent of the retail price. This is too small to be noticed by consumers and at the same time the revenue collected is paltry.

In the current economic situation, where purchasing power has risen 57 per cent since 2002, increasing a carefully selected and designed set of environmental charges and non-compliance penalties could be politically acceptable. Increasing the charges would make them more effective in improving the environment while generating revenues for financing public investment in infrastructure development. Increased charges with higher revenue generation would be attractive to public policy-makers and would send consistent signals to municipalities and industry to develop long-term environmental strategies for emission, effluent and pollution prevention.

To maintain the effectiveness of any economic instrument, the levels of fees and charges should be revised frequently and increased in line with inflation if necessary.

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.

The next step for improving the use of economic instruments, after clarifying policy objectives, is to evaluate the financial impact of environmental charges and their ability to instigate changes in use and consumption patterns. At the moment, there are no studies available on the effects of the environmental charges; nor are there any cost-benefit analyses when charges are used. The use of economic instruments is an optimization problem of attaining maximum effect at the lowest cost. Conducting studies on economic instruments requires sufficient manpower, a high level of expertise in the field, knowledge of economic instruments, and readily available information.

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

Municipalities have to make important and complicated decisions when deciding on the water and waste charge tariff levels. They also have to deal with social and equality concerns while taking into consideration the local political situation when issuing tariffs. Municipalities do not necessarily have sufficient expertise to solve issues like this on their own.

Recommendation 5.5:
The Government should develop guidelines to assist municipalities with tariff calculation and provide training to this end.

PART III: INTEGRATION OF ENVIRONMENTAL CONCERNS INTO ECONOMIC SECTORS AND PROMOTION OF SUSTAINABLE DEVELOPMENT

Chapter 6

PREVENTION AND CONTROL OF ENVIRONMENTAL POLLUTION

6.1 Introduction

Before the Law on Environment was enacted in 2005, with its provisions on integrated pollution prevention and control, companies in the former Yugoslav Republic of Macedonia had very limited environmental permits. There was a permit for water use, indicating that the water returned to the medium should be at least of the same quality of the water at intake. There were no permits for air emissions or for solid waste production. Companies dealing with chemicals had permits for import and use, but not for disposal of products.

A process of improvement of environment management has started. Companies will have to have an integrated environmental permit (IEP) describing obligations such as limit values of emissions into the air or water, as well as solid waste management procedures, a deadline for adjustments to operational plan to comply with legislation, and reporting obligations. Two types of IEP have been introduced: Type A for installations and processes included in the EU IPPC Directive[32] and mining; and Type B for installations and processes of lower capacity. Type A IEPs are issued by the Ministry of Environment and Physical Planning (MoEPP), whereas Type B IEPs are issued by the municipalities or the City of Skopje administration.

IEP applications were received from 2006 to 2008, according to the type of industry. However, the capacity at the central and local level to process the applications and monitor their implementation is still limited. The applications of larger emitters, such as energy production and metal industry, are not yet processed, and emission limit values on air and water for stationary sources are outdated. Hence, it is still not possible to see the impact of this process on emission trends. The challenge is great with regard to coming years, but the process is launched and is irreversible given the country's aspirations.

[32] Council Directive 96/61/EC of 24 September, amended by Directive 2003/35/EC of 25 June (version used by the Law on Environment), and by Directive 2008/01/EC of 15 January, recast into the Directive on Industrial Emissions 2010/75/EU

6.2 Trends

Data presented below, albeit official data from the State Statistical Office and from MoEPP, might have a high degree of uncertainty, given the large inter-annual variations. Hence data below should be taken with extreme care, and be used only to form an idea of orders of magnitude and long-term tendencies. Several factors might concur in this situation. Since the implementation of reporting obligations by industry is relatively new, the amount of industries contributing to the data might change from year to year. For some parameters, emission data come from a limited number of installations, and data might reflect years of more or less production. There is a limited quality check of data at the State Statistical Office and MoEPP (Chapter 3).

Air

The main sources of air pollution in the country are the energy sector, mostly coal-fired thermal power plants; district heating plants; refineries; the chemical industry; traffic; waste dump sites; fuel combustion in households and individual heating boiler plants; and the construction industry.

The dominance of energy and industry on air pollution is explained by looking at the composition of the gross inland consumption of energy, which increased from 2,700 ktoe in 2003 to 3,000 ktoe in 2008. In fact, the use of solid (lignite) corresponds to about 50 per cent of the total, while oil corresponds to 30 per cent. Lignite, which accounts for the production of about 70 per cent of the electricity used in the country, has a low calorific value and high moisture content, and its combustion produces high quantities of fly ash, sulphur dioxide (SO_2) and nitrogen oxides (NO_x). Thermal power plants, such as REK Bitola (Box 6.1), are equipped only with electrostatic precipitators and do not have desulphurization and denitrification technology installed. Use of less-polluting natural gas

has been increasing since 1998, but its quota was still about 3 per cent in 2008. Renewable energy, including hydropower and biomass, mostly domestic use, in which the main emission is carbon monoxide (CO) is variable through the years, and corresponds to 8 to 10 per cent.

Transport, namely road traffic, is considered a major contributor to air pollution in larger cities, since combustion of vehicles results in emissions of SO_2, NO_x, CO, total suspended particles (TSPs), and volatile organic compounds (VOCs). The country started phasing out lead from fuels in 2003, and since 2008 it has not been present. Implementation of the more stringent requirements started in the second half of 2008, with further changes introduced in 2009. On the other hand, data from the State Statistical Office show that the number of cars decreased since 2003 to 2008 (Table 6.1), although the number of motorcycles increased from 2,000 to 8,000.

Data trends

Regarding ambient air, the country registers SO_2, CO, NO_x, NO, NO_2, ozone (O_3), and particulate matter ≤ 10 microns (PM10) in 17 automatic stations. Black smoke and SO_2 are registered by a Hydromet station and the Public Health Institute in several locations in the country. Table 6.2 shows the amounts of emissions of acidifying substances, and tropospheric ozone precursors. Overall, there are no marked trends for data.

Box 6.1: REK Bitola

REK Bitola is the largest power plant in the country with a total installed capacity of 683 MW. It uses lignite as the main fuel. The complex also includes an open air lignite mine with an area of 10 km2. Production contributes to some 70 per cent of the electricity produced in the country.

The coal used has relatively low sulphur content, 0.4 weight per cent, and reportedly has about 12 per cent ash content (chemical analysis at the power plant laboratory). When the 3 blocks are operating at full power, 20,000 tons of lignite are used every day, and during the year 800 to 1,200 tons of flying ash is produced per day. The power plant uses heavy fuel to support the firing regime, when the lignite has lower combustion potential.

The 100 m deep mine currently being used is expected to end in 2017. A new mine has been opened for exploration in Novrotino, 10 km away from the power plant, with an estimated amount of 32 million tons. A new underground mine will be opened in the area. In total, the vicinity of the power plant contains 108 million tons of lignite, estimated to last 17 years.

As far as the mining process is concerned, water is often found. This water is pumped into a mechanical treatment (only sedimentation) and afterwards flows through the channel into the close river. Once the IPPC permit is implemented, the mine will require a wastewater treatment plant, since the water has been in contact with the lignite. The Novrotino mine is close to the river, and 12 boreholes have been dug to extract the water (about 250 l/s) to avoid disturbing production. The water is currently discharged into the river without treatment. This procedure has the potential to affect the aquifer and to contaminate the river with both suspended particles and other lignite components.

The process uses 9,000 to 12,000 m3 of water per day. The water is abstracted from an artificial lake in the vicinity, which also serves the population of Bitola (about 140,000 persons). The water to produce the steam needs to be treated and demineralized, for which a large amount of chemicals is used.

The water passes through the cooling towers and is conducted into the river via a channel. There is no possibility to reintroduce the water into the system. The water is passed through an oil separator and two neutralization basins. However, due to the oil separator's limited capacity, free phase oil is discharged into the neutralization basins which limit the secondary treatment. The wastewater treatment plant also deals with the waste water from the communal use of the plant. Water is monitored four to five times per year, and the results are reportedly good. However, this monitoring is insufficient and the discharge of untreated wastewater containing oil compounds and heavy metals poses a risk of soil, groundwater and drinking water contamination in the vicinity.

The largest environmental problem of REK Bitola is air pollution. Despite the 250 m high chimneys, the concentration of some pollutants exceeds MACs, e.g. dust from 1.5 to 2 times, SO2 about 4 times. The desulphurization process required for the operation of the power plant costs roughly €200 million. The air monitoring station has not functioned properly for the past three to four years, and air emissions at the chimneys are measured only once a month.

Another aspect is the flying ash at the dump site. A 2005 study recommended the covering the historic dump site of the flying ash with land and reforestation, which has been partially done. However, at the current operation there are episodes of flying ash being blown from the conveyor belt in its way to the dump site, or from the dumpsite before being covered with earth. The current dump site needs reshaping, since it is exposed to the wind and erosion of the top layer is causing airborne dispersion.

There is also a potential for infiltration of contaminated water in the soil, given the stock of at least 200,000 tons of coal by the plant without any protection.

Photo 6.1: OHIS waste water treatment plant

Table 6.1: Vehicle fleet in the country, 2003-2008, number

	2003	2004	2005	2006	2007	2008
Total	336,429	279,847	284,748	275,054	283,214	304,057
Motorcycles	2,142	1,382	1,724	3,442	4,437	8,626
Passenger cars	299,809	249,403	253,234	242,287	248,774	263,112
Busses	2,478	2,176	2,269	2,220	2,284	2,270
Freight vehicles	19,042	15,196	14,702	13,545	12,981	13,325
Special vehicles	6,874	7,095	8,070	8,758	10,002	11,615
Tractors	358	193	161	175	136	259
Trailers and semi-trailers	5,726	4,402	4,588	4,627	4,600	4,850

Source: State Statistical Office, 2011.

The total quantity of SO_2 emissions at national level for the period 2002 to 2008 shows two troughs in 2005 and in 2008, while there is no marked background trend (Table 6.2). The largest percentage of sulphur dioxide (> 60 per cent) is due to energy production (with lignite), which posted a steady increase from 90.3 in 2002 to 94.7 in 2008. Seasonal data show that the winter average of SO_2 is higher than the annual average from all measurement sites. This is closely connected to increased production of heating plants in the winter period. The second largest contributor is production processes (stationary sources), and data indicate the overall troughs are due to decreases in production. According to the 2010 Informative Inventory Report (IIR), ferro-alloy production contributes substantially for emissions in the Selected Nomenclature on Air Pollutants (SNAP) class. Regarding ambient air in main cities, annual average

Table 6.2: SO2 emissions, 2002-2008, thousand t/year

SNAP	2002	2003	2004	2005	2006	2007	2008
Combustion in energy and transformation industries (stationary sources)	90.28	91.88	91.88	91.86	92.20	92.80	94.72
Non-industrial combustion plants (stationary sources)	6.30	6.30	7.42	1.06	8.28	8.00	0.45
Combustion in manufacturing industry (stationary sources)	5.40	5.40	11.70	6.45	5.40	5.76	13.12
Production processes (stationary sources)	30.66	30.88	33.18	0.36	30.66	31.36	0.22
Solvent and other product use	3.98	1.42	4.43	0.00	3.98	4.22	0.00
Road transport	0.52	0.52	0.99	0.77	0.52	5.76	1.02
Other mobile sources and machinery	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Waste treatment and disposal	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Total	**137.13**	**136.40**	**149.60**	**100.76**	**141.03**	**147.90**	**109.54**

Source: Ministry of Environment and Physical Planning, 2011.

concentration of SO_2 shows a substantial decrease (3.5 μg/m^3 in 2009, compared to 16.6 μg/m^3 in 2003) and in Veles (17.1 μg/m^3 in 2009, compared to 51 μg/m^3 in 2003), as well as a decrease in the number of days above the maximum allowed concentrations (0 in 2009 and 42 in 2002) (Chapter 10).

NO_x emissions oscillate through the years, and as for SO_2, troughs occurred in 2005 and 2008. However, it is evident that in 2006 and 2007, emissions were the highest in the period. Emissions of this parameter are due to energy production (30 to 40 per cent), transport (30 to 40 per cent), and production processes (8 to 17 per cent). It is noticeable from the data that there is a steady increase of emissions from non-industrial combustion plants (starting in 2006 values are twice those of 2002 and 2003) and from combustion in the manufacturing industry (increased threefold in comparison to 2002 and 2003, reaching 15 per cent of total in 2008). This trend can be offset by adequate IEP implementation. On the other hand, starting in 2007, NO_x emissions from transport began to decrease

Table 6.3: NO_x emissions, 2002-2008, thousand t/year

SNAP	2002	2003	2004	2005	2006	2007	2008
Combustion in energy and transformation industries (stationary sources)	12.27	13.45	13.45	13.10	13.65	13.81	12.22
Non-industrial combustion plants (stationary sources)	1.13	1.13	1.53	1.50	2.05	2.06	3.10
Combustion in manufacturing industry (stationary sources)	1.51	1.51	4.07	2.74	4.07	4.14	5.16
Production processes (stationary sources)	4.17	6.22	7.09	4.93	6.49	6.44	2.71
Solvent and other product use	1.42	1.42	1.42		2.35	2.31	
Road transport	11.38	11.35	14.57	9.20	13.55	13.65	11.60
Other mobile sources and machinery				2.07	4.00	4.01	
Waste treatment and disposal				0.02			0.08
Nature				0.17			
Total	**31.88**	**35.08**	**42.12**	**33.73**	**46.16**	**46.42**	**34.88**

Source: Ministry of Environment and Physical Planning, 2011.

Table 6.4: Total emissions, 2004, 2008, Gg

Polutant	2004	2008	2008 / 2004 %
$S0_2$	100.76	113.61	112.80
NOX	33.89	36.83	108.70
CO	94.89	103.35	108.90
NMVOC	28.20	28.33	22.90
NH_3	8.79	7.07	80.50
TSP	29.85	27.32	91.50

Source: Informative Inventory Report, 2010.

significantly (in 2008 half of the value of 2006, but similar to 2002 and 2003), and it is expected that this trend will continue due to better fuel quality.

CO emissions show a tendency to increase, which is in correlation with the upwards trend for NO_x. Non-industrial combustion plant and production processes were primarily responsible for this trend, which has even offset solvent use. Use of heavy oil and other fuels in industrial boilers, and the use of coal for the heating of institutions like schools, hospitals, are reportedly the sources of these CO emissions. The exception is 2008, when production processes declined sharply and emissions from other mobile sources and machinery decreased. If emissions from transport and other mobile sources had been measured in 2008, it is possible that a trend in traffic emissions might have been be present.

Total emissions of non-methane volatile organic compounds (NMVOCs) in 2008 were approximately similar to 2004 emissions. Nature accounts for 80 per cent of NMVOCs, while there are also significant contributions from transport (8 per cent) and solvents and other products used (6 per cent). Ammonia (NH3) comes mostly from agriculture and 17 per cent from nature. Methane (CH4) was measured most extensively in 2004. However, according to IIR 2010,

Photo 6.2: Storage of hazardous waste at OHIS

there was an overall increase in methane emissions from 57 to 59 Gg. Emissions from waste treatment and disposal increased from 25 per cent to 32 per cent, the contribution of agriculture decreased from 48 per cent to 42 per cent, while extraction and distribution of fossil fuels and geothermal energy remained at 20 per cent.

According to the improved preliminary assessment report of air quality (MoEPP, 2008), there was a continuous increase of TSP and PM10 in the period 2002-2006. Lower emissions of TSPs during the period 2001-2003 were due to the fact that a ferro-siliceous alloy factory was closed. The reopening of this factory contributed to higher concentration of TSPs in the period 2004-2006. Given that this factory changed hands in 2010, it is expected that the value may fall once the IEP is implemented. PM10 originates from motor vehicle exhaust gases and as dust rising from unpaved surfaces. High particulate emissions are also generated by small-scale wood combustion in residential heating. In particular, toxic chemicals are emitted through uncontrolled burning of household waste (i.e. backyard burning), which is common in the country.

The highest values of PM10 are registered in the winter period. In 2009, PM10 concentrations were above the limit value of 40 mg/m^3 in all monitored cities, apart from one monitoring station in Lazaropole (background monitoring station). The highest average yearly concentration was registered in Skopje in 2006 (135 mg/m^3), and by 2009 it had decreased to 90 mg/m^3 (82.25 mg/m^3 in 2007 and 75.69 in 2004). This may be attributable to household use of solid fuel for heating in the winter season, as well as the influence of industry and traffic. On calm cold winter days, the meteorological situation called inversion causes episodes of high concentrations of this pollutant.

The target value for protection of human health for ozone (O_3) is 120 mg/m^3 and cannot be exceeded more than 25 days in one calendar year, with averages calculated over a three-year period. The long-term limit for human health protection from ozone was exceeded in all monitoring stations, except in Kocani in 2009. The target value for protection of vegetation for O_3 is 18,000 mg/m^3 h of average value calculated in the course of five years. Exceedances of target value for protection of vegetation were observed in the same measurement locations as for the target value for protection of human health.

Standards and emission permits

The 2005 Decree on the Limit Values of the Levels and Types of Polluting Substances in the Ambient Air and Alert Thresholds, Deadlines for Limit Values Achievement, Margins of Tolerance for the Limit Values, Target Values and Long-term Targets entered into force only in 2007.

However, MAC standards from point sources are outdated. The Rulebook on the Maximum Allowable Concentrations and Amounts of Other Harmful Matters that May Be Released into the Air from Individual Sources of Pollution still dates back to 1990. Similarly, the Rulebook on the Manner and the Terms for Measurement, Control and Recording of Air Emissions from Facilities, Plants and Devices Likely to Pollute the Air to Above the Maximum Permissible Concentrations dates back to 1976. A twinning project, to prepare a new rulebook on limit values and monitoring from stationary sources is expected to be carried out.

There have been advancements on the quality of fuels. The 2008 Amendment of the Rulebook on the Quality of Liquid Fuels to the Law on Product Safety is compliant with EU Directive 98/70/EC, Directive 99/32/EC and Directive 2003/30/EC, as well as with the European standard for petrol fuels EN 228:2007 and the European standard for diesel fuels EH 590:2007.

Measures to prevent and control air pollution

As the MoEPP publication on environmental indicators 2008 expresses, “data show that without the introduction of special measures and programmes to reduce emissions that cause pollution, the country will not get a continuous trend of decline in the quantity of emissions annually, and for a longer period of time”.

In accordance with the obligations stated in the Law on Environment and in the Law on Ambient Air, the country set up in 2004 a cadastre for air polluters and pollutants. The cadastre is currently being updated for a 2010 version. The 2004 cadastre covers 84 municipalities, organized into 8 statistical regions. Its database contains 2,758 registered exhausts of about 1,660 registered companies. Of these, 1,042 companies undertake non-productive activities (for example, schools, hospitals etc), while 618 undertake production of heat and power, mine processing, or are industries. The following measured pollutants are comprised in the cadastre, according to the characteristics of the source: SO_2, NO_x, CO, VOCs

and TSPs. The cadastre is used by MoEPP inspectors as the basis of the planning of their activities. With the strengthened IEP implementation, industry will have to start reporting other elements such as metals and their compounds, asbestos (suspended particulates, fibres), chlorine and its compounds, fluorine and its compounds, and cyanides, polychlorinated dibenzodioxins and polychlorinated dibenzofurans.

Several activities have take place regarding ozone-depleting substances (ODS). The MoEPP Ozone Unit has carried out or is undertaking over 10 projects to phase out ODS, ranging from strategic and legislative measures to capacity-building to administration and companies, and to demonstration projects. Several orders enacted since 2005 have prohibited the import, manufacture and sale of ODS, import of used refrigerators, freezers and other cooling or freezing, and in 2008 an Order for Banning of the Import and Export of Products Containing ODSs, No. 109/08 was enacted. Ozone Unit projects concern for example the recovery of DDT, methyl bromide and cycon and their sending to a safe final destination, as well as the recovery of all PCB in the country and its export for incineration in Switzerland. Taken together, the projects of this unit amount to over US$ 14 million.

Water

The use of water by industry is not well documented. The largest consumers are industries dedicated to chemicals, food processing, non-ferrous metal production, and the textile fibre and fabric industry. The tables below show trends for the water provided to industry and mining, the type of water used by industry (fresh or recycled/reused) and the wastewater produced. As can be seen, there are no significant changes in water use or wastewater treatment in the decade of the 2000s. About 95 per cent of the water used for production processes is discharged without treatment. As with air emissions, there are large year-to-year variations, which might be due to the existence of a small number of large water consumer companies. Fresh water continues to be more widely used (97 per cent), and there has been a change in intensity of use between recycled water and reused water in 2008. Data for next years will confirm or invalidate this trend.

Industrial wastewater continues to be one of the most significant polluters of surface and groundwater. Reportedly, high concentrations of heavy metals like Pb, Zn, Cd, Ni and Hg are found in industrial discharges. Also present are sometimes toxic organic compounds such as polycyclic aromatic hydrocarbons (PAHs), and even more threatening micro-organic pollutants: endocrine disrupters, pesticides, food additives and pharmaceuticals. Moreover, cooling water is discharged after use into the medium without previous cooling, causing thermal pollution (cooling water amounted to 13.3 per cent of wastewater discharge by industry in 2008). The highest release of effluent waters in water courses is due to the processing industry, while the lowest releases are from the manufacture of fabricated metal products (except machinery and equipment). In addition, non-treated communal wastewater and wastewater from slaughterhouses and livestock production enterprises are also major concerns. Reportedly, the most seriously polluted waterways are the central and lower sections of the Vardar, Pcinja, Bregalnica and Crna Rivers (Chapter 7).

Wastewater discharge permits

Before IEP, there were no wastewater permits, and only permits for water use were issued. These permits stated that wastewater must have the same conditions as intake water. Furthermore, the emission of wastewater

Table 6.5: Discharge of untreated waste water from industry and mining by recipient, 2000-2008, thousands m^3

	Total	Ground	Public sewage system	Water courses	Reservoirs	Lakes
2000	2,005,197	4,819	14,816	1,964,123	20,271	1,168
2001	1,649,597	2,320	34,730	1,179,742	18,431	414,374
2002	1,557,107	1,986	33,303	1,501,239	20,005	574
2003	2,353,371	2,317	90,995	2,236,985	22,742	332
2004	3,531,724	112,685	559,090	2,847,634	12,315	0
2005	1,551,604	27,705	30,226	517,528	976,145	0
2006	1,622,382	28,931	80,519	1,461,068	51,864	0
2007	2,956,200	14,765	96,066	2,279,218	566,153	0
2008	1,811,694	5,389	162,879	1,092,451	550,975	0

Source: State Statistical Office, 2011.

without any pre-treatment into the sewer system or directly into the nearby recipients is a breach of the Law on Drinking Water Supply and Outflow of Urban Wastewaters, No. 68/04, with amendments No. 28/06 and No. 103/08. However, there is limited monitoring of discharges.

There are several authorities, which have the power to inspect wastewater, but there is little communication and coordination among them: appointed local environment inspector (local self-governments), the State Environment Inspectorate (MoEPP), the State Communal Inspectorate (Ministry of Transport and Communication), the State Sanitary and Health Inspectorate and the Food Directorate (Ministry of Health - MoH).

There continues to be a small number of industrial wastewater treatment plants (WWTPs) in the country. Chemical and/or biological treatment is even more limited since some of the existing WWTPs only have mechanical treatment. There are also a number of WWTPs not functioning due to breakdown, lack of spare parts or due to the costs involved in operating them (Chapter 7).

Measures to prevent and control water pollution

The 2008 Law on Water incorporates the implementation provisions from the Water Framework Directive (2000/60/EC) and the Urban Wastewater Treatment Directive (91/271/EC). However, the regulations allowing its implementation are still being developed (Chapter 7).

The Cadastre of Pollutants has information collected from 1,002 installations (such as industry, public communal enterprises providing water and sanitation services, veterinary institutions, hotels, hospitals, car washing services, dry-cleaning services, etc). Inspectors plan their activities based on the cadastre. Registered water users have to provide information on the type (identification data) and capacity of the installation, information on water supply quantities, wastewater quantity and quality, type of wastewater treatments, etc. In practice, however, companies

Box 6.2: Chemicals and industrial accidents

Chemicals are managed by different ministries* and coordination among them is in the starting phase. The Law on Chemicals, No. 145/00 regulates the classification, packaging and labelling of chemicals, the requirements for trading in and manufacturing chemicals, and the rights and responsibilities of legal entities with regard to the aforementioned aspects. Some by-laws are being produced in order to implement the Law.

Currently, companies need permits to import, and there are about 200 companies with import licenses. With the 2000 Law, companies will also need licenses to handle preparations.

MoH has implemented a REACH help desk, and produced information brochures to industries. A register of chemicals will be established in the Ministry of Health, building on an existing database required by the Law of Poisons dating back to Yugoslavia. MoH is also working with companies to implement the EU Regulation on Classification, Labelling and Packaging (CLP) of chemicals.[33] The National Poison Information Centre has been created. This body is responsible for documenting, informing and providing consultation about acute poisoning by chemicals and other side effects, and has an emergency telephone number and its own website. It maintains a register of accidents involving poisoning with chemicals, and participates in the formulation and control of the central base of antidotes in the country.

The MoH inspectorate is trying to coordinate with other inspectorates the implementation of the Law on Chemicals, as well as EU REACH and CLP regulations. It proposes that State market inspectors deal with packaging and labelling, and customs may carry out inspections at the border for the import/export of substances, as it already does for instance for ODS.

The MoEPP Chemical and Industrial Accidents Unit deals with the implementation of the SEVESO Directive. The installations involved are identified on the basis of Annex 7 of the Rulebook on Hazardous Substances. Companies will start providing notification of substances and amounts by April 2011. The Unit will prepare a law on prevention of accidents and rulebooks on prevention policy and on safety reports. After that, companies will be required to submit safety reports. In general installations have emergency plans. The Unit is not yet evaluating for compliance the Rulebook on the Content of Internal and External Emergency Plans, as well as their Approval, No. 50/09. In 2009, the Unit started the basic tasks for the implementation of the UNECE Convention on the Transboundary Effects of Industrial Accidents, and has received assistance on the elaboration of guidelines on the identification of hazardous activities. Given the amount of changes that industry has to face in a short amount of time, the Unit has promoted 2 workshops with companies, and about 15 to 20 companies are involved in the activities.

Note *: The ministries involved are MoH (overall coordination, CLP, PIC, biocides in the market and detergents), MoEPP (Montreal Convention, Stockholm Convention, chemical waste), MoAFWM (plant protection products, PIC), Ministry of Economy (uses of chemicals), and customs

[33] Regulation (EC) No 1272/8 of the European Parliament and of the Council of 16 December 2008

analyze wastewater samples non-continuously (as an example, visited cement factories are inspected twice per year while coal mines inspect once per week), which weakens control. Fines for non-compliance with the law are relatively low, ranging from €1,400 to 3,400. As a result, there is no incentive for managers, who also lack awareness, to invest in costly technology.

Waste

According to the 2008 National Waste Management Plan for the period 2009-2015, the total amount of generated waste can be estimated at approximately 26 million t/y. Mining accounts for 17.2 million tons/y, animal by-products account for 5 million t/y, and non-hazardous waste from thermal process account for 2 million t/y, while municipal waste and construction waste account for 500,000 t/y each. Other hazardous waste accounts for 112,800 tons per year.

Permit issuing in waste management

Throughout the country, industrial waste is either stored on site or dumped on the vicinity of the installation. There are no special permits for these operations. The Rulebook on Processing, Treatment and/or Storage of Waste, No. 23/07, is not fully applied in companies. Some of this waste is transported to landfills. In 2006, a permit was introduced for transporters of municipal and other types of hazardous waste, and in 2010 it was updated by a Rulebook on the Form and Content of Permits for the Collection and Transportation of Hazardous Waste, No. 118/10. There are also permits for landfill operators (since 2007) and incinerator operators (since 2009). In practice, public enterprises, waste handlers, and informal collectors of usable waste fractions execute the collection and landfill operations for all kinds of waste, regardless of their hazardous properties. Landfills and transfer stations are currently within the scope of Type A or Type B IEPs, but their IEP applications might still be under processing..

Measures to prevent waste generation (reduce, reuse, recycle) and to control environmental pollution from waste treatment and disposal facilities

There is only one sanitary landfill in the country, Drisla near Skopje. In general, disposal sites do not meet the technical requirements for sanitary landfills, and throughout the country there are 54 non-compliant landfills. Active municipal waste landfills are categorized according to the assessment of their environmental risk: 16 landfills as high risk, 16 as medium risk, and 19 as low environmental risk. There are also hundreds of illegal dump sites of various sizes in rural areas. Most of the existing municipal dump sites need to be closed since the site conditions and environmental impact do not allow them to be upgraded economically, with a view to their harmonization with EU standards. An additional environmental problem consists of the traditional burning on open-air fires of municipal waste, plant tissue waste and plastics originating from greenhouses or silage coverage. Some combustible hazardous waste oils are burned as fuels.

The country has published by-laws such as the Rulebook on Identification of Hazardous Substances and Criteria for Classification thereof, No. 25/10, as well as rulebooks on handling of some specific hazardous waste streams, and on handling and labelling of hazardous waste.

Recycling in the country is underdeveloped. Waste recovery is undertaken for some commodities such as paper and hard plastics. Scrap yards as well as end-user facilities/processors are involved in these operations. The use of flying ash from REK Bitola, by a cement factory in Skopje, is one of the very few examples of valorization of waste for combustion in the country.

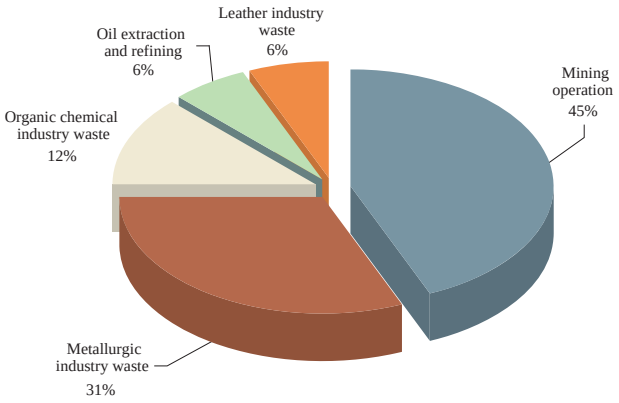
With the support of GEFTF (US$ 1 million) and UNIDO (US$ 150,000), the country undertook a project aiming at compliance with PCB-related obligations under the Stockholm Convention while simultaneously reducing releases of PCBs into the environment through enhanced national capacity in the management of PCB-containing equipment and wastes. The project included legislation, institutional and technical capacity-building, awareness-raising and assistance in the phasing-out of PCB-containing equipment (25 PCB transformers and disposal of 150 tons of PCB-containing waste). See Chapter 8.

Soil

Soil pollution trends

Besides the 54 non-compliant landfills, 16 sites with soil contamination characterized as hotspots have been identified in the country (Table 6.7). There are nine industrial areas, two mining and power plant areas and five locations with disposed residues from mining activities (Figure 6.3). Based on various environmental criteria, three classes of hotspots have been developed: low, medium and high risk contaminated industrial sites. Three “hot spots” have been ranked as high environmental risk, seven “hot spots” as medium environmental risk, and six “hot

Figure 6.1: Type of activity of the hotspots



Source: State Statistical Office, 2008.

spots" as low environmental risk. Methods for closure/remediation have been developed and (unit) cost estimates made. Total remediation costs are estimated at some € 77 millon (ranging from € 2,700 to almost 13 million).

By 2008, preliminary researches were undertaken at 16 sites, main researches were conducted on seven sites, and remedial measures were conducted on two sites. No completion was achieved at any site. The situation has not changed since then.

Map 6.1: Location of the hotspots

Source: Ministry of Environment and Physical Planning, 2005.

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

Measures to prevent and control soil pollution

Specific measures to prevent soil control are not widespread throughout the country. There are no legally specified limits for the concentration of certain contaminants in soil and standards for their detection in soil. There is no special Law for Soils, with a clear definition of institutional responsibilities.

In many of the older plants, particularly those which have stopped their operations or which are waiting for transfer of ownership to resume their operations, there is little or no information available about the history of waste disposal and waste management. The 2005 Law on Environment states that the operator shall not be obliged to compensate expenses for prevention and remediation measures undertaken with regard to occurred environmental damage if it has been proved that the environmental damage that has occurred has been caused by a third party and/or has occurred despite the undertaking of appropriate measures. Upon the transfer of ownership, the contract may establish the rights and duties of the new and old owners and in the case of public companies, or companies privatized which have stopped operation, the Government generally assumes the remediation costs, particularly at the main hotspots.

Partial implementation of rehabilitation measures and remediation has been carried out at Radovis mine, as follows: development of a new well for drinking water for the mine, and all the village; installation of new piping for potable water for the village; construction of a plant for storage, dissolution and dosing of reagents in the flotation plant; construction of a system for using the water from the mine for the technological process; afforestation activities; monitoring of wastewater and dust (perform monthly chemical analysis); monitoring of the impact of wastewater along the Lakavica until it flows into the River Bregalnica.

In Silmak in Jegunovce, the following activities were performed at a ferro-silicium smelter:

Table 6.6: Hotspots

Rank	Hotspot		Quantity (ton)	Surface (m^2)	Exploratory cost (soil and groundwater) (€)	Annual groundwater and soil monitoring (€)	Total remediation cost (€)
1	OHIS A.D	Abandoned, partly operational	252,200	76,725	28,490	6,890	10,936,076
2	Bucim copper mine	Operational	196,000,000	900,000	360,000	53,000	12,663,000
3	MHK Zletovo smelter	Closed	1,115,000	95,000	30,000	7,420	5,689,317
4	Lojane	Abandoned	1,000,000	100,000	40,000	10,600	4,250,600
5	Sasa mine	Closed	13,000,000	285,000	114,000	30,210	12,114,210
6	Silmak ferro-silicon plant	Dumpsite closed	851,000	80,000	...	8,480	2,568,480
7	Toranica mine	Closed	3,000,000	25,000	10,000	2,650	1,062,650
8	Makstil	Operational	2,500,000	125,000	50,000	...	3,175,000
9	Zletovo mine	Closed	14,000,000	280,000	112,000	29,680	11,901,680
10	REK Bitola	Operational	11,000,000	100,000	40,000	...	2,540,000
11	Feni Industry	Operational	6,800,000	167,000	...	...	1,670,000
12	MHK Zletovo fertilizer	Closed	3,700,000	70,000	...	...	700,000
13	REK Oslomej	Operational	2,000,000	280,000	112,000	...	7,112,000
14	Godel tannery	Closed	5,600	500	...	...	402,708
15	OKTA	Operational	3,000	6,000	2,400	636	3,036
16	Tane Caleski	Closed	10	100	...	...	2,701
	Average/Total		**255,226,810**	**2,590,325**	**898,890**	**149,566**	**76,791,458**

Source: Special Study on Industrial Contaminated Sites, 2005.

- Improving the existing drainage system to better collect leads and installing the specific treatment plant
- Setting the coating on the landfill to reduce infiltration of precipitation with dissolved chromium.

With the support of a project financed by Italy, the Ozone Unit has submitted to GEF a project for dealing with lindane at OHIS Skopje (the highest risk hotspot), and is waiting for an answer. The project aims at assessing a solution to solve the problem of stored lindane and other persistent organic pollutants on the factory grounds.

6.3 Policy, legal and institutional framework

Strategies, policies, programmes

The Ministry of Transport and Communications (MoTC) plans to increase the use of gas in the country. This would reduce the burning of heavy fuel and could in a second stage reduce electricity consumption if municipal gas is further developed. The natural gas network has been completed and connects Skopje to the Bulgarian border at Deve Bair. Several large enterprises in the capital are already connected. Skopje has no city network for smaller users, but plans to connect them. MoTC also foresees to build a secondary network, for consumers from Skopje to Tetovo in the west. The total cost of these investments, including provision of gas to households, is estimated at € 270 million. Reportedly, parts of the funds are secured from the paid-off Russian debt. This project could significantly reduce air emissions from companies currently using heavy oil boilers and furnaces.

With a view to facilitating exports, the country has been investing on eco-labeling. In line with this, one thrust of the Industrial Policy 2009-2020 is ecological production. A Committee on Eco-labeling was established in 2005 ("Official Gazette No. 109/05). Since 2008, Rulebooks have been enacted establishing criteria to be fulfilled for obtaining an eco-label for detergents for manual dishwashing; tourist accommodation; furniture; textile products; paints and varnishes; hygiene paper; footwear. In 2009, the MoE introduced training on ecological production for industry, and is providing financial incentives (€ 2,000-3,000 per company) for companies to get their products certified (13 companies have benefited from these incentives since 2009). Only one company in the country has been certified ISO 14001. This is partly due to the fact that there were no accredited entities in the country able to provide certification, as a result of which the process was very costly. Currently, only one company in the country is accredited to provide certification. The Institute for Accreditation is relatively new, and its Laboratory was recently accredited. According to the Standards Office, although EU directives are being transposed into the national legislation, about 60% of the existing standards will need to be updated.

Overall, the country has developed a waste management strategy and will work out strategies and actions on air and water. These measures are undertaken when there are available funds from international donors. In order to comply with the legislation being adopted, the Government needs to provide the conditions for companies to adapt to the changes, and will be required to set an example in terms of compliance.

The 2007 Law on Ambient Air foresees the elaboration of four plans and programmes to be implemented to prevent and control air pollution: (i) a national plan for ambient air quality protection; (ii) a programme for air pollution reduction and ambient air quality improvement; (iii) an action plan for ambient air protection; and (iv) a national programme for gradual reduction of emission quantities of certain pollutants. These have yet to be elaborated.

Legal framework for air management and for integrated pollution prevention and control

The Law on Ambient Air (No. 67/04, 92/07 and 35/10) establishes (i) limit and target values for ambient air quality and alert thresholds; (ii) emission limit and target values for exhaust gases and vapours from stationary sources and from mobile sources; and (iii) contents of harmful and target values of substances in fuels. The Law allows the establishment of stricter emission limit values in a given zone and agglomeration, depending on the nature of ambient air pollution and sources of emission, at the proposal of the Council of the Municipality or the Council of the City of Skopje. The Law further establishes that the legal entities or natural persons possessing or using certain installations that are sources of ambient air pollution must:

- install and maintain in proper working order the necessary measuring instruments to monitor emissions at source.
- undertake ambient air pollution prevention measures by reducing emissions of individual pollutants into the air, planning the measures to be undertaken, and implementing the emission-measuring methods.

If the installation is part of the monitoring network, the owner has an obligation to provide regular monitoring, measurement and processing of data on emissions from the source of pollution; to submit the data, on monthly basis, to MoEPP; and to keep the data on emissions for at least five years, after which they will be archived. The Law specifies the form and contents of data presentation and the manner of data recording. Installations not covered by the national or local monitoring networks must monitor both the source of emissions and the quality of ambient air in the neighbourhood of the installation. This can be done by the installation's own services or through scientific or professional organizations or other legal entities, provided they are accredited for ambient air quality monitoring.

The Law states that the types of pollutants, their limit emission values, upper limits and targets for reduction of certain types of pollutants, methods for emission measurement, as well as the terms for achieving the pollutant emission limit values are to be defined jointly by the Minister of MoEPP and the Minister of Economy.

About 12 rulebooks have been published, ranging from how to prepare the plans and programmes prescribed in the Law, to how to record, manage and report data for national purposes as well as to report to European Monitoring and Evaluation Programme (EMEP), to the use of parameters to make projections for a certain period concerning emission reductions of polluting substances at annual levels, etc. However, as has been discussed above, the emission limit values from point sources are outdated.

The Law on Environment, No. 53/05, introduced two types of Integrated Environmental Permits (IEPs), Type A and Type B, depending on the production capacity of the installation. This was followed by the Decree on the Determination of the Activities of the Installations for which Environmental Permits or Permits for Adjustment to the Operational Plan and Timetable for Submission of Application for Permit for Adjustment to the Operational Plan Are Issued, No. 89/05. Rulebooks for obtaining Type A permits, for obtaining Type B permits, and for obtaining permits with adjustment to the operational plans followed in 2006. The Decrees amending the Decree on the Fee that should be paid by Operators of Installations Carrying out Activities of IEP-A and IEP-B were updated in No. 64/10. A Rulebook on Conditions to be met by Members of the Scientific-Technical Committee for Best Available Techniques, No. 71/06 and the Rulebook on the Substances for Which Limit Values on Emission Must be Prescribed in the IEP-A No. 72/10 complete the legal framework on IPPC. Some of these legal acts are discussed in the next section.

Besides air legislation, other important related laws are the laws on Water (Chapter 7) and Waste (Chapter 8), the Law on Chemicals, and rulebooks on chemicals and accident-prevention related issues (box 6.1). From the set of laws from other sectors, it is worth mentioning the Law on Foreign Trade, which earmarks 0.1 per cent of import/export profits for the Fund to finance companies to get ISO certification, and the Law on Communal Works, which covers water and wastewater services and industrial waste. The Law on Mineral Raw Materials and the Law on Energy Efficiency also contain provisions that limit emissions.

Institutional arrangements

As seen above, the entity most involved with IPPC at the central level is MoEPP, namely the Administration for Environment, Sector of Environmental Pollution and Risk Management. In addition, MoH plays a coordinating role for chemicals; MoE through the Department of Industry is responsible for the implementation of cleaner production; and the Ministry of Agriculture, Forestry and Water Management (MoAFWM) is responsible for correct handling of chemicals for plants and animals.

Throughout the different environment sectors, enforcement capacity does not keep up with the pace at which legislation and rulebooks are being enacted. This is due partly to staff shortages and partly to the need for capacity-building. The mode of operation of the IPPC Unit (11 staff) is not efficient enough to deal with applications in a timely manner. The application period ran from 2006 to the end of 2008, and by early 2011 only 21 IEP-A permits had been issued, which corresponds to 18 per cent of all applications received. The MoEPP Chemical and Industrial Accidents Unit has 1 staff member. The MoH Department of Chemicals has four staff members and two more are expected.

The IPPC Unit received technical assistance from GIZ on IPPC capacity-building, for the evaluation of applications for landfills and chemical industry; checklist on what parameters to monitor on the adjustment plans; and calculation of compensation. The IPPC Unit is about to start a new capacity-building project with a Norwegian company on evaluation of applications of metallurgy and energy production

companies as well as the refinery. The unit is also applying to EPA for general support and technical assistance on policy-making and legal drafting on IPPC issues.

Several inspectorates are involved with issues regarding pollution prevention and control. In a broad way, it can be said that: the MoEPP inspectorate deals with MAC for air, water, waste, and compliance with IPPC permits. The MoAFWM inspectorate deals with water abstraction issues and irrigation; the MoH inspectorate with chemicals; and in the Ministry of Economy: the Unit of Industry Inspectorate with safety tanks, equipment under pressure; and the State Market Inspectorate (among many other inspections) with quality of fuel in the gas stations and monitors vehicle inspection. There are quite limited synergies and information-sharing between the different inspectorates.

The MoEPP Inspectorate has 19 inspectors dealing with environmental issues and with nature protection issues. Of these, 10 inspectors do both environment and nature protection. With this amount of staff, each inspector has reportedly a larger than ideal number of installations to monitor. The MoEPP inspectorate has three specializations: IPPC, SEVESO and waste. One of the constraints of the inspectorate is the fact that the MoEPP Environmental Laboratory is still not accredited.

The entities concerned with ambient air quality monitoring are the MoEPP Environmental Information Centre operating 17 automatic monitoring stations throughout the country; the MoAFWM's Hydrometeorological Institute that has been monitoring air quality in urban centres for more than 20 years, and the State Public Health Institute that monitors a few parameters as SO_2, black smoke, and TSPs in the largest towns (Skopje, Bitola, Veles, Tetovo, Kumanovo). In accordance with the Law, all air pollution data must be communicated to the Environmental Information Centre.

With the decentralization process occurring in the country, many responsibilities have been delegated to the municipalities. Municipalities grant IEP Type B permits, but they also issue local regulations on wastewater and waste, propose the establishment of stricter emission limit values in a given zone, decide the locations of landfills, finance and supervise dump/landfill closures, etc. However, only a few municipalities have established or designated divisions for environment. In many cases, the same person has to plan, manage and inspect all environment issues in the municipality.

The municipalities and City of Skopje play important roles with regard to ambient air quality. In fact, these local bodies participate in the establishment of zones and agglomerations of priority importance, depending on the degree of exceedance of the quality limit values and depending on the danger to human health, and may propose to MoEPP to establish stricter quality limit and target values of ambient air for certain areas. Local authorities also have a duty to promote public participation in the elaboration of the programmes and action plans established in the Law on Ambient Air. Moreover, local authorities will have to adopt the action plans, in particular for the zones and agglomerations of priority importance, and implement the corresponding activities.

The Chamber of Commerce plays a role in terms of sharing information (though brochures and seminars, and a help desk) and defending the interests of companies, in the face of all the necessary changes brought about with the adoption of EU legislation. The Chamber also has a center for the implementation of ideas to facilitate companies' access to modern technology. In addition, it assists companies in applying for funds and credit lines to modernize their infrastructure. Companies are faced with rapidly changing legislation and a series of new obligations, which require investments.

Access to funds and the ability to implement improvements within the time required by the IPPC permit with adjustment is a problem. Another limitation is that in order to comply with air emissions in many cases, companies will need to switch to natural gas, yet the pipeline still does not reach their installations. This will be even more challenging with the new Energy Efficiency Law, which is being finalized and will require companies to show energy savings.

The Clean Production Center is currently a public company functioning on the Engineering Faculty of the Technical University. It has been implementing projects from several donors such as the Austrian Development Agency (ADA), USAID and UNIDO to support companies in adopting clean production methods. There is a first scan, followed by training of the senior staff using UNIDO methodologies, and when the company is ready to implement improvements, the Centre helps to mobilize funds from different sources. Currently, ongoing projects only deal with agro-industry.

Implementation of the provisions of the EU IPPC Directive

The authority responsible for issuing Type A IEPs is MoEPP. For installations defined as new installations, a Type A IEP is issued, and for those defined as existing installations, a Type A IEP with an adjustment to the operational plan is issued. The authority responsible for issuing a Type B IEP is the municipality, except in protected areas. As for Type A permits, for existing installations a Type B IEP permit with adjustment to the operational plan is issued. The adjustment to the operational plan consists of a description, for each process likely to cause pollution, of the set of objectives, actions, expected results and investment required[34] to make the process and the whole installation compliant with emission limit values by 2014.

Due to the reduced number of staff dealing with environment in the municipalities, there is no information whether all companies requiring a Type B IEP have applied. In many municipalities, there is just one staff member in charge of environmental matters, who has to do everything, from planting trees to issuing permits and serving as inspector. Despite the fact that MoEPP oversees the issuing of Type A and Type B IEPs, there is a lack of systematic communication and support from the central to local level. All existing companies were required to submit environmental elaborates (environmental incidence assessment), and MoEPP can determine whether the company requires a Type A or a Type B permit.

In the case of the City of Skopje, which administers ten municipalities, three staff deal with IEP permit issuing, five inspectors and two staff members with EIA. In this special case, each of 10 municipalities deals with lower production capacity installations, while the City staff members deal with the larger Type B permits. The IPPC unit cannot ascertain if all the companies requiring Type B permits have submitted applications. Through meetings between the local inspectors and the IPPC city unit, the situation is becoming clear, but this is not done in a systematic way.

The procedure for issuing IEPs is compliant with the EU IPPC directive in terms of allowing public participation and access to justice.

The calendar for applications for Type A and Type B IEPs was clearly defined and took place between 1 January 2006 and 31 December 2008 for existing installations. Half-years were set aside for specific types of activity: manufacture and processing of metals, energy, mineral industry, chemical industry, landfills and recycling, and other.

According to the Decree on the Amount of Compensation Paid by Operators' Installations That Perform Activities for which a Permit with Adjustment to and Operational Plan Is Issued, No. 117/07, amended by No. 64/10, the operator of the installation pays for the permit in the following cases: when submitting the application; when submitting the request to amend the permit with an adjustment plan; when submitting a request to transfer the permit; annual fee; regular supervision of installation; and closure of the installation (Chapter 5).

Of the 117 applications for Type A IEPs received by MoEPP, 21 have been issued. A few other processes are ready and awaiting approval (box 6.3). The IPPC Unit has benefited from technical assistance projects in certain areas before starting to process applications, the next one being on energy production and refinery. Processing of applications is an iterative process in which key steps are the provision of administrative and technically acceptable documents (often the applications were not sent complete the first time or times), and any negotiations that might exist with the companies. All these steps take time. The legislation establishes deadlines for provision and analysis of documents, as well as communication between the competent authority and the companies, but different factors might interrupt the process. During this time, the companies can continue to operate, at least until 2014. Of the Type A IEPs issued, seven are for new installations (five are for different installations of the same company), whereas the remaining IEPs were issued with adjustments to the operational plan. Municipalities face a similar situation. The City of Skopje received 34 Type B IEP applications, of which 1 was denied, 8 were approved and 5 are being processed, while the remaining 20 are awaiting processing. According to MoEPP, 71 Type B IEPs have been issued by the municipalities.

Only Type A IEPs are requested to comply with best available technology (BAT). BAT is retrieved from the EU central website[35] and used as a reference for the analysis of IEP applications, and to set the goals for the adjustment to the operational plan. **BAT** Reference Documents (BREF) are not translated into Macedonian. What is more, the IPPC Unit does

[34] The formularies for the application can be found in:http://www.moepp.gov.mk/default-en.asp?ItemID=6285BBE6BCD07447B95245A24E6B9439

[35] http://eippcb.jrc.es/reference/

Box 6.3: Cement Factory

The Titan cement factory is about to be issued a Type A IPPC permit with adjustment plan. The factory covers around 80 per cent of the domestic market, and exports cement and clinker. The factory applied in 2007, but the process was only handled by MoEPP in 2010. The process contained a public hearing. The factory was the beneficiary of a CARDS project in which five plants received technical assistance on the administrative process of preparing an application.

The burner uses 100 per cent petrol cokes, and the mixture of the clinker is done with limestone and flying ash from REK Bitola. The factory uses 70,000 tons of petrol cokes per year. Heavy oil is also used to start the burner, and about 1,500 t/year are consumed. Since 2003, Titan has used 120,000 tons per year of flying ash, around 30 per cent of which is produced in REK Bitola.

There are membrane filters in the chimneys, and solid waste is dispatched to licensed operators and other hazardous waste is adequately stored, due to a lack of licensed operators to deal with those waste streams.

The factory monitors air continuously and reports monthly to the Inspectorate and Environmental Information Office. Water is monitored twice per year at intake and discharge waters at the request of the Inspectorate. Two noise inspections have been carried out. The factory also monitors GHG emissions, but for internal use only. Improvements are planned to replace the fuels, including certain types of waste accumulated or being accumulated throughout the country, as well as to collect the stormwater and channel it to the WWTP, as well as to improve fugitive dust on the mixing area.

not rely on experts (university professors, certified consultants, persons from other ministries, such as MoH) for help in analyzing the applications, some of which contain complex processes that are hard for laymen to understand.

Most Type A IEPs issued are permits with adjustments to operational plans and are still far from the BAT compliance requirement. Furthermore, if BAT implementation is too costly for the company, the final negotiations prior to grant of license result in the requirement of compliance with MACs. Therefore, no significant work is being carried out on BAT. Some of the larger companies are owned by the State, such as OHIS A.D or some privatized firms such as MakStil are so far from meeting Type A IEP requirements that they might face closure.

The transposition of the Environmental Liability Directive could bring another layer of responsibility to the companies and help protect the State from future incidents. This is because an operator of an occupational activity that has caused or may cause damage to the environment must, at his own expense, undertake the necessary preventive measures or remedies based on a dual-liability system. Under the Directive, the operator is released from liability if it can be proved that: (i) he was not negligent or at fault; and (ii) the damage caused resulted from either an emission or an activity authorized by, and fully in accordance with the conditions of, an authorization pursuant to national law, or from an emission or activity that was not considered likely to cause damage to the environment according to scientific and technical knowledge at the time the activity took place. Companies will have to take out insurance to cover any possible damage the activity may have done to the environment.

6.4 Conclusions and recommendations

The country is undertaking a great effort to modernize legislation, and to adopt the corresponding rulebooks for their implementation. The existing legal set-up for integrated pollution prevention and control allows the establishment of requirements to be fulfilled by the companies. A major remaining gap to implement IPPC is the updating of MACs for emissions from point sources to air and water. There are also some major strategies and action plans to be developed, including a programme for emission reduction.

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

Recommendation 6.2:
The Ministry of Environment and Physical Planning should develop the National Programme for Emission Reduction and promote its adoption.

MoEPP is reorganizing itself to be able to respond to needs; and develop and implement legislation, strategies and action plans. However the capacity of the IPPC Unit is not efficient enough to deal with applications in a timely manner. Municipalities have extended responsibilities on environmental management, but are even more understaffed. An example is reported that inspectors from larger municipalities cannot ascertain whether all companies requiring a Type B IEP have

applied for it, and companies might not know that they have to apply. A great deal of effort will be required to establish central, inter-municipality or regional, and municipal administrative and expert institutions that are operative and cooperate with each other.

Although there are advancements on the legislation, it is still not possible to see the results in terms of environmental improvement. This is a process that takes time, but companies need to make a real effort to comply with the adjustments to the operational plan in due time. In order to encourage persistent compliance, it is crucial to establish constant monitoring and proper enforcement by using the data. A first assessment of the implementation of adjustments to the operational plans is currently being prepared, when some companies have had the permit for two or three years, which shows limited enforcement. Given the relatively small number of large emitter companies, there is an opportunity to establish direct communication with the specific companies and work to improve reporting and data quality. For Type B IEP companies, the challenge is bigger due to their large number and differences in the capacities of the municipalities. This calls for improved coordination between central and municipal level, and also for increased inter-municipality cooperation.

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.

With the upgrading and updating of legislation that is taking place in the country, companies are faced with a large number of new requirements, and in some cases installations are so far from meeting the BAT that they run a real risk of closure by 2014. Significant investment in advanced technologies, equipment and practices would enable these industries to operate economically and with due regard for the environment. However, most companies lack the technical knowledge on what to do to improve their environmental performance and the market of consultants is still not developed in the country. On the other hand, in its transition to a market economy, the Government has been privatizing some companies and continues to actively seek to privatize other larger companies. Notwithstanding, many Central and Eastern European countries in similar situations have experienced problems in attracting foreign direct investment because of concerns over liability for past environmental damage and contamination. It is known that companies only comply if the market requires it, if consumers exert pressure, or there is enough enforcement or incentives.

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.

Chapter 7

SUSTAINABLE MANAGEMENT OF WATER RESOURCES

7.1 Introduction

Climatic parameters such as temperature, wind and moisture vary across the country and determine the hydrological regime in different regions. Precipitation with 700 mm to more than 1,000 mm in the west and 350 to 550 mm in the centre and in the east is spread unevenly in space and time. About 2 per cent of the total surface is surface water.

The country's territory is classified as a semi-arid region. The area of Ovce Pole is the driest area in the central Balkan Peninsula. From a European comparison, however, the country is average in terms of available water resources per capita (3.15 thousand m³/year). In addition, the fact that the waters of the former Yugoslav Republic of Macedonia cover approximately 2 per cent (6.4 billion m³) of the country with some 35 rivers and 53 natural and artificial lakes indicates sufficient water resources, which are however unequally distributed. Water resources depend mainly on the appearance, duration and intensity of precipitation. Glaciers as water spending reservoirs are not available. The use, protection and conservation of water resources is therefore of utmost importance.

7.2 Water resources

Groundwater

The karstic areas where the water drains into the ground form a sufficient water resource of ground water, which is also vulnerable to ground water pollution from surface drainage and agricultural land use as well as to any infiltration of toxic material. About 4,400 springs with a total annual yield of 992 million m³ are reported while about 60 springs have a capacity of over 100 l/s. Only three springs are located in the middle reach of the Vardar, while the remaining ones are in the western part. Worthy of note is Rashche spring north of Skopje with an average capacity of 4,700 l/s, as well as the nearby Nerezi and Lepenec wells with 1,400 l/s.

The country abounds in mineral and thermal water. The main geothermal zone is in the area of Vokovo-Skopje- Katlanovo, Kumanovo, Isti Banja- Kocani-Stip, Strumica, Smokvica- Negorci- Gevgelija and Kosovrasti- Debar- Baniste. Geothermal water is used for spa and medical cure purposes.

Due to a lack of systematic and continuous observations and examinations of groundwater, there are not sufficient data on ground water quantity and quality except the data for water supply.

The total amount of groundwater is estimated at approximately 940 million m³/y, which is equivalent to 18.3 per cent of river water resources. The amounts of exploited and potential groundwater in the Vardar River basin (VRB) are about 85-90 per cent from the whole quantities in the country.

Surface water

The surface water from rivers and lakes derives from the run-off from mountains (Table 7.1). The total annual amount of surface water is estimated at 6.37 billion m³. Hydrographically speaking, there are three main river basins: Vardar, Crn Drim and Strumica including three major natural tectonic lakes: Ohrid, Prespa and Dojran. All of them are shared with neighbouring countries (Map. 7.1).

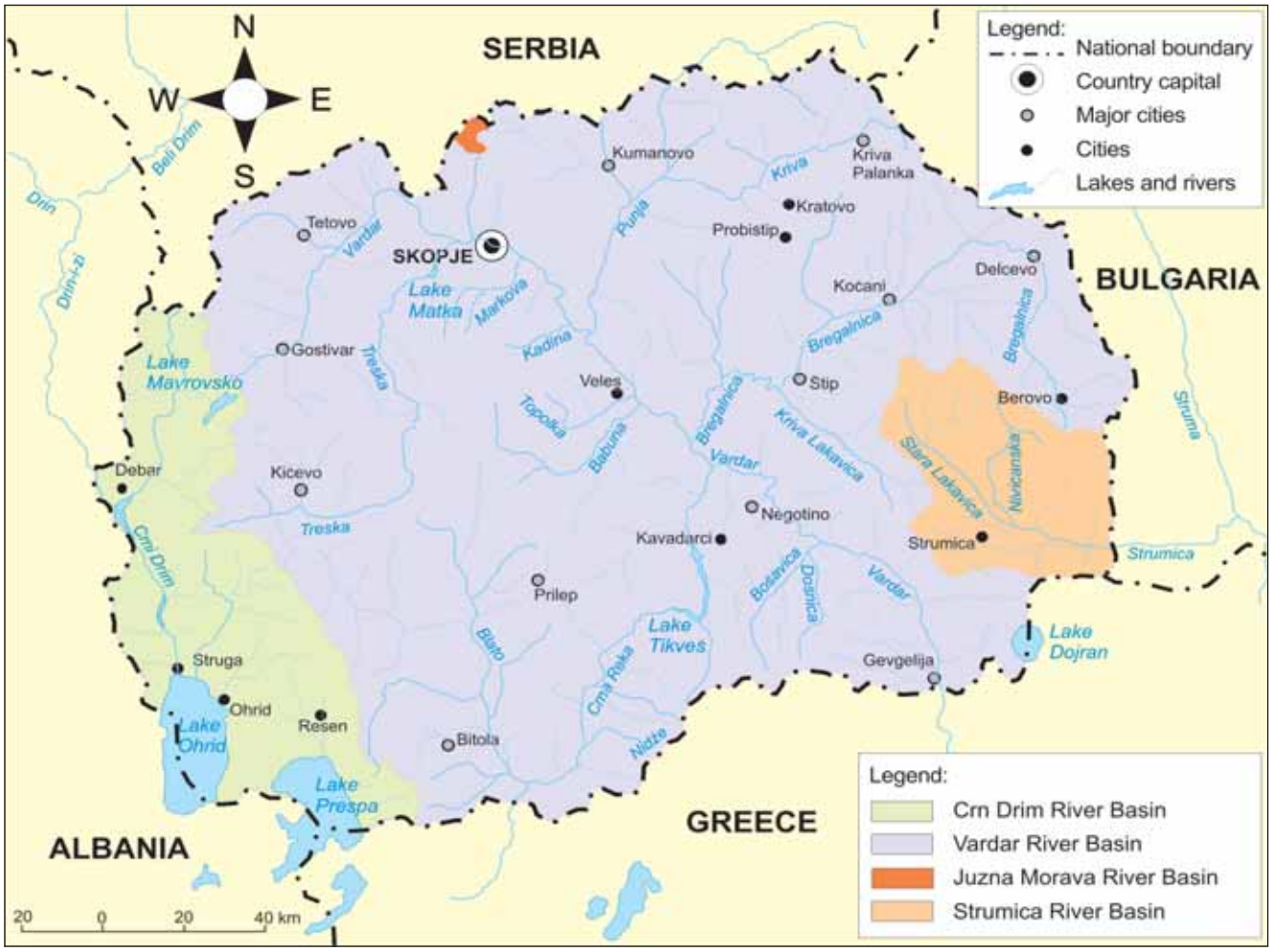
The Vardar watershed includes the basin of the Vardar River with its tributaries on the country up to the border with Greece, and the basin of Lake Dojran. The Vardar catchment is the biggest water basin and covers 80.4 per cent of the country. It consists of the Vardar River itself and its major tributaries, Lepenec, Treska, Pchinja, Bregalnica and Crna, which divide the Vardar basin into five subbasins (Map. 7.2). Almost 85 per cent of the total population (2,022,547) lives in the Vardar River basin (Census 2002). The Vardar River rises 683 m above sea level and runs almost diagonal from NW to SE over 300 km through the country down to the Aegean Sea. The total yearly water capacity is about 4.6 billion m³. The average annual flow in Skopje was 64.56 m³/s

Table 7.1: Areas covered by different types of water bodies, thousand ha.

Water body	Area
Natural lakes	46.70
Reservoirs	6.40
Rivers	2.20
Ponds and cages	0.70
Total	**56.00**

Source: Ministry of Environment and Physical Planning, 2011.

Map 7.1: River basins



Source: Ministry of Environment and Physical Planning, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

1971-1980, 53.61 m³/s 1981-1990, and 46.02 m³/s 1991-2000.

The Crn Drim watershed includes the basins of Lake Prespa and Lake Ohrid, and the basin of Crn Drim River with its tributaries up to the border with Albania. The basin covers 3,359 km² (13.1 per cent of the country's total territory). This region is the richest in terms of water resources. The Crn Drim River with 44.5 km in the country springs out from Lake Ohrid in Struga. Galicica Mountain lies between Lake Prespa and Lake Ohrid.

The Strumica watershed includes the basins of the Strumica, Cironska and Lebnica Rivers up to the border with Bulgaria. The basin covers 1,649 km² (6.4 per cent). The major part of the total river basin (75 per cent) is located in the country, while the remainder is

in Bulgaria and Greece. The main tributaries to the Strumica River are the Vodoca, Turija, Radoviska and Podareska Rivers. This area is the poorest in water resources.

The rivers have a distinctive hydrological regime determined by the high mountain relief and the relation to snow melt and precipitation with high peak flows in January, low peaks around April and March and very low flow rates during the summer more or less to the end of the year. For example, hydrological flow rates in Vardar River at Demir Kapija (far downstream) in 2003 varied from 900 m^3/s in January down to < 50 m^3/s (June-December).

Total annual available surface water resources in the country are assessed as 6,372 billion m^3 with a total cover of 56,000 ha, which is about 2 per cent of the country. Surface water resources are divided among the three river basins. The poorest areas for water resources are the regions of Strumica, middle and downstream Bregalnica and Pelagonija. In dry years, there was surplus water only in the regions of Treska, Skopje and downstream on the Vardar River.

Lakes and reservoirs have the biggest portion among water resources of the country (Table 7.2). Lake Ohrid (Photo 7.1) is a tectonic lake more than 2 million years old with the characteristic that it is sourced over 60 per cent by karstic springs (residence about 70 years).Numerous analyses have showed that the water of Lake Prespa, situated at 854 m above sea level, runs off into Lake Ohrid, through the karst of the mountains and reappears as surface springs at St. Naum, but also as underground springs at the bottom of Lake Ohrid. The total volume of the lake is 55 km^3; the water surface covers an area of 358 km^2 with maximum length of 30 km and width of 15 km; while its maximum depth is 289 m (mean depth is 155 m). The lake surface is at an average elevation of 693 m above sea level. Lake Ohrid was declared a UNESCO world heritage site in 1979.

Lake Prespa is shallow. It has a total volume of 3.6 km^3, with a water surface of 254 km^2 and maximum depth of 48 m (mean depth is 14 m). Lake Dojran has only 43 km^2 surface area, of which 26 km^2 is located in the country's territory.

Photo 7.1: Lake Ohrid

Photo 7.2: Vardar River in Skopje

Groundwater quantity

The total amount of groundwater is estimated at approximately 940 million m³/y, which is equivalent to 18.3 per cent of river water resources. The amounts of exploited and potential groundwater in the Vardar River basin (VRB) are about 85-90 per cent from the whole quantities in the country.

7.3 Water quality and monitoring (surface water, ground water)

Groundwater quality

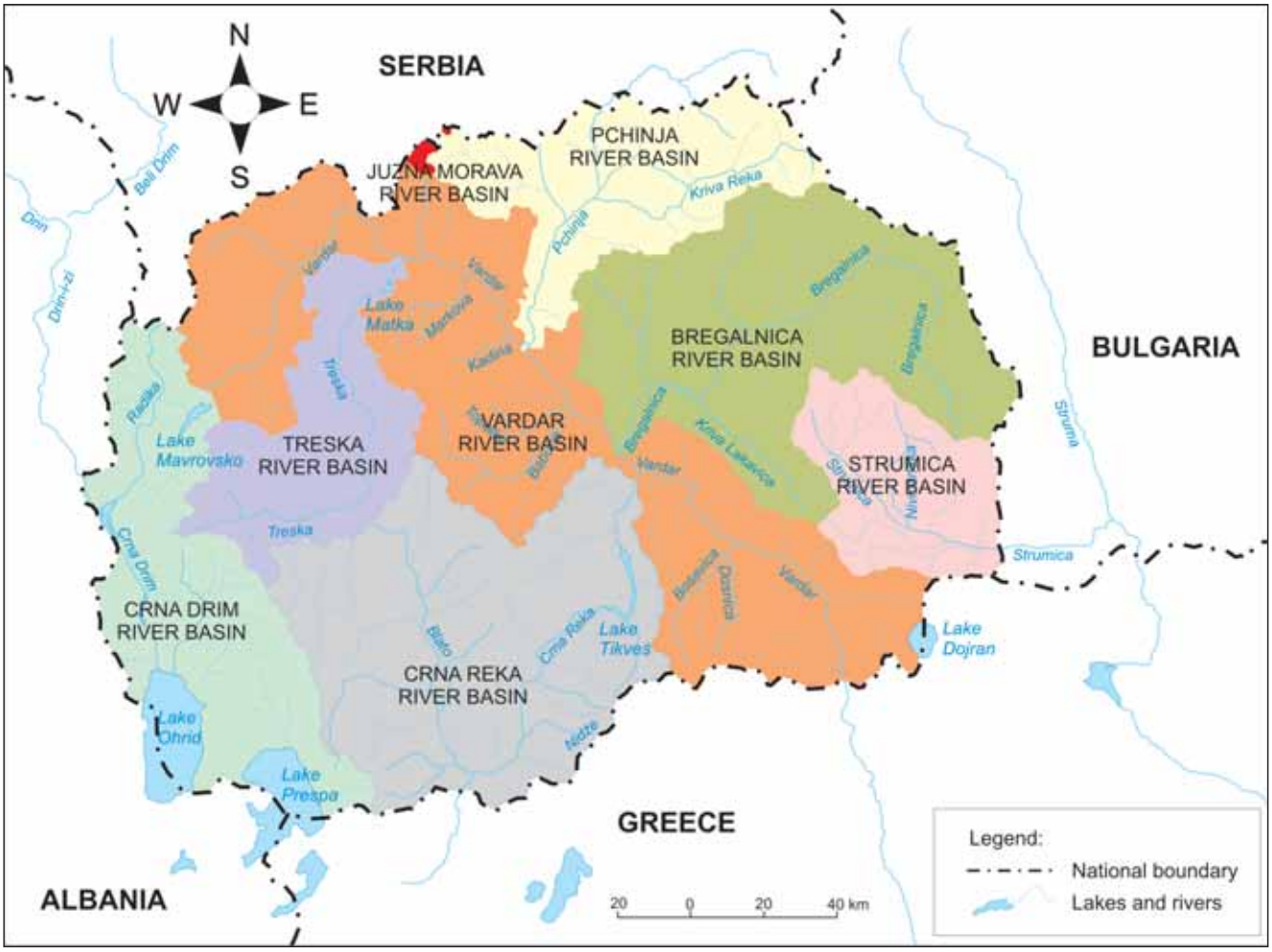
There are no sufficient and appropriate data on groundwater yields, quantities or quality. Observation and examination of groundwater have not been performed systematically and continuously, except for the local demands for certain regions. More detailed examination has been carried out only within the period 1963-1975, when hydrogeological units for basins of rivers upstream Vardar, Treska, Crn Drim, Crna Reka, downstream Vardar and the eastern part of the country were identified.

Surface water quality (rivers, lakes, reservoirs)

The natural composition of the water is determined by abiotic geological, pedological and climatic factors as well as biotic elements from the metabolism and interaction of aquatic communities. All kind of discharges from anthropogenic point sources and non-point sources are changing more or less the natural characteristics of the water. Physico-chemical parameters such as temperature, pH, conductivity, oxygen concentration, chemical oxygen demand (COD), biological oxygen demand in five days (BOD5), phosphate, nitrate and ammonium are standardized qualitative indicators for organic and nutrient (eutrophication) discharges.

Aquatic communities such as macrophytes, phyto- and zoobenthos, plankton and fish react to water pollution by tolerance, preference or disappearance of different species, also by their abundance. Consequently, biological components are excellent indicators for water quality. These are also the basic tools in assessing the ecological status of water bodies by the European Water Framework Directive (WFD).

Map 7.2: River subbasins (watersheds)



Source: 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.

The Hydrometeorological Institute (HMI) in Skopje has an impressive long-term data collection on hydrological and chemical parameters, especially during the River Monitoring System (RYMSIS) 2000-2010. The Hydrobiological Institute (HBI) in Ohrid is outstanding with incredible chemical and biological long-term investigations on Lake Ohrid and partly on Lake Prespa and Lake Dojran.

Rivers

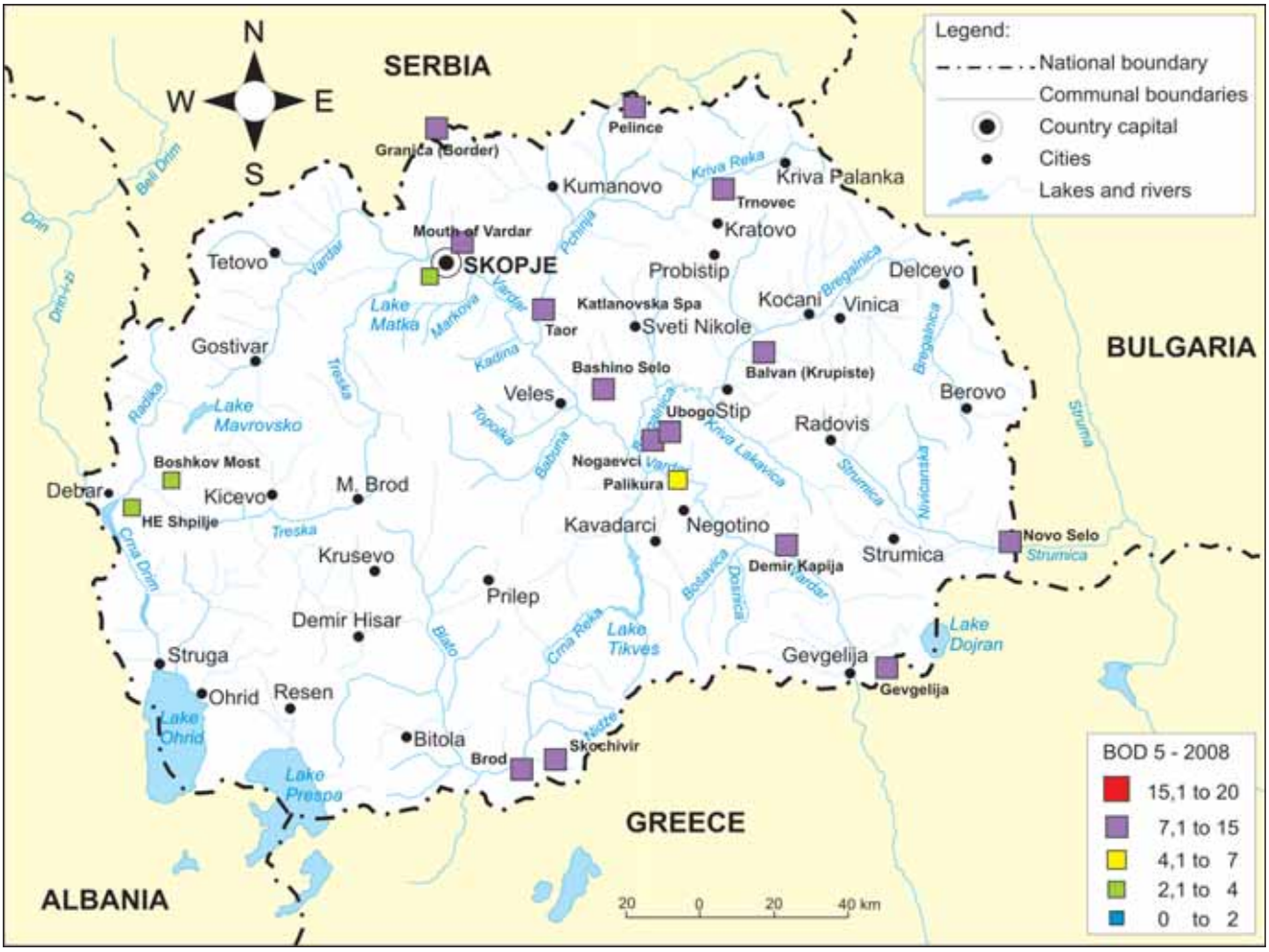
Surface water quality monitoring is performed by HMI. Monitoring covers a network of 20 measuring points sampled monthly from rivers. From the long list of qualitative chemical parameters, just a few representative parameters are selected for water quality assessment in this report. BOD5 stands for

Table 7.2: Surface water resources referring to river basin, million m^3/year

River basin	Surface water amount
Vardar	4.60
Strumica	0.13
Crn Drim	1.64
Total	6.37

Source: Ministry of Environment and Physical Planning, NEAP II,2011.

Map 7.3: Biological Oxygen Demand (in 5 days) (BOD5)-concentrations in rivers, 2008.



Source: Ministry of Environment and Physical Planning, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

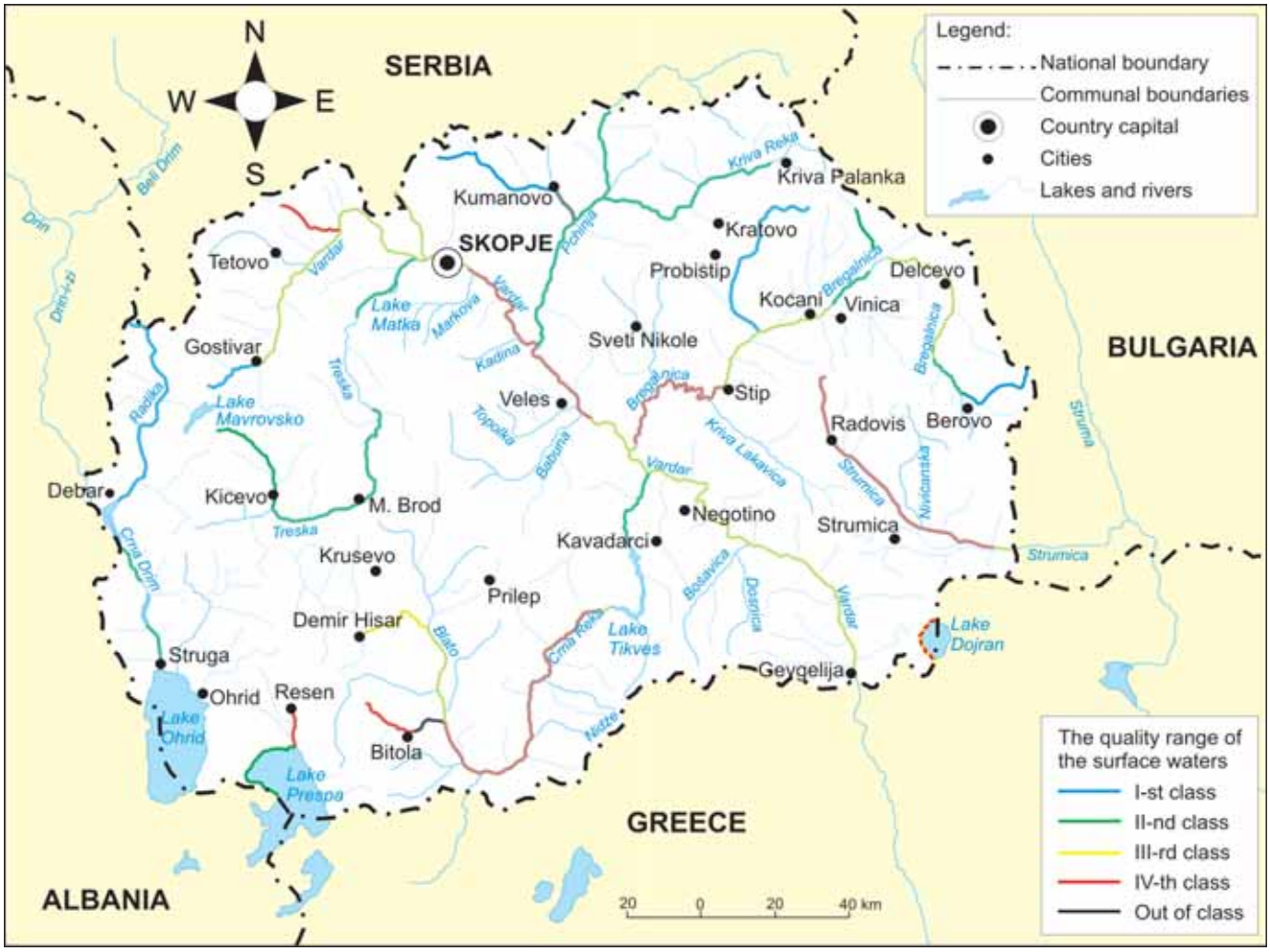
pollution with organic matter mainly from urban and rural sewage. The highest water pollution are reported in the lower reaches of the Vardar River, the Bregalnica River and the Crna River from the discharge of untreated wastewater urban centres, industry and livestock breeding farms. Reportedly only six per cent of wastewater is treated prior to discharge into rivers. The BOD5 in 2008 shows high values with 7 mg/l -15 mg/l (Map 7.3). Naturally, one would expect in those rivers BOD5 concentrations of 1-2 mg/l. Map 7.3 shows the average annual BOD5-concentrations in various rivers in the country from 1998- 2008 on its high level. Striking are the high BOD-concentrations especially from 2001 - 2003, which stands for high organic pollution. These results correspond with the sapro-biological results of Map 7.4.

Recorded nitrate concentrations are relatively low between 1-3 mg/l (Map 7.4). However, ammonium can reach quite high values up to 2 mg /l due to missing nitrification from sewage treatment plans. This also explains the low amount of nitrate. Ammonium at high pH becomes ammoniac, which is very toxic. In rivers with sewage treatment, the opposite occurs - low ammonium and higher concentrations of nitrate (<= 5mg/l).

Phosphate drives the eutrophication process in fresh water and can cause oversaturation of oxygen and secondary dissimilation and subsequently oxygen depletion at night by their high primary production of macrophytes, phytobenthos and phytoplancton. A general trend towards an increase in nutrient concentrations was observed after larger settlements. Measured phosphate concentrations up to 2 mg/l in rivers are beyond good and evil and are once more a sign of lacking wastewater treatment.

Water quality in measuring station Skochivir is considered as one of the most polluted sites in terms of visibility reducing particles (VRB). Very low concentrations of dissolved oxygen were recorded,

Map 7.4: Sapro-biological evaluation of water quality of surface waters, 1996.



Source: Ministry of Environment and Physical Planning, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.
Note: Water classes indicate the pollution with organic matter from sewage.

followed by high concentration of nutrients (NH4 and P). This is a result of untreated municipal wastewaters from settlements (Prilep and Bitola) located upstream.

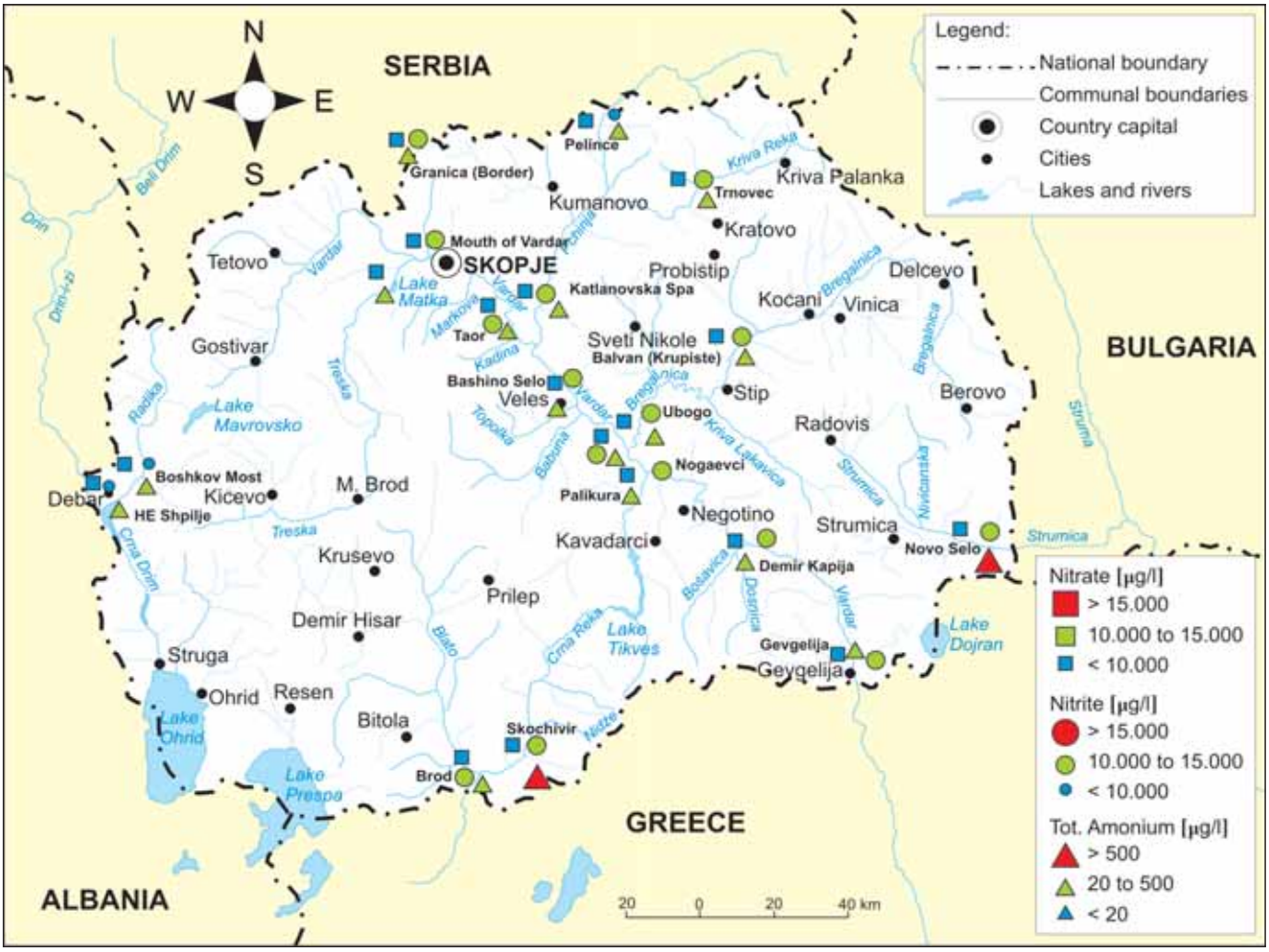
Elevated heavy metal concentrations were found in the sediment samples. Concentrations of heavy metals in the water samples do not exceed limit values. Target analyses of organic pollutants in water and sediment indicate serious industrial pollution: especially high concentrations were detected for pentachlorobenzene, hexachlorobenzene, phenols and pesticides (DDT and its metabolites, lindan, 3-fluralin etc). Some of the present organic pollutants indicate herbivore pollution. High values for heavy metal and other toxic substances were also detected in fish tissues. After Veles, Vardar River is also polluted by heavy metals: Pb, Zn and Cd as a result of the zinc and lead melting industry and fertilizer industry. Fortunately, concentrations of these heavy metals have been tending to decline over the past decade. However, it can be assumed that sediment and fish are still carrying accumulated heavy metal.

Unfortunately, it must be stated that none of the 20 qualitative sampling monitoring sites from HMI are from reservoirs, which are the main source for irrigation. For example, the largest reservoir, the Tikves reservoir near Kavadarci, has no qualitative monitoring.

Lakes

Lake Ohrid is an oligotrophic lake with high transparency (average Secchi depth 14 m). Low concentrations of phosphorous (< 10 µg P/l, average 4.6 P µg /l) and consequently low chlorophyll concentrations reflect the efforts made in the Lake Ohrid Conservation Project and the waste water collection system around the lake. Some danger

Map 7.5. Nutrient conditions from nitrate, nitrite and ammonia concentrations in rivers



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.

exists from the rivers tributaries, with their input of phosphorous.

For Lake Prespa and Lake Djoran, less qualitative data are available. The water quality of Lake Prespa is not as good as in Lake Ohrid. Phosphorous concentrations are higher compared to Lake Ohrid (about 40-50 ugP/l), which is a mesotrophic status, and these high concentrations are caused by the discharge of untreated wastewater directly into the lake (61 per cent belongs to the Golema River).

Lake Dojran suffers from water abstractions and decreasing water level, which have severely impacted its water quality, resulting in eutrophic status. Lake Dojran is the smallest of the three tectonic lakes in the country. The total water surface area of Lake Dojran is 43 km² (about 26 km² are located on the territory of the country and the rest on Greece). 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 massive use of the water from wells for irrigation. In order to improve the situation, a system for abstraction of water from wells near Gevgelija was built and a pipeline system for recharging the lake with ground water was installed. Even this solution was not an integral solution for the lake basin.

Biological indicators

Biological communities are excellent indicators for water quality assessment. A classical system for expressing pollution with mainly organic matter from point sources is the saprobiological index. This system is also used in the country. Irregular sampling and determination is done by the University of Skopje, Faculty of Biology. The saprobiological index can be transferred into water classes from I to IV (oligosaprob class I, blue to polysaprob

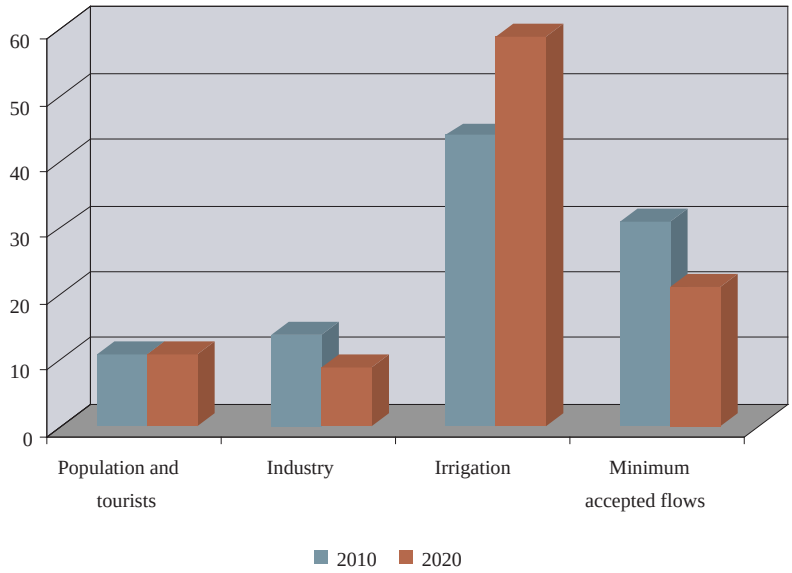
Photo 7.3: Waste water treatment plant in Kumanovo

class IV, red) illustrated by rainbow colors. Even if it is an older presentation, Map 7.6 shows clearly the high sewage pollution with dominant water quality classes III (alpha-mesosaprob) and IV (polysaprob), especially below bigger cities such as Skopje, Veles, Bitola and Stip, as well as the Vardar River, the Crna River, and the Bregalnica River. Since nothing has changed much on the wastewater side, this map is still up to date. Data from 2010 show better classes but calculation has been done including autotrophic taxa such as diatoms. However, this type of calculation should exclude autotrophic taxa such as diatoms. Although the rivers have good hydromorphological conditions, there is minor self-purification due to the overload of sewage along many rivers. The declined recreational fisheries downstream of Skopje since 1990 can also be interpreted as a sign of reduced fish in terms of diversity and abundance. Highest pollution was found in Crna River at Skochivir – typical serious organic pollution from untreated domestic and toxic industrial wastewater, which results in a bad ecological status according to WFD. Decline in aquatic species and fish kills were reported in the past.

It is alarming to see the red class IV of Crna River running with class III into Tikves reservoir, from which water has been used for a large irrigation area without qualitative monitoring data.

However, in the western part of the country, the Crn Drim and Radika Rivers have good water quality. During a survey in 2006, no fish biota were taken from the Vardar River for chemical testing, but historical data indicate that cadmium concentrations in fish tissue from specimens caught downstream of Skopje and Veles are not suitable for human consumption. Also, mercury contents in fish were higher in fish from the stretch of the river downstream of Skopje than from upstream. Pollution of the Vardar River, downstream of Skopje and Veles, probably had an impact on the extent of sport and recreational fishing. Fishing on Lake Dojran practically collapsed due to a lack of water rather than the quality of the water.

Figure 7.1: Total water demands by users, 2010 and 2020



Source: Ministry of Environment and Physical Planning, 2011.

7.4. Water use and wastewater

The major water users are agriculture, industry, population (drinking water supply) and energy production. According to the total water demands by user, currently the major water consumer is the irrigation sector with 44 per cent, followed by nature with 31 per cent, then industry with 14 per cent, and drinking water supply by population and tourists with 11 per cent (Figure 7.1).

The Vardar River basin covers 79 per cent of total water demands, the Crn Drim River basin 12 per cent and the Strumica River basin 9 per cent of total water demands. Total annual water abstraction in the country has been decreasing in recent years, especially from surface water (Figure 7.2). It might be related to the breakdown in industry at the moment even if industry is still a big user of groundwater. Total water consumption from industry dropped from 2004 to 2008. The major ground water users are water supply (21 per cent), industry (14 per cent), observation (14 per cent), agriculture (6 per cent), thermomineral (3 per cent), and 42 per cent not classified.

Drinking water supply

About 60 per cent of drinking water in the country is supplied from karstic springs, 20 per cent from surface waters and 20 per cent from groundwater. Access to regular clean and safe drinking water is an essential part of public health (see Chapter 10).

According to the Census 2002, the proportion of dwellings connected to public water supply system is 86 per cent of all dwellings. The percentage of connections to public water supply systems in the municipalities-urban areas is much higher than the average and higher compared to rural areas. It varies from 82 per cent (Berovo, Kumanovo) to 100 per cent Skopje-Center municipality. Regarding rural areas, the percentage of the connected dwellings to the public water supply systems is very different and varies from 10 per cent up to 100 per cent. On average, about 70 per cent the population is connected to public water supply, while the remaining 30 per cent has mainly local facilities in urban areas.

The public water enterprise (Vodovod) of Skopje supplies 550,000 people plus industry continuously.

Table 7.3: Drinking water quality for physico-chemical and microbiological parameters as a percentage, 2001-2008

	2001	2002	2003	2004	2005	2006	2007	2008
Physio-chemical % improper	4.2	5.3	7.5	5.6	5.6	3.8	5.6	4.1
Microbiological % improper	1.3	1.5	0.8	0.8	0.8	1.4	1	0.9

Source: Ministry of Health, 2011.

Rashche spring delivers 4.7 m³/s in average plus 1.4 m³/s by additional wells as a security factor in summer. Total input is about 0.1 billion m³/year, with no shortage in the summer and very stable water qualities and no treatment except a little addition of chlorine (0.2 Cl2 mg/l). Water protection zones I, II and III guarantee excellent water quality for Skopje. The water tariff for domestic drinking water of Vodovod is 0.28 €/m³. There has been good progress in Skopje regarding water meters in houses by getting the used water amount monthly through remote data transfer or by inspectors. About 80 per cent of the people pay their water bill. Outside Skopje, most households seem to have no meters for billing, which does not encourage water saving.

The Institute of Public Health monitors drinking water quality from Skopje and regional Health Institutes through the country. According to their data, drinking water quality in the public water supply systems is very good and safe to use. Only a maximum of 7. 5 per cent respectively around 1 per cent of drinking water samples are shown to be unsafe following physico-chemical or microbiological analysis (Figure 7.3). These rates are higher in rural areas (about 21 per cent respectively 25 per cent), and higher still in some local facilities due to own supply systems from wells and springs and the lack of chlorine. In areas with higher agriculture like Prilep and Radovish, 10-15 mg/l N03 can be found in drinking water.

It is important to emphasize that bigger public water supply utilities also have their own laboratory for monitoring drinking water quality. For example, the public water enterprise of Skopje has a well-equipped laboratory for chemical and microbiological analysis, which will receive accreditation according to ISO standards in the next future. They inspect 30 sampling sites daily and 20 sites additional frequently.

Drinking water consumption varies from 300-400 l/capita/day in urban areas (Skopje even 500 l/capita/day), which is above the average of most European countries. In rural areas, demand is lower by about 200 l/capita/day. Total drinking water demand is currently estimated over 2x108 m³/year.Demand for drinking water might increase in the next 10 years by almost 30 per cent, although it is not clear whether resources can be increased under sustainable conditions.

A major problem is leakage of water in deteriorating water supply systems. In Skopje, water loss in the water supply network is about 30 per cent, and is tending to increase (Figure 7.4).

Water use for industry

Industrial capacities are mostly located in urban areas or in the immediate surroundings. Only structures and facilities for energy generation (hydropower plants, thermopower plants, mining, and oil refineries) are located further from urban areas. As far as a breakdown of water consumption is concerned, large consumers are the industry for energy generation, the food processing industry, the chemical, metal, and non-ferrous industries, textile, etc. Industry capacities can be divided into two groups: industry connected to public water supply systems using water of high quality, and industry with its own water resources (spring, wells, river diversion, and reservoirs). Data on consumed water quality lack for the latter. In 2008, of the total intake of water for supplying industry and mining, approximately 92 per was surface water (69 per cent in 2005) and the rest was public sewage, springs and ground water. The largest consumers are the chemical industry, food processing, non-ferrous metal production, and the textile fiber and fabric industry. Water used for production of electric energy, except for cooling of thermal plants, is not actually spent or polluted. Industry has to pay for water consumption. In the city of Skopje, industry has to pay 1.07 €/m³ (0.76 €/m³ for water use and 0.31€/m³ for sewage) compared to the domestic tariff, which is 0.48 €/m³ for drinking water and wastewater.

Water consumption and wastewater production from industry varies greatly from year to year. It is also very important to emphasize that large numbers of industry facilities are not operating, due to the difficult economic situation in the country. Some factories are closed, some are operating at reduced capacity, and others have changed their production. This might be the major reason for the lower wastewater from 1994 to 2002 (Table 7.3). Vague estimations predict a twofold increase in water demand from industry by 2020.

Irrigation

Over 100 irrigation systems have been built to water agricultural crops like wheat, vineyards, vegetable and fruits. They are spread over the country and cover an area of almost 127,000 ha, which represents about 5 per cent of the country. The largest irrigation schemes such as Bregalnica (28,000 ha), Tikves (15,000 ha), Polog (13,900 ha), Strumica (15,000 ha), Prespansko pole (3,600 ha), Lipkovo (8,150 ha) are more then 30 years old. The Strezevo irrigation scheme (20,200 ha), the most modern system in the country, was built in

1983. Arable agricultural area in the country accounts for approximately 667,000 ha (26 per cent of country). If fully constructed, irrigation schemes could irrigate around 400,000 ha, or 60 per cent of total arable land. This would proportionally increase greatly the percentage of water use for irrigation among all types of water consumption.

Water for irrigation is mostly taken from reservoirs (ca.75 per cent), with the remainder coming from wells and rivers. Around 15,000 ha are irrigated with water from rivers, the main resource being the Vardar River. According to the rule book of water classification, only water quality class I and II are suitable for irrigation.

There are about 70 per cent open systems, mainly in the north and east of the country and more closed pipe systems in the drier southern part. Most of them were built between 1950 and 1980 and would need rehabilitation and technical efficient improvements. The majority have sprinkling irrigation, and only a very few already have drop irrigation.

Leakage seems to be a bigger problem than evaporation. However, there are no quantitative data on water losses, only the inlets are sometimes measured. There is no regular monitoring of irrigation water in canals or pipelines. Some measurements were made within the framework of the Irrigation Rehabilitation and Restructuring Project for irrigation schemes covered by the project Bregalnica, Tikves and Polog. There are no reliable data on consumed irrigation water. Most of the irrigation schemes have no measuring devices on irrigation intakes, such as river diversions or canal outlets. When there are water meters, farmer pay per m^3 otherwise per area or per crop for the water they use for irrigation. The prices vary within different regions and different type of irrigation. For example, farmers on the Tikves irrigation system pay 50 €/ha/year.

Pollution of soil and groundwater in regions characterized by intensive use of fertilizers and plant protection chemicals is noticed, but no systematic monitoring and analyses are performed. This would be very important for irrigation areas where groundwater is used for drinking or irrigation.

Irrigation activity, especially in dry areas, leads to salinization, but there is no monitoring or research to define the intensity, dimension and state of the salty soil in these areas. There are 11,000 ha naturally salty soils located in the driest region in the country (Ovce Pole).

Reservoirs

There are 22 large mostly multifunctional dams and over 120 small dams (about 100 in VRB). In all, they cover an area of about 6,400 ha. They supply water mainly for irrigation, to households and industry and generate hydro power. They are also used for flood control. Fish farming in cages, mainly involving carp, is increasing in reservoirs, which could be a factor for water pollution in the future.

The largest reservoir, the Tikves reservoir (1,400 ha) near Kavadarci, supplies 95 million m^3 for irrigation, which has the potential to irrigate 17,000 ha of arable land, of which about 12,000 ha is currently under irrigation. There is concern about the water class III from old data, while there is no recent qualitative monitoring of the reservoir.

According to the expert report on water resources management (ERWRM) document, there is a need for a biological minimum acceptable water flow of 10 per cent of the average discharges of a given river. This biological minimum should be available at all times in the riverbeds below the dam to ensure the survival of life in the water as an environment. For example, there has not been any water flow at all for a long time below the Lake Veles reservoir. It is necessary to establish a methodology for estimation of the minimum accepted flows on the basis of not only average river discharge but also other factors as well (e.g. hydromorphology) that are important to aquatic life. It must be stated that river dams and reservoirs are severely interrupting the ecological continuum of rivers for fish migration, gravel transport, sedimentation, and temperature regime.

Floods

The most frequent critical areas of the country under conditions of rapid snow melting with intensive rainfall which are favoured by the steep relief of most parts of the country are shown in Map 7.6. Large flood controls by reservoirs and protection by dikes exist for Skopje, Pelagonia, Strumica and Struga.

Economic losses experienced during the flash floods in 2004 show that 91.3 per cent of total damage was attributed to agricultural production mainly in the south-eastern part of the country. The biggest losses were experienced in rural areas, where households and cultivated areas were flooded. Existing data suggest a sinusoidal pattern of repetition of dry and wet episodes, over a period of 60 years. Currently, a wet period is prevailing, and it is expected that by

2020, the wet period will have peaked. The situation is getting worse because of uncontrolled and illegal building and activity within the flood plain of rivers. Buildings, constructions and land use in the flood plain are exposed to severe danger and even increase the water flow by diminishing the profile of the flood plain relief.

Wastewater (urban and rural sewerage)

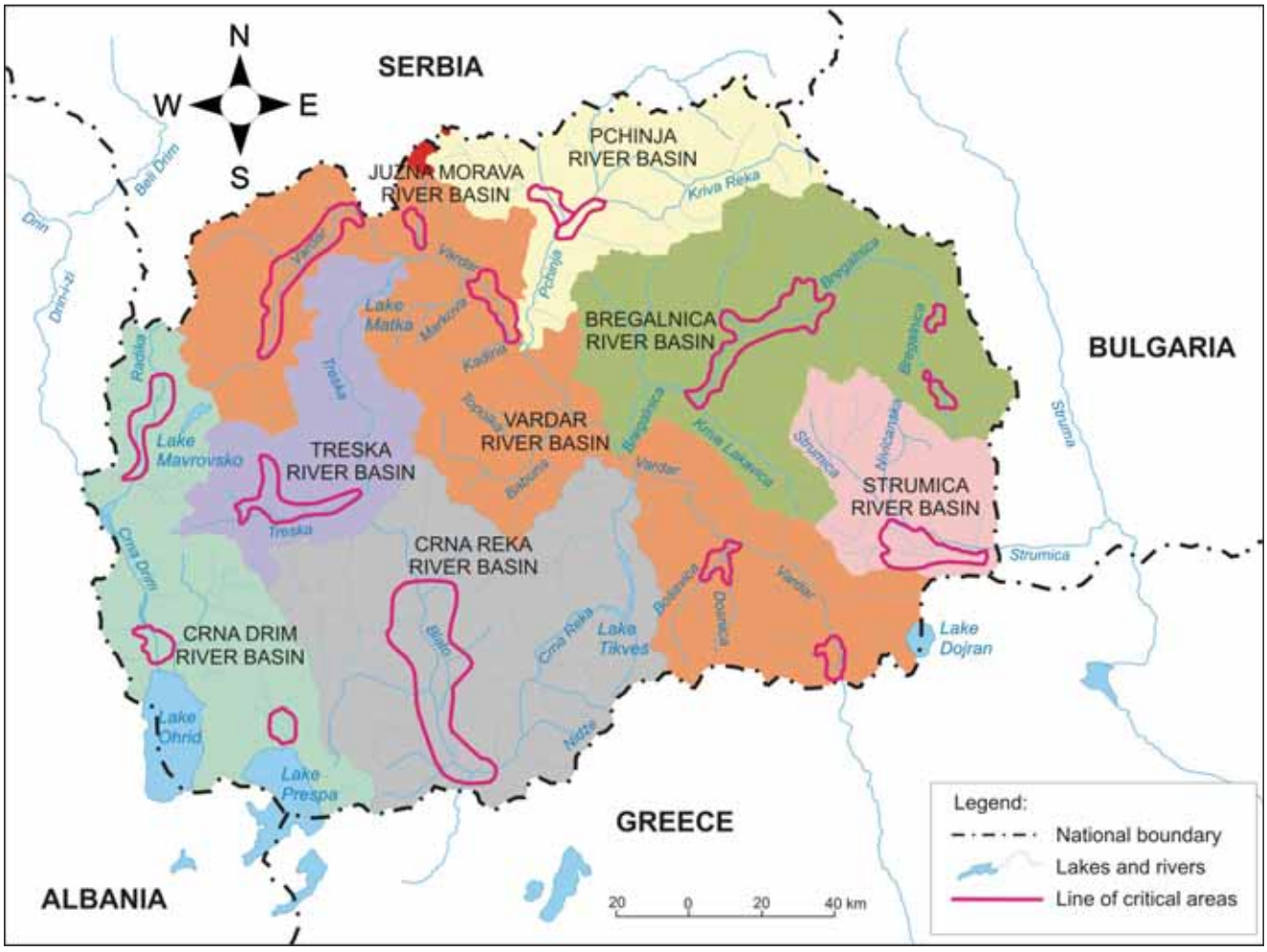
Only approximately 6 per cent of total wastewater is treated prior to discharge. In 2008, approximately 25.1 per cent of total wastewater quantities were discharged in reservoirs, 6.0 per cent in water courses, 68.1 per cent in sewage systems and 0.4 per cent in ground. Purification of wastewater depends to a large extent on the technical suitability of facilities for that purpose. The construction of new facilities does not appear to be on the rise, which of course underscores the need for bigger efforts to improve conditions in this sphere.

Wastewater is one of the most dangerous pollutants of surface water in the country. Sewage systems in major urban areas are designed to collect and convey both wastewater and precipitation water. About 60 per cent of the discharged sewage is connected to public sewage facilities, while 40 per cent of sewage from households is not connected (21 per cent with septic tank, 12 per cent uncontrolled discharge).

Only 10 cities have separate sewage systems. Skopje has constructed separate systems for wastewater (56 per cent) and for precipitation water (18 per cent). The sewage water tariff in Skopje is 0.19 €/m³ (monthly billed together with the water supply), even though there is no sewage treatment plan. The wastewater tariff in Skopje is calculated for the sewage network system.

The capacity of sewer systems is very often not sufficient to collect all the wastewater. The systems are combined systems for sewage and storm water

Map 7.6: Areas under conditions of rapid snow and intensive rainfalls



Source: Hydrometeorological Institute, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

instead of separate systems for urban wastewater and precipitation water (storm water). During rainfall, pipes are hydraulically overloaded and suffer from increased pressure.

The percentage of wastewater treatment is very low in the country, and the rate of public wastewater treatment plants with biological treatment is even lower. Only seven urban sewage treatment plants have been built in the whole country: Struga, Lake Ohrid: 120,000 population equivalent (p.e.); Resen, Lake Prespa: 15,000 p.e.; Dojran, Lake Dojran: ~ 10,000 p.e.; Sveti Nikole<: ~35,000 p.e.; Makedonski Brod: ~ 5,000 p.e.; Kumanovo: ~ 100,000 p.e. and Berovo 17,000 p.e.. With regard to Lake Ohrid, Lake Prespa and Lake Dojran, each lake is protected by a regional sewage system.

In 2010 the project Gevgelija wastewater treatment plant started with implementation and expected to be finished in 2014. Project is financed by Swiss confederation and Greece, and co-financed by Macedonia, with total amount of EUR 9.5 mln.

However, especially most bigger cities like Skopje, Bitola, Prilep, Strumica, Tetovo, Gostivar, Veles and Stip have no wastewater treatment plant. Due to their high discharge of organic and trophic material, they cause significant pollution in the rivers, which has a very bad impact on the aquatic ecosystem, with its aquatic communities such as fish fauna, macroinvertebrates and macrophytes. Dead river sections and decline in aquatic species have been reported. Sewage treatment plans have top priority, both on local and national level.

An outstanding improvement was achieved in Kumanovo, where a sewage treatment plant (STP) was built in 2008. It is a public municipal enterprise for 95,000 equivalents, of which 80,000 people are connected out of 125,000 inhabitants (=65 per cent). It is a mixed sewage system with mechanical and biological treatment (PO4-precipitation is not necessary due to low Ptot <1mg/l, input is 10 mg/l PO4-P .BOD-input is about 100 mg/l BOD and the outlet only 1mg/l BOD, expressing the good purification process of the STP. 24-hour mixed water samples are taken and analyzed in the own lab on standard parameters. Biogas production from sludge covers 20 per cent of the STP's electricity requirements. Treated sewage runs into the Kumavska River, which previously had a dead section, but now fish are back. It would be useful to have results for aquatic communities before and after the STP was built. The inhabitants of Kumanovo pay for water use, but not for sewage. In addition, Vranista recently introduced mechanical, biological and chemical treatment.

The construction of the wastewater treatment plant in Prilep will be financed by IPA

There is a general lack of data on urban wastewater quality, due to a lack of systematic monitoring. In the Law on Water, there are provisions stipulating that all wastewater producers must install, operate and maintain measuring devices, as well as provide wastewater quality analysis. In practice, however, the Law is not respected. Only the laboratory of the Water Supply and Sewage Utility in Skopje (Centre for Sanitation Control and Supervision) has equipment for performing analyses. Wastewater quality is monitored at six locations where main sewage pipes discharge wastewater into the Vardar River. The sampling frequency is two times in a month, and the following parameters are controlled: basic physical indicators, parameters for oxygen regime, nutrients (phosphate, nitrate), anion contents, and specific indicators such as presence of phenol, oil and fuels and surface active substances.

One major concern is the leakage of wastewater, especially by loose pipes, into the ground which might cause groundwater pollution. In particular, loosely and infrequently maintained pipe connections are leaking sewage into the ground. This is especially dangerous when it happens close to ground water wells used for drinking. A crossover between infiltrated sewage and drinking water might occur, subsequently contaminating drinking water by sewage water.

Industrial discharge

Industrial water is a major polluter of ground- and surface water due to mostly only mechanical treatment and the lack of chemical and biological treatment. About 90 per cent of industrial wastewater is not treated properly.

The quantity and quality are rather variable and depend on the technology process and capacity of the industry. Regarding the source of the industrial wastewater, it can be divided into the following groups:

- Wastewater from technological processes;
- Wastewater from cooling of thermal plants;
- Wastewater from sanitary facilities in the industry;
- Wastewater from maintenance of the premises and devices.

Some wastewater contains non-organic matter or other organic matter or may be at a high temperature. Non-organic matter and compounds are typical for thne chemical industry, fertilizer producers, and the galvanization and metal industry. Organic matter is typical for the food processing industry, textiles, pharmaceuticals, production of colours and polishers, and detergents.

Cooling wastewater comes from the melting facilities and from thermal plants. This water is at a higher temperature and can damage life in the recipients. A high risk is posed by wastewater from mines, which can provoke a negative impact on the aquatic environment. There is no systematic monitoring of the quantity and quality of industry wastewater.

Also in 2008, from total discharged untreated wastewaters from industry and mining, 60.2 per cent was discharged in water courses, 30.4 per cent in reservoirs, and the rest in public sewage and the soil. In the lakes, there is no discharging of untreated wastewater from industry and mining.

Impact from landfills

There is another concern about landfills located within the reach of rivers and in the flood plain. Landfills carrying waste from households and industry are a dangerous source of toxic infiltration into groundwater and surface water. So far, there is no relationship between the quantity and quality of polluted water infiltration from landfills or any monitoring (Chapter 8).

Impact from agriculture

The diffuse sources of water pollution from agriculture are nitrate fertilizers and pesticides (chemical and organic). These diffuse sources cannot be precisely located due to the large area of contamination and are spread diffusely in space and time. The situation of the diffuse pollution sources is unknown and not analyzed. It is commonly thought that there are no problems with nitrate pollution, especially not from agricultural production. This opinion is due to lower annual amounts of precipitation and low quantities of applied fertilizer compared to the countries where this problem is raised. Climate conditions such as the arid climate and intensive agricultural production on soils with a light mechanical structure make irrigation a necessity.

The irrigation process increases the danger that nitrates and pesticides will infiltrate lower soil layers and eventually reach the groundwater level. Accordingly, there is a need to investigate the groundwater contamination level.

In some of the reservoirs for drinking water supply, the process of eutrophication as a result of accelerated growth of algae and higher forms of plant life is present. This process enriches the water with nitrogen and phosphorous compounds, disturbing the water quality in the reservoir. According to available data, this process has been recorded in the Strezevo reservoir near Bitola. The water quality of this reservoir is very important because the water is used for drinking and for the food processing industry. It can be observed that over a period of five years, the Strezevo reservoir became more eutrophic, which means that there is a need for measures to protect the water from increased eutrophication.

7.5 Water policies and legal framework

Legal framework

The 2008 Law on Water provides the framework for the protection and sustainable management of water resources. It regulates issues concerning surface water (watercourses, lakes, accumulations and springs) and underground water within an integrated policy and represents the legislative framework for the future management of water resources. It has environmental provisions. EU-Water Framework Directive (WFD) 2000/60/EC, Directive 1976/160/EC, Directive 91/676/EC, Directive 98/83/EC, Directive 98/83/EC, Directive 91/271/EC, Directive 1976/ 464/EC and Directive 75/440/EC have been transposed.

Furthermore, secondary legislation has fully achieved the transposition of the requirements of WFD 2000/60/EC concerning river basin plan preparation. Specifically, this legislation refers to the establishment of methodology for drafting, reviewing and updating the master plan; the manner of preparation of river basin management plans; the content and the manner of preparation of the programme of measures; the preparation of information and cartographic overviews of activities for waters monitoring; as well as the methodology for river basin assessment.

Beside the Law on Water, the most relevant pieces of regulation regulating the water sector are the following:

- The 2005 Law on Environment and related secondary legislation;
- The Law on Water Supply, Collection and Treatment of Waste Water, No. 68/2004

- The Law on Water Economies and the Law on Water Users Associations.

Apart from national laws, there are also some international conventions (e.g. the Convention on Environmental Impact Assessment in a Transboundary Context, 1991) or agreements/memorandum of understanding which complement existing national water legislation.

All sectors of water use aimed at sustaining and protecting water resources are regulated in the Law on Water. It regulates matters related to surface water, including permanent watercourses or watercourses through which water flows occasionally, lakes, reservoirs and springs, groundwater (hereinafter: waters), the riparian lands and wetlands; management of waters, riparian lands and wetlands, including water resources distribution, water protection and conservation, as well as protection against the harmful impact of water; water management structures and services; organizational arrangements and financing of water management; as well as the manner, the conditions and the procedures under which water can be used or discharged.

The Law on Water stipulates competencies in water management, not only with the central administration but as well with local authorities as well, especially with regard to the protection of water from small industry and communal wastewaters, flood protection, erosion, water supply and water discharge. 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. The Law on Water comprises the Drinking Water Directives, the Bathing Water Directive, and the Fish Water Directive.

Since many rivers and lakes have a transboundary character, the necessity for transboundary water basin management according to WFD is regulated in article 7 -11 and 70, 71 of the Law on Water in addition to the Rulebook on River Basins, No148/09.

Concessions are necessary for (1) generation of electricity in hydropower plants; (2) bottling of water from underground bodies for commercial purposes; (3) breeding of fish and water birds; (4) lake traffic; and (5) provision of tourist, sports and other recreational services, including construction of permanent structures and facilities.

The Law on Water provides three types of water management in planning and development documents:

- The national strategy for waters;
- Water master plan;
- River basin management plans.

Under the Law on Water, MoEPP, in cooperation with public utilities, local and regional authorities, has identified the state of existing sewerage networks and wastewater treatment plants, as well as the need for provision of sewerage networks to collect wastewater and to build wastewater treatment plants. The relevant activities have been planned for the period between 2007 and 2015 for agglomerations exceeding 2,000 inhabitants, and in the period between 2014 and 2025 for smaller agglomerations below 2,000 inhabitants. Construction of sewerage networks has been envisaged for the period between 2008 and 2015, as well as by 2025 for smaller agglomerations (<2,000 inhabitants). The development of detailed designs for the new wastewater treatment plants will be provided through projects with technical assistance, including their construction in accordance with the adopted programme. Construction has been planned to proceed by 2025 until full compliance with Directive on Uurban Wastewater Treatment is reached. To this end, MoEPP will need to identify the resources required to cover the costs for the design, construction and maintenance of sewerage systems and wastewater treatment plants by users and and to introduce a fee collection system based on the polluter-pays-principle.

The National Water Strategy is under preparation, and although preparation of the Water Master Plan has begun, much work remains to be done. The 1975 WMP was not replaced by a new water master plan so far, but is in planning according to Articles 63-65 of the Law on Water.The National Water Council has been established, and will be responsible inter alia for the adoption of the National Water Strategy.

In the absence of other policy documents, the 2006 National Environmental Action Plan had identified some policy and technical priorities.

- Action to finalize the legislation; establishment of the new organizational set-up for water resources management;
- Protection of water quality and maintenance of the water balances of the three natural lakes - Ohrid, Prespa and Dojran - in cooperation with neighbouring countries;
- Protection of surface water and groundwater from the pollution of urban and industrial wastewaters;
- Protection of the water quality of the reservoirs, especially those whose water is used for drinking water supply, recreation, sport and tourism;

- Improvement of the rural drinking water supply and access to healthy drinking water; investment in urban water supply systems upgrading;
- Improvement of urban public sewage systems through physical rehabilitation of the systems, upgrading, extension and modernization;
- Extension and construction of rural sewage systems and construction of isolated wastewater treatment plants;
- Improvement of the state of irrigation systems through amelioration of flood protection and erosion protection systems;
- Improvement of the water regime via the construction of new multipurpose hydropower systems;
- Introduction of water-saving measures in water consumption (pricing policy, introduction of irrigation application methods for water saving, use of other sources for supplying of industries, etc);
- Improvement of the State monitoring network for waters and creation of conditions for broadening and filling the database; establishment and operation of the local network for water monitoring by the local self-government units;
- Protection of surface and underground water from diffuse sources of pollution.

7.6 Institutional framework and responsibilities

Since January 2011, the Ministry of Environment and Physical Planning (MoEPP) has been the main central government authority in the water sector, especially in water management. The Water Department was recently established in the MoEPP Administration of Environment to take over the water competences. At present, water management is situated within the Administration for Environment in the sector of waters, which comprises three units:

- Water Management Planning Unit;
- Inter-sectoral Cooperation Unit;
- Lake Ohrid Protection Unit.

Six units are envisaged, one for each river basin and additional three units , one for planning and development of waters, one for water rights and one for concession and inter-sectoral cooperation. In addition to the Administration of Environment, there are two more units in the State Inspectorate of Environment (for Inspection Supervision and Inspectors' Coordination).

At present, responsibilities for water-related issues are still shared amongst several ministries (MAFWE, Ministry of Transport and Communication (MTC), Ministry of Economy (ME) and Ministry of Health (MoH)). The Law on Water provides a basis for a consolidation in this sector, by stipulating transferral of competence to MoEPP.

The main challenge for MoEPP in the coming months will be to establish an effective institutional set-up for water management. Within the Water Department, the organizational units responsible for river basin management need to be properly established. Currently, the Water Department is organized based on the competences that the MoEPP has at present. According to the Plan for Institutional Development of the Capacity for Environmental Management on the Central and Local Level for the period 2009-2014, the Water Department needs to be restructured in accordance to the competencies set out in the Law on Water, and the number of employees will be significantly increased in the next five years.

Under the provisions of the Law on Water, MoEPP is responsible for developing national policies and guidelines for overall water management, including river basin management and the permit issuing system. MoEPP also supervises the monitoring of water quality and the implementation of water-related laws. In cooperation with MTC, MoEPP is responsible for overseeing development plans for water supply systems and sewerage network infrastructure, implemented with financial allocations of the State budget. MAFWE is responsible for irrigation, drainage, flood protection and river bed training and erosion control in the boundaries of areas being managed by water economies. In addition, MAFWE is responsible for qualitative and quantitative water monitoring and for the maintenance of dams which are used as sources for irrigation schemes. As for irrigation and drainage, the present Water Economies that are being established under MAFWE auspices are responsible for management of the main facilities and infrastructure on the subregional level. On the other hand, the water users' association is responsible for managing the irrigation distribution network. MH shares responsibility with MoEPP with regard to the issuing of water quality standards, and is responsible for monitoring of water supply sources along with public users.

Under the Law on Water, MoEPP, in cooperation with public utilities, local and regional authorities, has identified the state of existing sewerage networks and wastewater treatment plants, as well as the need for provision of sewerage networks to collect wastewater and to built wastewater treatment plants.The relevant activities have been planned for the period between

2007 and 2015 for agglomerations exceeding 2.000 inhabitants, and in the period between 2014 and 2025 for smaller agglomerations below 2.000 inhabitants. Construction of sewerage networks has been envisaged for the period between 2008 and 2015, as well as by 2025 for smaller agglomerations (<2.000 inhabitants). The development of detailed designs for the new wastewater treatment plants will be provided through projects with technical assistance, including their construction in accordance with the adopted programme. Construction has been planned to proceed by 2025 until full compliance with Directive on Uurban Wastewater Treatment has been reached. To this end, MoEPP will need to identify the resources required to cover the costs for the design, construction and maintenance of sewerage systems and wastewater treatment plants by users and to introduce a fee collection system based on the polluter-pays-principle.

The Hydrobiological Institute (HBI) on Lake Ohrid is subordinated to the Ministry of Science and Education (MSE) and is not quite integrated into the new structure. The Hydrobiological Institute (HBI) performs monitoring over the three main natural lakes in Macedonia. They do limno-chemical and limno-biological basic monitoring with a limited size of sites and parameters (again since 2003, intense monitoring 1998 -2003 during the Lake Ohrid Conservation Project financed by the World Bank). It is not clear who will do the limno-biological investigations on rivers according to WFD. Some work was done by the University of Skopje, Faculty of Biology. Limno-chemical and hydrological monitoring is insufficient given the number of sites and the equipment needs (e.g. lack of automatic running stations for flood prediction) and is carried out by the Hydrometereological Institute (HMI), which again belongs to a different ministry.

7.7 Conclusions and recommendations

Capacity deficiencies in key institutions; lack of political will to tackle and resolve serious issues; fragmented management of water between sectors and institutions with little regard for conflicts between social, economic and environmental objectives and hence no accountability; and finally, overall poor implementation and enforcement capacity on national and local levels, lead to poor water governance at present.

Through the reorganization of MoEPP, the 2008 Law on Water and the second NEAP accompanied by strategy papers, recommendations and support reports from international institutions, the country achieved an appropriate framework for sustainable water management. The environmental issue for water bodies is now embedded into legislation. The country has to start implementation, which can be achieved mainly through adequate investment. The main objective is integrated water management based on the principles of sustainable development for river basins in transboundary international cooperation.

Although MoEPP has been strengthened in the water management sector there is still overlapping in responsibilities and competencies between different ministries and a lack of institutional coordination and sometime inefficient performance. MAFWE is still responsible for functions of irrigation and protection of waters from pollution from agricultural resources (nitrate pollution). Hydrometereological Institute (HMI) is responsible for quantitative and qualitative water monitoring, while agriculture is one of the biggest water user at the same time.In the past, this side tended to emphasize water supply and water use rather than water protection or ecological issues.

Recommendation 7.1:
The Government should consider establishing an Environmental Protection Agency with the responsibilities according to the Law on Waters.

See recommendation 1.2.

Wastewater treatment from point sources (municipalities and industry) remains a big challenge. Only 10 per cent of the settlements have access to mechanical and biological treatment of wastewater. Bigger cities have no sewage treatment plants. The average rate of wastewater collection in sewerage collection systems is around 60 per cent for households. Although certain rural areas have developed combined domestic sewerage and storm wastewater collection systems, no treatment is performed prior to wastewater discharge. This situation is getting worse during low flow rates in rivers during summer due to lower sewage dilution. Industrial wastewater is discharged without prior treatment, or pretreatment takes place in poorly maintained and inefficient facilities. Beside organic matter, toxic sewage is being discharged into rivers. In addition, landfills within the reach of rivers or lakes are a further source of pollution by infiltration or run-off into surface water and groundwater.

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 emphasise 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 land fills along river banks exposed to flooding and infiltration.*

(e) *Ensure special regime of protection of areas of drinking water supply.*

In response to climate variability and climate change, water uses, especially those for agriculture, may increase, while total national water availability (especially in the Vardar River as the main catchment area in the country) is expected to decrease. The summer season could be extended as a result of the temperature rise, but also larger water consumption - not only for irrigation - is expected. The prognostic value of increase on the drinking water demands of Skopje could be around 30 per cent. For that reasonm the loss of water in drinking network systems and the leakage of degraded irrigation systems (especially Tikves, Bregalnica, Polog) and the awareness and technical device for saving water resources will become a big concern. At 500 l/capita/day, water demand for Skopje lies far above the European average.

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.*

Like in many other European countries, the first step of enhancing the ecological status of rivers and lakes was the improvement in water quality before doing stream restoration of hydromorphology. The EU Water Framework Directive (WFD) requires good ecological status for rivers and lakes, which can be achieved through good water quality and good hydromorphology status of riverbed, banks and flood plains. The EU Flood Risk Management Directive requires flood risk management and protection of retention space in 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 WFD once water quality has improved. Dams in rivers and reservoirs are severe interruptions in the structure and the ecology of a natural river. Fish migration, gravel and sediment transport are stopped, and sedimentation, eutrophication, warming, oxygen depletion, etc. occur. Flood plains are part of the river and offer flood retention space as well as water resources from bank filtration.

The natural hydromorphology of most river reaches in the former Yugoslav Republic of Macedonia are remarkable in terms of ecological habitat diversity and their contribution to flood plain protection. The mistakes made by many other European countries can be still avoided. For example in Germany, but also in France, England, Italy and Spain, rivers and streams were canalized, straightened and dammed in the last two centuries, causing river bed degradation in structure and habitat.

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.*

Transboundary water basin management on rivers and lakes, in cooperation with neighbouring countries, is in preparation (e.g. in the Vardar River basin) and set out in the Law on Water. WFD offers an

excellent tool and formal procedure for water basin management:

- Defining water bodies by river and lake typology and groundwater bodies by catchments;
- Displaying artificial and heavily modified water bodies;
- Ensuring biological monitoring for fish, macroinvertebrates, macrophytes, phytobenthos and phytoplankton accompanied with chemical and hydromorphological monitoring for assessing ecological status;
- Performing measurements on pesticides and nitrate in groundwater as well as water abstraction amounts from groundwater;
- Setting up a management plan with programme of measures based on monitoring results;
- Implementing the programme of measures;
- Ensuring public participation (NGOs, stakeholder dialogues, etc.).

WFD is however a formal instrument with long procedures and late implementations of measures required for good ecological status of surface water bodies and groundwater bodies even if ecological deficits are obvious at present.

WFD procedure and WFD process do not delay the urgent measures in wastewater treatment and other urgent measures set out the Law on Water to improve water quality and sustainable water use. Significant measures for ecological improvements are to be accomplished with the framework of WFD, independently of the formal WFD process.

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.

Chapter 8

WASTE MANAGEMENT

8.1 Situation since the first EPR

Significant progress has been achieved since the first EPR, particularly in the development of the policy-making and legal framework, with the adoption of the 2004 Law on Waste Management, the National Waste Management Strategy for the period 2008-2020, and the National Waste Management Plan for the period 2009-2015. Additionally, a considerable amount of secondary legislation has been adopted. Waste management is viewed both by the Government and the Ministry of Environment and Physical Planning (MoEPP) as among the top two environmental priorities of the country, alongside water management. Thus, significant institutional progress has been achieved with the establishment of a Department of Waste Management under MoEPP, although it remains understaffed.

Despite the progress achieved, there are still major challenges affecting waste management with a detrimental effect on the environment and public health. Unregulated/unlicensed municipal disposal sites, illegal dumpsites and industrially contaminated hotspots pose major threats to public health and the environment. Also very high in the priority list remain organizational and staffing issues, cost recovery and financing of services and investments, and most phases of technical management from collection to final disposal of hazardous and non-hazardous waste. Shortcomings in the generation and sharing of reliable data on all aspects of waste management undermine efforts for the formulation and implementation of an effective evidence-based waste management policy.

8.2 Waste generation

Waste streams

Estimated quantities of generated waste in 2005 are shown in Table 8.1. Two-thirds of waste is generated in the mining sector. In terms of special waste streams, the estimated national generation of waste oil amounts to 8,000 t/year, mostly from metallurgy. To date, no adequately organized system has been put in place for the collection of waste oils, although four compamies have been licensed for the collection and treatment of waste oils. Used oils are more frequently used as fuel or discharged directly into the soil or the sewerage systems. There is no organized system of collection for end-of-life vehicles, estimated at 17,500 t/year. They are usually collected by the informal sector, either for spare parts or as scrap metal. Discarded batteries and accumulators are not separated and are commonly disposed of as solid waste at landfills, although at the time of the EPR review three licensed companies existed for the collection of accumulators. Waste tires are mainly disposed of, but a certain portion is collected and used as fuel in lime production.

Municipal waste

Current estimates of municipal waste show a steep increase in recent years. For example, in 2005 total municipal waste, i.e. household and commercial waste, was estimated at approximately 570,000 tons, an estimate included in the second NEAP (2006), the 2007 National Waste Management Strategy and the 2008 National Waste Management Plan. However, according to more recent statistics collected by the State Statistical Office (SSO) for the years 2008 and 2009 (table 8.2), municipal waste is estimated at around 714,000 tons for 2008 and 726,000 tones for 2009, a significant increase of almost 27 per cent between 2005 and 2009. It is not clear whether these increases are due to changes of methodology, estimation error or real changes in volumes of generated waste.

Only a fraction of estimated generated waste is actually collected (table 8.2). The highest ratio of collection can be found in Skopje, where in 2008 approximately 87 per cent of generated waste was collected, although in 2009 this ratio dropped to 83 per cent. The worst ratios can be found in Polog in 2008 (59 per cent) and in the Southeast region in 2009 (60 per cent). Interestingly these two regions are the ones where the solution of regional landfills is promoted the most.

These figures should be treated with caution, because they are not based on actual measurements but rather on expert estimates, for example counting of collection vehicles. The only exception is the Drisla landfill that services the municipality of Skopje and adjacent areas, where vehicles are weighed. Nevertheless,

Table 8.1: Estimated quantities of generated waste, 2005

Waste generation	Tons	%
Waste from mining	17,300,000	66.40
Agriculture waste – animal by-products	4,900,000	18.81
Industrial non-hazardous waste	2,120,000	8.14
Agriculture waste – plant by-products	550,000	2.11
Construction and demolition waste	500,000	1.92
Municipal waste	420,000	1.61
Commercial waste (constituents similar to those in household waste)	150,000	0.58
Industrial hazardous waste	77,500	0.30
End-of-life vehicles	17,500	0.07
Used mineral oils	8,000	0.03
Used tyres	5,000	0.02
Used accumulators	3,500	0.01
Waste from healthcare institutions	1,000	0.00
Total	**26,052,500**	**100.00**

Source: Ministry of Environment and Physical Planning, 2011.

these figures appear to reflect a rather worrying situation. The total amount of uncollected municipal waste was 182,000 tons in 2008 and 174,000 tons in 2009. According to SSO, although a small part of this uncollected waste - e.g. scrap metal - may in fact be involved in economic activities as secondary raw material, the vast majority is actually waste that is dumped in illegal dumpsites. The problem usually affects rural areas and remote villages, each of which often has multiple illegal dumpsites.

Industrial waste

Hazardous and non-hazardous industrial solid waste is usually disposed of at industrial landfills, together with other waste from processes, or at municipal landfills, together with other waste, in clear non-compliance with the current legal and policy framework. According to the 2006 NEAP, it is estimated that around 5,000 tons of industrial non-hazardous waste is disposed of at municipal landfills, together with around 500 tons of industrial hazardous waste. Despite the existence of an extensive legislative framework regulating industrial waste management, compliance and enforcement are not adequately developed, as a result of which industrial waste management remains substandard (see also Chapter 6).

One of the key problematic areas identified in the first EPR was the absence of reliable information on industrial waste. Estimates of industrial waste have varied greatly in the years since the first EPR. A more detailed study undertaken in the context of the preparation of the National Waste Management Plan reported a total of 26 million tons of waste (see table 8.1), 66 per cent of which came from the mining sector, 19 per cent from agriculture, and 8 per cent from industry (non-hazardous). About 77,500 tons of industrial waste (or 0.30 per cent of the total) were classified as hazardous.

In 2009, SSO, in cooperation with MoEPP and with financial support from the Swedish International Development Cooperation Agency (SIDA), undertook a programme of identifying quantities and types of waste generated in 2008 by industrial facilities (see box 8.1). The method used was direct interviews through the regional statistical offices with all enterprises numbering more than 10 employees based on the national business register. The importance of this survey cannot be overstated, because its findings are not based on sampling but on the entire population of industrial facilities.[36] Although it is unlikely that this 'census' type of coverage will be repeated in 2011 (for waste generated in 2010) due to the high costs involved, it is nevertheless a very good source of information.

One major shortcoming is the fact that SSO is precluded by law from sharing information even with other concerned governmental ministries and departments. Whenever possible, SSO provides such information on a fee-paying basis. In the case of

[36] Out of 1040 questionnaires, 780 were completed. For the rest of the questionnaires, part of the non-replies were due to the closure of some enterprises. Taking this into consideration, the response rate was as high as 90 per cent.

Table 8.2: Municipal waste, 2008-2009, tons

Statistical Region	Waste Collected		Waste Generated		Ratio Collected/ Generated		Non-Collected Waste	
	2008	2009	2008	2009	2008	2009	2008	2009
Vardar	54,944	58,716	66,457	70,271	0.83	0.84	11,513	11,555
East	49,970	62,497	63,681	79,069	0.78	0.79	13,711	16,572
Southwest	102,271	77,372	156,813	107,669	0.65	0.72	54,542	30,297
Southeast	26,281	30,040	42,260	50,128	0.62	0.60	15,979	20,088
Pelagonia	49,743	67,758	63,290	82,882	0.79	0.82	13,547	15,124
Polog	56,902	61,412	96,686	97,967	0.59	0.63	39,784	36,555
Northeast	38,870	49,907	49,820	64,352	0.78	0.78	10,951	14,445
Skopje	152,301	144,529	174,557	173,638	0.87	0.83	22,256	29,109
Total	**531,282**	**552,231**	**713,564**	**725,976**	**0.74**	**0.76**	**182,282**	**173,745**

Source: State Statistical Office and author's own calculations, 2011.

MoEPP, the Waste Management Department (WMD) which issues permits on the amount of waste produced from the various enterprises does not have access to the enterprise responses that are in the possession of SSO. To obtain municipality-level responses on municipal waste, MoEPP was asked to pay a fee. Under the present situation, these practices restrict the availability of information for the most directly concerned governmental bodies. However, under conditions of severe budget constraints, it would seem that strengthening and facilitating inter-ministerial or inter-agency cooperation and information-sharing would be a useful practice with positive impacts for the environment and the broader society.

Photo 8.1: Landfil in Vasilevo

Box 8.1: The manufacturing industry

According to SSO data, the total amount of generated waste from the manufacturing industry in 2008 was 1,362,466 tons. The largest part of that (1,277,616 tons or 94%) was generated in the manufacture of basic metals and standard metal products. The total amount of generated hazardous waste was 6,441 tons, or 0.5% of the total amount of generated waste. The largest portion of hazardous waste (4,095 tons) was also generated by "manufacture of basic metals and standard metal products".

The total amount of disposed waste from industry was 1,180,327 tons, out of which 99% were disposed by deposit into or on land.

Of the total amount of generated waste from industry, less than 10% (126,959 tons) was delivered waste, i.e. waste that was delivered from the business entities to other physical or legal persons in the country or abroad during 2008.

The total amount of received waste, i.e. waste that business entities have received from other physical or legal persons in the country or abroad during 2008, was 323,279 tons.

During 2008, 322,650 tons of industrial waste were recovered.

This survey is biannual but more importantly covers only waste from the manufacturing industry while other sectors, such as the mining sector, would be very interesting to analyse and assess. The method followed (direct interviews) is reliable but very costly, and it is therefore doubtful whether it can be used for other industrial sectors – or even be repeated for the manufacturing industry in 2011 (for waste generated in 2010).

Hazardous waste and chemicals

Hazardous waste remains a major challenge for the country. Hazardous waste-related issues are incorporated in the National Waste Management Plan for the period 2009-2015 and the Waste Management Strategy for the period 2008-2020. Metallurgical industries generate the largest volumes of hazardous waste, which are generally stored in non-compliant dumps on the companies' premises. Hazardous waste oils generated in the production sector and in other activities are often burned as fuels.

According to WMD, 16 major industrial areas and dumpsites have been identified as 'hot spots', some of which remain fully and other partially operational (Table 6.6 and Map 6.1). Total deposits are estimated at 267.6 million m^3, covering an estimated 260 ha of land. However, little has been achieved in terms of remediation. The case that attracted the most attention so far is that of the Organic Chemical Industry Skopje (OHIS) site, which is considered as the highest risk contaminated site among the 16 hotspots. In the period 2002-2010, several feasibility studies were prepared to find the most appropriate solution for Hexachlorocyclohexane (HCH) waste at the OHIS site. It is estimated that 38.000 tons of technical mixture of HCH are stored in the yard of this factory.

Some worthwhile smaller-scale efforts have been undertaken with donor support within the Basel Convention framework. Specifically, in the period 2003-2006, 31 tons of PCB-contaminated equipment (low- and medium-voltage transformers) including PCB-contaminated waste were inventoried, collected, packed and transported to be disposed of in Valorec, Switzerland. This activity was conducted under the project "Energy Efficient Distribution Program" financed by the Swiss Government and implemented by the MoEPP/POPs Unit.

In 2005-2006, the MoEPP POPs Unit was responsible for implementation of the project "Removal of obsolete stockpiles at the Public Health Protection Institute" that was financed by the Swiss Government. Around 4.5 tons of obsolete pesticides and chemicals (2.5t DDT, methyl bromide and Hydrogen cyanide-cyclone B) were identified, inventoried, properly packed and transported for final disposal to Switzerland. This is necessary due to the fact that there are no facilities in the country for the safe disposal of agrochemical wastes containing hazardous substances like contaminated packaging waste and pesticide residues. If plans for the new dual usage incinerator at the Drisla landfill materialize, this problem will be resolved.

In 2010, a project for almost 7 tons of obsolete chemicals that were collected from laboratories

Table 8.3: Incinerated medical waste at Drisla landfill, tons

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Quantity	115	232	249	255	323	376	327	355	439	498	444	3,612

Source: Drisla landfill; information provided in January 2011.

started with funding from Norway and Switzerland. The aim of this project is to pack and dispose of these chemicals at the Swiss incinerator in Basel.

Medical waste

According to the current legal framework on medical waste, it is separated at source. Although this appears to be the case countrywide, it is not effective to ensure separation of medical waste from other types of municipal waste, because public utilities that are responsible for the transportation and landfilling of municipal and medical waste do not separate them in practice and dispose of them virtually at the same sites.

The only exception is the Drisla landfill, which receives separate streams of medical waste from medical facilities of the municipalities of Skopje, Kumanovo and adjacent areas. There, medical waste is separated at source and delivered to the landfill in separate vehicles. Medical waste is easily identifiable in yellow bags. Once it reaches the landfill, waste is weighed to calculate payment and it then proceeds to the incinerator.

The incinerator itself has been in operation since 2000. It is a two-chamber incinerator that has been designed to operate in temperatures between 800 C˚ and 1,000 C˚, although at the time of the review it was operating as an open-fire incinerator. The maximum daily capacity of the incinerator is 1 t/day. In 2008, the second chamber broke down, allowing potentially harmful emissions to reach the atmosphere. It is not possible to assess the severity of the problem in terms of the composition of the emissions, since no measurements are available. However, experience suggests that improper incineration of this sort of waste causes dioxins, furans and coplanar polychlorinated biphenyls (PCBs), for example, with adverse impacts on public health. The problem is becoming more acute, considering that in the peak year of 2009, the quantity of incinerated medical waste at the Drisla landfill had doubled since the first EPR, reaching 498 tons (table 8.4). This volume of waste is equivalent to roughly 1.4 tons per day, which considerably exceeds the capacity limits identified in the National Waste Management Plan.

Medical waste from Skopje and the surrounding areas is transported to the Drisla landfill and burned in the incinerator. Medical waste generated in the rest of the country (about 65 per cent of the total) is not handled or treated in a compliant way and is mostly disposed of at municipal dump sites. There is a company dealing with the collection of used oil, but it also does not cover the whole country. Larger hazardous waste generators are metallurgical factories which deposit the waste on site. Smaller hazardous waste generators produce approximately 2,400 t of hazardous waste per year, of which about 1,300 t of hazardous waste is sold/reused (54 per cent); other wastes are disposed of on site (25 per cent) or together with municipal waste (21 per cent).

Priority technical measures to improve the situation are urgently needed, primarily through investments in the treatment facility for medical hazardous waste. There are currently plans for a new contemporary incineration plant on the location of Drisla landfill. The planned new incineration plant is expected to be adequately designed for co-incineration purposes for some types of hazardous waste like residues of pesticides, laboratory chemicals and other combustible hazardous materials. Unlike its predecessor, it should expand co-incineration of some select types of combustible hazardous waste generated in the country. It is also planned that the new incinerator will have the capacity to handle medical waste from the entire country.

8.3 Waste collection, recycling and disposal

Collection and transport of waste

Collection, transport and landfilling are the main methods for the final disposal of almost all waste streams in the country. Collection and transport of waste are almost exclusively handled by public utilities owned by municipalities for a fee. However, only approximately 70 per cent of the population is involved in the public municipal waste collection system, which is operated by the public communal enterprises. Waste collection equipment and extent of services do not comply with the existing requirements outlined in the 2004 Law on Waste Management.

Collection of municipal and non-hazardous industrial waste is common practice, which is non-compliant with the Law. Collection of unseparated hazardous and non-hazardous municipal waste is also common practice. Although WMD has been issuing licenses for collectors of non-hazardous waste, there are no officially licensed collectors and transporters of hazardous waste, except for special hazardous waste streams like batteries, accumulators, electric and electronic waste, and waste oils.

There are no formal collection systems for construction and demolition waste as well as for high-risk animal

tissue from slaughterhouses and animal breeding farms.

The level of separation of hazardous and other non-hazardous medical waste within the hospitals has improved since the first EPR and at least for Drisla landfill, separation started at the source continues until the final disposal of waste at the landfill. However in almost all other cases, medical waste, even when separated at source, is disposed of together with municipal waste at municipal disposal sites.

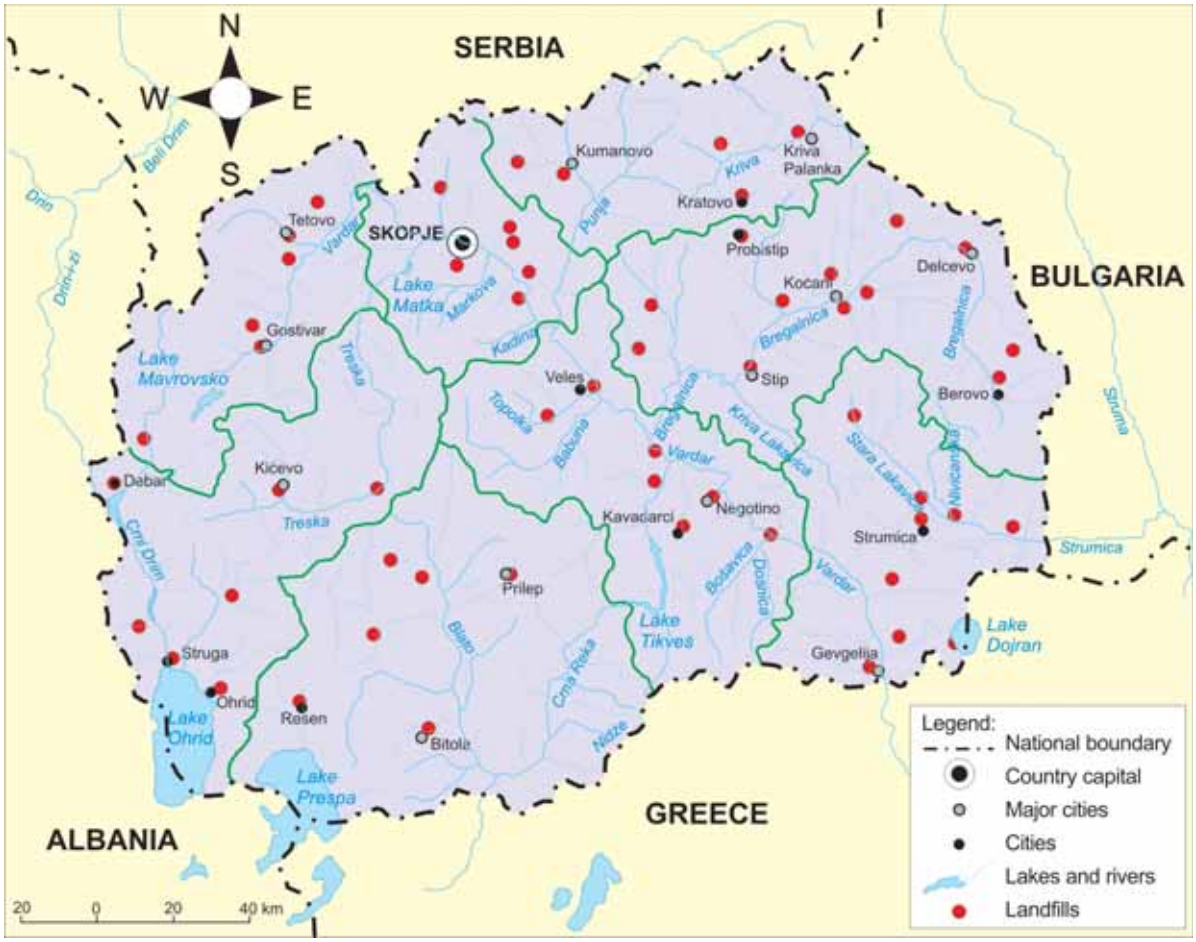
Treatment, recovery and recycling

A coherent national policy promoting recycling, either through incentives or education, has not yet been developed and no investment programmes aimed at creating the necessary infrastructures at the municipal level currently exist. Nevertheless, some sporadic measures are taken – for example in 2006 and 2009, MoEPP purchased and distributed wastebins and containers to municipalities country-wide; some of these containers were intended for recycling. Similarly, efforts at recycling at the municipal level are only occasional and therefore not adequate to achieve this objective.

Because of the fact that there is no coherent policy on recovery and recycling activities for municipal waste, collection and recycling of recyclable materials is limited and undertaken by the informal sector and private companies. This means that only those types of non-hazardous and hazardous waste that have commercial value are separated. These include metals, plastic, paper, waste oils, and car batteries and accumulators. Scrap metals represent the biggest part of the collected recyclable materials, although at the time of the review, the recycling market for plastic was relatively developed. Waste oils are often burned as heating oil. These collection activities largely take place in unregistered scrapyards with potential health and environmental impacts.

A large part of the plant tissue produced in agriculture is reused in an environmentally sound manner. Manure generated by cattle and sheep is completely used for

Map 8.1: Municipal landfills



Source: National Waste Management Plan, 2011.

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

Photo 8.2: Plastic bottles collection in Skopje

soil fertilization. Composting and anaerobic digestion of organic waste are generally not in practice or the existing facilities are not in operation.

Waste disposal

Perhaps the single most important challenge facing the country at the time of the EPR review is the availability of appropriately designed and maintained sites for waste disposal. Current practices contribute to the pollution of air, water and land, and create severe risks for public health. With minor exceptions that are discussed elsewhere in this Chapter, the only method for the final disposal of waste is through disposal at municipal landfills/disposal sites and illegal dumpsites. At the disposal sites, there is no monitoring of impacts on the environment or public health.

However, most of the municipal solid waste and other collected waste types are disposed without any pretreatment at municipal disposal sites. Various types of hazardous and non-hazardous waste such as used tyres, car accumulators, oily car components and other waste are disposed of at illegal dumpsites.

Landfills themselves operate in unregulated and unlicensed way, hence they are routinely called disposal sites in this report (see map 8.1). Drisla landfill is the only exception. A recent MoEPP study has shown that 54 municipal disposal sites are non-compliant with existing legislation. Leachate is a problem for all disposal sites and landfills, posing threats to public health, ground and surface water resources, land and biodiversity. Because these sites operate like dumpsites, there is no record of volume or composition of delivered waste. Some of these sites are situated on river banks. In one such case, the landfill in Gevgelia is located on the river bank of a tributary to the Vardar River, a transboundary river. When waters rise, the municipal waste is washed off into the river, causing transboundary pollution.

This problem is compounded by numerous illegal dumpsites where usually smaller communities and villages in rural areas dispose of their waste. The first EPR identified more than 1,000 such sites. Although some measures have been taken through MoEPP's Investment Programme, the situation remains problematic.

Hazardous and industrial waste generated by the mining and processing industries poses equally urgent problems. Sixteen major industrial areas and dumpsites have been identified as "hotspots" with regard to their environmental impact and their high hazardous potential (see also Chapter 6).

8.4 From municipal disposal sites to regional landfills

The problems identified thus far are partly due to lack of organization and resources but also partly to scale issues. Few of the existing municipalities can afford to organize their waste management cycle up to standard. Due to this fact, plans for the creation of regional landfills have advanced in recent years. Strictly speaking, the country does not have a 'regional' level from an administrative point of view, only national and local ones. However, as a result of statistical reporting to Eurostat, the country has been split along eight 'statistical' regions. In practice, these regions are also used as a basis for policy-making purposes.

Two of these regions, the Southeast and Polog ones, are set to create a regional landfill.[37] The procedure for awarding concessions for the financing, designing, construction and managing of regional municipal solid waste landfills in these two regions was still ongoing at the time of the review, with the Southeast region at a more advanced stage. In that region, the local authorities had agreed on the location of the regional landfill, namely, that it should be placed at the current unlicensed disposal site of Vasilevo. So far, six companies that fulfilled the tender conditions have qualified for the next phase of the procedure for the Southeast region.

Another two regions (East and North-East) are implementing projects for establishing integrated waste management system, within the IPA programme component 3. Part of this project also aims to establish a regulatory body for communal works in the fields of waste and waters.

Given the gravity of the current situation, regional landfills may provide a solution; however, there are some key parameters that may determine the extent of their success. Landfill design and construction questions aside, current infrastructures (roads etc) are not adequate to support a constant stream of waste from all seven municipalities of the region. The landfill is situated at the north of the region, thus imposing a taxing distance of 70 km from the municipality that is located the furthest from it (Gevgelia). Without adequate planning of a transfer station[38] and appropriate structuring of fees in order to offset the higher transportation costs imposed on the distant municipalities, the cost of compliance and lawful disposal may become prohibitive for some of the operators.

However, regional landfills also raise a matter of a higher order than that of management because the Law recognizes only two levels of administration, State and local. In this sense, insofar as 'regions' are understood only in the statistical sense, there are few conflicts. To the extent however that 'regions' provide the basis for regional development and the provision of services, as is the case with waste management, higher order questions of authority, competency areas and jurisdiction arise that necessitate the adaptation of the otherwise advanced legal framework and potentially the policy framework.

The issue of supervision and inspections illustrate this matter. According to Article 126 of the 2004 Law on Waste Management, "As for the competences of Municipalities and the City of Skopje stipulated by this Law, the inspection supervision over the implementation and enforcement of this Law shall be carried out by authorized inspectors of environment of the Municipalities and authorized inspectors of environment of the City of Skopje."

Yet the 2004 Law does not include the concept of regional landfills for the simple reason that the concept did not exist at the time of the drafting of the Law. As a result, the Law does not provide clear rules for matters of supervision and inspection. Since it is clear that a regional landfill is more than the sum of its units, and to the extent that the regional landfills currently promoted are not a sui generis situation but may provide a long-term country-wide solution, the only long-term solution that will adequately resolve this issue will be to expand the current legal framework to

[37] "Decision for initiation of the procedure for awarding concession for financing, designing, construction and management of regional municipal solid waste management in the Polog planning region" (Official Gazette No. 44/10). "Decision for initiation of the procedure for awarding concession for financing, designing, construction and management of regional municipal solid waste management in the Southeastern planning region (Official Gazette No. 44/10)

[38] The relevant Rulebook regulating transfer stations has been in place since 2007; "Rulebook on minimum technical requirements of transfer stations in terms of environmental protection, requirement of locations where transfer stations are built or placed and deadlines for the storage of waste transfer stations according to class of waste" (Official Gazette No. 39/07).

Photo 8.3: The landfill in Gevgelia on the river bank of a tributary to Vardar River

cover explicitly waste management issues at a regional level, and provide rules for all related compliance and enforcement issues, including inspections and jurisdictional delineation between municipal and state inspectors.

8.5 Economic management of waste

Investment

When analyzing environmental investments by MoEPP, it is useful to keep in mind two aspects that frame the choices it makes. First, the Ministry has identified waste management as one of its two top environmental priorities. Second, the first EPR identified closure and/or remediation of illegal dumpsites and non-compliant landfills as a top policy priority. Environmental protection investments, as can been seen in table 8.5, appear to reflect these two observations. Waste-related investments between 2006-2010 reached roughly 18 per cent of the total investment budget, which is based both on MoEPP's own resources (37 per cent) and core budget allocations (63 per cent). As a breakdown of these investments shows, only 4.66 per cent has been directed towards dumpsite and landfill closure and or remediation. Almost three quarters of this, however, came from the Ministry's own resources and the rest from its central budget.

An additional area of concern relates to the level of actual investments: in the five-year period between 2006 and 2010, approximately 3.4 million EUR were spent on waste-related issues, a level of investment that can hardly meet the country's needs and priorities.

Waste management operators

With a few exceptions, waste management is handled by public communal enterprises that are owned by municipalities. Sources for the cost recovery and financing of waste management operations are mainly direct charges for transport and disposal of waste. However, since most disposal sites are unregulated and unlicensed, they operate largely as dumpsites, i.e. there is no payment by the transport and collection operators to the landfill. It is therefore not possible to assess cost recovery in a usual framework. However, income for public utilities from waste-related payments by households and legal persons is often very high, amounting to as much as 25 per cent of their revenue. Drisla landfill, which serves the city of Skopje and surrounding cities and communities, is one exception to this practice.

The public communal enterprises invoice and collect fees for municipal waste management services directly. Charges are different for physical persons/ households and commercial/legal entities. The most

Table 8.4: Waste-related investment (from core budget and own resources), in million denars and million Euros and per cent

Category	2006	2007	2008	2009	2010	Total	Per cent over total	Of which: Per cent Own Resources	Of which: Per cent core budget
Water Supply	11.78	19.73	27.54	31.67	14.70	**105.42**	9.24	19.99	80.01
Wastewater Treatment	20.37	7.42	14.47	381.94	366.78	**460.87**	40.38	4.35	95.65
Environmental protection	285.30	45.94	38.28	4.24	21.63	**395.39**	34.64	19.43	80.57
of which: dumpsite closure	8.07	20.52	21.20	0.00	3.40	**53.19**	4.66	72.01	27.99
of which: other related Waste	0.45	5.30	6.31	0.00	3.70	**15.76**	1.38	90.74	9.26
Preparation of feasibility studies, project documentation etc	1.64	10.60	17.20	18.33	2.80	**50.57**	4.43	57.30	42.70
of which waste related	0.00	10.00	13.10	0.00	0.34	**23.44**	2.05	100.00	0.00
Non-Municipality specific investments	10.61	0.00	0.00	115.12	0.00	**125.73**	11.02	0.00	100.00
of which waste related	7.50	0.00	0.00	104.11	0.00	**111.60**	9.78	0.00	100.00
Other (road infrastructure etc)	0.50	2.86	0.00	0.00	0.00	**3.36**	0.29	0.00	100.00
Total	**330.19**	**86.55**	**97.49**	**551.30**	**75.81**	**1,141.34**	100.00	12.87	87.13
Total (in EUR)*	**5.50**	**1.44**	**1.62**	**9.19**	**1.26**	**19.02**			
Memo:									
Total waste related investments	16.02	35.82	40.61	104.11	7.44	203.99	17.87	37.28	62.72
*Total waste related investments (in EUR)**	0.27	0.60	0.68	1.74	0.12	3.40			

Source: Ministry of Environment and Physical Planning; author's own calculations, 2011.
*At an exchange rate of 1 € =60 denars

common basis for charges for households is surface. Rates vary between municipalities, but as these are not reported centrally, it is not possible in the context of this review to acquire this information. It is generally acknowledged, however, that the proportion of non-payers is frequently high.

In Strumica, individual houses and flats are charged 2.7 denars/m^2; yards are also counted but at a discounted rate of 0.6 denars/ m^2. Legal entities are charged at a rate of 4 denars/ m^2.and yards at a rate of 1.2 denars/ m^2.

By comparison, rates are higher in the City of Skopje, where collection and disposal are the most organized in the country, managed through a city-owned public utility 'Public Hygiene'. Rates in the city of Skopje, where waste is collected 6 days per week (for the central city) or 3 days per week (for the inner city), are set at 3.7 denars/ m^2 for households. This is also the rate charged for legal entities larger than 250 m^2; the rest are charged monthly at flat rates of 300 denars, 700 denars, and 900 denars, depending on the category of the entity. For houses in the outskirts of Skopje, where waste is collected once per week, a flat rate of 286 denars/house is charged. Unlike most municipalities, Public Hygiene is charged by the landfill, which is also owned by the City Council, at a rate of 680 denars/ ton (or approximately EUR 11/ton, at the time of the review). The payment rate for medical waste is 45 D/ kg, for larger facilities. These rates are set by the City Council.

For the collection and disposal of commercial and industrial waste, public communal enterprises charge flat rate fees, but usually higher than those for municipal solid waste.

According to Article 121 of the 2004 Law on Waste Management, the fee for collection and transportation of municipal waste is either approved by the Councils of the Municipalities at the proposal of the Mayors, when the provider of the service is a public communal enterprise, or is set in the contract referred to in Article 46[39], paragraph (4) when the service provider is a legal entity or individual.

[39] Art 46, paragraph (4): "The Mayor of the Municipality and of the City of Skopje may entrust the collection and transportation of municipal and other types of non-hazardous waste to legal entities and individuals, by means of a contract for performance of activities of public interest of local importance for one or more municipalities or the City of Skopje, in accordance with the public tendering procedure."

At the time of the second EPR review, the vast majority of fees were determined by City Councils and invoiced and collected directly by the public communal enterprises as service providers with limited participation by the private sector in municipal waste collection activities. Nevertheless, according to WMD, at the time of the EPR review, there were 66 private enterprises for waste collection and transport of non-hazardous waste, 197 private companies for storage, treatment and/or processing of waste, and 197 companies for waste trade.

8.6 Legal, policy and institutional framework

Current legal framework

Since the first EPR, the following laws related to waste management have been adopted:

- The 2004 Law on Waste management, last amended in 2010[40]
- The 2005 Law on Environment, last amended in 2010[41]
- The 2009 Law on Packaging and Packaging Waste Management[42]
- The 2010 Law on Batteries and Accumulators and Waste Batteries and Accumulators[43].

The general legal framework underlying waste management policy was established by the 2004 Law on Waste Management. This instrument is a framework law and outlines general principles of waste management and general rules which apply to hazardous and non-hazardous waste, as well as special waste streams. The Law provides the basis for the numerous pieces of secondary legislation that have been introduced since its adoption. The extensive system of secondary legislation usually takes the form of rulebooks which cover general rules of waste management; storage (landfills); handling of special waste types (hazardous and non-hazardous); Basel Convention-related guidelines; records of waste streams; permits for waste management; and transfer stations. The Law also outlines important principles governing waste management, such as the 'polluter pays' principle (Art. 12), the precautionary principle (Art. 9) the proximity principle (Art 10), universality of service (Art 11) and the system of deposit (Art. 13).

The Law on Waste Management identifies recycling, reuse and reduction of waste as its priorities. Specifically, according to Article 7 which outlines the priorities of waste management:

(1) Waste generators shall avoid the generation of waste as much as possible and reduce the negative impacts of waste on the environment, and human life and health,

(2) In waste management, after prior selection, the waste should be processed by means of recycling, reuse or other process for extraction of the secondary raw materials or used as a source of energy.

The 2004 Law on Waste Management is also linked to other Laws, in particular the Law on Environment; the Law on the Organization of the Organs of the State Administration; the Law on Local Self Government; the Law on Public Enterprise; the Law on Physical and Urban Planning; the Law on Investment Constructions; the Law on Concessions; and the aw on Public Procurement..

Detailed secondary legislation vis-à-vis the 2004 Law on Waste Management has been developed since 2007, usually in the form of Rulebooks.[44] The most important Rulebooks covering waste management deal with the operation of landfills (Official Gazette Nos. 08/09; 78.09; 08/08 and 156/07), general rules for managing communal and other types on non-hazardous waste (Official Gazette No. 147.07), the content and manner of record-keeping in the waste register (Official Gazette No. 29/2009), and emission limit values during waste incineration (Official Gazette No. 123/2009). Also, there is extensive coverage in secondary legislation of permit issuing, including permit issuing for landfill operators (Official Gazette No. 140/07), for incineration (Official Gazette No. 108/09), for the collection and transportation of hazardous waste (Official Gazette No. 118/10), and for trade in hazardous and non-hazardous waste (Official Gazette No. 115/07).

Medical waste management is also regulated by the 2004 Law on Waste Management and the 2007 Rulebook on the manner of handling medical waste, as well as the packaging and labelling of medical waste (Official Gazette No. 146/07).

The 2005 Law on Environment stipulates that planning documents in the areas of waste management should be subjected to Strategic Environmental Assessment

[40] Official Gazette No. 68/2004 and correction No. 71/2004, No.107/07; 102/08 134/08. and124/10

[41] Official Gazette No 53/2005, 83/05, 24/07, 159/08, 83/09, 40/10 and 124/10.

[42] Official Gazette No. 161/09.

[43] Official Gazette No. 140/10.

[44] For a full list, see Annex IV in this publication.

and that waste management should be a component of the National Environmental Action Plan and of the Local Environmental Action Plans. The Law also includes important provisions concerning access to waste-related information. It introduces the notion of a cadastre of waste generators as part of the environmental cadastre. It outlines the framework for charges and charges payments of waste generators. Finally, the Law also positions waste management as one of the areas subject to investments from the State programme for environmental investment.

Extensive secondary legislation for the 2009 Law on Packaging and Packaging Waste Management has been put in place until January 2011. In 2009, the Rulebook on the Law on Packaging and Packaging Waste Management (Official Gazette No. 161/09) was adopted. As many as eight rulebooks were adopted in 2010, regulating technical matters in greater detail. The most important among them cover reporting and record-keeping of autonomous packaging waste handlers (Official Gazette No. 41/2010); long-life packaging (Official Gazette No. 52/2010); and the List of illustrative packaging examples ("Official Gazette No. 52/2010).[45]

At the time of the review, a draft Law on Electrical and Electronic Waste Management was under preparation; expected to be adopted in June 2011. The secondary legislation regarding this law and also *the Law on Batteries and Accumulators and Waste Batteries and Accumulators is also expected to be prepared and adopted in 2011-2012.*

The legal framework of the country is complemented by its international obligations. So far, the country is party to the following international conventions (see also Chapter 4):

1. The Stockholm Convention on Persistent Organic Pollutants - signed in 2002 and ratified in 2004;
2. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal - ratified in 1997;
3. The Aarhus Protocol on Persistent Organic Pollutants (POPs) - ratified in 2010;
4. The Convention on Long-range Tranboundary Air Pollution- ratified in 1997.

Waste management policy

The general policy directions on waste management were outlined in the First and Second National Environmental Action Plans (NEAPs), in 1996 and 2006 respectively, as well as in the 2004 Law on Waste Management. They consist of two official national-level documents, the National Waste Management Strategy for the period 2008-2020, and the National Waste Management Plan for the period 2009-2015. The former aims at defining long-term needs in the area of waste management as well as the necessary legislative measures for enforcement, while the latter makes a frank assessment of current conditions and outlines, activities as well as resources and financial mechanisms in the waste management process for the period of its validity.

The policy-making framework is further complemented by local plans in line with the national plan. These plans are usually prepared for three year periods, adopted by municipalities and approved by MoEPP.

National Waste Management Strategy for the period 2008-2020

The National Waste Management Strategy is a key policy document which outlines the key objectives of waste management vis-à-vis public health and environmental protection and offers an assessment of the actual situation on the ground. Even more importantly, the Strategy offers a road map of the country's prioritized actions until 2020 in order to improve the situation. Priorities are identified both in terms of technical needs and the legal, policy and legal framework underlying waste management. Waste management, hazardous waste management and improvement of the situation of landfills are among the key priorities of the Strategy. Recognizing the magnitude of the problems affecting waste management, the Strategy distinguishes two development "phases". In the first, "transition" phase, highest priorities are dealt with, sometimes with temporary measures. Bigger projects, such as landfill upgrades but also lower impact areas, are foreseen for the second development phase.

One of the key ideas developed in the Strategy is that of regional waste management systems and landfills, and the invitation to MoEPP and the Government to support and facilitate municipalities in setting up regional bodies and boards and in promoting plans and investments for regional waste management. Additionally, the Strategy calls for the creation of a central body for the management of hazardous waste. Among the key technical priorities are the establishment of the technical infrastructure for municipal and other non-hazardous waste management, as well as for the management of hazardous waste from industry,

[45] For a full list, see Annex IV in this publication.

healthcare institutions, animal breeding farms and slaughterhouses. Special waste streams such as packaging and packaging waste, used tyres, car batteries and other special end-of-life products are seen as of lesser importance, and their implementation is generally foreseen to start in the second development phase of the waste management system.

National Waste Management Plan for the period 2009-2015

The National Waste Management Plan (NWMP) is a six-year plan, which identifies interim priorities for the accomplishment of the national strategy on waste management. Priorities areas include the policy and legislative framework; human and capacity-uilding; technical infrastructure; economic financial issues; and stakeholder and public awareness.

In terms of the legal aspects addressed in NWMP, significant progress has been made. Implementation remains the key area that will determine the success of the plan in the period until 2015.

NWMP also includes financial estimates for two key areas, namely legislative development and infrastructure financing. Infrastructure investments to cover approximately 60 per cent of the required landfill capacity are estimated at EUR 51 million. Investments under these estimates cover the construction of two regional landfills and the upgrading of Drisla landfill. A look at the past level of investment, however, shows that there is a need for additional resources. For example, the level of investment in waste management at the time of the second EPR review stood at 204 million denars or EUR 3.4 million for the period 2006-2010 (table 8.4).

Institutional framework

The Waste Management Department

The most significant institutional change since the first EPR has been the establishment of a Waste Management Department (WMD) in 2010 under the Environmental Administration of MoEPP, according to 2010 The National Plan on Adoption of the Acquis Communautaire (NPAA) and the Plan for Institutional Development of National and Local Environmental Management Capacities 2009-2014. The Department consists of four units for:

1. Management of hazardous and historical[46] waste;
2. Development of plans and programs for waste management;
3. Registration and evidence of waste managers;
4. Special waste streams management.

WMD is the central administrative body responsible for waste management within the MoEPP Environmental Administration that is responsible for carrying out the main administrative, planning, monitoring and development tasks related to the waste management projects on the national and local level. It is responsible for developing and elaborating waste management plans and programmes of national importance, for monitoring their execution, and for preparing periodic reports.

It is responsible for issuing consents, permits and registrations with regard to all waste management facilities and operations; for permitting waste shipment inside and particularly outside of the country according to the Basel Convention; for monitoring and data collection/handling/reporting; for elaborating and coordinating technical and economical studies for the management of special waste streams and end-of-life products; and for elaborating programmes for the closure of illegal dumpsites and "hotspot" remediation.

At the time of the EPR review, the Department was understaffed with only six staff members and with the Unit on Hazardous and Historical Waste remaining unmanned. In view of this low capacity, it is questionable whether the Department can fulfil its heavy mandate effectively. Some of the most important functions relating to landfill/dumpsite closure and remediation or the remediation of hot spots cannot be under such conditions. Furthermore, in the current structure of the Ministry, waste management and investment appear to be dealt mostly at the implementation level, without representation at the policy level with, for example, a State advisor representing waste-related matters, as is the case for other issues. Consequently, waste-related investment decisions and actions often lack a more long-term and comprehensive planning.

Other institutions

Tasks and responsibilities on waste management are in practice shared among several institutions in the country, where a certain amount of overlapping can be observed among governmental institutions as well as between national and local level municipal institutions.

MoEPP has the main responsibility for preparing and adopting all legal instruments to complete full

[46] Accumulated

transposition of EU legislation and to implement waste management directives. However, the preparation, adoption and implementation of the main primary and secondary legislation are carried out with the involvement of other Ministries or authorities (like City of Skopje, municipalities), which may take the form of joint initiatives and actions, cooperation, consultations, or consent. There seems to be some confusion as to roles and powers as well as a lack of communication and coordination.

Inspection of the segregation, labelling and storage of medical waste is the obligation of the State Sanitary and Health Inspectorate (Ministry of Health). Inspection of the fulfilment of the requirements of the Packaging Waste Directive (94/62/EC) is the obligation of the State Market Inspectorate (Ministry of Economy).

According to the Law on Waste Management, the municipalities are in charge of important activities in the field of waste management: protection of the environment, life and health of people; achieving the goals and directions stipulated in the National Environmental Action Plan; establishing an integrated national network of plants and treatment plants; accomplishing the country's international obligations related to waste management; organizing collection, transport and disposal of communal waste; supervising transport and disposal of industrial non-hazardous waste; making decisions concerning the sites of waste management facilities; adopting regulations on waste management at local level; financing and supervising the closure of unauthorized dumpsites and closure of waste management facilities. The municipalities are also responsible for the establishment of landfills for non-hazardous and inert waste. However, issuing permits, inspection and monitoring related to environmental protection issues, with the exemption of the landfills for inert waste, lies within the competences of MoEPP. There are 72 Public Communal Enterprises for waste management in the country, which are under local self-government authorities.

Inspection and supervision over the implementation and enforcement of the Law vis-à-vis the above-mentioned competences of the various municipalities and the City of Skopje are carried out by authorized inspectors of environment of the municipalities and the City of Skopje.

However, the implementation of the country's advanced legislative and policy framework faces a de facto obstacle in the fact that due to the high level of decentralization, municipalities are often confined by limited resources and capacity combined with lack of adequate intermunicipal/regional cooperation and burden sharing. As a result, municipalities are formally responsible for the extensive and demanding tasks listed above, yet several of them do not have the size and resources to appoint the responsible divisions/persons in their administrative structure and to provide adequate training.

Yet the issue of capacity and resources is more general. Looking at tasks and obligations at the national and local level, all institutions responsible for carrying out the main tasks on waste management have insufficient human resources, knowledge and experience to develop and implement all the relevant legislation, standards, instruments and investments.

Waste-related control mechanisms

According to the 2004 Law on Waste Management, supervision in terms of inspections concerning the enforcement of the Law and related regulations is carried out by the State Inspectorate for Environment. Among its numerous tasks, the State Inspectorate is mandated to inspect and control whether the waste to be disposed of is not acceptable for the landfills (Article 86) and whether the waste that is not acceptable for the landfills is disposed of in accordance with the operations referred to in Article 35 of the Law. Furthermore, the State Inspectorate is mandated to inspect and control whether the disposal of the waste is done in an appropriate class of landfill[47] (Article 88) and to ascertain whether monitoring and control of the environmental impact of the landfill is performed (Article 91).

In practice, the State Inspectorate does not act on this mandate, as a result of which waste-related control mechanisms are weak. Structural problems associated with unregulated and unlicensed disposal sites are so extensive that control mechanisms do not suffice to ensure compliance with the current legal framework. Furthermore, of all the inspections undertaken by the Inspectorate in 2010, none was directed towards municipal disposal sites. The issue appears to be partly jurisdictional and partly political. It is jurisdictional because, some (but not all) municipalities employ staff responsible for inspection functions, usually together with other unrelated duties. It is political because in case of violations of the Law, public utilities are owned by municipalities, thus penalties, fines and legal actions would be directed towards the latter.

[47] Article 78 of the Law introduces 3 classes of landfills: those for hazardous waste, non-hazardous waste and inert waste.

8.7 Conclusions and recommendations

Given the limited resources available in the country, there are serious pressures on the environment caused by a long period of neglect of waste management throughout the country. The creation of the Waste Management Department in the Ministry of Environment and Physical Planning is a positive development; however, more attention is needed to adequately staff the new Department. For example, at the time of the review, key posts, e.g. on industrial 'historic' waste, were still not filled. Given the problematic situation with regard to both municipal and industrial waste, it is important to ensure that the Department has both an adequate mandate and resources to meet the serious challenges. Due to the internal structure of the Ministry, the Department is limited to implementation rather than planning. As far as planning is concerned, waste management is not covered on higher policy and planning levels within MoEPP.

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.

At the time of the second EPR review, all but one of the country's municipal disposal sites operated without licences or any sort of supervision or monitoring. Extensive parts of the country's rural areas and villages are not covered by any waste collections services or, if they are, coverage is not frequent. The majority of medical waste in the country, even if separated at source, is disposed of at municipal disposal sites, with Drisla landfill being the only exception. At the same time, such disposal sites are also grounds for economic activity by the informal sector, and human communities have often developed in the vicinity of these dumpsites. Furthermore, some municipal landfills are inappropriately situated, for example on the banks or rivers or transboundary waters, causing adverse impacts, including transboundary pollution. However, there is no systematic assessment of the health and environmental impacts of existing disposal sites, including assessment of contamination of ground and surface waters from leachate.

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.

Considerable resources have been earmarked in the MoEPP budget for the municipalities on projects for the closure or remediation of existing sites; however, there is no systematic assessment of the effectiveness of these projects.

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 situation of the country's landfills is worrying, since out of the more than 70 existing municipal disposal sites only one, Drisla, is licensed even it is not fully sanitary. One possible long-term solution for this problem is to move from municipal-level to regional-level landfills. This is an approach currently followed by the Government: two concession-based and two public-based regional landfills were at the time of the second EPR in advanced negotiations. It is expected that waste collection, transportation services and landfill operation will be run by the private sector. The successful establishment and operation of first two regional landfills is particularly important, as they may set an example for the remaining municipalities in the country. Due to the geography of the regions and the choice of locations for the establishment of the regional landfills, it is important to choose an effective mix of economic and regulatory/enforcement instruments. At the same time, technical/infrastructural solutions such as transfer stations may contribute to the successful operation of the regional waste management system. However, the current road network does not appear to be adequately developed to facilitate the increased flow of waste to the chosen regional landfills. Additionally, the concept of regional landfills does not exist in, and is therefore not adequately regulated by, the existing legal framework.

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.

Although Reduce, Reuse and Recycle (RRR) practices are strongly promoted in the Law on Waste Management and the key policy documents on waste management, remarkably little is done at the State level to formulate and implement a coherent national policy on this front. Although sporadic initiatives at municipal level sometimes occur, they are not adequate to have a positive country-wide impact.

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.

In the majority of cases in the country, medical waste is separated at source (hospitals, clinics, and other medical institutions) but is then mixed by public utilities which collect and dispose this waste with other municipal waste. Thus, waste disposed of in municipal disposal sites contains medical waste which may be infectious and hazardous. Since dumpsites are in effect unsupervised and are the site of many economic activities by the informal sector, there are serious risks for public health. Although the current legal framework covers incineration of medical waste, the country possesses only one incinerator, which works beyond capacity and below standard.

Recommendation 8.6
The Government should ensure that an adequate system for medical waste management is in place.

Chapter 9

FORESTRY, BIODIVERSITY AND PROTECTED AREAS

9.1 Developments since the first EPR

Since the first EPR in 2002, the former Yugoslav Republic of Macedonia has made much progress in establishing a comprehensive legal framework and strategies for sustainably managing its forests, conserving biodiversity, and protecting its natural heritage. New laws and rulebooks are filling major legal, regulatory, and policy gaps, e.g. the Law on Nature Protection, the Law on Forests, and the Law on Hunting.

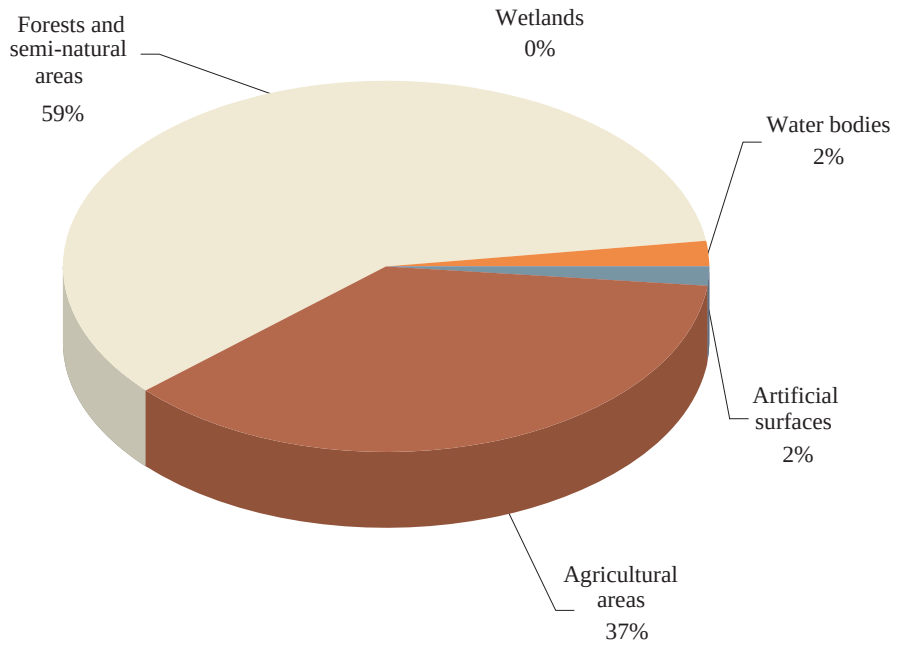
According to the CORINE[48] classification system, about 60 per cent of the territory's land cover is classified as forest, 37 per cent is agricultural, and the remainder is water, (including water bodies, artificial lakes, and wetlands) (Figure 9.1). In contrast, land use is about 37 per cent forest, 48 per cent agriculture, and 15 per cent other (water, urban development, transportation corridors, and other uses) (Figure 9.2). The difference in numbers between land cover and land use is due to different classification systems and mapping methodology.

Geologic, climatic, and anthropogenic influences contribute to the territory's relatively high biodiversity. This diversity of flora and fauna continues to be studied, and over 17,000 taxa have been identified, of which over 900 are endemics. Some of the largest remaining European populations of threatened mammals (such as the brown bear, the wolf, the Balkan lynx, the chamois, and bats), as well as the European populations of birds of prey, survive in the mountains and gorges of the protected areas, which is a direct reflection of the quality of composition and area remaining intact. The country thus offers great potential at the European scale for conserving species on the continent.

The country has other significant natural resources. Lake Ohrid is a UNESCO World Heritage Site. Lakes Prespa and Dojran are wetlands of international importance and are designated Ramsar sites, while Lake Ohrid is a proposed Ramsar site.

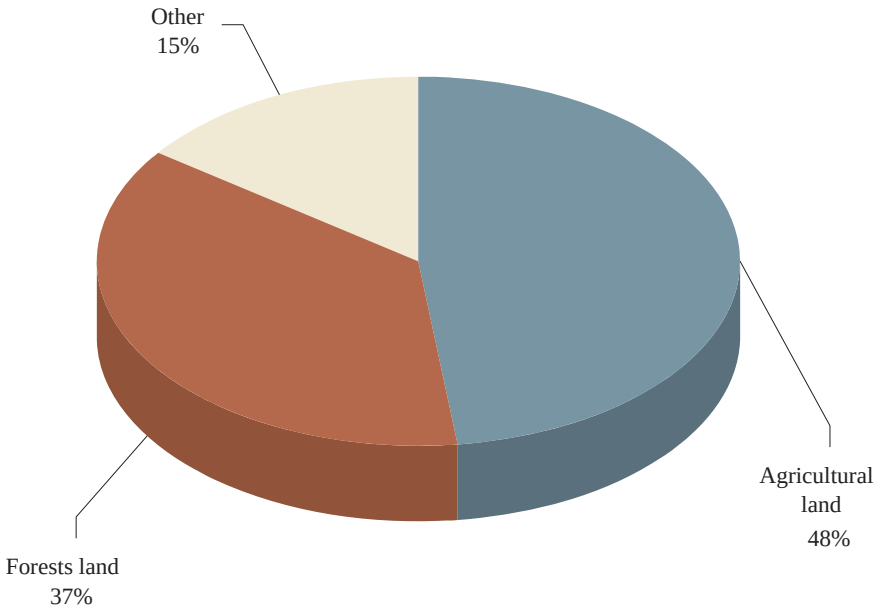
[48] CORINE: "Coordination of Information on the Environment." Land cover project of the EU European Environment Agency.

Figure 9.1: Land cover



Source: Environmental Statistics, 2009. MoEPP; and Corine 2006, EEA.

Figure 9.2: Land use



Source: Environmental Statistics, 2009. MoEPP. 2 Corine 2006, EEA.

9.2 Current conditions, trends, and management situation

Forestry and forest management

Total forest area (land use) is currently 949,329 ha, or 37 per cent of the territory. This figure has remained relatively stable over the past decade. State-owned forests account for nearly 89 per cent of the total forest area, with the remainder in small, privately owned parcels.

As elsewhere in the Balkans, broadleaf trees dominate the country's forests, with oak and beech being the principal species. The proportion of forests by major species groups has remained relatively unchanged over the past 10 years (Table 9.1). More than four-fifths of the forests are available for wood production, and all but some small areas of plantations are classified as semi-natural. High forest makes up about one third of the forest area, with the remainder being coppice reproduction and about 11 per cent plantations.

The primary disturbance factor over the past 10 years has been forest fires, which occurred primarily in 2007 when other nearby countries were also experiencing a severe fire season. The amount of acres burned in 2007 was 10 times higher than the prior two years (Figure 9.3). Other disturbance agents that contribute to loss of forest cover and timber volume include insects, pathogens, and illegal logging.

Increased wildfire activity in 2007 and 2008 tested the Government's capacity to respond to these events. Since then, the country has acquired suppression equipment such as planes, tractors, and fire engines. Training is being provided and public awareness and education programs have been implemented. Reviews recommend that a new agency (Center for Crisis Management) be established to manage emergency situations.

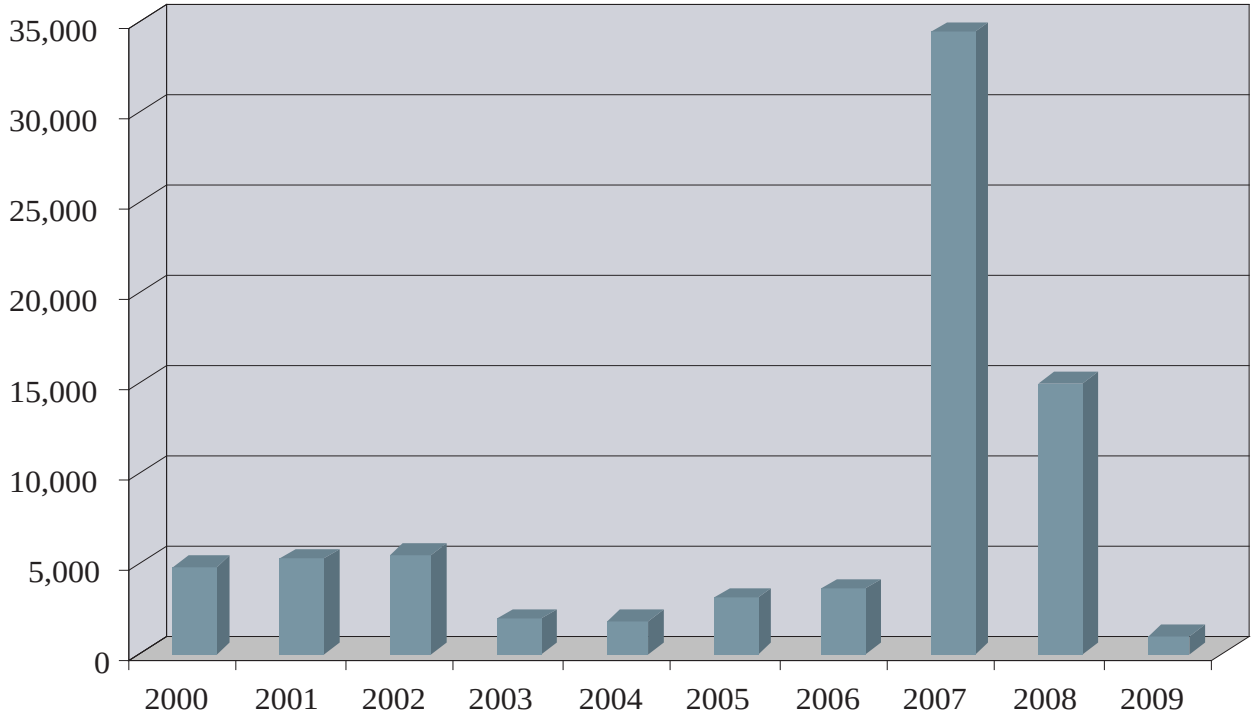
Table 9.1: Forest area by species group, 2003-2009, in hectares

	2003	2004	2005	2006	2007	2008	2009
Pure stands of broadleaved trees	539,666	553,456	555,495	560,389	551,681	547,186	549,869
Pure stands of conifers	109,454	85,104	83,665	87,569	80,009	80,576	83,583
Mixed stands of broad-leafed trees	239,905	242,653	251,006	248,439	245,768	254,925	255,114
Mixed stands of conifers	6,389	6,394	5,161	6,383	7,293	7,472	7,634
Mixed stands of broad-leafed trees and conifers	59,880	60,046	59,901	56,479	57,218	52,889	53,129
Total	**955,294**	**947,653**	**955,228**	**959,259**	**941,969**	**943,048**	**949,329**

Source: Forestry 2009. State Statistical Office, 2009.

Photo 9.1: Green zone in Skopje

Figure 9.3: Area of forest damage from fires, 2000-2009, in hectares



Source: Forestry 2009. State Statistical Office, 2009.

The total growing stock volume of commercial timber species in 2010 is estimated at 76.41 million m^3 of which 90 per cent are broadleaf species. Total carbon in above-ground biomass is 47.9 million tons, which is about the same as in 1990. All State-owned forests are guided by 10-year management plans. With the help of the Afforestation Fund (active until 1990), more than 140,000 ha of bare lands have been planted.

The country does not yet have a national forest inventory. The methodology has been developed and will be finalized in a Rulebook. The Strategy for Sustainable Development of Forestry's Action Plan identified two data-related actions that have not yet been completed: (1) develop an information network and introduction of technology relying on Geographic Information Systems (GIS); and (2) develop a forestry information system with a database.

Wood products and trade

The planned annual available cut on State forest lands in the last 10 years has been about 1,300,000 m^3, of which about 70 per cent is actually harvested. The primary domestic use of wood is as fuel, with some 67 per cent of the gross timber volume harvested in 2010 going to the fuelwood market. The remaining wood consists mainly of hardwood logs, which are processed in local sawmills (Figure 9.4). About 80 per cent of the harvested volume comes from State forest lands. Nearly half of the sawn hardwood is exported, while domestic demand for softwoods and paper is met by imports. The former Yugoslav Republic of Macedonia imports more forest products than it exports, importing about US$43 million while exporting about US$7 million worth of forest products.

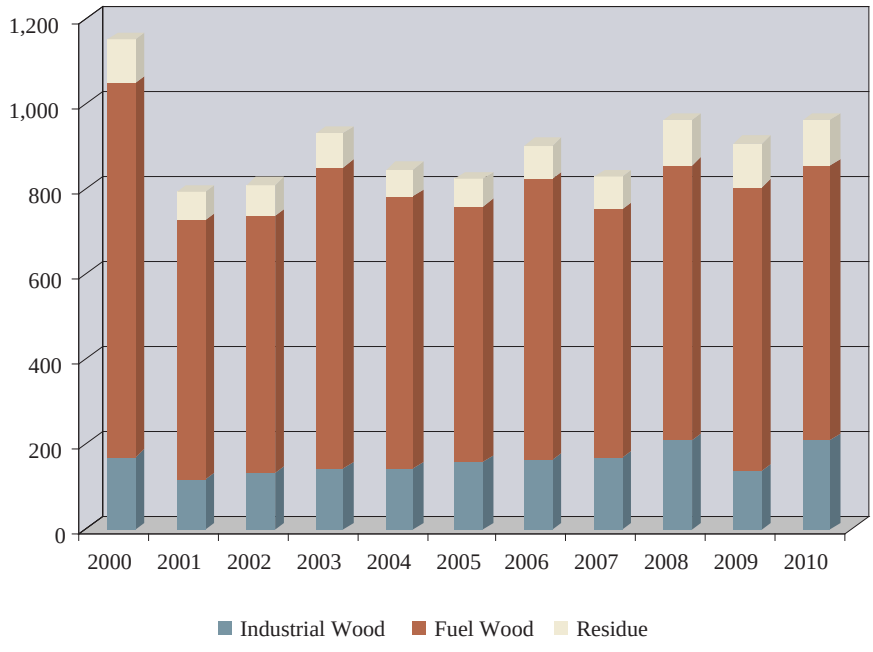
Non-wood forest products

Because the forests in the country are characterized by very rich biodiversity, they produce significant non-wood forest products (NWFPs) such as medicinal plants, herbs, mushrooms, lichens, and forest fruits. Raw and processed NWFPs are traded on the local and national markets and exported, primarily to the regional (Balkan) and broader European markets. Some US$ 15 million of NWFPs are exported annually. About 60,000 people are involved in the collecting process. The overall market (mechanisms for collecting, processing, trade) is not well regulated yet.

Forestry contributes only 0.3-0.5 per cent to GDP, but if multifunctional uses (ecosystem services) are included, this contribution would be larger. The share of the forest industry (primary and secondary wood processing, furniture, paper, and celluloses) is 2.5-3 per cent.

The lack of a regulatory framework for collecting, processing, and marketing NWFPs may be contributing to overuse of the resource and exploitation of those in the supply chain (collectors, processers, and retailers).

Figure 9.4: Harvested timber volume by product category, all ownerships, 2000-2009, in 1,000 m^3



Source: Forestry 2009. State Statistical Office, 2009.

Photo 9.2: Mavrovo national park

Threats and issues

Some of the main threats and problems in forest management are illegal logging; other illegal activities; forest fires, which have affected nearly 100,000 ha for the last 10 years; climate change through the process of drying of the forests; insect damage; and diseases. Illegal logging is a serious and long-term problem, jeopardizing sustainable forest management as well as forest value from a broader perspective. Illegal logging disturbs natural regeneration and creates potential for erosion, forest fires, diseases and pest calamities, and disturbances to the water regime. Illegal logging and illegal sale of wood create economic losses for the State sector.

The former Yugoslav Republic of Macedonia does not yet have a land cadastre (real estate) of public versus private land; therefore, land ownership boundaries are not marked on the ground. Also, some protected areas do not have recorded boundaries. This cadastre would help differentiate forest land from agricultural or other land uses. The cadastre is needed to sustainably manage and protect the State forests and protected areas. For example, protecting these forests against illegal logging and enforcement of other regulations is problematic when ownership boundaries are not clearly marked.

Biodiversity

The main components of biodiversity have been determined in accordance with the international criteria of the Convention on Biological Diversity (CBD), Convention on the Conservation of Wetlands of International Importance especially as Waterfowl Habitat (Ramsar), Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, Council of Europe), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), EU Directive on the Conservation of Wild Birds (Birds Directive), and EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive). Due to a constant effort of research and classification, varying numbers of species by taxonomic group and their status have been reported. Despite this variance, a consistent and most impressive finding has been the

country's heterogeneity and high level of relict and endemic species. Analyses of biodiversity richness for individual countries within the European continent rank the former Yugoslav Republic of Macedonia at the very top of the list of countries considered to be European "hotspots."

Vegetation communities

The number of vegetation communities in the country is high at about 270 plant associations. Forest communities dominate with more than 55 per cent of the land cover, followed by grass communities, lake and river vegetation communities, while swamp communities and temporal communities occupy the smallest areas. Wetland vegetation communities are represented in running and standing waters. Floating and submersive plant communities in the three natural lakes are of particular significance. Swamp plant communities have been preserved in a fragmentary form in major swamps and marshes. Thirteen swamp plant communities dominated by reed-mace, reed, and other species are especially significant.

Species diversity

Even though numerous taxonomic groups have not yet been fully researched, current knowledge on the biodiversity of the former Yugoslav Republic of Macedonia shows an extremely high level of species richness. The number of species recorded in the territory now totals 17,604 species, including 1,053 species of fungi, 354 species of lichens, 2,169 species of algae, 3,674 species of vascular plants, and 10,354 faunal species. Of this vast array, 976 are considered endemic (Table 9.2).

Notwithstanding the fact that the entire territory of the country encompasses an area of 25,713 km^2 (0.26 per cent of the European continent), a huge portion of European biodiversity is concentrated within this small area that ranges from 33.64 per cent of vascular plants, 14 per cent of freshwater fish species, 20.3 per cent amphibians, 25.2 per cent reptiles, 64 per cent birds, and 29 per cent of mammal species.

On a regional scale, the biodiversity of the country represents 70-90 per cent of the entire Balkan Peninsula biodiversity. Comparative analysis shows that the concentration of biodiversity richness in the former Yugoslav Republic of Macedonia ranges from 54 times (in fishes) up to 246 times (in birds) higher than the mean European Species Diversity Richness.

Key threats to ecosystems, habitats, and wild species

Based on assessments conducted in different projects and studies, a general threat to biodiversity is loss of natural ecosystems and habitats due to their modification and fragmentation. In this context, the most significant changes are occurring in aquatic habitats – natural lakes, wetlands, and in specific sections of major rivers. Grassland ecosystems have also changed significantly, with large areas having been turned into arable land. Threats to forest ecosystems are varied and include desiccation, die-back processes, forest fires, illegal logging, and various diseases. Negative effects in mountain ecosystems are caused by uncontrolled collection of plant species and illegal hunting of large carnivores and the Balkan chamois.

Uncontrolled anthropogenic activities have negative impacts on ecosystems, habitat types, and especially populations and spread of wild species. Threats are also induced by overuse of biological resources, mostly for commercial purposes. Thus, a high number of indigenous medicinal and aromatic plants, 67 species of mushrooms, more than 110 species of diatom algae, 12 species of lichens, 12 species of ferns, and 20 species of mosses are all at risk. At the national level, the most threatened groups of higher plants are the angiosperms (flowering plants) (with approximately 280-300 species). Aquatic and wetland plants are especially endangered.

For fauna diversity, groups of butterflies, stream crab and crayfish, river and lake molluscs, and 115 vertebrate species are also under threat. The most endangered group among the last of these is fish, of which as many as 30 native species are threatened. Illegal collection is adversely affecting populations of terrestrial snails and reptiles. Illegal hunting and poaching are threatening more than 60 bird species, including six species of eagles and vultures. Threatened mammals include bats, lynx, otter, and badger. Furthermore, poaching is a threat to the brown bear, wolf, lynx, or the rare Balkan subspecies of chamois, all listed under Habitats Directive Annex II.

Another threat is uncontrolled land development, either in the vicinity of present settlements or in the mountain locations most attractive for tourism and recreation. To a large extent, these illegal activities are facilitated in some areas of the region by the absence of valid land development plans. Uncontrolled urbanization and industrialization also contribute to the loss of agro-biological diversity, unsustainable

Table 9.2: Species biodiversity and conservation status

Taxonomic Group	Number of Species[1]	Endemic[1]	Conservation Status (Number of Species)			
				Under Strict Legal Protection		IUCN Globally Threatened Species[1]
			Threatened[2]	Habitats Directive 92/43/EEC (Annex II and IV)	Birds Directive 79/409/EEC (Annex I)	
Flora						
Algae	2,169	196		None		None
Lichens	354	None		None		None
Fungi	1,053	None	67	None		None
Mosses	398		20	1		
Peat Mosses	6		6			
Horsetails	7		2			
Ferns	45	1	16	1		
Gymnosperms	18		8			
Angiosperms	3,200	114	340	8		
Flora Total:	7,250	115	459	10		None
Fauna						
Protozoans	113	32				
Sponges	10	6				
Flatworms	85	35				
Cnidarians	2					
Nemertine Worms	1					
Rotifers	269					
Nematodes	553					
Mollusks	366	131		1		
Segmented Worms	186	48				
Arthropods	8,234	383		22		
Invertebrate Total:	**9,819**	**635**	**0**	**23**		**10**
Fishes	78	27	30	9		18
Amphibians	15	None		8		None
Reptiles	32	None	1	25		2
Birds	328	None	66		117	13
Mammals	82	3	16	32		4
Vertebrate Total:	**535**	**30**	**113**	**220**		**37**
Fauna Total:	**10,354**	**665**	**113**	**254**		**47**
Total:	**17,604**	**976**	**572**	**271**		**47**

[1] UNDP. Assessment and Evaluation of Biodiversity on National Level: Report and National Catalogue (Checklist) of Species. 2010.

[2] State Statistical Office. Environmental Statistics, 2009.

development of agriculture, and depopulation of rural areas.

One more threat to biological diversity is the abandonment of traditional land use practices, resulting from the ongoing migration from mountain settlements and villages (common for the mountain areas worldwide). As a result, the former picturesque and diverse mosaic of the agricultural mountain landscape will evolve over time into a simplified landscape dominated by forest vegetation once the formerly cultivated or managed areas revert to dense forest. Thus, this reduced landscape diversity would likely adversely affect the biological diversity of plant and animal species.

Conservation status

Most of the endemic species at the national or local scale are vulnerable to extinction due to their very restricted range size. The former Yugoslav Republic of Macedonia has not yet prepared its National Red List of Threatened Species and Red Data Book. The UNDP/GEF/MoEPP project "Strengthening the Ecological, Institutional and Financial Sustainability of Macedonia`s National Protected Areas System" produced two reports in 2009. The "Final Report: National Catalogue (Check List) of Species" provides a comprehensive list of species in the country by taxonomic group. The second report, "Final Report: Assessment and Evaluation of Biodiversity on National Level," lists the species conservation status, which provides a basis for development of the Red List of Species in the country. The list of species by taxonomic group enabled a more efficient feeding of data into the National Information System of Biodiversity (NBIS), whereas the table with species conservation status helped the MoEPP prepare the first draft of the Rulebook on proclamation of strictly protected and protected species. Therefore, the available data should be regarded as a preliminary list of threatened species, since there is not enough information yet for an evaluation of the threat status for most of the endemic species, especially local endemic species. The Law on Nature Protection provides direction for developing the National Red List and Red Book, and includes temporary protection measures for strictly protected and protected wild species.

The Law on Amendments and addenda to the Law on Nature Protection (March 2011) provide further harmonization of the categorizing of species in the act with the IUCN Red List categories of threatened species. This will assist in determining special conservation status during future development of the National Red List. Amendments to the law stipulate an obligation for wildlife species to be subject to a scientific analysis that provides the basis for them to be proclaimed strictly protected wild species or protected wild species, thus acquiring the status of natural heritage and a higher (i.e. more precise and more effective) level of legal protection. This intervention makes it possible to implement one of the major provisions of the UN Convention on Biological Diversity and of other conventions dealing with biodiversity protection ratified by the former Yugoslav Republic of Macedonia. The law further specifies the definition of protected wild species, the list of which should incorporate the species affected at both national and international levels, in line with the obligations stemming from the international nature conservation legislation.

The two UNDP reports cited above plus the 2010 UNDP "Assessment and Evaluation of Biodiversity on National Level: Report and National Catalogue (Checklist) of Species" appear to provide the most current, detailed, and comprehensive assessment of biodiversity and conservation status of particular species and taxonomic groups for the country. Table 9.2 summarizes the conservation status of species by taxonomic group.

Hunting

The country is organized into 250 game management areas and 5 national hunting grounds. Each game management area has a 20-year management plan for big game and a 10-year plan for small game. These plans establish target populations for each game species and set quotas for the number of individual animals that can be taken. Each game management area is awarded to a public concession through competitive bidding. The concessionaire is responsible for game protection, breeding, and hunting within his game management area. To legally hunt in the former Yugoslav Republic of Macedonia, the public must obtain a hunting license or permit through the concessionaire, and individuals are restricted to hunting only within that concessionaire's game management area. The concessionaire sets the price for each game management area. The concessionaire strictly controls hunting operations (where, when, which species, how many of each species) and must account for every animal taken through annual reporting to MoAFWE. Base prices for hunting are established annually by MoAFWE. The price is set for each animal taken, by species. The concessionaire must pay 20 per cent of the base price to the Government and may retain the remaining 80 per cent to cover administration, operating costs,

Table 9.3: Protected areas by category

Protected area category (IUCN)	Number of protected areas in category 2002	Number of protected areas in category 2009	Total area in category 2002 (ha)	Total area in category 2009 (ha)	% of national territory 2009
Strict Natural Reserve (I)	2	4	12,730	12,855	0.50
National Park (II)	3	3	108,338	112,988	4.39
Natural Monument (III)	16	60	55,422	63,428	2.47
Nature Park (IV)	14	12	2,645	2,645	0.10
Protected Landscape (V)	3	3	2,338	2,338	0.09
Multipurpose Area (VI)	0	1	0	27,950	1.09
Total	**38**	**83**	**181,473**	**222,204**	**8.64**
Published figure					8.25

Sources: UNECE. Environmental Performance Review-The former Yugoslav Republic of Macedonia, 2002.
State Statistical Office. Environmental Statistics, 2009.
The former Yugoslav Republic of Macedonia. Second National Review of the Application of Environmental Indicators. 2009.
Indikatori 2008 - Nature and Biodiversity (Environmental Indicators of the Republic of Macedonia). MK - NI 008 - Designated Areas. MoEPP. December 2008
Point 5.1 Annex C. Part C – Republic of Macedonia, Nature and Biodiversity (October 2009), European Environment State and Outlook Report 2010 (SOER 2010).

and profit. Enforcement of game management plans is the responsibility of the MoAFWE Forest Police Department (see Section 9.5 below).

Protected areas

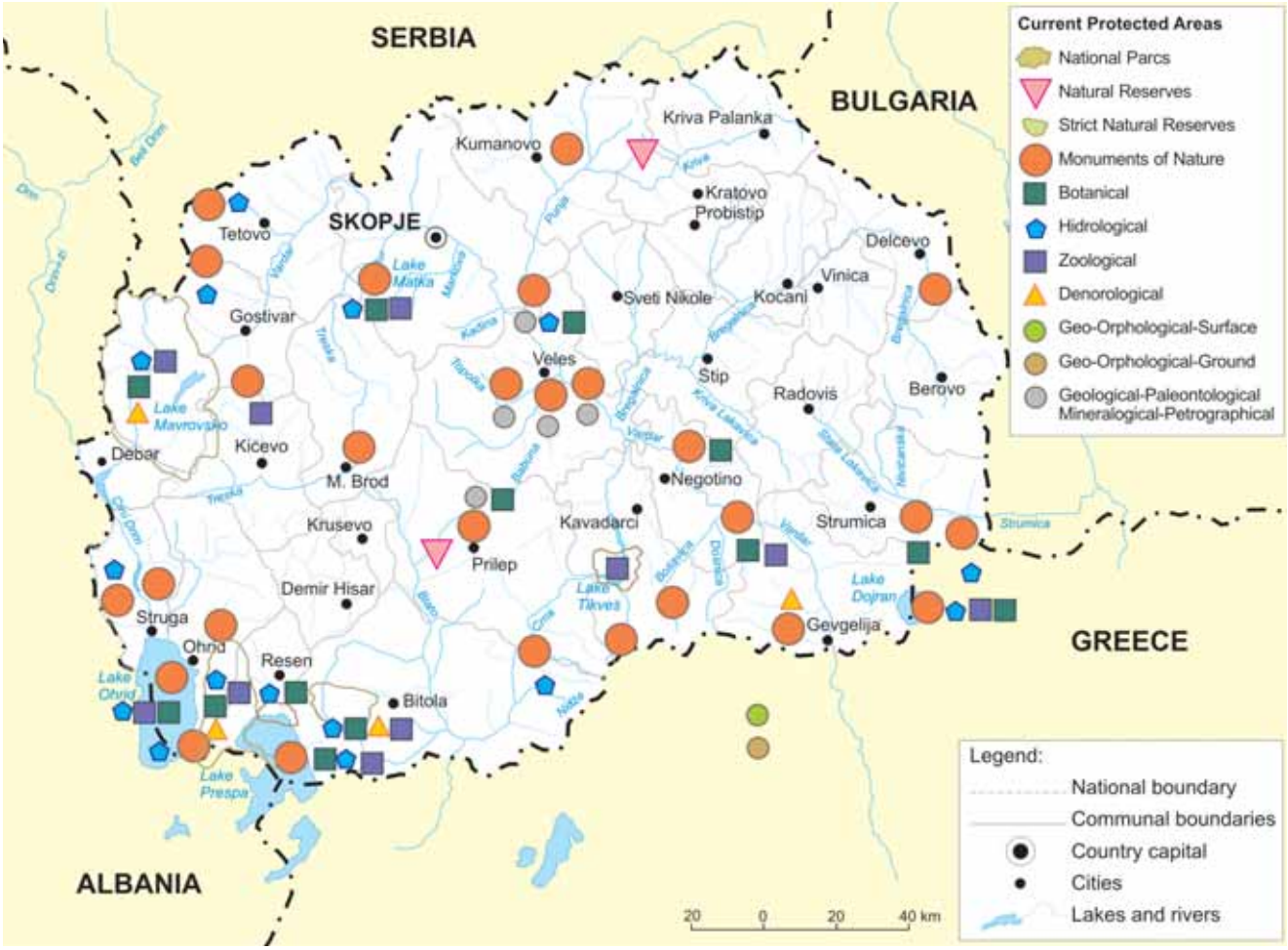
In 1948, Pelister National Park became the first protected area (PA) in the country. Since then, 82 more areas have been added to the system, expanding it to a current total of 222,204 ha (8.6 per cent of the territory). Since the first EPR in 2002, the system has grown by 40,731 ha (1.5 per cent of the territory) through addition of new areas and expansion of existing areas. The new areas are in the following categories: 2 strict natural reserves (IUCN I), 44 natural monuments (IUCN III) and 1 multipurpose area (IUCN VI) (Table 9.3). The largest addition occurred through the proclamation of the Jasen multipurpose area (27,950 ha). Slightly over 50 per cent of the land currently protected in the country is designated as national parks with the next largest category being natural monuments.

The system of protected areas is in a dynamic state of transition. In accordance with the Law on Nature Protection, several existing protected areas have been re-evaluated since 2002 and their boundaries may have been readjusted through this process, resulting in a commensurate change in the total area protected. Changes continue to occur in areas designated under the old categorization, areas designated under the new (IUCN) categorization, redesignated areas, areas in the process of redesignation, and new areas in the process of designation. Table 9.3 displays the number of protected areas, hectares, and percent of territory by IUCN category based on data available during the second EPR mission in February, 2011. Map 9.1 shows their distribution across the territory.

The former Yugoslav Republic of Macedonia's Natural Resources theme of its Spatial Plan and the Biodiversity Strategy and Action Plan set a target for a total of 265 areas and sites (298,566 ha) to be designated as Protected Areas by 2020, which would increase the proportion of the territory designated as Protected Areas to 11.6 per cent. By way of comparison, the international goal set by the Convention for Biological Diversity is 10 per cent. One of the proposed new Protected Areas has been the planned national park encompassing the Sharr/Šar Planina mountain range along the border with the Republic of Kosovo (in dispute with Serbia). However, that proposal was not approved, apparently due to lack of support by the local rural communities concerned about socio-economic impacts of the designation.

The country is making progress in developing a balanced, representative, and effective network of Protected Areas as per the UNDP/GEF/MoEPP project "Strengthening the Ecological, Institutional and Financial Sustainability of Macedonia`s Protected Area System" and the Spatial Plan of the Republic of Macedonia.

Map 9.1: Current system of protected areas



Source: Ministry of Environment and Physical Planning, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.
Other - In addition, other designations include: 42 important plant habitats (IPA), 77 CORINE biotopes, 22 important bird areas (IBA), and 8 important butterfly areas (ILA).

Internationally important areas

The Ohrid Natural and Cultural Heritage Site (38,000 ha) has been included in the World Heritage List. Two natural monuments, Markovi Kuvi and Cave Slatinski Izvor, are on the Tentative List of World Heritage Sites. Lake Prespa and Lake Dojran were designated Wetlands of International Importance (Ramsar sites) in 1995 and 2007, respectively, while Lake Ohrid has been proposed as a Ramsar site.

The Law on Nature Protection requires establishment of an ecological network that will be fully compatible with the Coherent European Ecological Network "NATURA 2000." One requirement for accession of the former Yugoslav Republic of Macedonia to the EU is the establishment of a network of Natura 2000 sites.

In accordance with the provisions of the Bern Convention and the Law on Nature Protection, four projects aimed at establishing the National Emerald Network in the country were completed between 2002 and 2008. This was an important enabling activity for the establishment of a coherent Natura 2000 network. Thirty-five sites have been identified in the National Emerald Network of areas of special importance for conservation. These amount to 752,223 ha, or 29 per cent of the territory, and comprise the entire planned network (Map 9.2).

Balkan Green Belt - Within the framework of IUCN activities concerning the initiative for the establishment of the Balkan Green Belt, the former Yugoslav Republic of Macedonia's contribution to the Green Belt was established in 2004 in its border regions with Bulgaria, Greece, and Albania. The

goal of the initiative is to link the Protected Areas in Southeastern Europe to provide integrated protection of nature and biodiversity and promote cooperation among countries for the protection of natural heritage. The country's Green Belt includes 11 Protected Areas: a strict natural reserve (Ezerani); three national parks (Pelister, Mavrovo, and Galicica); three natural lakes which are proclaimed as natural monuments (Ohrid, Prespa, and Dojran); and four other natural monuments (Vevcani Springs, Smolare Waterfall, Kolesino Waterfall, and Majdan).

9.3 Legal framework

Forestry

Management and protection of the country's forests are guided by one primary law, the Law on Forests, No. 64/09. This instrument is designed to permanently preserve forest areas, increase their value, and enable the largest increase according to the natural conditions of the place of their growth as well as allowing sustainable forest governance, planning, management, and preservation of forests and forest land in a manner and with a scope that provide permanent preservation and advancement of their productive capabilities, biodiversity, capability for regeneration and vitality in the interests of the present and future development of economic, environmental, and social functions of the forest, without disturbing the ecosystem. The Law applies to all forests and forest land, regardless of ownership and purpose.

Biodiversity

Since achieving its independence in 1991, the former Yugoslav Republic of Macedonia has been establishing a legal and policy framework to facilitate rapid integration into the European Union (EU) and the wider international community. This primary strategic goal has given rise to sectoral targets, one of which is the establishment of efficient environmental protection measures.

One component of this strategic goal is the conservation of biodiversity and habitats. To accomplish this goal,

Map 9.2: National Emerald Network

Source: Ministry of Environment and Physical Planning, 2011.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

the former Yugoslav Republic of Macedonia has ratified the following instruments: the Convention on Biological Diversity (Rio, 1992), the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971), the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979), the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1982), the Convention on Protection of the World's Cultural and Natural Heritage (Paris, 1972), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 1973), and the European Convention on the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes (Strasbourg, 1986) (Chapter 4). Together with the international agreements acquired from the former Socialist Federal Republic of Yugoslavia by means of succession, these constitute part of the national legislation and align the country's framework for biodiversity conservation with that of the international community.

Implementation of these instruments, and particularly the establishment of Natura 2000 under the EU's Birds Directive and Habitats Directive, is of vital importance in the development of the Pan European Ecological Network (PEEN), since these instruments provide for the conservation of many valuable sites across Europe. A major mechanism for conservation of biological diversity is through the designation and appropriate management of a network of protected areas.

The country has adopted and begun implementing several significant environmental laws, rulebooks, strategies, and sustainable development indicators since the first EPR. These are positioning the country well for the process of accession to the EU. The instruments most pertinent for the conservation of biodiversity and protection of natural heritage are the Law on Nature Protection, the Biodiversity Strategy and Action Plan, and the National Strategy for Sustainable Development. The Law on Nature Protection, (No.67/2004, 14/2006, 84/2007, 35/2010, and 47/2011) transposes the EU Birds Directive and Habitat Directive. The Law on Nature Protection requires development of the National Red List and Red Book, and includes temporary protection measures for strictly protected and protected wild species.

Also noteworthy is the fact that the country has been taking steps to address several of the threats described above. For example, in 2005 all fishing (commercial and sport) was prohibited on Lake Ohrid to protect threatened fish species, such as the Ohrid trout (Salmo letnica). Waste treatment facilities have been required in the vicinity of the Lake to protect water quality and aquatic biota. Also, a five-year moratorium (2006-2011) has been established at the national level prohibiting the collection and trade of medicinal plants (Gentiana lutea, and Gentiana punctata).

The Law on Hunting, No.26/2009 transposes the EU Regulation (FEC) 3254/91 prohibiting the use of leghold traps as well as the Birds Directive (79/409/FEC) on the conservation of wild birds. The Law regulates breeding, protection, hunting, and use of game and its parts. Amendments have provided for increased numbers of wild animal species (game) to acquire the status of permanently protected wild species. The effect of implementing the amendments of the Law of Hunting in 2008 has been positive. Hunters support activities for permanent protection of endangered wild species.

The 2008 Law on Genetically Modified Organisms should help potential threats to natural biodiversity. Four rulebooks have been developed to date.

Protected Areas

The former Yugoslav Republic of Macedonia's basic legal act regulating the protection of its natural heritage is the 2004 Law on Nature Protection. Under this Law, the system of Protected Areas (PAs) is established for the purpose of protecting biological diversity within natural habitats, natural processes, abiotic characteristics, and landscape diversity. Once an area has been declared eligible for protection, it acquires natural heritage status.

The Law on Nature Protection provides a new legal basis for the PA system. It consolidates and updates several previous laws affecting species, habitats, and landscape protection and reflects many of the policies and strategies described in previous sections. It requires the Ministry of Environment and Physical Planning (MoEPP) to carry out a re-evaluation of areas protected prior to adoption of the law, have their boundaries confirmed (and adjusted if necessary), and be assigned a managing authority and IUCN management category. The Law requires preparation of new acts for declaration in accordance with the new categories within six years from the day of implementation of the Law. MoEPP has been making good progress towards satisfying this requirement.

All PAs are required to have 10-year management plans within 2 years of proclamation and these plans

should be approved by MoEPP. New PAs will be included in the National Ecological Network: The country's Spatial Plan envisions an increase in PA coverage up to 11.6 per cent by 2020. The Law also establishes other important authorities, including development of a National Information System of Biodiversity (NISB), National Ecological Network, cadastre of Protected Areas, national strategy for nature protection, and a financing framework.

The 2005 Law on Environment provides for the development and maintenance of an environmental information system; the establishment and maintenance of an environmental cadastre; the development and implementation of NEAP 2 and local Environmental Action Plans as well as the strategic environmental assessment of PA plans; and the regulation of access to government environmental funds for nature protection.

9.4 Policies and strategies

Several national strategies and action plans pertaining to forestry, biodiversity, and Protected Areas have been developed since the first EPR. These are comprehensive and contemporary in their thinking and approaches, and align the country with international agreements and the EU approximation process. They set the country on the right path towards sustainable development. The challenge facing the Government now is to complete the high-priority strategic actions set forth and, in partnership with public enterprises, public institutions, the private sector, and the public, to apply the products of those actions in day-to-day administration.

Forestry

The Strategy for Sustainable Forestry in the Republic of Macedonia was adopted by the Government in 2006. Its overall goal is to increase the contribution of the forestry sector to the national economy and rural development through sustainable forest management; reliance on renewable resources; protection of the local and global environment; and the delivery of products and services for improving the quality of life of all citizens. The Strategy also addresses game management and non-wood forest products. The main policy directions are:

- Enlargement of the forest covered area and improvement of the quality of the forests;
- Multifunctional forest management and sustainable development;
- Improved quality of life in rural areas;
- Comprehensive valorization of forests' benefits;
- Increased awareness of the environmental and social value of forests;
- Identification of funds for sectoral development support;
- Harmonization of forestry legislation with national interests and international commitments.

This Strategy's Action Plan (2007-2009) is still current and objectives continue to be pursued. The document contains measures and activities for future development of the forestry sector, with a specified schedule and estimate of required material and human resources for their implementation. It further addresses climate change and biomass utilization as a renewable energy source.

The Strategy on Renewable Energy (2010) is a UNEP project/study on "Biomass availability for utilization from agriculture and forestry residues" and is financed by the Italian Ministry for the Environment, Land, and Sea.

The National Strategy for Clean Development Mechanism for the first commitment period of the Kyoto Protocol 2008-2012 is one of three "flexibility mechanisms" to assist Annex I countries in meeting their emission reduction commitments in a flexible and cost-effective manner. The Clean Development Mechanism (CDM) is defined in Article 12 of the Kyoto Protocol. It allows Annex I Parties to invest in projects that reduce greenhouse gas emissions and contribute to sustainable development in non-Annex I countries. CDM is the only flexible mechanism that Macedonia can access under the Kyoto Protocol. The two primary goals of CDM are:

- To assist Annex I countries in reaching their emission reduction targets, and;
- To contribute to sustainable development in non-Annex I countries (developing countries and some transition economies in South-Eastern Europe and the Commonwealth of Independent States).

Biodiversity and Protected Areas

The 2004 National Biodiversity Strategy and Action Plan, complemented by the 2004 First Action Plan for the period 2004-2008, is a comprehensive roadmap for the conservation of biodiversity. The Strategic Action Plan for Biodiversity Conservation for the period 2011-2014 is being revised and will be available in -2011. The Fourth National Report indicates that 232 of the 248 strategic targets in the First Action Plan were implemented in the period 2004-2008. Examples include the prohibition of hunting of threatened animals; the total prohibition of fishing of

trout (salmonids) in Lake Ohrid; the reintroduction of endemic fish species in rivers, lakes and wetlands; reproduction and reintroduction of the red deer in Mavrovo National Park; and farming production of terrestrial turtles and gastropods.

The National Strategy for Nature Protection (Law on Nature Protection, Articles 159-160) has not yet been prepared. MoEPP plans to start preparing the Strategy in 2011 if international donors are willing to support this project.

GEF/UNDP PIMS 3728: Strengthening the Ecological, Institutional, and Financial Sustainability of Macedonia's Protected Area System. The United Nations Development Programme (UNDP) is assisting the Government of the Republic of Macedonia to implement a Global Environmental Facility (GEF), which aims to create an enabling environment for PA establishment and management in terms of policy, governance, institutional capacity, and management know-how. The objective of the project is to conserve the country's biological diversity by strengthening the management effectiveness of the country's PA system as prescribed by its recent Law on Nature Protection.

The project strategy is specifically directed toward supporting the country in meeting the rigorous PA system planning and proclamation requirements of the Law on Nature Protection. The proposed project will develop the institutional and systemic capacity of the country's PA agencies to: (i) strengthen the national knowledge systems and apply appropriate technologies to support the design and development of a more representative and viable PA network; (ii) strengthen the decision-support tools needed to secure the legal tenure of, and expand, the PAs in the network; and (iii) locally test these decision-support tools and mechanisms in the formal re-proclamation processes of two pilot protected areas. The project will seek to ensure that PA lands in the country graduate in status from poorly managed to well-managed. This project is facilitating delivery of critical needs such as numerous amendments, addenda, and bylaws to the Law on Nature Protection; the National Information System for Biodiversity (NISB); and studies and management plans for several PAs. Numerous other accomplishments have also been realized.

The country adopted the Environmental Indicators in 2008. These include the following indicators for Nature and Biodiversity:

- MK-NI-007 Threatened and Protected Species
- MK-NI-008 Protected Areas
- MK-NI-009 Species Diversity

9.5 Institutional framework

Forestry, hunting, and fishing

The Ministry of Agriculture, Forestry, and Water Economy (MoAFWE) is responsible for forestry, hunting, and commercial fishing. The National Agriculture Inspectorate within the Ministry is responsible for forestry legislation. The Department of Forestry and Hunting has a director and about 16 employees who are responsible for developing forest and hunting policies and planning. The country's State-owned forests are organized into 184 forest management units, each guided by a 10-year forest management plan. The Ministry oversees implementation of these management plans.

The Public Enterprise "Macedonian Forests" (PEMF) ("Makedonski sumi") was created by the Government in 1998 as a successor to economic entities that operated with the State forests. PEMF is responsible for managing the State-owned forests through implementation of the forest management plans. It also manages 17 hunting areas. PEMF has a headquarters office in Skopje, and operations are conducted through 30 branch offices spread across the country. The enterprise is organized into 14 departments and has some 4,500 employees (2,500 permanent). PEMF is self-financed by revenue generated through the sale of wood and non-wood forest products (NWFPs) and other services. The Department of Forestry and Hunting provides general oversight, while the Forestry Police conduct field inspections to ensure compliance with laws, regulations, and forest and game management plans.

The State Inspectorate for Forestry and Hunting (Forest Police Department or Forest Police) is a body within the Ministry of Agriculture, Forestry and Water Economy with authority to supervise enforcement of regulations and bylaws of the Law on Forests, the Law on Hunting, the Law on Reproductive Material of Forest Tree Species, the Law on Protection of Plants from Diseases and Pests, and other regulations closely related to this issue. The State Inspectorate for Forestry and Hunting inspects and supervises the nearly 1 million hectares of forests and forest land in both State and private hands, including forest management within the national parks. This includes the 176 State forest management plans and 250 game management areas administered by concessionaires for the use, cultivation, and protection of wildlife. The Inspectorate is responsible for addressing illegal logging and harvesting of

NWFPs, although a rulebook has yet to be adopted for such products.

The activities of the State Inspectorate for Forestry and Hunting are carried out through the Department of Forestry and Hunting, professional and administrative staff, and five regional departments.

Within the Agriculture Department, the Department of Fisheries and Aquaculture regulates fisheries. Because the Macedonian waters have a rich endemic ichthyofauna, MoEPP is also involved for biodiversity conservation matters. MoAFWE is responsible for issuing licenses for concessions for commercial fishing companies and sport fishing associations (SFAs), as well as permits for fish farm installation and operation.

Basically, commercial fishery has been limited to the three natural lakes Ohrid, Prespa, and Dojran, and to some of the reservoirs. However, all fishing is now prohibited on Lake Ohrid to protect the Ohrid trout. Five-year concessions are given to a single fishing company on each waterbody, and the company is expected to develop a master plan for protection, improvement, and usage of the relevant fish stock during their license period. Apart from their great biological significance, all of the lakes have considerable commercial fish stock, which requires particular management. The plans are therefore supposed to be submitted to MoAFWE prior to the issuing of a license, and MoAFWE can request opinions from relevant scientific institutions.

Sport fishing is allowed on the lakes, but only on the basis of a subsidiary agreement between the SFA and the concession-holder. Sport fishing on rivers is also on a concession basis, but arrangements are made directly with the SFA, again on a five-year basis. Both commercial companies and SFAs have to submit a five-year plan for protection, improvement, and responsible usage of the relevant fish stock. They are obliged to protect the stock, perform stocking programmes, and provide physical protection and control.

MoAFWE has a Directorate of Inspection that monitors the activities of the companies and SFAs through their reports or by direct field inspection. Some monitoring of fishing activity is effected through the police.

Biodiversity and Protected Areas

The Ministry of Environment and Physical Planning (MoEPP) is the Government body responsible for biodiversity and protected areas in the former Yugoslav Republic of Macedonia. It primarily fulfills a policy, planning, regulatory, and monitoring role for PAs except in the case of strict natural reserves, where it is the designated responsible management authority, according to the Law on Nature Protection. Within the Ministry is the Administration of Environment and below that the Department of Nature with primary responsibility for biodiversity and protected areas. At present, the Department of Nature has 8 staff, all located in the headquarters office in Skopje.

MoEPP is directly responsible for administration of strict nature reserves; however, this responsibility can be delegated to another legal entity. For example, two PAs have been established and are managed by non-governmental bodies: Strict Natural Reserve Ezerani is managed by the Bird Study and Protection Society (further to a Governmental Decision), and Natural Monument Matka Canyon is managed by the Speleological Society 'PEONI' (further to a Decision of the Council of the City Skopje).

The Law on Nature Protection, Articles 135-143, established the administrative structure for management of national parks and other Protected Areas. This includes the establishment of Public Institutions – National Parks, a separate entity for each national park, which are responsible for management and protection of the parks. These are the Public Institution Mavrovo National Park, the Public Institution Pelister National Park, and the Public Institution Galicia National Park. The legal mandate for the public institution administering and carrying out management of a national park includes monitoring and direct protection of the national park; implementing the management practices stipulated in the management plan; and enabling and facilitating scientific research. Moreover, the national park administrations are self-financed and currently depend on revenue generated by such economic activity as timber harvesting (sanitation harvests). They are moving towards finding other funding sources and mechanisms. The Government appoints a five-member Management Board and a Director of the Public Institution for each national park. All Protected Areas are to be protected by a ranger service, with responsibilities that include visitor education and monitoring. Management and protection of the designated multipurpose area are to be carried out by a Public Enterprise.

Local-level planning and implementation (on the ground) is occurring for two sectors. For example, forest management plans and national

park management plans are in place and are being implemented or revised. However, other Protected Areas still lack management plans. Limited interviews tend to indicate that management of State forests and national parks is being planned and implemented appropriately. However, sustainable management of State forests cannot be verified until an inventory and monitoring program is in place. There is a perception that timber harvesting (sanitation cutting) allowed within national parks is in conflict with the main purpose of these Protected Areas, but the logging practices are designed to be low-impact and low-intensity. Alternative financing options for the national parks and other Protected Areas have been studied and should be pursued.

Administration of other PA categories is carried out by the "subject," which is proposed with the application for proclaiming the Protected Area. The Department of Nature Protection only performs inspections on implementation of the provisions of the management plan and implementation of overall protection. According to the Law on Nature Protection, local municipal governments have almost no competencies concerning administration of Category I and II Protected Areas (Article 135). The general public can be involved only in the proclamation process.

There is no State budget or centralized funding for Protected Areas. Although the Law on Nature Protection mandates that finances for nature protection shall be provided from the State Budget, there is, in fact, no direct State budget earmarked for Protected Areas. The lack of public financing is a key factor contributing to the narrow and insufficient funding base for PA management. The absence of State budget support is an issue at both local and national levels, and translates into a lack of core funds for on-the-ground operations. At the national level, there is currently no dedicated mechanism for funding anything beyond the bare minimum costs of running the Department of Nature Protection and the State inspectors who deal with nature protection.

The State Environmental and Nature Protection Inspectorate (SENPI) is a body within MoEPP with a major role in inspection of protected areas. It has a head office (Director, Technical Secretary) and six branch units in county seats, and includes within its structure two inspection roles – environmental protection (18 inspectors) and nature protection (10 inspectors). SENPI is responsible for compliance checking and enforcement of laws. Its Sector for EU and International Cooperation coordinates all activities related to adjustment of inspections to EU standards and to Council Recommendation Providing Minimum Criteria for Environmental Inspections, which is directly linked with the process of EU approximation that the former Yugoslav Republic of Macedonia is currently going through as a candidate country.

Articles 145-147 of the Law on Nature Protection provide for the establishment and functioning of a National Council for Nature Protection, as an advisory body to the Minister of Environment and Physical Planning. In respect of Protected Areas, the Council issues opinions on: (1) the identification, proclamation, management, measures, and activities for protection of environmentally important areas, ecological network, and the system of ecological corridors; and (2) the acceptability of proposals for the proclamation of Protected Areas. The National Council was established in 2010 and its Rules of Procedure have been prepared. At the moment, MoEPP is preparing amendments to the Law on Nature Protection concerning the functions of the National Council, giving opinions to the Law on Nature Protection, proclaiming Protected Areas, taking decisions regarding strategic documents, and adopting the National Strategy for Nature Protection.

The Macedonian Environmental Information Centre is the central repository for environmental information, but at present only collects data on environmental quality through pollution monitoring. Data pertaining to biodiversity are currently limited to copies of reports forwarded from the Administration of Environment. The GIS Department in MoEPP has boundary information for some Protected Areas, but does not currently have a comprehensive spatial database for the entire system. However, the Department does have extensive general data and is currently preparing a revised CORINE land cover assessment of the country.

Although the ministries have accomplished much in recent years, their institutional capacity appears to be "bare-bones," resulting in slow progress in policy development, lack of oversight, and reduced enforcement of laws and regulations.

Coordination among MoEPP and MoAFWE has been occurring at the national level to develop these laws and strategies. Also, the legal framework provides for collaborative review of management plans of forests and Protected Areas and proposals for new Protected Areas.

Administrative capacity has been strengthened through numerous trainings, workshops and seminars

on management and financing of protected areas, ecological networks, cross-border cooperation on environment protection in the SEE countries within the Green Belt Initiative, GIS system, communication and public awareness for nature protection, and on EU Directives 31992L0043 and 32009L0147.

9.6 Conclusions and recommendations

The former Yugoslav Republic of Macedonia's goals to sustainably manage State-owned forests and certify its high forests will not be realized until it has the necessary land and resource information systems established and functioning. These include a real estate cadastre of State-owned lands and a comprehensive forest inventory and monitoring programme. It should further include an inventory of non-wood forest products, especially those which may be vulnerable to overuse, collection or exploitation. This inventory should be continuous and accompanied by the introduction of an ongoing integrated monitoring program to track conditions of forest resources, including forest health, timber volume, wildlife habitat, non-wood forest products, and other key resources.

Strong consideration should be made to collaborate with MoEPP to expand the scope of this inventory to encompass vegetation on non-forest lands. That information would be valuable for identifying and assessing whether the current network of Protected Areas fully represents and protects the territory's habitats and biological diversity. The cadastre would also significantly benefit the PA system, as some sites do not yet have recorded boundaries.

In addition, a comprehensive set of environmental indicators is required that provides the core of a monitoring programme. For example, the only current environmental or sustainable development indicator pertaining directly to forest conditions is MK-NI-038 – Forest Fires. A broader suite of indicators is needed that monitor trends of stressors (including impacts of climate change); the condition, health, and productivity of forests; non-wood forest products; and social and economic conditions related to forest management, including forestry sector jobs. These would establish the baseline data for practicing adaptive management, which is the primary mechanism for achieving sustainable development. Two potential sources of indicators include the Convention on Biological Diversity's Indicators of Forest Biodiversity and the Montreal Process Criteria and Indicators.

Recommendation 9.1:
The Government should complete a land cadastre.

Recommendation 9.2:
The Ministry of Agriculture, Forestry, and Water Economy, the Ministry of Environment and Physical Planning and other relevant stakeholders should

- Begin conducting a national inventory of all forests.
- 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.
- Add environmental indicators that address sustainable forest management including wild-fire control system and adaptation to climate change.

The former Yugoslav Republic of Macedonia has not yet prepared its National Red List of Threatened Species and Red Books, even though these are identified as Priority I activities (A.6.2 and A.6.3) in the Biodiversity Strategy and Action Plan. The scientific community does not appear to agree on the status of these species. This may be due to a lack of sufficient data for each of the many endemic and threatened species. Temporary protection measures may not be affording adequate protection of the invaluable biodiversity the country currently supports.

Recommendation 9.3:
The Government, in collaboration with the scientific community, should:

- *Complete the inventory and assessment of threatened species;*
- *Adopt a Red List of threatened species and commensurate Red Books for protecting and conserving these species.*
  The Government should increase means for law enforcement with regard to poaching and illegal collection of non-wood forest products.

The system of Protected Areas is not fully compliant with the Law on Nature Protection. Examples include: (a) development of management plans for all Protected Areas within two years of proclamation (Articles 98, 99); and (b) establishment of a system of Protected Areas to form an ecological network that provides representation of the diverse habitat types and ecosystems that exist in the territory of the country, that protect the habitat of Red List species, and that contribute to the international ecological networks of Protected Areas (Articles 65, 66). Re-evaluation of existing Protected Areas to ensure conformance with IUCN categories (Article 66) is progressing.

Recommendation 9.4:

The Ministry of Environment and Physical Planning in cooperation with the relevant bodies should

- *Complete the reevaluation and re-proclamation of all protected areas in accordance with the Law on Nature Protection.*
- *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.*
- *Adopt a management plan for each protected area.*
- *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.*

The funding of Protected Areas is inadequate and not stable. The Law on Nature Protection established a set of potential funding sources; however, these are very limited. The Law amending the Law on Nature Protection (Official Gazette of the Republic of Macedonia no.47/11) included financial instruments for funding of protected areas. For example, the public institutions for national parks are self-financed, currently through low intensity timber harvesting (sanitation harvests). MoEPP and public institutions are exploring alternative funding sources.

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.

Chapter 10

HUMAN HEALTH AND THE ENVIRONMENT[51]

10.1. Demographic trend

The latest census of 2002 in the former Yugoslav Republic of Macedonia recorded a total population of 2,022,547, of which 21 per cent were young (aged below 15), while 10.5 per cent were 65 and over. The WHO Health for All (HFA) data from 2009 report a population of 2,042,485 with a fertility rate which has declined from 1.9 births per woman in 1990 to 1.46 in 2008, i.e. lower than the European average of 1.6. The current trend is one of ageing. Life expectancy at birth was 73.54 years (76 for females and 71 for males) in 2007, while the disability-adjusted life expectancy was 63 years. The 2005 birth rate was 11.04 per 1,000 population and the mortality rate was 9 per 1,000, resulting in a natural increase of 2 per 1,000 population (Figure 10.1). The distribution of deaths by age shows the highest proportion of total deaths for age 75 at 43.6 per cent.

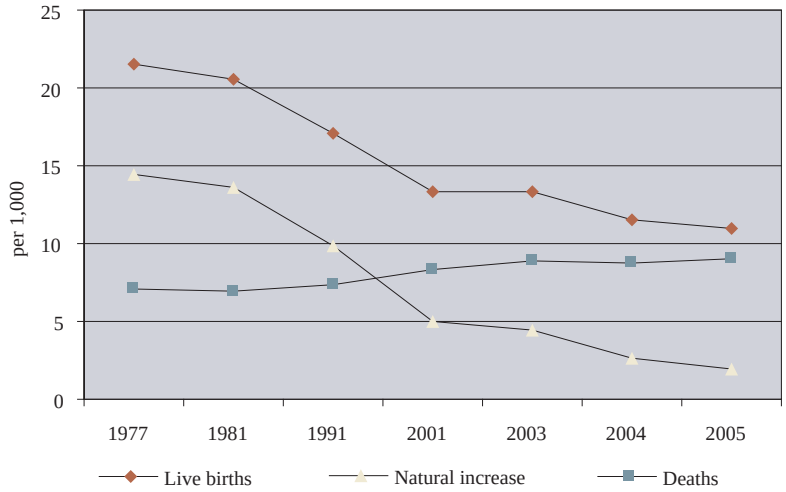
Drinking water, wastewater and recreational water

Drinking water

Since 2002, overall drinking water quality in the country has improved. However, water quality is still a problem in smaller rural communities, where water companies are less financially able to maintain standards. Further legislation on urban wastewater treatment has not yet been implemented and is insufficient throughout the country (Chapter 7). Last but not least, the quality of sanitation remains a problem.

Today, 95 per cent of the population have access to safe drinking water. In 2009, 1,545,655 inhabitants or 66.8 per cent of the total population were supplied with drinking water by central water supply systems

Figure 10.1: Natural demographic changes, 1977-2005



Source: WHO Health for All Database (HFA), http://data.euro.who.int/hfadb/

10.2 Environmental conditions associated with health risks

WHO estimated in 2004 that 26 disability adjusted life years (DALYs) per 1,000 population per year were lost due to environmental risk factors in the country, accounting for 15 per cent of deaths.

managed by communal public enterprises. Communal public enterprises meet legal obligations for providing drinking water and monitoring drinking water safety. In rural areas, 482,952 inhabitants (52.3 per cent of

[49] The Chapter builds on the Environment and Health Performance Review carried out by the WHO in 2009.

Table 10.1: Key facts and data, selected years

Indicator	Year	Value
Mid-year population (million)	2009	2.04
% of population aged 0-14 years	2003	20.72
% of population aged 65+ years	2003	10.69
Live births per 1,000 population	2005	11.04
Crude death rate per 1,000 population	2003	8.88
Life expectancy at birth, in years	2003	73.54
Life expectancy at birth, in years, male	2003	71.12
Life expectancy at birth, in years, female	2003	76.11
Estimated life expectancy, (World Health Report)	2008	74.00
Estimated infant mortality per 1,000 live births (World Health Report)	2004	13.00
Infant deaths per 1,000 live births	2003	11.29
SDR all causes, all ages, per 100,000	2003	1,033.73
Tuberculosis incidence per 100,000	2008	22.06
Hospital beds per 100,000	2006	462.69
Physicians per 100,000	2006	254.24
In-patient care admissions per 100	2007	10.52
Total health expenditure as % of gross domestic product (GDP), WHO estimates	2008	7.00

Source: WHO Health for All Database (HFA), http://data.euro.who.int/hfadb/

the rural population/22.16 per cent of total population) are supplied from local public water supply systems. Almost 140,000 inhabitants (15.1 per cent of rural population/6.4 per cent of total population) are supplied from local water supply devices (springs, Norton pumps, drilled wells).

In 2009, 1,038 sanitary-hygiene inspections on public water supply objects were carried out. Microbiological standards were not met in public water supply systems in cities up to 1.18 per cent and 9.17 per cent in the villages connected to central water supply systems of the cities. But the biggest problems were encountered with the drinking water samples from the rural areas with their own water supply systems (6.4 per cent of the total population): 29.6 per cent drinking water samples from these rural areas did not meet microbiological standards; and especially in villages with private water supplying objects, 42.63 per cent drinking water samples were microbiologically unfit.

The chemical quality of drinking water varies with the origin of drinking water sources. Almost all karstic and surface water, and significant amounts of well water, are notably short in fluoride, which helps prevent tooth decay. Consequently, in accordance with the Strategy for Oral Health, in 2009 fluoridation of milk was introduced. Fluoridated milk is distributed to preschool children in kindergardens.

Regularly during the summer, higher nitrate concentrations are found in a few wells in Prilep and Radovish (10-15 mg/l), but the content of nitrate in drinking water distributed through water supply networks is less than the limit value (50 mg/l). Both wells are situated in regions where the land is intensively used for agriculture. The nitrite content is generally below 0.1 mg/l. In some wells, iron and manganese impair the organoleptic quality of the water (Veles, Stip, Kocani and some rural settlements). According to the Institute of Public Health, toxic parameters, such as lead, arsenic, chromium, cadmium and nickel concentrations, meet WHO and EU standards. A few wells in rural settlements have unusual levels of ammonia, nitrite, nitrate and chemical oxygen demand (COD). Because of slightly higher concentrations of arsenic (above 10 μg/l) in two wells in Valandovo and St.Dojran, this water was banned for consumption in 2008.

Natural mineral and thermal mineral water springs are used as spas, for tourism, and as a source of bottled water. Water quality and safety meet national standards. Only some artesian wells presented high mineralization with the presence of iron, manganese and inorganic ammonia, but after treatment water met the legislative requirements. The Rulebook for Special Requirements for Safety of Natural Mineral Water, No. 32/06, is fully harmonized with the EU Directive and Codex Alimentarius.

The country has harmonized its legislation concerning drinking water quality with the EU Directives (Rulebook for Water Safety, No. 46/08). Communal public services, the regional public health centres, in cooperation with the Institute of Public Health, control the quality of drinking water. In rural settlements, drinking water quality control is handled by the regional public health centres and their local sanitary-hygiene branches. Continuous disinfection of drinking water and maintenance of the water supplying objects and distribution network are the responsibilities of local communities. The control measures, frequency and standards comply with EU regulations and WHO Drinking Water Guidelines. The Ministry of Transport manages drinking water infrastructure (primary infrastructure), while operational adjustments are managed by municipal communal enterprises (secondary infrastructures; pipes to houses). As user charges are low and very often not collected, enterprises are unable to maintain adequate technical standards. Communal public enterprises are also in charge of disinfecting drinking water.

Wastewater

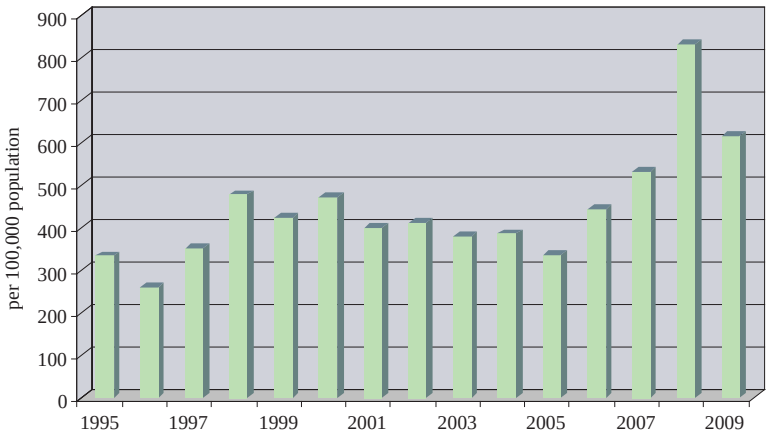
Management of sewage systems is the responsibility of the same public utilities as for drinking water supply. Only 12 cities in the country have built separate sewage systems. Skopje has constructed a separate system for wastewater and for precipitation water. The wastewater collection network of Skopje is 605 km (faecal) and 229 km for precipitation water in length with 1,539.1 km of sewage network at national level. Almost all schools and child-care institutions have access to a continuous sanitation infrastructure with separate facilities for boys and girls.

Industrial wastewater is one of the most significant polluters of the surface and groundwater. Only a small number of industrial wastewater treatment plants have been built: most have only mechanical treatment, while only a limited number have mechanical and chemical (biological) treatment. Some of these are not functioning due to breakdown, lack of spare parts or high operating costs.

In January 2011, the Ministry of Environment and Physical Planning prepared three draft rulebooks concerning wastewater quality and its treatment. These draft rulebooks have been harmonized with the Urban Wastewater Treatment Directive of the EU (98/15/EC). The requirements of the Directive concerning municipal wastewater treatment have not been implemented. According to the results on the distribution of the population in the country in relation to treated municipal wastewaters involving only mechanical treatment, biological treatment and latest treatment technology, it can be concluded that there is yet no conformity as yet with the Urban Wastewater Treatment Directive. The percentage of the population

Photo 10.1: Medical waste incineration on Drisla landfill

Figure 10.2: Number of enterocolitis cases/100,000 for the period 1999-2009



Source: Institute of Public Health. Acute communicable diseases in Macedonia in 2009. 2010.

covered by municipal wastewater treatment including biological treatment is very low. Therefore, the introduction of regular treatment of wastewater in the country is a top priority, both at local and national levels. Feasibility studies are underway for urban wastewater treatment plants in Prilep, Bitola, Strumica and Gevgelija.

Recreational water

The problems of bathing water quality protection in the lakes are closely related to the implementation of one of the highest priorities in the country's environment protection: construction of adequate wastewater treatment facilities. Wastewater treatment plants are installed and in operation in the areas around the three big lakes (Ohrid, Prespa and Dojran), Makedonski Brod, Sv. Nikole and in Kumanovo. Settlements around the three natural lakes are among the rare ones with wastewater treatment plants available in the country. The quality of surface waters used for sports and recreation purposes and for tourism, on the shores of the lakes seems to be unsatisfactory, the sole exception being Ohrid Lake. There is evidence of water pollution with microbiological substances (approx. 12 per cent unfit samples from the total number of examined samples) and organic substances (15 per cent unfit samples from the total number of samples examined). As international waters, the waters of the biggest natural lakes, i.e. Ohrid and Prespa, have also been the subject of bilateral and trilateral agreements between the former Yugoslav Republic of Macedonia, Albania and Greece, respectively.

The most heavily polluted waterways are reportedly the central and lower sections of the Vardar, Pcinja, Bregalnica and Crna rivers. The most serious water pollution concerns are the discharge of untreated wastewater from mining and industry, as well as wastewater from urban centres and livestock breeding farms. Reportedly, only six per cent of wastewater in the country is treated prior to its discharge into rivers.

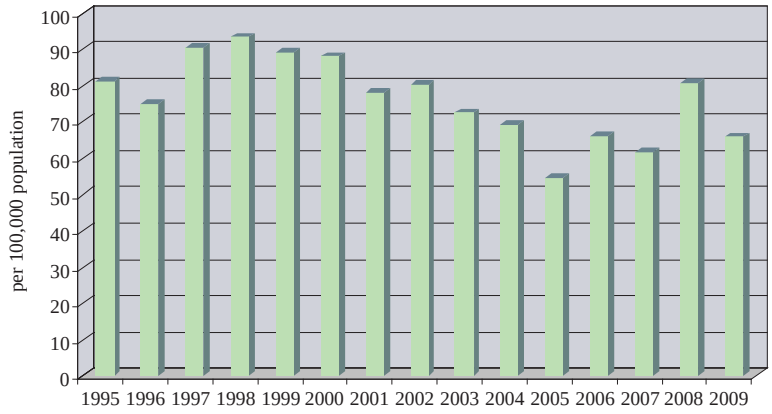
In 2009, 12,572 patients were registered with diarrhoeal diseases, a drop of 26.2 per cent compared with the reported 17,034 cases in 2008. The main causes of intestinal diseases in 2009 were enterocolitis (616/100,000), both caused by water and food contamination (Figure 10.3), and acute toxic infections (65.9/100,000). Another acute intestinal disease of interest which was registered in 2009 was Hepatitis A (14.2/100,000)

Waste

Waste management remains a problem in the former Yugoslav Republic of Macedonia. The Waste Management Strategy for the period 2008-2020, No. 39/08, and the National Waste Management Plan for the period 2009-2015, No. 779/09, and other related laws have been endorsed to cover this very important health related issue. However, enforcement and implementation are lacking (Chapter 8). Two major problems have been identified in the country (Chapter 8): hazardous waste and medical waste.

Hazardous waste: This type of waste is not collected and dumped separately, and is processed in regular waste disposal sites. In general, disposal sites do not meet the technical requirements of sanitary landfills. There are also hundreds of illegal dump sites of various sizes in rural areas. Uncontrolled burning at dump sites produces harmful emissions of particulate matter, dioxins and polycyclic aromatic

Figure 10.3: Morbidity rate/100,000 for food poisoning in total population



Source: Institute of Public Health. Health status and health care of the population, Skopje, 2011.

hydrocarbons. Also, degradation of biodegradable waste in dump sites results in the emissions of landfill gas that contains carbon dioxide and methane, of which the latter may, due to inadequate handling, lead to explosions. Moreover, leachate from dumpsites poses a threat to groundwater, surface water and soil, due to the high content of organic matter and heavy metals. No population exposure studies were available.

Medical waste: In the country, approximately 900-1,000 tons of hazardous medical waste are generated each year, which represent about 15 per cent of the total waste generated in healthcare institutions. Separate collection and separation of medical waste in hospitals and in other healthcare institutions are slowly growing; at present, only about 35 per cent of hazardous medical waste is separately collected, transported and incinerated at the Drisla landfill (up to 360 tons/year). The remaining 65 per cent of the hazardous medical waste is disposed of at municipal landfills or unauthorized dumpsites. Financing of these operations is provided by MoH for healthcare institutions and by individual private producers of medical waste participating in the system. Separation of hazardous/infectious medical waste takes place in some hospitals in the Skopje area, and this waste is incinerated and has been incinerated in an incinerator installed in 2000 at the Drisla landfill. About 115 tons were incinerated in 2000 whereas in 2008, 409,156 tons were incinerated, an increase of over 3.5 times. Some 23 of the larger health facilities and 603 smaller health units were included in the medical waste disposal programme. The emission levels from the incinerator have been called into question, particularly in relation to revised air quality legislation limits. At the time of installation, the incinerator was assessed to have the capacity to burn half of all hospital waste in the country. The incinerator is under the communal public enterprise Drisla, which is under the jurisdiction of the City of Skopje.

The remaining hazardous medical waste generated in the country (about 70 per cent) is not handled or treated in a compliant way and is mostly disposed of at municipal dump sites. At present, as a considerable amount of hospital waste is still being disposed of at communal landfill without prior separation or treatment, it is considered that these circumstances pose a health risk.

Although there is well-defined waste categorization in the health sector (infected, sharps, pharmaceutical and chemical waste) as well as procedures for separation, collection and labelling, medical waste management activities are primarily focused on biological waste. Internal treatment is performed in small autoclaves and covers only items such as sharps, culture plates and small glass tubes with blood samples. Following autoclaving, the waste is disposed of without further treatment in municipal waste containers, for disposal at the municipal landfill together with ordinary municipal waste. Plastic sharps boxes are used, but these are emptied and reused due to the relatively high costs of the boxes. Although the waste has been sterilized via the autoclave, the sharps are still intact and therefore pose a threat to the staff of the municipal waste collection company and scavengers at the landfill.

Health Care Waste (HCW) is collected from healthcare institutions located in the urban area of Skopje using two dedicated trucks for this purpose, each equipped with 5 m^3 open containers. The containers are coloured yellow and are marked with text, highlighting the fact that this is medical waste being transported. During

transport, the open containers are covered with a tarpaulin to avoid spillage. For smaller healthcare institutions (typically private GPs and clinics), a special yellow carton is used for collection and transport in Skopje. HCW from the Kumanovo area is collected by the General Hospital in Kumanovo using the hospital's own van as well as the Health Centre's van; the same vehicles are used for transport to Drisla landfill.

Currently, the only external treatment and disposal of HCW, besides dumping at municipal landfills without pre-treatment (except as stated above), is the incinerator at Drisla landfill. This incinerator does not fulfil the requirements according to the EU Directive 2000/76/EC on waste incineration, and its upgrading would not be cost-effective.

The Faculty of Veterinary Medicine has installed a small incinerator for animal carcasses and other animal by-products. At present, a legal framework and environmentally sound system is lacking to handle animal manure and animal tissues from slaughterhouses and animal breeding farms appropriately. Current practice is to bury animal tissue in holes in the ground on the farms or throw it onto village dumpsites. In both cases, it takes place in a completely uncontrolled manner and far from the required sanitary standards. Only in a few rare cases are regional burial places organized for this type of waste.

In practice, there is minimal or no involvement and supervision by official veterinarians. There is no organized pet food industry, composting or anaerobic digestion plants, approved landfill sites or incineration facilities, which might be used for the proper disposal of animal tissue waste. Safe disposal facilities for agrochemical wastes containing hazardous substances such as contaminated packaging waste, used for pesticides, and spent sheep dip do not exist in the country. The contaminated packaging waste is usually burned or dumped together with municipal waste. The spent sheep dip is released into the environment on location.

Food safety

Microbiological food safety

Since 2002, microbiological testing of food samples, delivered by food inspectors and food operators has shown that microbiological safety is still an important problem in the country. Food safety is tested in authorized and accredited laboratories in collaboration with authorities responsible for food safety and food operators. Assessment of food safety is performed according to the national legislation and Codex Alimentarius standards. The country is currently harmonizing its regulations in the area of food and consumer safety with European legislation. In January 2011, the new Food Agency was formally put into place. At the time of the EPR, the various roles and responsibilities as well as interlinkages with other Ministries were still under clarification. Cooperation with institutions that in the past provided food control will be necessary.

The number of active tested samples on domestically and imported food in 2005 was 25,556, and 2.1 per cent of them were unfit for human consumption. However, this should be interpreted with great caution, as it depends to a large extent on the type of foods sampled, as well as laboratory techniques. During the following three years, the percentage increased to 3.9 by 2008, and by 2009 the percentage of unfit samples had decreased to 1.9 per cent. In 2009, food producers enforced their hygiene conditions and practices in order to prepare facilities and stuff for implementation of HACCP principles of food safety. Since 2010, implementation of HACCP has been compulsory for food producers. The most frequently isolated micro-organisms in food were Escherichia coli and Staphylococcus aureus. The overall morbidity rate from food poisoning was between 54 (2005) and 89 (2001) per 100,000. (Figure 10.4)

Chemical food safety

Food samples are regularly tested for pesticides residues, especially food of plant origin, mycotoxins, antibiotic residues and radioactivity. In 2009, 3,982 samples were tested for pesticides residues and 2,454 samples were tested for mycotoxins. All of them were safe according to the national legislation for pesticide residues and mycotoxins. Radioactivity was tested on 494 samples, mostly cereals and vegetables, and all of them were far below limits for radioactivity in food products. Additives were tested in 1,709 samples, and 7 of them were considered unsafe for human consumption. Residues of toxic metals were tested on 6,365 samples, and concentrations above national limits were detected in 14 of them.

Detection of toxic metals in vegetables of domestic origin, as an indicator of environmental contamination and threats to human health, is an important part of public health policy and the disease prevention prevention of MoH and the Institute of Public Health. Laboratory testing and statistical analysis have shown that the average value of contamination with lead was

0.037 mg/kg, for cadmium 0.022mg/kg, for arsenic 0.004 mg/kg and for mercury 0.001 mg/kg.

The Institute of Public Health assessed the daily dietary intake of heavy metals and residues of pesticides in students who live and study in student campus every year. Collected samples of whole day meal, during spring and winter, were laboratory tested with gas chromatography for residues of organchlorine and organo phosphorus pesticides, and with atomic absorption spectrometry for residues of lead, cadmium, arsenic and mercury. Residues of pesticides were not detected, but the average value of daily intake for lead was 0.037mg, for cadmium was 0.007mg, arsenic 0.003mg and mercury 0.012mg. Estimated weekly intake was a few times below the tolerable weekly intake of tested contaminants.

Chemical safety and environmental health hotspots

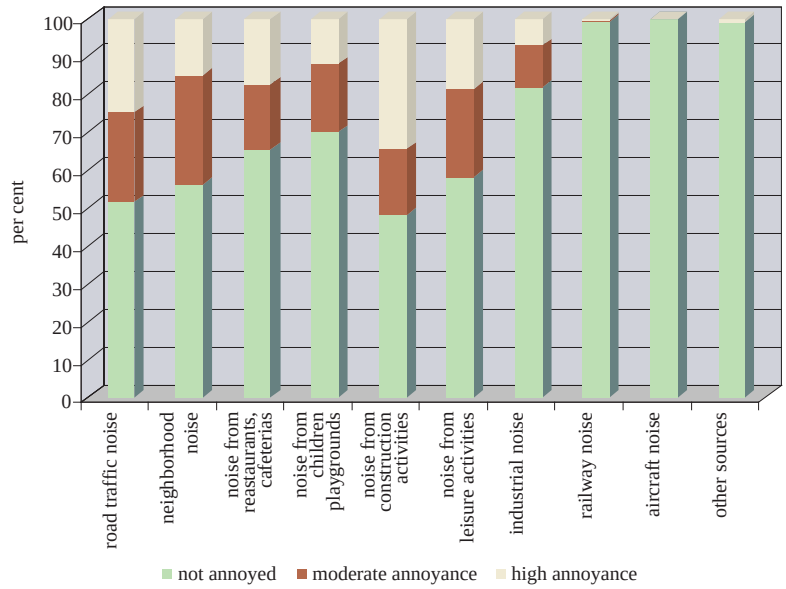
Until recently, inadequate regulations were available on chemical waste and chemically contaminated sites. The usual practice was for such waste to be disposed of on sanitary landfills. New rules were introduced with the Law on Waste Management, but implementation is still lagging behind. Furthermore, Law No. 145/10 on Chemicals regulates the classification, packaging and labelling of chemicals, the requirements for trading in and manufacturing chemicals, and the rights and responsibilities of the legal entities with regard to the aforementioned aspects, and the Rulebook on Identification of Hazardous Substances and Criteria for Classification, No. 25/10, has been issued.

A National Centre for Control and Information about Poisoning by Chemicals has been established. It is responsible for collecting and processing data about acute poisoning with chemicals and other side effects, providing information on cases of acute poisoning with chemicals and other side effects, maintaining a database on acute poisoning with chemicals and other side effects, documenting, informing and advising on poisoning with chemicals and other side effects, maintaining a register of accidents involving poisoning with chemicals, and participating in the formulation and control of the central base of antidotes in the country.

At the time of the EPR review, the following chemical-related problems had been reported:

(a) Industrial hotspots: During the transition of the socio-economic system, many enterprises faced serious problems, some of them even in the period before the transition. A number of companies stopped conducting operations, without any chance to restart their production process in the near future. Their landfills were also abandoned, and little or no information is available about the history of waste disposal and waste management in those companies. Because of the unclear property status issues, assigning environmental responsibility has proved to be a very difficult task. In the majority of cases, the State is the only remaining responsible party. Other companies have stopped their production process temporarily, but they hope to be able to resume operations soon after the

Figure 10.4: Level of annoyance in whole sample according to noise sources in Skopje



Source: Institute of Public Health. Health status and health care of the population, Skopje, 2011.

transfer of ownership. In the contracts between the Government/current owners and the new owners, it is of vital importance to clearly assign the environmental responsibility to someone in order to provide for adequate remediation and future use of the landfills. Industrial hotspots, i.e. the biggest polluters, in the country were identified: 16 identified contaminated industrial sites were analysed and based on various environmental criteria 3 classes were developed: low, medium and high risk contaminated industrial sites. Methods for closure/remediation were developed and (unit) cost estimates made. The total remediation costs are estimated at €70 million. Table 6.6 shows the current status of the hotspots.

(b) More than 800 tons of used oil are stored mainly inappropriately (in open barrels; in the open i.e. outdoors; without any secondary packing; etc.);
(c) There is increased inappropriate disposal of used lead-acid batteries (on a regular landfill), even though it is supposed that about 70 per cent of used lead-acid batteries are collected and recycled;
(d) There is random disposal of used tires, which are good breeding places for Aedes albopictus;
(e) Filters from galvanization industry are stored on site, very often inappropriately, allowing leachate to permeate through the soil and perhaps reach the ground water; there is also unregistered use of illegal pesticides for agriculture.

In 2006, the Institute of Public Health identified Veles as the site of main concern where studies have shown that blood lead levels are above acceptable levels in the population. The OHIS (organic chemical plant, currently out of order) site is considered to be the second site of main concern due to mercury infiltration into the ground water layer, resulting in the necessary development of an alternate external drinking water supply (Table 10.2).

According to WHO, blood lead levels in children of 100 to 150 μg/l have been consistently reported as having a negative effect on measures of cognitive functioning, such as the psychometric intelligence quotient. Other sources of exposure to lead may include lead-ceramic pottery, lead-soldered cans and contaminated soil. The average values of blood-lead levels in schoolchildren were significantly higher in 2001-2002 (37.27 μg/l) and 2003 (16.51 μg/l), than the recommended value of 10 μg/dl proposed by Guidelines for Air Quality. After the closing of the lead smelter plant, the average value of blood-lead levels in schoolchildren dropped significantly to (7.64 μg/l) in 2004. The soil is still polluted in Veles and its surrounding, and might, through food exposure, continue to contribute to higher blood lead levels in children.

The amount of use of pesticides seems to have been declining over the last 10 years. This includes all kind of chemical substances like fungicides, herbicides, insecticides and the total amount. The data present a decreasing trend of use in the period 2000-2008 (Chapter 6). No studies on health effects were available.

Outdoor air quality

Air quality remains a problem in the major urban areas in the country. Problems due to air pollution affect approximately 60 per cent of the population, i.e. some 1,225,000, in particular, those living in Bitola, Skopje, Tetovo and Veles.

Air pollution as a major environmental issue was mentioned in the first National Environmental Action Plan (NEAP) adopted in 1996. Since then, a number of legislative (EU air quality regulations) and monitoring activities have been implemented and enforced. The Institute of Public Health and 10 regional public health centres still monitor black smoke and sulphur dioxide (9 measurement sites in Skopje (7) and Veles (2)), heavy metals (Skopje and Veles) and inert dust in 10 cities. Also, PM10, CO, SO_2, NO_x, and O_3 are monitored following EU regulations at 15 measuring sites by automatic online monitoring systems.

The bulk of air pollutants, such as fly ash, sulfur and nitrogen oxides, results from combustion of low-quality lignite and engine fuel. Thermal power plants are equipped only with electrostatic precipitators and do not have desulphurization and denitrification technology installed. Emissions from transport include sulphur dioxide, carbon monoxide, nitrogen oxides, ozone, particulate matter, and lead pollution to the air. The main reasons for air pollution from the transport sector are poor quality of engine fuel, out-of-date vehicles and generally poor technical standards for the vehicle fleet. The country has started with the phasing-out of lead from gasoline in 2003, and since 2008 lead has not been present in fuels, as well in the air from the smelter operating in Veles (stopped working in June 2003).

The health effects of particulate air pollution can be severe and depend on particle size, composition and concentration, and can fluctuate with daily changes

in PM10 or PM2.5 levels. PM10 concentrations are above the limit value of 0.040 mg/m^3 in all monitored cities, with the exception in one monitoring station in Lazaropole. The highest average yearly concentration was registered in Skopje in 2006 (0.135 mg/m^3). In 2009, an average yearly concentration of 0.090 mg/m^3 (75.69 in 2004 and 82 μg/m^3 in 2007) was registered in Skopje. It is suggested to be attributable to the use of solid fuel for heating households in the winter, as well as the impact of industry and traffic.

According to the recent studies during the period 1990-2008, there has been a trend towards the improvement of the ambient air quality related to SO_2 and black smoke in Skopje and Veles, as well as a resultant decline in the incidence rate of the respiratory diseases. The yearly concentration of black smoke in Skopje (18.3 μ/m^3) shows a substantial decrease compared to 2006 (25.7 μg/m^3), as well as with regard to the number of days above the maximum allowed concentrations (231 in 2004 and 155 in 2009). The improved air quality in respect of black smoke in Skopje is due to the renewed car fleet as well as better fuel quality according to EU standards and the introduction of new heating plants.

The same situation has been registered in Veles (16.8 μg/m^3 in 2009, compared to 20 μg/m^3 in 2005), and there was a substantial decrease in the number of days above the maximum allowed concentrations (29 in 2005 and 0 in 2009), due to the closure of the lead and zinc smelter plant in Veles in June 2003. There is a seasonal variation of sulphur dioxide and black smoke concentrations due to the heating season. Inert dust monitoring data for 2009 indicate a yearly average of 136 μg/m^2 with the highest average yearly concentration in Veles (282.7 μg/m^2), a substantial decline compared to 2003 (177 μg/m^2). This is as above most likely due to changes in transport and obligatory restrictions during building construction. Yearly concentration of sulphur dioxide average in Skopje (in 2009) shows a substantial decrease (3.5 μg/m^3), compared to 2003 (16.6 μg/m^3).

Results from NO_x monitoring shows increased average yearly values of NO_2 in 1998, 2000, 2001, 2004, 2005 and 2006 in Skopje. Higher concentrations were registered in Kumanovo in 2004 and Kicevo in 2005. From 2004 to 2009, the trend shows a decline in this pollutant (39.9 μg/m^3 in 2002, 0.05067 mg/m^3 2006, 38.52 μg/m^3in 2007 and 15 μg/m^3 in 2009). For 2007-2009, no day was registered with higher values than the limit value for health protection. Emissions of NO_x are caused by wood processing, incomplete wood burning, heating and traffic in urban areas. The long-term limit for human health protection from ozone was exceeded in all monitoring stations except in Kocani in 2009.

More research activities and continuation of the monitoring activities are needed to be able to estimate the possible health effects of particulate matter in the country. So far, it cannot be concluded that there is an increased incidence of lower respiratory illness in children, of chronic obstructive pulmonary diseases, of asthma episodes, as well as increases in adult mortality, as expected.

Analyses of monthly morbidity reports produced by the Institute of Public Health show that both preschoolers (under 6 years of age) and schoolchildren (aged between 7 and 14 years) living in polluted cities, such as Skopje and Veles, have a higher (up to 2-3 times) level of morbidity from respiratory diseases (excluding influenza and pneumonia) than children living in relatively less polluted villages. The difference is particularly high in winter, when heating and climatic factors (including temperature inversion) contribute to an increase in air pollutants, especially SO_2 and black smoke.

Noise

The management of environmental noise is regulated by the Law on Environmental Noise Protection, which is harmonized with European legislation END 2002/49. The Law identified noise exposure indicators, responsible authorities, preparing of strategic noise maps and action plans. The national network for the environmental monitoring has been developed under the auspice of MoEPP and MoH, in accordance with the National Annual Preventive Programme for Noise Monitoring, which has been carried out by the Institute Public Heath and the Centres for Public Health of Skopje, Bitola and Kumanovo.

The responsible authority for collecting data for noise exposure indicators and the percentage of noise-exposed population is MoEPP. Authorized and accredited laboratories for noise exposure assessment obtain data for noise exposure indicators in collaboration with responsible bodies, like MoEPP for major roads, major railways and major airports, local government for agglomeration and settlements. Laboratories for noise measurements are allocated in public health centres and consultant companies for environmental risk assessment. Some of them are already accredited by the National Institute of Accreditation, while other are working on accreditation.

Strategic noise maps have not yet been prepared, so there are no available data for noise-exposed population and the public is not informed about the current status for noise exposure. National limit values for the prevention of adverse noise-related effects were established in compliance with WHO recommendations by the Ministry of Health.

Data based on strategic noise maps (number and percentage of people exposed to 55 dB (A) and more in major agglomerations, around major roads, major railways and major airports) are not available. Data for noise levels in urban centers such as Skopje, Bitola and Kumanovo based on local noise monitoring are available, but data for the percentage of exposed population are not available.

Noise exposure assessment in Skopje has shown that the mean value of Lday was 69.5 dB(A) and Lnight was 56 dB(A) in mixed residential administrative and trade areas, as compared with Lday was 56 dB(A) and Lnight was 46 dB(A) in residential areas. Population in mixed residential administrative trade areas was exposed to a 10 dBA higher noise level, compared with national noise limits for the prevention of adverse health effects.

The Ministry of Health is responsible for the assessment of noise-induced health effects. The Institute of Public Health has developed methods for the assessment of noise annoyance and sleep disturbance and performed a cross-sectional study for adverse health effects in Skopje. A 2002 cross-sectional study for noise exposure assessment of school children and psychosocial effects on exposed children in Skopje showed an association between chronic noise exposure above LAeq>55 dBA and reduced social adaptability (c2= 10.9; p= 0.0009; RR=1.39) in the children. A cross-sectional study and prospective study 2006-2008 in adults showed that 8.24 per cent of subjects reported a high level of sleep disturbance; 17.82 per cent reported a moderate level of sleep disturbance, and 74 per cent did not have any sleep disturbance induced by noise. Analysis of the sleep disturbance level according to noise sources showed that the most frequent noise sources for sleep disturbance were neighbourhood noise, road traffic noise, noise from construction activities, noise from leisure activities, and more rarely noise from restaurants and cafeterias (Figure 10.4).

According to the density of population, Skopje is the most heavily noise polluted city in the country. The other cities have a tendency towards growth, migration of the rural population to the cities, and small businesses without measures for noise protection, so this is a problem that will have to be faced.

Occupational health

The Ministry of Health and the Ministry of Labour and Social Policy are responsible for the occupational safety and health policy, which is heavily influenced by the objectives related to EU accession. Clear progress has been made in terms of both the renewal of legislation and institutional capacity-building. However, much remains to be done according to the EU Progress Report 2009. The occupational safety and health policy is based on international regulations and documents such as ILO conventions, EU directives and EU strategy.

The new Law on Safety and Health at Work, No. 92/07, is a transposition of EU Framework Directive 89/391/EC on Safety and Health at Work to domestic legislation. The obligations of employers, rights and obligations of workers and specific occupational safety and health tasks have been defined in line with the EU Directive. According to the Law, many regulatory acts have been amended concerning specific issues on health and safety at work (noise, asbestos, heavy load, video terminals, chemical agents, carcinogens, etc.), related to relevant EU legislation. Special emphasis is placed on the Rulebook on the Statement concerning Safety and Health at Work, which incorporates the obligatory procedure for risk assessment for every workplace.

To date, there are still gaps in the availability, incidence and prevalence of data on occupational diseases (ODs), despite the Rulebook of the List of Occupational Diseases, No. 88/04, harmonized with EU regulations. An official register of ODs exists, but it is supposed still to have gaps in terms of verification and registration. The basic occupational health services (BOHS) represent the main relevant sources where the basic data should originate, mainly with regard to the diagnosis of occupational diseases. According to the new regulation, the Institute of Occupational Health, WHO Collaborating Centre is responsible for the verification of occupational diseases. From 2006 to 2009, from 60 to 80 cases were registered per year. The main causes registered are occupational asthma, occupational contact dermatitis, occupational lead poisoning, silicosis and brucellosis. Recognized occupational diseases are compensated through the Commission for Work Ability Assessment of the Pension Insurance Fund.

Every employer has the obligation to keep records of every injury at work, disease and accident. Experience shows that many of the companies do not have such logs, and many non-fatal injuries at work are not even reported to the authorities. Accidents at work are better registered in comparison with occupational diseases, and the reporting rate is much higher.

The responsibility of the Labour Inspectorate is performing inspection, making reports and taking appropriate legal measures in case of severe injuries at work or injury that caused an absence of the employee of more than three days and in case of fatal accidents. The registration of accidents at work within the framework of health statistics is regulated by the Law for Evidence in Health, No. 20/09 and is the responsibility of the Institute of Public Health. There are ongoing activities for the harmonization of the national statistics on accidents at work in accordance with the ESAW principles.

Several studies have been carried out in recent years by the Institute of Occupational Health. Infectious and parasitic diseases have been included in the new List of Occupational Diseases, No 88/04. For example, a 26.6 per cent prevalence of Hepatitis B was registered in health-care workers, and HBsAg was found in 19.2 per cent of 120 tested health workers, in 2008. The main reasons were attributed to needle-stick injuries at the workplace. Hepatitis B vaccination in health-care workers does not seem to be routine. During 2008-2009, 12 cases of brucellosis (6 stockmen, 5 veterinary doctors and 1 agronomist) were confirmed as an occupational disease.

High concentrations of free silicate dioxide (SiO2) have been reported during studies in the metallurgical, metal-processing, cement, mining and construction industries. The high level of particles above the maximum allowable concentrations, present in various technological processes in working environments, entails a specific risk of pneumoconiosis. Thus, in construction and mining, the predominance of silicosis ranges between 9.7 and 23.3 per cent, in different stages of evolution and with the characteristics of a non-typical disease. In a longitudinal study (14-year follow-up) on tunnel workers, silicosis was diagnosed in 10.5 per cent of the workers studied. Since the mid-1990s, no industry uses asbestos in the manufacturing process; however, cases are still registered resulting from the production processes used in the 1990s.

Several epidemiological studies on occupational asthma (OA) in different industries and manufactures showed a prevalence of 5.2 per cent in mill workers, 5.7 per cent in rice workers, 6.2 per cent in tanners, and 1.6 per cent in herbal tea processors. Furthermore, a multicentric study on the prevalence of asthma and other allergic diseases in six cities revealed that the overall prevalence of asthma was between 5.4 per cent. 24.7 per cent of the subjects, with reported worsening of their asthma symptoms at work (work-related asthma). There is strong evidence that occupational exposure, i.e. mineral dust, organic dust, gases and fumes, are the second preventable risk factor for chronic bronchitis (CB) and chronic obstructive pulmonary disease (COPD) besides tobacco smoke. In addition, a relevant interaction between smoking and occupational exposures is documented in a number of studies. Today, a law banning smoking at the workplace has been introduced.

A cross-sectional study (Stoleski S) comparing 60 workers occupationally exposed to inorganic lead and 60 matched controls assessed lead exposure, toxic effects, including a questionnaire, physical examination, spirometry, ECG and laboratory tests. Muscle pain, droopiness and work-related nasal symptoms were significantly more frequent in lead workers. The prevalence of lung symptoms was higher in lead workers than in controls (20 per cent vs. 6.6 per cent, respectively). Mean values of BLL and δ-aminolevulinic acid (ALA) were significantly higher in lead workers. The activity of δ-aminolevulinic acid dehydratase (ALAD) in lead workers was significantly lower than in controls. A significant difference was found for BLL and ALAD, with a very high odds ratio (14.64 and 7.23, respectively) and high relative risk (4.18 and 3.08, respectively). The data have confirmed the association between occupational lead exposure and deviation in specific biological markers of lead effect and between the role of occupational exposure in the development of adverse effects.

On the other hand, there is an increased number of small and medium-sized enterprises that were opened or revamped which deal with key chemical hazards for occupational exposure. The risk assessment procedure has already begun, and should pinpoint the most hazardous chemical agents and exposures in this sector and determine the appropriate preventive measures for preserving and promoting workers' health. Also, there has been a significant increase in regular preventive medical checkups as a basis for the prevention and promotion of workers' health.

The issue of occupational carcinogens is also regulated by the Rulebook on Safety and Health at

Work for Workers Exposed to Chemical Agents, No. 46/10, which incorporates all agents that might have carcinogenic, mutagenic or any reproductive toxic effect, or are connected with the transport of dangerous chemicals. The next step should be the establishment and operation of the cancer register based on the morbidity records due to occupational exposure.

The recognition of occupational health as an important element in the Strategy on Health until 2020 and objectives for modernization of occupational health service delivery as a publicly provided service can be seen as a special merit of the country's occupational health policy, different from some other countries, which have excluded BOHS from the general health strategies.

Housing

Implementation of the 1964 and 1981 Codes for Design and Construction of Buildings in seismic regions provided for improved earthquake protection for newly constructed buildings. Poverty and unemployment have led to a cheap and unique way to construct new apartments by building one or two new floors over existing buildings. Of course, in most cases, this implies increasing the weight and decreasing the stability of existing buildings. These new constructions are found more frequently in urban areas and generally represent an increased vulnerability to earthquake. Traditionally, small private contractors have usually been constructing the family dwellings houses or the family members by themselves. Sometimes the owner, as the most directly concerned person, himself performs the inspection during all stages of construction, ensuring relatively good quality of these houses.

Due to the aforegoing, the Institute of Earthquake Engineering and Engineering Seismology estimates that 10 per cent of the buildings in Skopje, built later than 1995 would be unsafe in the case of an earthquake superior to a magnitude of 6 on the Richter scale. On the other hand, population density in Skopje has increased rapidly and now exceeds the suggested density (factoring in seismic exposure) of 900 habitants per km^2 to 2.000 habitant per km^2. Another aspect to take into account when analysing the city's exposure to earthquakes is the fact that as a result of the last years, inappropriate urban development can pose a serious problem in terms of the emergency evacuation of the city.

Climate change

As described in the 2008 Second National Communication to UNFCCC, the mean annual air temperature has increased over the last 30 years. The largest increase of air temperature up to the year 2100 in the former Yugoslav Republic of Macedonia is expected in the summer season. According to the comparison of the results from the empirical downscaling and the direct Global Climate Model (GCM) output, local projections show a more intensive increase in air temperature in winter and spring. In addition, local projections show a less severe decrease of precipitation in the summer season.

The Government declared a nationwide heatwave emergency in 2007. During July, daily temperatures reached 43°C, causing more than 200 fires, destroying more than 2,000 hectares of forests, and causing almost 1,000 excess deaths compared to the averages of 1994-2007. Studies have shown that if the daily average temperature increases by 1°C in summertime, mortality increases by 3.2 per cent.The very high temperatures in hospitals and emergency care units were the major problem. There is growing evidence from EuroHEAT that the effects of heatwave days on mortality are larger when levels of ozone or PM10 are high, particularly among the elderly (75 years and more).

The recent heatwaves in Europe also affected the country, and forest fires are increased significantly, especially over the past decade. Wildfires can cause significant air pollution problems over long distances. Fire-caused deforestation increases the vulnerability to flood damage risk, as the natural barrier disappears. While droughts and climate changes have increased the threat of fire, negligence and inadequate fire safety measures in rural and forest regions are primary factors for the increased fire risks. Forest fires pose a relatively limited threat to urban areas due to the incombustible building typology prevalent in the country.

The drought phenomenon on the Balkan Peninsula is a specific feature for the geographical conditions and although without a strict cyclicity, shows repeatability at 15-25 year intervals with a persistency of about 12-15 years, with short-term interruptions of about 1-3 years with rainfall above the normal values.

In 2010, the Institute of Public Health investigated the relationship between environmental temperature and reported salmonella infections among the

population in five cities (Skopje, Kumanovo, Bitola, Strumica and Veles). Salmonella cases show a strong seasonal pattern, with the highest number of cases in summertime. For Skopje, it was estimated that the increase in the weekly temperature of 1°C above the detected threshold of 17.9°C is associated with a 2.8 per cent rise in the number of salmonellosis cases. The projection for 2030 of the seasonal index by month for food-borne diseases caused by salmonellosis, due to air temperature rise, shows two peaks in the summer months and one possible peak in winter months because of a decrease in the average monthly temperature in the future period.

The impacts of climate change on aeroallergens, and in particular pollen, include impacts on pollen production and atmospheric pollen concentration, pollen season, plant and pollen spatial distribution, pollen allergenicity, and similar impacts on mould spores. Since 1993, aeropallinologic research in the country has been performed at the National Institute of Occupational Health (NIOH) of Skopje. The Institute of Public Health and NIOH have assessed the impact of current burden of the weather maximum temperature of the 9 pollens distribution in Skopje (Betula, Cupressaceae, Quercus, Fraxinus, Platanus, Urticcaceae, Plantago, Chenopodiaceae, Poaceae) for the 1996, 2003, 2007 and 2009. They have found statistically significant differentiates for the Cupressaceae pollens in this investigation and maximum temperature in Skopje during whole examined years with Beta Coefficient (b=-0.23) for p=0.02, but not for other types. Pollen distribution and risk increases in three main periods: early spring, spring and summer, which are the main cause of allergies during those seasons. The impacts of climate change via the increase in the temperature in the next decades on aeroallergens, and in particular pollens, will include impacts on pollen production and the pollen season as detected in the airborne pollen spectrum, the weekly dynamics of the most important taxa, the influence of one meteorological variable as maximum temperature, and the changing distribution (onset of flowering, maximum and end of the seasons).

A multi-sectoral steering committee was established a couple of years ago. At the moment, two documents have been submitted to Parliament for approval, one on a health adaptation strategy and the second on the heatwave prevention of health effects. The steering committee has more recently also taken up issues on energy efficiency and hospital safety.

Ionizing radiation

The ionizing radiation protection and safety infrastructure is established via the Law on Ionizing Radiation Protection and Safety, No.48/02 and 135/07. Following the provisions of the Law, the Radiation Safety Directorate (RSD), as an independent governmental institution for carrying out administrative and professional activities in the field of radiation protection and safety, and nuclear security, was established in 2005. Its principal functions and activities are the following: establishing radiation protection and safety requirements through the development of regulations, guides and other acts; licensing ionizing radiation sources; performing inspections and enforcing regulatory requirements; maintaining a national register on ionizing radiation sources, occupational exposed persons and nuclear material; establishing intervention levels and undertaking interventions in case of emergency; determining the exposures to be excluded and the sources to be exempted from regulatory control; training radiation protection officers and other persons working with ionizing radiation sources; establishing appropriate means for informing the population with regard to radiation protection; establishing institutional and international cooperation on matters within the competence of the RSD; and preparing a plan for the protection of the population in case of a radiation emergency.

The Institute of Public Health is responsible for monitoring ionizing radiation in the environment. It also monitors radioactive contamination in domestic, imported and exported food, cosmetics, drugs and construction material, and issues certificates of compliance. Approximately 2,000 samples per year are analysed, mostly for alpha and beta activity; others for total uranium.

The first systematic indoor radon measurements in the country were carried out in the period December 2008-December 2009. A total number of 437 dwellings in 8 statistical regions were subjected to radon concentration measurements by using CR-39 track detectors. The arithmetic and geometric means of annual radon concentration were estimated at 105 ± 84 and 85*/1.9 Bq m-3, respectively. The overall estimated annual effective dose equivalent from indoor radon was found to be 2.1 */1.9 mSv y-1.

The Institute of Public Health maintains a facility for the evaluation of the radiation dosimeters used to monitor whole body exposure of 1,200 and exposure

to extremities of 200 occupationally exposed workers in the country. Traceability of measurements to the International Measurement System was established. This improved the accuracy in radiation dosimetry in the country and started the process of establishing confidence in radiation protection measures. The calibration laboratory participated in inter-calibration audits run by IAEA and in April 2006 RPC became a member of the SSDL Network.

10.3. Environmental health policy and management

Environment and health in public health

Environment and health is officially recognized in the Constitution of the former Yugoslav Republic of Macedonia, and other documents such as the Law on Public Health, No. 22/10, and the Health Strategy until 2020.

The 2010 Law on Public Health provides a legal basis for the performance of the basic public health functions in the country, including the functioning of the system in emergencies. The National Public Health Council and the Local Public Health Councils provide a basis for the establishment of intersectoral bodies comprising representatives of both central and local governments, which act as advisory bodies in performing public health functions requiring intersectoral cooperation. The State is responsible for the provision of preventive care for the population through the Institute of Public Health and for ensuring that health services are available. The 2000 Law on Health Insurance underscores the basis of the health service funding process, establishes a compulsory health insurance scheme, and confirms the independence of the Health Insurance Fund and its management board. The Institute of Public Health coordinates environmental health activities in different sectors and follows up on international initiatives. In addition, it collaborates with WHO and the EU and is involved in harmonizing the country's legislation with EU directives.

In the Ministry of Health, the control of environmental health issues (such as food safety, chemical safety, drinking-water quality, environmental impact on health and risk assessment) are under the jurisdiction of sanitary inspection and public health services. The National Institute of Public Health and regional public health centres are the main bodies in the health system responsible for assessing and monitoring health risks that result from environmental factors. They are under the direct supervision of the Ministry of Health, which is the main source of funding for public health services. The Institute of Public Health has also the possibility of raising funds by providing analytical services to investors, municipalities and public and private investors (e.g. in applications for permits for new activities). This allows the Institute to invest increasingly in analytical equipment.

With regard to environment and health emergencies, the Law on Crisis Management, No. 29/05 provides the basis for the establishment of the Crisis Management Centre (CMC), as well as the Law on Protection and Rescue, No. 36/04, 49/04 and 86/08, which regulates the system for protection and rescue of people, environment, material goods, natural resources against natural disasters and other accidents. The country is working on the implementation of the WHO International Health Regulations (IHRs), the plan on the health system response to emergencies, which clarified for example that a chemical incident is a trigger for activation of the laboratories of the Institute of Public Health (through MoH), the Ministry of Industry (MoI), the Chemistry Institute within the Faculty of Natural Sciences and Mathematics (through MoEPP) and the Pharmaceutical Faculty (through MoH). The Crisis Management Centre has entered into a cooperation agreement with the Institute of Public Health for the establishment of a national network of key laboratories for the crisis management system, No.03-556/09).

Total expenditure on health was around five per cent of GDP, in 2007. More than 95 per cent of official health care finance is derived either from contributions levied by the Health Insurance Fund or from user charges. Of the remainder, half is derived from the State budget (funding for vertical primary prevention programmes, including environmental health and the care of the needy), while the other half comes from other sources such as international aid.

10.4 Environmental health impact assessment and information sharing

The 2010 Law on Public Health recognizes the key role of monitoring in health protection and states: "… shall be responsible for public health by means of the following tasks:" "…Monitoring the health status of the population and identification of health problems in the community".

The Institute of Public Health collects data based on Health for All (HFA) indicators, monitoring the health status of the population, reporting and analysing the health status and organization of the

healthcare system, epidemiological surveillance, immunization, environmental monitoring, drug control, and providing advice to MOH on matters related to health policy. In 1993, the regional public health centres were decentralized and now perform market activities to support their funding. Monitoring and data collection and management are hampered by current human resource restrictions. Health indicators are monitored on the basis of the relevant legislation, including:

- Programme for Statistical Health Research for 1998-2000, Nos. 64/97, 11/00 and 54/01;
- Law on Health Records, Nos. 22/78 37/79, 18/88 and 15/95;
- Law on Health Protection, No.38/91, 73/92, 46/93, 55/95, 17/97, 21/98, 9/00;
- Law on Protection at Work, No. 13/98;
- Law on Health Insurance, Nos. 25/00, 34/00 and 69/00.

The environmental monitoring system focuses mainly on the collection of general indicators mainly related to air, water, and food. The monitoring of the biosphere, waste, soil and noise are still in their infancy (Chapter 3). Currently, the country does not have an effective mechanism to relate environmental monitoring and epidemiological data collected by different actors in order to identify links between exposure to environmental hazards and their health effects.

Further, there is a very substantive gap in systematic environmental health impact assessment. This could be improved by an efficient mechanism to relate environmental monitoring and epidemiological data collected by different actors in order to identify links between exposure to environmental hazards and their health effects, and enhance reporting to the WHO Environment and Health Information System (ENHIS).

An integrated environmental health information system needs to be able to establish links among environmental conditions (e.g. as assessed by monitoring data), population exposures and health effects. This means that monitoring systems should be geared to the coherent collection of relevant indicators (e.g. PM10 instead of black smoke), and these data should be related to health effects.

The Law on Sanitary and Health Inspection, No. 71/06 establishes competences and organization of the State Sanitary and Health Inspectorate (SSHI), appointing sanitary and health inspectors, specifying their mandate and the procedures for carrying out the inspection and control. SSHI has competences to carry out inspection and control over the laws and regulations enacted on basis of the legislation in the area of sanitary-hygiene and epidemiologic protection and health protection and health insurance. This is important legislation in respect to medical waste, because this body, together with the State Environmental Inspectorate (SEI), is responsible for the inspection of the process of handling medical waste. Training is conducted now and then whenever funding is available. A training institute conducts the training. There is no national training system or regular budget available in the country.

10.5 Conclusions and recommendations

The burden of disease from environmental health risks was estimated to be as high as 15 per cent of the total burden of disease in the Former Yugoslav Republic of Macedonia, in 2004. Improvements in key health indicators have been reported since 2002. While domestic legislation is being aligned with the EU, the national and regional institutional and human capacities need time, capacity and resources to implement the rapidly changing regulations. Many environment-related laws are under harmonization with EU legislation, but in many cases lack enforcement and implementation. Environment and health policy is often fragmented, and a clear vision and strategy is not apparent in the short term.

Environment and health is officially recognized in the Constitution and a number of regulations; however, the absence of an updated specific dedicated environmental health unit (or capacity) in either the Ministry of Health or the Ministry of Environment and Physical Planning has resulted in a lack of consistent and coherent policy actions, systematic research and communication on environmental health issues. Human and technical resources available in environment and health are in need of strengthening, resulting in insufficient monitoring, reporting and evidence-based policy actions.

Particular attention is needed in response to environmental hotspots, waste management (including medical waste), health service hygiene and maintenance, air pollution, water and waste, as well as systematic information elaboration and sharing in environmental exposures and health effects. The evidence base produced in the country that links health and environmental risks is too weak to help policy-makers in setting priorities. Public funding for research in environmental health is limited. Data on exposure is seldom linked to data on health outcomes,

resulting in very limited risk assessment activities. The country reports on only 11 of the 29 indicators in the WHO Environment and Health Information System database.

Although the movement towards sustainable development in the country is evident, a reactive (curative) approach is still the predominant method in the health system, rather than a proactive (preventive) approach. Except for time-bound project activities, the Government lacks a budget planning and reporting process dedicated to overall environmental health programmes, and there is a gap between available financial resources and statutory services compelled by law.

In the national institutes, activities are based on shorter-term projects rather than sustainable programmes. Funding opportunities from other sectors, such as environment (energy efficiency and the green economy), transport, labour, economy and education in issues that are relevant to environmental health, are rarely explored. For example, the intensive health services adjustments, reconstructions and new constructions could be benefitting from clean development schemes, higher energy efficiency, less health care expenditures and health safety under disasters opportunities. Through EU financing mechanisms, there is an opportunity to ensure higher priority for environmental health in projects and initiatives. Greater exploration of regional and subregional initiatives and opportunities may help reduce costs and increase regional/subregional capacity

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.

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.

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.

ANNEXES

ANNEX I: IMPLEMENTATION OF THE RECOMMENDATIONS IN THE FIRST REVIEW

ANNEX II: SELECTED REGIONAL AND GLOBAL ENVIRONMENTAL AGREEMENTS

ANNEX III: SELECTED ECONOMIC AND ENVIRONMENTAL INDICATORS

ANNEX IV: LIST OF MAJOR ENVIRONMENT-RELATED LEGISLATION

Annex I

*IMPLEMENTATION OF THE RECOMMENDATIONS IN THE FIRST REVIEW**

Part I: THE FRAMEWORK FOR ENVIRONMENTAL POLICY AND MANAGEMENT

Chapter 1. Legal and regulatory instruments

Recommendation 1.1:
The Ministry of Environment and Physical Planning should develop and implement NEAP 2 and a sustainable development strategy, and it should focus more on instruments for implementation, including, for example, strategic environmental assessment, environmental impact assessment, and integrated permitting.

The Government adopted the second National Environmental Action Plan (NEAP 2) for the period 2006–2011 in 2006. The document, prepared by the Ministry of Environment and Physical Planning (MoEPP) in coordination with different ministries provides general guidelines and directions for the country in the area of environment until 2011. In addition to setting up general priorities and goals in different sectors, NEAP 2 also envisages specific measures and actions that need to be implemented in order to achieve the said goals. MoEPP is the body with overall responsibility for the implementation and updating of the NEAP. The implementation of NEAP 2 is ensured by: monitoring and information systems; integrated pollution prevention and control (IPPC) and voluntary arrangements; inspection and enforcement mechanisms; environmental impact assessment (EIA) procedures; strategic environment assessment (SEA) procedures; access to information and public participation; decentralization and involvement of local self-governments (LSG); and accelerating environmental project preparation at the local level.

In April 2009, the Government adopted the National Strategy for Environmental Investments. The Strategy for Environmental Investments covers the period 2009–2013, and identifies issues with the environmental infrastructure, as well as the priorities, measures and activities for the realization of environmental investments.

In January 2010, the Government adopted the National Strategy for Sustainable Development, which offers the vision and policy for sustainable development for the period until 2030. Based on the Strategy, the Government established the National Council for Sustainable Development.

In the area of the environment, the process of European Union (EU) approximation poses significant requirements for the country not only in terms of financing, but also in terms of capacity improvement, institutional restructuring and strengthening. As a confirmation of this, the Government, through MoEPP, has developed a road map for the approximation of standards and legislation in the area of environment to EU legislation.

Recommendation 1.2:

a. The Ministry of Environment and Physical Planning in cooperation with other Ministries and institutions should develop and implement a new law on environmental protection as a framework for environmental legislation which includes instruments for environmental management such as an environmental information system and access to it, economic instruments, an environmental impact assessment procedure, strategic environmental assessment and an environmental monitoring system.

***** The first review of the former Yugoslav Republic of Macedonia was carried out in 2002. During the second review, progress in the implementation of the recommendations in the first review was assessed by the EPR Team based on information provided by the country.

b. The Ministry should also complete stand-alone acts for air, water, protected areas and biodiversity, underground resources, transport, waste and noise, giving the opportunity to bring the legislation in conformity with the relevant European Union directives.

c. The MoEEP in cooperation with other ministries and institutions developed and is implementing a new law on environment as a framework for environmental legislation. The 2005 Law on Environment replaces the previous law of 1996 with a completely new approach. It contains the fundamental environmental protection principles, which are basis for determination of the procedures for management of the environment and which are common to all the laws regulating particular environmental media. The 2005 framework law contains provisions on all sectors covered by EU legislation on the environment, transposing it into national legislation — namely, access to environmental information; public participation in environmental decision-making; environmental monitoring; the procedures for environmental assessment and environmental liability; eco-labelling and the Eco-Management and Audit Scheme (EMAS).

d. The Ministry completed stand-alone acts for air, water, protected areas and biodiversity, waste and noise, according to the relevant EU directives. Under the process of legal alignment with the acquis in Chapter 27, several additional framework laws and a significant number of by-laws were adopted: the Law on Nature Protection; the Law on Protection against Environmental Noise; the Law on Waste Management; the Law on Ambient Air; and the Law on Waters. These laws are in force. However, full correspondence with the EU directives has not yet been reached.

Recommendation 1.3:
The Ministry of Environment and Physical Planning should give special attention to the full transposition of the European Union's EIA Directives in national environmental legislation. On the basis of the new framework law, a by-law for environmental impact assessment should be drawn up, defining clearly all important steps of the EIA process: screening, scoping, consultations, access to information, decision-making and access to justice. The by-law should decentralize the assessment process in a rational manner, e.g. delegate competencies to local self-government for small-scale activities.

MoEPP gave special attention to the full transposition of the European Union's EIA Directives in national environmental legislation. On the basis of the new framework law, a wide range of secondary legislation was adopted defining clearly the following important steps of the EIA process: screening, scoping, consultations, access to information, decision-making and access to justice. The decentralization process on EIA is ongoing, with challenges due to the lack of capacities among the municipalities.

Chapter 2. Institutional arrangements

Recommendation 2.1:
The Ministry of Environment and Physical Planning should undertake the necessary steps, which could include internal restructuring, to correspond better to the needs of the European Union integration process:

a. The Department for Sustainable Development should be reinforced. Particular attention should be given to strengthening capacity to prepare policies and strategies, to facilitate intersectoral coordination with relevant ministries, and to coordinate with local authorities in the preparation and implementation of Local Environmental Action Plans and the development of economic instruments.

b. The Department for European Integration should be strengthened.

c. Coordination and cooperation between the Department for Legislation and Standardization and the Department for European Integration is of critical importance.

The Government revises annually the National Programme for Adoption of the Acquis (NPAA) in order to fulfil the criteria for full EU membership. The document contains details on the activities for implementation of the priorities and objectives in each sector. Chapter 27 of the 2008 NPAA review focuses on the achievements and remaining obligations in the area of the environment. The obligations (or the activities for their accomplishment)

are classified as short-term (2007) and mid-term (2008–2010) obligations. Besides NPAA, environmental goals and priorities are contained in other strategic environmental sectoral documents.

In order to strengthen the coordinated implementation of environmental policy, in February 2009 the Government adopted the Plan for Institutional Development of Environmental Management Capacity at the National and Local Levels 2009–2014. The Plan integrates all the work programmes of MoEPP and provides guidelines for the development of the capacity of the Ministry and the local self-government units for environmental management and implementation of legislation.

The administrative capacity of the environmental authorities at all levels will be strengthened by gradually increasing the number of the staff and their training by visiting international training courses and workshops.

MoEPP has taken steps to restructure internally in order to ensure that its structure better corresponds to the needs of the EU integration. MoEPP has grown significantly in the past few years in terms of human capacity. Nevertheless, for the purpose of efficient implementation of environmental legislation, appropriate solutions will need to be identified to strengthen administrative capacities in MoEPP, especially on approximated environmental laws and ratified international agreements, but also in other ministries that manage sectors closely related to the environment and nature protection. This is especially connected with drafting and developing legislation, strategies, policies and projects.

Currently, MoEPP is organized into nine departments or sectors, further organized in units as well as three bodies within MoEPP as constituent parts, i.e., the State Environmental Inspectorate, the Administration for Environment and the Office for the Spatial Information System. These bodies operate as separate entities and in accordance with legal regulations and other legal acts governing issues within the sphere of competence of MoEPP.

Recommendation 2.2:
The Ministry of Environment and Physical Planning should give the highest priority to strengthening its implementation bodies — the Environment Office and the State Environment Inspectorate:

a. The Environment Office should be strengthened and reorganized into an executive environment 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 EIA and permitting division (dealing with single permits: air, wastewater, waste, as well as with integrated permits), and a division for laboratory research. (See also recommendation 4.2.)

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 exchange of information and joint site visits or site inspections. (See also recommendations 12.4 and 14.5.)

c. The 2005 Law on Environment, for the purpose of carrying out expert activities related to environmental media and areas, prescribes the establishment of the Administration of Environment (AE) as a body responsible for expert activities in the area of the environment. The Administration of Environment is an integral part of MoEPP. It started with a staff size of about 25 to 30 people and is growing both in terms of human capacities and in the number of units. It performs professional activities in the area of nature protection, in waste, water, air, soil and noise protection and in other environmental areas.

The Administration of Environment will also regulate the EIA procedure for projects and the procedure concerning integrated environmental permitting and compliance permitting; and it will manage the Cadastre of the Environment and the Register of Pollutants and Polluters, including their characteristics. It will be responsible for monitoring environmental performance, as well as for permitting procedures and other activities stipulated by law.

As of January 2011, the State Environment Inspectorate (SEI) consists of the Director, who coordinates the activities of the Inspectorate, and 13 State inspectors for the environment located in Skopje (five), Tetovo (three), Bitola (one), Gostivar (one), Strumica (one), Stip (one) and Veles (one). At the same time, as a transitional measure, five of those inspectors perform the function of State nature protection inspector (Skopje (three), Strumica (one) and Bitola (one)). In addition, SEI has 10 branch offices

Chapter 3. Economic instruments and privatization

Recommendation 3.1:
The Ministry of Environment and Physical Planning should develop an effective system of pollution charges, in cooperation with other ministries and stakeholders. A first attempt should be made by further elaborating the legally binding provisions of this system. (See also recommendation 6.6.)

The polluter pays principle is integrated in the 2005 Law on Environment. However, often the secondary legislation is missing or the charges are not defined, which in effect makes the charge system ineffective. Environmental protection works mainly through a permit system and money collected from the different permits and car registration fees is channelled to the central budget.

Recommendation 3.2:
The Ministry of Environment and Physical Planning, should strengthen its competence to develop economic instruments for environmental protection. The respective staff should have access to training in environmental economics and the principles of economic instruments and their implementation. (See also recommendation 2.1.a.)

Although strengthening capacity in the area of environmental economic instruments was one of the Ministry's priorities, there is no staff specially working in this field within MoEPP. MoEPP staff have participated in some training seminars. The seminars, however, were much broader in scope, although they tackled some environmental economic instrument issues. Several training and study tours were also organized under the Priority Environmental Investment Programme (PEIP) within the framework of the Regional Environmental Reconstruction Programme for South Eastern Europe (REReP).

Recommendation 3.3:

a. *The Government should, as soon as possible, clarify the status of the Environmental Fund as an independent financing institution for environmental protection with clear and transparent management and independent supervision.*

b. *The Environment Fund, in cooperation with the Ministry of Environment and Physical Planning, should develop a financing strategy that describes objectives and sets priorities among the different environmental projects, consistent with the national environmental policy goals, particularly those contained in the NEAP.*

c. *Since its establishment, the Environmental Fund was exposed to various political and economic conditions, which led to frequent changes in leadership and the lack of a long-term strategy for its operations. The perception of the stakeholders was that the Fund lacked clearly defined priorities and transparent financing strategies and procedures. Based on the recommendations of the International Monetary Fund (IMF), and with the 2005 Law on Environment in place, the Fund ceased its operations in 2005. MoEPP is now administering the environmental investment programme and environmental investments.*

d. *The National Environmental Investment Strategy for the period 2009–2013 was adopted in 2009. The Strategy is not only a structured platform for environmental investment during the period 2009 to 2013, but also a tool contributing to the approximation with the EU acquis as well as meeting the environmental objectives of the country.*

Recommendation 3.4:
The Government should increase the role of the Ministry of Environment and Physical Planning in privatization and insist on the introduction of environmental audits or environmental impact assessments for industrial

enterprises undergoing privatization. The Privatization Agency should include environmental clauses in the sales contracts for the privatization of enterprises. (See also recommendation 11.3.)

The privatization process is mostly finalized. However, no environment audits or EIAs were included for industrial enterprises undergoing privatization.

Chapter 4. Environmental information and public participation

Recommendation 4.1:

a. *A new law on access to environmental information in accordance with the Aarhus Convention should be prepared by the Ministry of Environment and Physical Planning and adopted by Parliament. It should include a clear description of the rights of the public to have access to environmental information.*

b. *The Ministry of Environment and Physical Planning, in close cooperation with other public authorities, should prepare a strategy for the implementation of the Aarhus Convention. It should require certain legislative changes and strengthen the capacities of Government officials at all levels and local non-governmental organisations to enable broad public access to information and public participation in decision-making processes.*

The country has gradually established a supportive legal and regulatory basis for the implementation of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters Key legislation includes the Law on Environment and the Law on Access to Information of a Public Character.

Recommendation 4.2:
The Ministry of Environment and Physical Planning, in cooperation with relevant institutions, should develop a centralized, strategic monitoring programme capable of delivering the environmental information needed by all decision makers. Such a programme should harmonize the disparate methods, standards and indicators currently in use by various monitoring authorities and ensure a closer alignment of monitoring data and environmental policy objectives. (See also recommendation 7.3.)

In 2006, the Government adopted the National Environmental Monitoring Strategy. The Strategy focuses on three main issues: institutional issues; monitoring methods and parameters; and reporting obligations. To implement it, MoEPP started a process of establishing a State monitoring network on the environment covering air, water, biodiversity, waste and noise.

Recommendation 4.3:
The Ministry of Environment and Physical Planning should improve the flow of environmental information between the Ministry and other entities involved in environmental data and information by further developing a national environmental information system.

In 2005, the Government approved the Strategy for Environmental Data Management in the country. The Strategy set up the institutional, technical and technological framework for the development of a national environmental information system. The system has to provide optimized environmental data flow between all relevant institutions and to integrate all available environmental data in one functional piece. All environmental data and information obtained by various monitoring networks and self-monitoring originating from different institutions, entities and bodies are now submitted to MoEPP.

Recommendation 4.4:
The Environmental Information Centre should collaborate with the State Statistical Office on the collection of data on the discharges of pollutants, taking into account the ongoing negotiations on the PRTR protocol, under the Aarhus Convention. The State Statistical Office should incorporate relevant environmental indicators in the Statistical Year Book. (See also recommendation 14.1.)

The Sector for Environmental Information Centre within MoEPP manages databases on air, wastewater and waste on the basis of data submitted by enterprises. Since 2007, the State Statistical Office (SSO), jointly with MoEPP, has been producing every second year a publication on environmental statistics. The yearly SSO publications include basic environmental statistics. MoEPP published "Environmental Indicators" in 2008. In 2010, SSO published the statistical compendium "Sustainable Development, 2010". The publication follows the structure of the set of indicators defined in the EU strategy for sustainable development.

Recommendation 4.5:
The Public Relations Office of the Environmental Information Centre should be linked with the citizen information centres established in the municipalities. The Ministry of Environment and Physical Planning should focus on a strategy for the dissemination of environmental information. Within this strategy, the Environmental Information Centre should consider publishing State-of-the-Environment Reports both in print and on the Internet, as well as executive environmental information, i.e., headline indicators.

In 2004, the Strategy for Communication on Environment and the Environmental Awareness Strategy were adopted by the Government to guide MoEPP activities in these two areas in the period 2004–2008. The Public Relations Office within MoEPP has organized numerous awareness-raising campaigns on specific topics. A green eco-bus, a technically equipped mobile public communications office, and other innovative means have been used as specific tools to communicate with and reach citizens.

Chapter 5. International cooperation

Recommendation 5.1:
The Ministry of Environment and Physical Planning should develop a strategy for international environmental cooperation, by taking the lead in initiating a consultative process at the national level, involving related Ministries and institutions.

The strategy should clearly identify major challenges, present national achievements, and main needs for technical cooperation, co-financing and foreign investment in the environment.

The Strategy should be developed by ensuring the maximum degree of public participation, and by promoting international environmental cooperation and agreements in media and public awareness campaigns.

The strategy should be used to promote the international cooperation priorities within the coordination mechanism set up by the Sector of European Integration at Government level, and presented to and considered by the Committee of Ministers for the Coordination of Foreign Aid.

The National Environmental Investment Strategy (NEIS) for the period 2009–2013 forms the basis for the future programming of environmental investments in the country. The NEIS is based on directions and recommendations given in existing strategic environmental documents, such as the second NEAP and the National Strategy for Environmental Approximation. The NEIS identifies an initial list of projects of solid waste management and priority environmental investment, which mostly focus on water supply and wastewater projects. Sources of financing include the central Government budget, the Instrument for Pre-Accession Assistance, bilateral donors and other contributions.

However, the Strategy does not cover aspects of international environmental cooperation and coordination. Coordination of foreign assistance is centralized, with a major role played by the Sector of Foreign Assistance within the Secretariat for European Affairs. The overall structure for coordination of foreign assistance has recently undergone some changes, in line with the recommendations of an independent evaluation of the donor coordination mechanism and structure in the country, completed in mid-2008. Based on the outcome of this evaluation and recently held donor coordination meetings, it was agreed to introduce the Programme-Based-Approach (PBA) in five priority programme areas, including the environment. Assessment and PBA implementation plans for the five programme areas will be carried out by senior-level working groups consisting of Government representatives and international partners. The PBA implementation plans for each of the five programme areas will be consistent with the national development priorities and the EU accession agenda of

the country by establishing a single results framework. Based on the outcome of the ongoing work and the PBA implementation plan for the environment programme area, a separate strategy for international environmental cooperation might not be needed anymore.

Recommendation 5.2:
The Ministry of Environment and Physical Planning should:

- *Prepare management plans in compliance with the European Water Framework Directive at the national level, and bilateral agreements for the major transboundary natural resources and water bodies;*

- *Accede to and implement the ECE Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes;*

- *Take measures to support bilateral and multilateral agreements to implement the ECE Espoo Convention on Environmental Impact Assessment in a Transboundary Context;*

  The Government of the former Yugoslav Republic of Macedonia should ratify as soon as possible the ECE Convention on Long-range Transboundary Air Pollution protocols to which it is still not a Party.

Preparation of water management plans for Lake Prespa and Lake Ohrid is currently under way. These plans are in accordance with the EU Water Framework Directive and bilateral agreements. Various donor-funded projects have also focused on capacity-building aimed at the development of river basin management plans for the Drin River Basin (Swedish Environment Protection Agency (EPA)), the Strumica River Basin (Flemish Cooperation Programme) and the Vardar/Axios River Basin, including the Lake Dojran sub-basin (EuropeAID-Community Assistance for Reconstruction, Development and Stabilisation (CARDS)). These river basin management plans are still to be prepared, in compliance with the current Law on Waters, which is harmonized with the EU Water Framework Directive, and the Water Strategy.

The country has not yet acceded to the ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). Upon the request of MoEPP, the secretariat of the Water Convention provided guidelines for the Convention's implementation, which will assist the Government in its efforts to achieve compliance with the requirements of the Convention. With the support of the secretariat of the Convention and Sweden, a workshop concerning the Water Convention was organized in October 2009, in Skopje. This workshop and the guidelines for the implementation of the Convention are regarded as important steps contributing to the strengthening of national capacity in the context of ratification and implementation of the Water Convention.

Although the former Yugoslav Republic of Macedonia ratified the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) in 1999, following which the requirements of the Espoo Convention were incorporated in the Law on Environment, so far, no EIA procedure has been carried out in a transboundary context. A multilateral agreement among the countries of South-Eastern Europe for implementation of the Espoo Convention (the Bucharest Agreement) was signed by the country in 2008, but the agreement has not yet entered in force.

In 2010, the country ratified the protocols to the ECE Convention on Long-range Transboundary Air Pollution.

Recommendation 5.3:
The Government of the former Yugoslav Republic of Macedonia should undertake more concrete measures for complying with those conventions to which it is already a Party.

Since the first EPR (2002), MoEPP as competent authority for most of the country's multilateral environmental agreements (MEAs) has made many efforts to comply with provisions of MEAs to which it was already a Party at the time of the first EPR. National reports, as well as thematic reports, have been regularly prepared for the biodiversity and nature conservation related agreements, the United Nations Framework Convention on Climate Change (UNFCCC), the Montreal Protocol, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, as well as the regional ECE conventions (the Aarhus Convention,

the Espoo Convention and the Convention on Long-range Transboundary Air Pollution). Additionally, sectoral strategies and action plans have been developed, such as the Biodiversity Strategy and Action Plan and the national communications to UNFCCC. Work is also under way to update some of these documents. Specific requirements under these MEAs have been incorporated in the Law on Environment, as well as sectoral and secondary legislation in line with the EU acquis. National focal points for the MEAs are all located within MoEPP and participate actively in relevant international and regional meetings. Furthermore, the country has been actively involved in various projects and activities which support the implementation of the MEAs, led by bilateral and international donors. In general, compliance with the MEAs to which the country was already a Party at the time of the first EPR has improved; the emphasis should now be placed on the national enforcement of laws to implement them.

Recommendation 5.4:
The Ministry of Environment and Physical Planning should continue its support for capacity-building in municipalities' environmental management, and seek the cooperation of the international donor community in the development of LEAPs and programmes to support public participation, information and project development at local level.

Strengthening environmental management at the local level, including the development of Local Environment Action Plans (LEAPs), has been included in various national strategic documents, such as the second NEAP and the National Strategy for Environmental Approximation. The preparation of LEAPs has also been included in the Law on Environment and a methodology for the preparation of LEAPs has been developed by MoEPP. The preparation of LEAPs for municipalities has been well under way and, as of the beginning of 2011, 64 out of 85 municipalities in the country have prepared LEAPs. Financial and technical support for LEAPs and strengthening the local capacity of the municipal administrations has been received from international donors. Two Instrument for Pre-Accession Assistance projects are currently being undertaken that focus on strengthening local capacities for environmental management in the area of air quality and waste management.

PART II: MANAGEMENT OF POLLUTION AND OF NATURAL RESOURCES

Chapter 6. Water management, including protection of lakes

Recommendation 6.1:
The Government should urgently set up an inter-ministerial working group consisting of the five key administrations in water management, i.e., the Ministry of Agriculture, Forestry and Water Economy, the Ministry of Environment and Physical Planning, the Ministry of Health, the Ministry of Transport and Communications and the Ministry of the Economy, together with their associated specialized institutions. This inter-ministerial group should be responsible for the further preparation of the upcoming integrated water management plan. The plan should cover water use and supply, water quality protection and conservation, and water flow management.

Since the beginning of 2011 the water management section of MoEPP was strengthened at the ministry and municipal levels. But responsibilities on water are still spread among various bodies. For example, monitoring of drinking water belongs to the Ministry of Health. Irrigation, drainage, flood protection and monitoring belong to the Ministry of Agriculture, Forests and Water Economy (MoAFWE). The Hydrometeorological Administration (HMA) is subordinated to MoAFWE and the Hydrobiological Institute (HBI) to the Ministry of Science and Education. The Ministry of Transport and Communications (MoTC) is responsible for water supply , and piping and sewerage systems for dwellings.

MoEPP has been strengthened with inspectorate units (14 inspectors), penalty provisions and Geographical Information System (GIS). The Administration of Environment of MoEPP has its own Sector of Water, with three units for planning and management, water protection and Lake Ohrid protection.

The adoption of the Law on Waters represents important progress on water management, by settling a year-long dilemma regarding responsibilities for water management. It is also a step towards the transposition of the Water Framework Directive; the Law on Waters gives an adequate framework for sustainable water management, for qualitative and quantitative water protection, for water use and for wastewater control. Implementation and

enforcement will be the biggest challenge for this framework. As of 1 January 2010, the establishment of water management bodies fell under the responsibility of the MoEPP.

Recommendation 6.2:
The Government should propose to Parliament that the Ministry of Environment and Physical Planning be the responsible authority for water resource management and protection. The Ministry of Environment should be entrusted with the implementation of the water management plan, including water monitoring, and it should be given the task of issuing licences and permits for water use and water discharges, and implementing the user-pays and polluter-pays principles.

The recommendation was partially achieved by the latest MoEPP reorganization. However, qualitative and quantitative monitoring of surface water and groundwater is carried out by HMI under MoAFWE. HBI on Lake Ohrid is subordinated to the Ministry of Science and Education.

Recommendation 6.3:
The Government, after designating the Ministry of Environment and Physical Planning as the responsible authority for water resource management and protection, should create an appropriate structure to assist the Ministry in implementing its enlarged tasks. These tasks should include the introduction of a river basin management planning approach working on the experience gained through the Lake Ohrid Conservation Project. Twinning arrangements with countries having experience in river basin management should be sought, together with their technical, financial and political support, to assist the country in its task.

Significant steps have been taken, including the adoption of the Law on Waters, which transposes the Water Framework Directive; preparations for the implementation of this recommendation are also being carried out, e.g., the identification of surface water bodies in the Vardar River Basin. However, identification of groundwater bodies and stream typology with references for aquatic bio-communities, as well as monitoring and evaluation systems for ecological status according to WFD with five biocomponents,[50] are still missing. Public participation on water issues is weak. A water master plan with a programme of measures is still missing, but in preparation. Nevertheless, the Lake Ohrid Conservation project is a model and cornerstone for surface water management.

Recommendation 6.4:
The Government should show its support for the Lake Ohrid watershed management by:

- *Updating the legislation giving official status to the watershed management and related management objectives and institutions;*
- *Calling for the development of a management plan for the lake;*
- *Giving official status to and reinforcing the present management board for the protection of Lakes Ohrid and Prespa;*
- *Mobilizing the international community and partner countries to help consolidate the integrated management approach for the transboundary Lake Ohrid catchment area.*

The Government has taken some steps to implement this recommendation. The Lake Ohrid Conservation project is a good example. However, since the end of the project in 2003, work in this area has slowed down.

Recommendation 6.5:
The Government should take measures to enforce the principle that all users should pay for the water they use. For those people who cannot afford to pay, the Government, together with the municipalities, should work out a system of social compensation.

The public water companies are responsible for the supply of water and the collection and treatment of wastewater. Water prices are proposed by the water companies and approved by the communal authorities. Since the last EPR, the water metering situation has improved markedly and currently most households have water meters installed.

[50] Fish, macroinvertebrates, macrophytes, phytobenthos and phytoplancton.

The collection rate has also gone up; in Skopje it is around 80 per cent and there are plans to move to remote meter reading. Water and sewerage service charges differ from municipality to municipality. Skopje charges in 2010 for households were: water with sewerage, 29.39 denars per cubic metre (m^3); water without sewerage, 17.25 denars/m^3; and sewerage only, 12.12 denars/m^3. For enterprises, the charges were much higher: water with sewerage, 65.80 denars/m^3; water without sewerage 45.63 denars/m^3; and sewerage only 19.17 denars/m^3. In Veles, the water price for households in 2010 was 30.4 denars/m^3 and sewerage 5.45 denars/m^3. For an enterprise, water cost 60.25 denars/m^3 and sanitation 8.68 denars/m^3.

Recommendation 6.6:
The Government should prepare legislation to implement the polluter-pays principle according to the provisions of the Law on the Environment and Nature Protection and Promotion and the Law on Waters. Pollution charges should be introduced and in a first step implemented only according to few parameters, i.e., major pollutants and toxic elements. Collected pollution charges should be redistributed to stimulate the reduction of pollution discharges. (See also recommendation 3.1.)

There were no significant changes in implementation of sustainable water management.

Chapter 7. Air management

Recommendation 7.1:
The Ministry of Environment and Physical Planning, in cooperation with the Ministry of Health, should speed up the development of the new law on air quality including the development of the framework for air quality management and the setting of new air quality standards. In developing the new law, the Ministry should take into consideration not only European Union (EU) approximation but also a national air management strategy coherent with the Environmental Impact Assessment (EIA) and Integrated Pollution Prevention and Control (IPPC) strategy. Special attention should be paid to all issues relating to its enforcement, including the sharing of responsibilities between local self-government and national levels.

The Law on Ambient Air Quality was adopted in 2004 and it establishes the system for the management of ambient air quality. The Law defines the obligation for the adoption of the National Plan for Ambient Air Protection and the Programme for Ambient Air Pollution Reduction and Quality Improvement. According to the Law, the Plan and the Programmes should be adopted within six years after the Law enters into force. So far, the country has not complied with this requirement. The elaboration of the National Plan for Emission Reduction and the National Plan for Ambient Air Protection is planned for 2011.

Recommendation 7.2:
The Ministry of Environment and Physical Planning should establish a unit dealing with air management issues which would be responsible for the preparation, implementation and evaluation of the national clean air strategy as well as for developing cooperation with all partners interested in air management (ministries, industries, non-governmental organizations (NGOs)).

The unit dealing with air management has not been yet established. The Unit for Risk Management and Atmosphere was established within the framework of the Department for Industrial Pollution and Risk Management of the Administration for Environment.

Recommendation 7.3:

a. *The Ministry of Environment and Physical Planning should coordinate and formalize the activities of the different networks involved in air quality monitoring through agreements and memoranda of understanding. (See also recommendation 4.2.)*

b. *The Ministry of Environment and Physical Planning in cooperation with the Ministry of Health should identify monitoring objectives, data quality objectives, quality assurance and quality control procedures. (See also recommendation 14.1.)*

In 2006 the Government adopted the National Environmental Monitoring Strategy. The Strategy focuses on institutional issues, monitoring methods and parameters, and reporting obligations. To implement it, MoEPP commenced a process of establishing a State monitoring network on the environment, including air. In 2010 it set up a working group that reviewed the existing monitoring stations and parameters used by MoEPP, the Republic Health Institute (RHI) and the Hydrometeorological Administration (HMA) with a view of integrating these stations into a single State network. MoEPP has prepared a draft decree on establishing a National Environmental Monitoring Programme.

Recommendation 7.4:
The Ministry of Environment and Physical Planning should develop appropriate strategies for implementation of the Protocols to the ECE Convention on Long-range Transboundary Air Pollution. (See also recommendation 5.2.)

The Ministry of Environment and Physical Planning is considered analyzing costs and benefits for the ratification and implementation of the protocols to the ECE Convention on Long-range Transboundary Air Pollution.

Chapter 8. Waste management

Recommendation 8.1:
The Ministry of Environment and Physical Planning should establish a comprehensive strategy to stop the contamination of soil and groundwater by stored chemicals and other hazardous waste and to initiate soil remediation programmes in cooperation with the Ministry of Agriculture, Forestry and Water Economy. The strategy should include the establishment of a legal system for waste classification.

The recommendation has been implemented. A Waste Management Strategy, with the objective to define specifically the long-term needs in the area of waste management, as well as the necessary legislative measures for enforcement, was adopted in 2008.

Recommendation 8.2:
The Ministry of Environment and Physical Planning should review the draft national solid waste management plan as soon as possible, taking into consideration the spatial plan for waste management and more awareness-raising. Upon approval, the Government should allocate sufficient staff and financing to the Ministry of Environment and Physical Planning to guarantee successful implementation.

The recommendation was partially implemented. The National Waste Management Plan was adopted in 2009. It assessed prevailing conditions at the time and made basic recommendations, outlining activities as well as resources and financial mechanisms in the waste management process for the subsequent six-year period.

Recommendation 8.3:
The Ministry of Environment and Physical Planning and the municipalities should act decisively to decrease the use of illegal dumps in rural areas.

The recommendation was partially implemented. There are ongoing projects regarding these issues. MoEPP and Swedish Environment Protection Agency signed a new agreement for cooperation on preparation of a programme for closure of municipal landfills that are not in compliance with the EU standards, as well as strengthening the capacity of the State Environmental Inspectorate in the area of inspection and supervision of municipal landfills. Also, within the Instrument for Pre-Accession Assistance projects components 1 and 3, relevant documents for the establishment of an integrated and financially self-sustainable waste management system have been developed. These should be implemented in three regions, while strengthening central and local capacity in waste management. For another two regions, the call for expression of interest for the concession/public-private partnership award on integrated waste management had reached its second phase at the time of the review. It is expected that the decision on the company will be announced in the last quarter of 2011.

Recommendation 8.4:
The Ministry of Health and the Ministry of Environment and Physical Planning should extend the separate collection and incineration of medical waste to areas outside Skopje as a first step in a separate waste collection system.

The recommendation was partially implemented. Implementing the draft national solid waste management plan requires major investments. The incineration of medical waste from the Skopje medical centres at the Drisla landfill site is one of the few exceptions to the overall practice of waste disposal in landfills. It is an important example of waste separation and reduction of the risks associated with contagious and infectious waste.

However, for its realization, a priority technical measure is investment in the treatment facility for medical hazardous waste; the project will provide a definitive solution for the disposal of medical hazardous waste through a new contemporary incineration plant on the location of the Drisla landfill and through landfilling of the incineration residues. The new incineration plant shall be planned to enable the expansion of capacities and technical up grading in order to co-incinerate select combustible hazardous waste generated in the country.

Important temporary technical measures may be investment in facilities for safe temporary storage of hazardous waste. Storage may be executed on assets of waste generators or on assets of licensed private enterprises. Waste storage may be executed as a service activity. The stored hazardous waste can later be pretreated or disposed of within the country or exported by licensed services and the trade sector.

Recommendation 8.5:
The Ministry of Environment and Physical Planning together with the association of municipalities, "ZELS", should assist those municipalities interested in the privatization of public enterprises by developing a strategy to make public enterprises more economically attractive. A best practice guide based on experience in other countries, standard procedures for tendering, and studies into consumers' ability to pay should form part of this strategy.

The procedure for awarding concessions for financing, designing, construction and managing of regional municipal solid waste landfills in two regions — the South-East and Polog regions — is ongoing. So far, six companies that fulfilled the tender conditions have qualified for the next phase of the procedure for the South-East region and the selection procedure for the Polog region is planned to be finalized in the second half of 2011.

Chapter 9. Agriculture and forest management

Recommendation 9.1:
The Ministry of Agriculture, Forestry and Water Economy should urgently promote rational water use and strategies to lower the demand for water in the agriculture sector rather than support increased supply. The impacts of agricultural practices on water quantities and quality should be studied and reduced with the implementation of guidelines for operating irrigation facilities and the pumping of groundwater. The construction of additional surface water reservoirs should be re-examined under the principle of sustainable and efficient use of limited resources.

Several planning documents have been developed, and projects implemented with regard to recommendations on water use in agriculture. Additional financial recourses are needed, however, to achieve a reduction in water demand for irrigation, by one of two alternatives: (a) not irrigating agricultural crops; or (b) investing in infrastructure facilities and equipment upgrading for in-field application. The construction of additional surface water reservoirs should also be re-considered, as recommended.

Recommendation 9.2:
The Ministry of Agriculture, Forestry and Water Economy and other relevant bodies should ensure that irrigation systems, particularly following their rehabilitation, are protected from the leaching of chemicals and from erosion.

This recommendation has not been implemented. The legal framework to determine the various responsibilities has to be drafted and approved.

Recommendation 9.3:
The Ministry of Environment and Physical Planning, in cooperation with the Ministry of Agriculture, Forestry and Water Economy, should prepare comprehensive legislation on soil protection in order to substitute existing laws and to define respective responsibilities clearly. The law should contain provisions on protecting the soil and remediation measures for contaminated soils, compulsory measures against erosion and compaction, and provisions for the use of the best agricultural practices.

The recommendation has not yet been implemented.

Recommendation 9.4:
a. *The Ministry of Environment and Physical Planning should initiate a programme analysing and monitoring soils for heavy metal and pesticide contamination and develop a comprehensive programme for prevention and clean-up.*

b. *Agricultural activities, including plant production and animal grazing, should be prohibited in areas where the soil is contaminated.*

The recommendation has not yet been implemented.

Recommendation 9.5:
The Ministry of Agriculture, Forestry and Water Economy should further develop and strengthen agricultural extension services with comprehensive information programmes based on the principles of integrated and organic farming. Where farmers cannot pay, these extension services should be provided free of charge.

The recommended services are provided by the National Agency for Motivating the Development of Agriculture.

Recommendation 9.6:
The Ministry of Agriculture, Forestry and Water Economy, in collaboration with the Ministry of Environment and Physical Planning, should establish the prerequisites for marketing major agricultural products under an eco-label, and particularly those products intended for export (such as wine, tobacco and lamb).

Under the Law on Organic Agricultural Production, Nos. 146/2009 and 53/2011, each organic product is to be labelled by a national label for organic products. This label is compulsory for organic products of domestic origin and intended for the domestic market. Products that are exported, depending on the country, i.e., the final destination of the organic product, are labelled in accordance with the policies of the destination country. For EU member States, the EU organic product label is compulsory. This means that every product exported is re-labelled. The eco-label is granted by MoEPP to products that are not used in foodstuffs and do not pollute the environment.

Chapter 10. Nature and biodiversity management

Recommendation 10.1:
a. *The Government should put the "Work Organization National Parks and Hunting Areas", as well as the Galicica, Mavrovo, and Pelister National Parks, under the responsibility of the Ministry of Environment and Physical Planning, with the existing personnel, equipment and financing.*

b. *The competent authority should, as soon as possible, develop integrated management plans for the national parks, in cooperation with the Ministry of Agriculture, Forestry and Water Economy, and the Ministry of Finance, with the broad involvement of environmental NGOs and local communities. Adequate financing schemes for the implementation of the management plans should be developed and introduced.*

c. *The first part of the recommendation has not been done. However, the Law on Nature Protection established the administrative structure for management of national parks. This includes establishment of public institutions, one for each national park, which are responsible for the management and protection of the parks. The Government appoints a five-member Management Board and a Director of the Public Institution*

for each national park. The MoEPP State Inspectorate and MoAFWE State Inspectorate (Forestry Police) ensure the enforcement of laws, regulations, and management plans within the parks.

d. The second part of the recommendation has been partly completed and is ongoing. The Pelister National Park adopted its 10-year management plan in 2006. The Mavrovo National Park is in the process of developing its 10-year management plan, and the Galicica National Park is preparing to develop its management plan.

New financing schemes are being explored as authorized by the Law on Nature Protection.

Recommendation 10.2:
In the process of harmonizing its legislation with European Union requirements, the Ministry of Environment and Physical Planning should, as soon as possible, prepare a unified law on nature protection

The Law on Nature Protection was adopted in 2004 with amendments in 2006, 2007, and 2010.

Recommendation 10.3:
The Ministry of Agriculture, Forestry and Water Economy and other ministries responsible for the use of natural resources, should harmonize their existing or new legislation with the new unified law on nature protection as well as with nature conservation requirements set by the European Union, and should incorporate the nature conservation measures into the management plans of the natural resources for which they are responsible.

MoAFWE accomplished the recommended harmonization of legislation with the 2009 Law on Forests. It incorporates the goals, principles, and requirements of the Law on Nature Protection into the 10-year forest management plans and game management plans.

Recommendation 10.4:
The Ministry of Agriculture, Forestry and Water Economy should, as soon as possible, develop a national forestry strategy that will ensure sustainable forest management based on internationally recognized principles. The strategy should be developed with the participation of the Ministry of Environment and Physical Planning, scientific institutions, non-governmental organizations (NGOs) and other stakeholders. The strategy should also include economic instruments that would facilitate introduction of sustainable forest management practices.

MoAFWE, in cooperation with MoEPP and other stakeholders, has developed the national Strategy for Sustainable Development of Forestry (June 2006) and its Action Plan for 2007–2009. The Strategy, in concert with the National Strategy for Sustainable Development, the National Strategy for Clean Development and the Strategy on Renewable Energy, addresses economic issues, such as expanding markets for non-wood forest products and promoting ecotourism in a sustainable manner. Also, the Action Plan includes an action to study the values of the multifunctional benefits of forests so as to establish a financing mechanism for providing these benefits.

Chapter 11. Industry, energy and the environment

Recommendation 11.1:
The Ministry of Environment and Physical Planning should set up an expert working group comprising all stakeholders, including the Ministries of the Economy, Finance and Health, and senior management from the respective industries, to prioritize action, e.g., identify low-cost remediation measures and set a timetable for urgent risk reduction at the identified environmental hot spots. (See also recommendation 9.4.)

In 2000–2001, UNEP undertook an assessment to identify the most urgent environmental needs of the country. At a number of hot spots that have been identified, waste causes severe negative environmental conditions. The following five sites have been identified as the most severe hot spots: HEK Jugohrom Ferro-alloy plant in Jegunovce (now Silmak); the OHIS organic chemicals plant in Skopje; the MHK Zletovo lead and zinc smelter in Veles; the Zletovo lead and zinc mine in Probistip; and the REK Bitola lignite-fuelled thermal power plant. The UNEP study recommended an action plan for hot spots remediation.

Under the 2001 "National Solid Waste Management Plan and Feasibility Studies" CARDS programme project, 16 Industrial Contaminated Sites — hot spots — were identified and evaluated. Methods for closure/remediation were developed and (unit) cost estimates were made.

The EU-funded project managed by the European Agency for Reconstruction (CARDS 2006) "Development of Remediation Plans with Financial Requirements for Elimination of Industrial Hotspots" assisted in the elimination of industrial hot spots in the country through the development of hot-spot remediation plans for four hot spots with financial requirements.

Recommendation 11.2:
The Ministry of Environment and Physical Planning should strengthen its institutional capacity to manage the environmental impacts of chemicals, e.g., by the establishment of a special section for chemicals management.

Within the Administration for Environment of MoEPP, the Department of Industrial Pollution and Risk Management, and the Unit for Chemical and Industrial Accidents were established.

Recommendation 11.3:
The Ministry of Economy, in collaboration with the Ministry of Environment and Physical Planning, should develop legislation clearly identifying who is responsible for past pollution at industrial and energy-related sites, i.e., the new owner, the previous owner or the State. In the case of orphan sites, where the previous owners cannot be traced or where the previous owners are bankrupt, it should be clearly stated whether the Government would assume responsibility for the associated environmental liability.

The Law on Environment contains articles concerning environmental liability.

Recommendation 11.4:
The Ministry of Economy, when carrying out studies into the continuing viability and competitiveness of industrial enterprises, should also take into consideration the need for these industries to meet European environmental standards.

In accordance with the Law on Environment, IPPC licences as well as the licences for adjustments with adjustment plans should be issued. Licences are subject of prior consultations with relevant institutions, including the Ministry of Economy.

Recommendation 11.5:
a. The Ministry of Economy should ensure that the "energy efficiency strategy up to the year 2020" is harmonized with the "strategy for the complex development of energy up to the year 2020" to ensure consistency in the development of the overall national energy policy.

b. As a short-term objective of this overall national energy policy, and drawing on existing experience and infrastructure, the Ministry of Economy should promote low-cost energy efficiency measures and energy management in all sectors. The promotion of energy savings and the rationalization of energy use, particularly in the industrial sector, will result in both environmental and economic benefits.

The Government adopted in 2010 the Strategy for Complex Energy Development until 2030 and the Strategy for Improving Energy Efficiency until 2020, which are complementary and harmonized with each other. According to the Law on Energy and the Strategy for Improving Energy Efficiency, programmes for strengthening energy efficiency in different sectors, including industry, will be developed.

Recommendation 11.6:
In view of the significant potential for energy savings and expected energy supply constraints, the Ministry of Economy should, in consultation with all stakeholders, establish an energy efficiency fund as a matter of priority. The fund should be an independent organization with clear and transparent management and independent supervision. The Ministry should also ensure that appropriate financial support for the energy efficiency fund is provided or facilitated.

The Energy Efficiency Fund has not been established as a separate body yet.

Recommendation 11.7:
The Ministry of Economy should ensure that a full environmental impact assessment of the pipeline proposal (AMBO) be undertaken, including the consideration of a number of alternative options for the route of the proposed pipeline project. The report of the environmental impact assessment should be presented to the Ministry of Environment and Physical Planning for review and approval.

The environmental impact assessments for some sections of the pipeline was carried out in accordance with the Law on Environment.

PART III: ECONOMIC AND SECTORAL INTEGRATION

Chapter 12. Spatial planning

Recommendation 12.1:
Parliament should adopt the national spatial plan as a priority. In cooperation with the relevant ministries and local authorities, the Ministry of Environment and Physical Planning should make a greater effort to implement the national spatial plan. The development of a structured action plan with clearly assigned responsibilities, time frame and priority actions should form the basis of the implementation strategy. The action plan should include realistic and achievable objectives, taking into account fiscal and technical constraints, and define performance measures to track progress.

The 2004 Spatial Plan contains an Action Plan for implementation which sets priorities for short-, medium- and long-term implementation; however, it has not been allocated the financial resources required for its implementation. The Programme for Implementation of the Spatial Plan 2008–2010 had been developed.

Spatial Plans, under the Law on Spatial and Urban Planning, are financed from the MoEPP Budget, based on the Annual Programme for development of spatial plans adopted by the Government and published in the Official Gazette.

The national Spatial Plan is elaborated and implemented through preparation of spatial plans of regions, spatial plans for special areas of interest, spatial plans for the national parks, spatial plans for municipalities, spatial plans for certain categories of protected areas, and infrastructure corridors.

The Spatial Plans for the following areas have been adopted so far: the Ohrid and Prespa Region; the Region of Protection Zones of Rasce Springs; the Region of the Treska River Basin; and the Kozjak Region. Spatial Plans for Skopje Region and for Galicica National Park are under preparation.

Recommendation 12.2:
The Government should encourage the implementation of the national spatial plan by providing incentives for regional collaboration among municipalities on issues such as transport, economic development, air and water quality. In encouraging such cooperation, the Ministry of Environment and Physical Planning should facilitate the integration of spatial planning and environmental protection to achieve positive synergies. It should also aim at inter-ministerial collaboration to ensure the complementarity of sectoral programmes within the framework of planning and development activities.

In the framework of the spatial plans, environment and nature protection is elaborated as a priority, while sustainable development is the foundational basis for every spatial plan. The development of all documents in the segment of spatial planningt is carried out through intersectoral and inter-ministerial cooperation.

Monitoring of the implementation of the Spatial Plan is regulated by the Law on Spatial and Urban Planning and the Law on the Implementation of the Spatial Plan, through the elaboration of the Annual Report on the Implementation of the Spatial Plan which is adopted by the Government.

The Annual Report is elaborated on the basis of information sheets submitted by ministries, municipalities, public enterprises, agencies and other relevant institutions at the central and local levels concerning changes in space. Another tool for the implementation of the Spatial Plan under the legal provisions are the elaborated and issued decisions on the conditions for planning of the development of urban plans in rural areas, at the request of municipalities or investors.

Recommendation 12.3:
Good planning needs to be supported through capacity-building efforts at the national level. For this purpose, the Ministry of Environment and Physical Planning should develop adequate institutional capacity. Both policy and legal planning frameworks require a considerable effort to enable the efficient operation of real estate markets.

In organizational terms, spatial planning is positioned at central level and is carried out through the Department for Spatial Planning within MoEPP. In accordance with the law, the Spatial Planning Agency has been established as a specific legal entity responsible for spatial plan development under annual programmes financed through the MoEPP budget.

Still needed is allocation of a greater budget for the annual programmes for spatial plan development and strengthening of the capacity of the Spatial Planning Department and the Spatial Planning Agency, through trainings and provision of sophisticated equipment.

Recommendation 12.4:
The Ministry of Transport and Communications in cooperation with the Ministry of Local Self-Government and the Ministry of Environment and Physical Planning should develop a strategy for the devolution of planning control and inspection functions to the municipal planning and infrastructure management units. The existing system needs to be reviewed to design appropriate institutional structures suited to the needs of the 123 local authorities.

The ministries and municipalities mentioned in the recommendation cooperate in the domain of planning of multi-annual and annual programmes for spatial plans development.

A priority programme for urban plans development is carried out through the Ministry of Transport and Communications. Strategic documents have been prepared and adopted for sustainable development, regional development, economic development, infrastructure planning, investment development and planning of technological industrial development zones.

Legislation has been adopted for spatial and urban planning, construction, regional development, infrastructure, environment; and nature protection and improvement.

Recommendation 12.5:
The Government, through the Ministry of Environment and Physical Planning, should accelerate efforts to develop a legislative framework for spatial planning that integrates and reconciles fragmented planning legislation. This should include a review of the spatial plan component of the Law on Physical and Urban Planning, to emphasize integration of physical, economic and environmental planning, and promote the use of a transparent system of zoning regulations sensitive to market demand.

Spatial planning is managed at the central level, through a Department within MoEPP; however, the establishment and organization of regional centres will allow for the management of part of these activities at the regional level.

Chapter 13. Transport and the environment

Recommendation 13.1:
The Ministry of Transport and Communications should establish an environmental unit to coordinate policy-level environmental issues [e.g., a strategic environmental assessment of the transport sector]. Following the completion of the restructuring being undertaken by the Fund for National and Regional Roads, an environmental unit should also be established in the new highway authority. The environmental units should be adequately

staffed, trained, equipped and funded so that they can ensure environmental standards in all aspects of transport management.

An Environmental Unit was not established, but the Ministry of Transport and Communication, through its relevant Sectors, is coordinating policy-level environmental issues, such as environmental impact and strategic environmental assessments.

Recommendation 13.2:
The Ministry of Transport and Communication should prepare a Transport Plan subject to a strategic environmental assessment. The Ministry of Environment and Physical Planning should support the carrying out of the strategic environmental assessment. The Ministry of Finance and the Ministry of Transport and Communications should allocate funds within the transport sub-sectors (road, rail, air) taking into account the results of the strategic environmental assessment.

The Ministry of Transport and Communication, in the framework of the CARDS 2006 project "Technical Assistance to the Ministry of Transport and Communications", developed a National Transport Strategy (NTS). The Government adopted the NTS in 2008, based on public hearings and debates, without a full strategic environmental assessment procedure, due to lack of licensed strategic environmental experts in the country.

NTS initially covered only the road sector, but the scope was expanded to also include:

1. Improvement of economic development by improvement of connectivity
2. Improvement of vehicle and user safety
3. Improvement of mobility, in particular dealing with urban transport
4. Environmental effects of the transport policy
5. Financing and investment issues, including public and private partnerships and income arrangements
6. A Monitoring and Action Plan for the implementation of the strategy
7. Transformation of the road sector.

Recommendation 13.3:
Upon completion of the general Environmental Impact Assessment procedures, the Ministry of Environment and Physical Planning should work with the Ministry of Transport and Communications to develop sector-specific environmental impact assessment (EIA) guidelines.

This recommendation has not been yet implemented.

Recommendation 13.4:
The Ministry of Environment and Physical Planning, together with the Ministry of Economy and other stakeholders, should develop a clear strategy and action plan with set targets and an implementation schedule to phase out the use of leaded petrol.

In June 2009 the Ministry of Economy in cooperation with the Ministry of Environment and Physical Planning adopted a Rulebook for Fuel Quality with clear targets and an implementation schedule for phasing out leaded petrol.

Chapter 14. Human health and the environment

Recommendation 14.1:
The Ministry of Health, in cooperation with the Ministry of Environment and Physical Planning, and other institutes with responsibility for collecting monitoring data and health statistics, should lay the foundation for the establishment of an integrated and coherent environmental health information system. For instance:

a. The State Public Health Institute and the Ministry of Environment and Physical Planning should strengthen their collaboration in the redefinition of the country's air monitoring network with a view to optimizing

available resources, avoiding duplication and making the information provided more consistent. Priority should be given to ensuring that relevant indicators (such as PM10) are monitored, and to bringing air quality standards into line with the WHO Air Quality Guidelines and the relevant European Union directives. (See also recommendations 4.2 and 7.3.)

b. The Ministry of Health and the Ministry of Environment and Physical Planning should work together to redefine the policy framework for noise monitoring and noise standards, taking into consideration the WHO Guidelines for Noise as well as the European Union's policy on noise.

c. The Ministry of Health, together with the Ministry for Education and Science and other relevant institutions, should establish and coordinate the implementation of a set of common methods for the monitoring and analysis of contaminants (biological and chemical) in different environmental media and foodstuffs. They should also continue professional training and inter-laboratory calibration and quality assurance schemes to ensure the accuracy and comparability of the results of monitoring and analytical procedures.

d. The State Public Health Institute, in collaboration with the regional Institutes, should conduct specific studies on health-related issues at environmental hot spots (e.g., in Bitola and Veles) as part of the overall monitoring system.

a. Air quality remains a problem in the major urban areas in the country. Problems due to air pollution affect approximately 60 per cent of the population, in particular, those living in the cities of Skopje, Veles, Bitola and Tetovo. Air pollution was mentioned as a major environmental issue in the first NEAP adopted in 1996. Since then, a number of legislative (EU air quality regulations) and monitoring activities have been implemented and enforced. The Institute of Public Health and 10 regional Centres of Public Health still monitor black smoke and sulphur dioxide (nine measurement sites in Skopje (seven) and Veles (two)), heavy metals (Skopje and Veles) and inert dusts in 10 cities. PM10, CO, SO2, NOx, O3, are monitored at 15 measuring sites by automatic online monitoring systems managed by the Ministry of Environment and Physical Planning, according to EU regulations.

b. The management of environmental noise is regulated by the Law on Environmental Noise Protection. The Law is harmonized with European legislation END 2002/49. The Law identifies noise exposure indicators, responsible authorities, and is responsible for preparing strategic noise maps and action plans. National limit values for prevention of noise adverse effects were established in compliance with WHO recommendations. The National Network for Environmental Monitoring has been developed under the auspices of MoEPP and MoH. In accordance with the National Annual Preventive Programme, noise monitoring has been carried out by the State Public Health Institute and the Centres for Public Health of Skopje, Bitola and Kumanovo.

c. This part of the recommendation has been partly implemented. The Public Health Institute is the body implementing this recommendation.

d. This part of the recommendations has not been implemented yet.

<u>Recommendation 14.2:</u>
The Ministry of Health, in collaboration with the other ministries involved in water management and control, should enforce sanitary protection zones around springs used for drinking water supply.

The recommendation has been partly implemented. Since the EPR was carried out, no reduction in five-day biological oxygen demand (BOD5) and in concentrations of ammonium in rivers has been observed in the country. At some monitoring stations, located on the rivers Crna Reka and Vardar, eutrophic water status with high BOD value was recorded. These results could reflect the status of inefficient treatment of urban and industrial wastewaters in the country, as well as the inadequate protection of river basins.

Problems associated with bathing water quality protection in the lakes are closely related to the implementation of one of the highest priorities in the country's environment protection — construction of adequate wastewater treatment facilities. The quality of surface waters used for sports and recreation purposes and for tourism on the

shores of the lakes is unsatisfactory, the sole exception being Ohrid Lake. There is evidence of water pollution with microbiological substances and organic substances.

The most seriously polluted waterways are reportedly the central and lower sections of the Vardar, Pcinja, Bregalnica and Crna Rivers. The most serious water pollution concerns are the discharge of untreated wastewater from mining and industry, as well as wastewater from urban centres and livestock breeding farms. Reportedly, only 6 per cent of wastewaters in the country are treated prior to their discharge in rivers.

Recommendation 14.3:
The Government should expedite implementation of the new Food Law, including the establishment of a Food Agency under the Ministry of Health.

The new Law for Food Safety was endorsed by Parliament in 2010. In January 2011, the Food and Veterinary Agency was established as an independent Governmental body. However, the various roles and responsibilities have to be clarified. Cooperation with institutions that provided food control will be necessary. Food safety is tested in authorized and accredited laboratories in collaboration with the national authority responsible for food safety and food operators, i.e., the National Food and Veterinary Agency. Assessment of food safety is performed according to national legislation. The country is currently harmonizing its regulations in the area of food and consumer safety with the European legislation.

Recommendation 14.4:
The Government should designate a suitable site for the safe storage of radioactive waste.

According to the Laws for protection of ionizing radiation and radiation safety (No. 48/02 and No. 135/07) the management, handling and treatment of radioactive waste are under the responsibility of the Regulatory Safety Directorate, which operates in accordance with the International Atomic Energy Agency (IAEA) guidelines and regulations. Subsequent negotiations have been ongoing at the Governmental level to identify safe storage for radioactive waste, although no satisfactory solution has been found. The main reason is the opposition by residents of potential locations, which have thwarted Government efforts to comply with the requirement. The struggle to find a depot site has continued for five years.

Recommendation 14.5:
The Government should encourage and establish mechanisms for closer collaboration and the integration of common concerns between the Ministry of Environment and Physical Planning and the Ministry of Health. This should include, among other activities, the following:

- *Integration of environmental health concerns into the permitting system by involving representatives of the health sector in assessment and decision-making for new projects.*
- *Redefinition of the responsibilities of the respective Inspectorates in the two Ministries.*
- *Inclusion of representatives of the Ministry of Health in working groups established to approximate the country's legislation to that of the European Union.*
- *Establishment of common programmes for coordinated fund-raising from external sources.*
- *Implementation of the programme for Health, Environment and Safety Management in Enterprises (HESME).*

Mechanisms for collaboration between the Ministry of Environment and Physical Planning and the Ministry of Health exist, but not to a satisfactory level. National Committees and working groups for development of policies and strategies usually consist of representatives of both Ministries. However, there is a lack of coordination between the two Ministries in terms of implementation of joint activities on a daily basis and clarification of responsibilities, as well as the establishment of common programmes. Both Ministries often coordinate isolated projects with limited collaboration, which has an influence on the sustainability of the implemented activities.

Annex II

SELECTED REGIONAL AND GLOBAL ENVIRONMENTAL AGREEMENTS

Worldwide agreements		Former Yugoslav Republic of Macedonia	
		Date	**Status**
1971	(RAMSAR) Convention on Wetlands of International Importance especially as Waterfowl Habitat 1982 (PARIS) Amendment 1987 (REGINA) Amendments	1977	Su
1972	(PARIS) Convention Concerning the Protection of the World Cultural and Natural Heritage	1974	Su
1973	(WASHINGTON) Convention on International Trade in Endangered Species of Wild Fauna and Flora 1979 (BONN) Amendment 1983 (GABORONE) Amendment	1999	Ra
1979	(BONN) Convention on the Conservation of Migratory Species of Wild Animals	1999	Ra
	1991 (LONDON) Agreement Conservation of Bats in Europe	1999	Ra
	1992 (NEW YORK) Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS)		
	1995 (THE HAGUE) African/Eurasian Migratory Waterbird Agreement (AEWA)	1999	Ra
	1996 (MONACO) Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS)		
1985	(VIENNA) Convention for the Protection of the Ozone Layer	1994	Ra
	1987 (MONTREAL) Protocol on Substances that Deplete the Ozone Layer	1994	Ra
	1990 (LONDON) Amendment to Protocol	1998	Ra
	1992 (COPENHAGEN) Amendment to Protocol	1998	Ra
	1997 (MONTREAL) Amendment to Protocol	1999	Ra
	1999 (BEIJING) Amendment to Protocol	2002	Ra
1989	(BASEL) Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1997	Ra
	1995 Ban Amendment	2004	Ra
	1999 (BASEL) Protocol on Liability and Compensation		
1992	(RIO) Convention on Biological Diversity	1997	Ra
	2000 (CARTAGENA) Protocol on Biosafety	2005	Ra
1992	(NEW YORK) United Nations Framework Convention on Climate Change	1997	Ra
	1997 (KYOTO) Protocol	2004	Ra
1994	(PARIS) United Nations Convention to Combat Desertification	2002	Ra
1998	(ROTTERDAM) Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2010	Ra
2001	(STOCKHOLM) Convention on Persistent Organic Pollutants	2004	Ra

Ac = Accession; Ad = Adherence; At = Acceptance; De = Denounced; Si = Signed; Su = Succession; Ra = Ratification.

Regional and subregional agreements		Former Yugoslav Republic of Macedonia	
		Date	**Status**
1979	(BERN) Convention on the Conservation of European Wildlife and Natural Habitats	1997	Ra
1979	(GENEVA) Convention on Long-range Transboundary Air Pollution	1986	Su
	1984 (GENEVA) Protocol - Financing of Co-operative Programme (EMEP)	2010	Ra
	1985 (HELSINKI) Protocol - Reduction of Sulphur Emissions by 30%	2010	Ra
	1988 (SOFIA) Protocol - Control of Emissions of Nitrogen Oxides	2010	Ra
	1991 (GENEVA) Protocol - Volatile Organic Compounds	2010	Ra
	1994 (OSLO) Protocol - Further Reduction of Sulphur Emissions	2010	Ra
	1998 (AARHUS) Protocol on Heavy Metals	2010	Ra
	1998 (AARHUS) Protocol on Persistent Organic Pollutants	2010	Ra
	1999 (GOTHENBURG) Protocol to Abate Acidification, Eutrophication and Ground-level Ozone	2010	Ra
1991	(ESPOO) Convention on Environmental Impact Assessment in a Transboundary Context	1999	Ra
	2003 (KIEV) Protocol on Strategic Environmental Assessment	2003	Si
1992	(HELSINKI) Convention on the Transboundary Effects of Industrial Accidents	2010	Ra
1998	(AARHUS) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	1999	Ra
	2003 (KIEV) Protocol on Pollutant Release and Transfer Register	2010	Ra
2000	(FLORENCE) European Landscape Convention	2003	Ra

Ac = Accession; Ad = Adherence; At = Acceptance; De = Denounced; Si = Signed; Su = Succession; Ra = Ratification.

Annex III

SELECTED ECONOMIC AND ENVIRONMENTAL INDICATORS

Air pollution	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Emissions of SO_2										
- Total (t)	..	..	137,129.6	136,400.0	149,600.0	100,796.8	141,033.6	142,144.2	109,542.7	..
- by sector (t)	..	..								..
Energy	..	..	101,974.4	103,584.0	111,008.0	99,376.0	105,878.4	106,560.0	108,288.0	..
Industry	..	..	34,640.0	32,300.8	37,606.4	355.2	34,640.0	35,584.0	224.0	..
Transport	..	..	515.2	515.2	985.6	1,024.0	515.2	0.2	1,024.0	..
Other	..	..	0.0	0.0	0.0	41.6	0.0	0.0	6.7	..
- per capita (kg/capita)	..	..	..	..	..	..	..	..	..	..
- per unit of GDP (kg/1,000 National currency units)	..	..	..	..	..	..	..	..	..	..
Emissions of NO_x (converted to NO_2)										
- Total (t)	..	..	31,881.3	35,073.6	42,125.1	33,735.1	46,025.8	46,550.1	39,650.4	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	..	..	14,908.0	16,085.6	19,047.8	17,341.3	19,770.0	20,009.2	25,299.0	..
Industry	..	..	5,588.8	7,640.3	8,509.7	4,931.0	8,845.4	8,739.7	2,759.9	..
Transport	..	..	11,384.5	11,347.7	14,567.6	11,269.5	17,410.3	17,801.3	11,499.5	..
Other	..	..	0.0	0.0	0.0	193.2	0.0	0.0	92.0	..
- per capita (kg/capita)	..	..	..	..	..	..	..	..	..	..
- per unit of GDP (kg/1,000 National currency units)	..	..	..	..	..	..	..	..	..	..
Emissions of ammonia NH_3										
- Total (t)	..	..	..	..	..	..	..	..	..	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	..	..	..	..	..	..	..	..	..	..
Industry	..	..	..	..	..	..	..	..	..	..
Transport	..	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..	..
Emissions of total suspended particles (TSP)										
- Total (t)	..	..	..	..	..	..	..	..	..	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	..	..	..	..	..	..	..	..	..	..
Industry	..	..	..	..	..	..	..	..	..	..
Transport	..	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..	..
Emissions of non-methane volatile organic compounds (NMVOC)										
- Total (t)	..	..	..	..	124,087.7	..	..	..	137,822.0	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	..	..	..	..	5,409.4	..	..	..	5,538.0	..
Industry	..	..	..	..	10,017.4	..	..	..	10,379.0	..
Transport	..	..	..	..	9,793.3	..	..	..	11,905.0	..
Other	..	..	..	..	98,867.6	..	..	..	110,000.0	..

Air pollution (continued)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Emissions of persistent organic pollutants (PCBs, dioxin/ furan and PAH)										
- Total (t)	..	..	..	..	..	..	..	..	..	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	..	..	..	..	..	..	..	..	..	..
Industry	..	..	..	..	..	..	..	..	..	..
Transport	..	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..	..
Emissions of heavy metals										
- Total cadmium (t)	..	..	..	..	..	..	..	..	..	..
- Total lead (t)	..	..	..	..	..	..	..	..	..	..
- Total mercury (t)	..	..	..	..	..	..	..	..	..	..
Greenhouse gas emissions (total of CO_2, CH_4, N_2O, CFC, etc.) expressed in CO_2										
- Total (t)	15,028,560.0	12,893,430.0	12,570,960.0	..	..	..	..	..	..	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	9,226,897.3	9,355,703.3	9,755,524.3	..	..	..	..	..	..	..
Industry	885,698.7	929,018.3	784,045.3	..	..	..	..	..	..	..
Transport	na	na	na	..	..	..	..	..	..	..
Agriculture	1,379,516.6	1,313,287.8	1,141,021.8	..	..	..	..	..	..	..
Waste	844,231.2	836,382.7	840,588.6	..	..	..	..	..	..	..
Other	2,692,213.1	459,033.0	49,779.5	..	..	..	..	..	..	..
Emissions of CO_2										
- Total (t)	12,017,815.2	10,084,587.4	10,072,656.7	..	..	..	..	..	..	..
- by sector (t)	..	..	..	..	..	..	..	..	..	..
Energy	8,791,000.0	8,934,373.0	9,348,403.0	..	..	..	..	..	..	..
Industry	780,650.2	733,133.6	679,023.6	..	..	..	..	..	..	..
Transport	..	..	..	..	..	..	..	..	..	..
Agriculture	0.0	0.0	0.0	..	..	..	..	..	..	..
Waste	0.0	0.0	0.0	..	..	..	..	..	..	..
- per capita (kg/capita)	..	..	..	..	..	..	..	..	..	..
- per unit of GDP (kg/1,000 National currency)	..	..	..	..	..	..	..	..	..	..
Greenhouse gas (GHG) emissions vs. targets (if established) (% of the target)	..	..	..	..	..	..	..	..	..	..
Urban population exposed to air quality exceedances	..	..	..	..	..	..	..	..	..	..
- Number of exceedances of maximum allowable concentration (MAC) (times/year)	..	..	..	..	..	..	..	..	..	..
- Air pollution index (% of population affected)	..	..	..	..	..	..	..	..	..	..
Consumption of ozone-depleting substances (ODS) (t)	77.9	77.0	43.4	55.3	26.6	13.7	9.4	1.3	2.0	4.0

Source: *Ministry of Environment and Physical Planning*

Water	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Accessible freshwater resources										
Total (million m^3)	..	..	..	..	..	..	..	..	..	..
- Surface water (million m^3)	..	..	..	..	..	..	..	..	..	..
- Groundwater (million m^3) 1)	314.3	314.3	314.3	314.3	314.3	314.3	314.3	314.3	314.3	314.3
Water abstraction										
Total abstraction (million m^3/year)	739.5	754.0	712.2	904.7	2,058.7	1,465.2	1,141.9	570.7	907.1	1,285.3
Intensity of water usage (water abstraction/accessible resources)	..	..	..	..	..	..	..	..	..	..
Total water consumption by sectors (million m^3)	692.0	667.8	633.2	826.3	1,675.3	1,156.6	900.0	551.2	715.8	1,047.1
- Households	126.6	114.4	125.9	122.4	118.6	117.8	115.5	114.8	143.3	163.9
- Industry	182.4	246.7	225.9	310.6	1,311.9	792.9	602.5	310.9	294.6	523.2
of which water used for cooling	8.9	6.9	6.6	9.8	12.5	0.5	13.3	12.3	7.5	38.5
- Agriculture	383.0	306.7	281.4	393.3	244.8	255.1	182.0	125.5	277.9	359.9
Source: *State Statistical Office*										
1) Estimated data from administrative source										
Household water consumption index (l/capita/day)	..	..	..	..	..	..	..	..	..	..
Nutrient and organic water pollution discharged into rivers (thousand t)	..	..	..	..	..	..	..	..	..	..
- Suspended solids	..	..	..	..	..	..	..	..	..	..
- Biological oxygen demand (BOD)	..	..	..	..	..	..	..	..	..	..
- Ammonium	..	..	..	..	..	..	..	..	..	..
- Nitrates	..	..	..	..	..	..	..	..	..	..
- Phosphates	..	..	..	..	..	..	..	..	..	..
Wastewater treatment (average removal rate in %)	..	..	..	..	..	..	..	..	..	..
- Suspended solids	..	..	..	..	..	..	..	..	..	..
- Biological oxygen demand (BOD)	..	..	..	..	..	..	..	..	..	..
- Ammonium	..	..	..	..	..	..	..	..	..	..
- Nitrates	..	..	..	..	..	..	..	..	..	..
- Phosphates	..	..	..	..	..	..	..	..	..	..

Biodiversity and living resources	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Protected areas										
- Total area (km^2)	1,887.3	1,887.3	1,887.3	1,887.3	1,887.3	1,887.3	1,887.3	1,887.3	2,220.5	2,313.8
- Total area (% of national territory)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	8.7	9.0
- Protected area IUCN categories (% of national territory)	..	..	..	..	..	..	..	..	..	..
Ia Strict Nature Reserve	..	..	..	..	..	..	..	..	0.5	0.5
Ib Wilderness Area	..	..	..	..	..	..	..	..	..	..
II National Park	..	..	..	..	..	..	..	..	4.4	4.4

Biodiversity and living resources (continued)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
III Natural Monument	..	..	..	..	..	..	..	..	2.5	2.7
IV Habitat / Species Management Area	..	..	..	..	..	..	..	..	0.1	0.1
V Protected Landscape / Seascape	..	..	..	..	..	..	..	..	0.1	0.2
VI Managed Resource Protected Area	..	..	..	..	..	..	..	..	1.1	1.1
Forests										
- Total area (km²)	9,575.5	9,973.7	9,890.5	9,552.9	9,476.5	9,552.3	9,592.6	9,419.7	9,430.5	9,493.3
- Total area (% of national territory)	37.2	38.8	38.5	37.2	36.8	37.1	37.3	36.6	36.7	36.9
- Naturalness										
Undisturbed by man (1,000 ha)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Semi-natural (1,000 ha)	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Plantation (1,000 ha)	105.0	..	..	..	..	105.0	..	..	..	105.0
- volume of the wood (thousand m³)	..	..	..	..	..	..	..	..	..	..
- harvesting intensity (harvest/growth)	..	..	..	..	..	..	..	..	..	..
Number of endangered species (IUCN categories)										
- Critically endangered	..	..	..	..	..	..	..	..	..	..
- Endangered	..	..	..	..	..	..	..	..	..	..
- Vulnerable	..	..	..	..	..	..	..	..	..	..
Industrial fish catch (t)										
- From fish farming (t)	..	..	..	..	..	..	..	..	..	..
- From natural water bodies (t)	..	..	..	..	..	..	..	..	..	..

Source: *State Statistical Office, Ministry of Environment Physical Planning*

Land resources and soil	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Arable land (thousand ha)	499.0	512.0	480.0	473.0	461.0	448.0	439.0	431.0	424.0	420.0
Cultivated land (thousand ha)	599.0	612.0	577.0	569.0	560.0	546.0	537.0	526.0	521.0	513.0
Soil erosion										
- % of total land	..	..	..	..	..	..	..	..	..	..
- % of agricultural land	..	..	..	..	..	..	..	..	..	..
Fertiliser use per ha of cultivated land										
- Mineral fertilizers (kg/ha)	27.45*	16.26*	18.35*	17.7*	17.73*	18.13*	18.14*	14.38*	14.95*	..
- Organic fertilizers (t/ha)	..	..	..	..	..	..	..	..	..	..
Pesticide use (kg/ha)	0.51	0.54	0.42	0.39	0.48	0.29	0.62	0.23	0.17	..

Source: *State Statistical Office, Ministry of Environment and Physical Planning*

* Data are only for agricultural enterprises and agricultural cooperatives

Energy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total primary energy supply (TPES) (Mtoe)	2.76	2.68	2.89	2.74	2.75	2.86	2.93	3.03	3.02	2.79
Total final energy consumption (TFC) (Mtoe)	1.61	1.44	1.79	1.62	1.64	1.71	1.73	1.82	1.80	1.69
- by fuel										
Coal	0.11	0.10	0.07	0.10	0.10	0.13	0.14	0.18	0.15	0.07
Petroleum products	0.68	0.59	0.97	0.70	0.71	0.73	0.71	0.78	0.75	0.74
Gas	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Electricity	0.45	0.43	0.43	0.49	0.50	0.54	0.55	0.58	0.59	0.55

Energy (continued)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Heat	0.15	0.13	0.14	0.13	0.12	0.13	0.12	0.11	0.10	0.10
Other	0.22	0.16	0.15	0.18	0.18	0.16	0.17	0.15	0.18	0.20
- by sector										
Industry	0.54	0.46	0.44	0.46	0.46	0.56	0.59	0.66	0.61	0.42
Transport	0.37	0.35	0.38	0.35	0.35	0.35	0.35	0.40	0.41	0.43
Agriculture	0.06	0.06	0.03	0.03	0.06	0.04	0.03	0.02	0.02	0.02
Other	0.65	0.58	0.94	0.78	0.76	0.76	0.76	0.73	0.75	0.81
Energy intensity TPES/GDP (PPP) (toe/thousand US$ (2000) PPP) [1)]	0.71	0.72	0.77	0.71	0.68	0.68	0.66	0.65	0.61	0.57
Energy productivity GDP (PPP)/TPES (thousand US$ (2000) PPP/toe) [1)]	1.41	1.39	1.30	1.41	1.47	1.47	1.51	1.55	1.63	1.75
TPES/Population (toe per capita)	1.36	1.32	1.43	1.35	1.35	1.41	1.43	1.48	1.48	1.36

Source:*State Statistical Office*
1) toe/tousand euros (2000). Data for GDP in US$(2000) PPP is not available.

Transportation	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of transport accidents (land, air and maritime)	1,667	1,300	1,628	1,926	1,988	2,821	3,313	4,037	4,403	4,353
In which										
- Died	144	87	144	105	133	123	130	147	155	149
- Injured	1,523	1,213	1,484	1,821	1,855	2,698	3,183	3,890	4,248	4,204
Size and composition of motor vehicle fleet (1,000)	..	..	..	..	..	..	..	..	..	..
Freight vehicle fleet	29	31	31	30	25	26	29	27	29	32
- Trucks	21	22	20	19	15	15	14	13	13	14
Passenger vehicle fleet										
- Buses (including passenger vans)	2	3	2	2	2	2	2	2	2	2
- Cars	300	309	308	300	253	253	242	249	263	282
Passenger transportation (million passenger kilometres)	774	831	1,042	1,344	1,110	1,087	1,016	1,027	1,239	1,213
Freight transportation (million ton kilometres)	776	3,131	3,679	5,450	5,341	5,576	8,299	5,938	3,978	4,035

Source: *State Statistical Office*

Waste	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Generation of waste										
Total waste generation (t)	..	..	..	..	..	..	..	..	..	20,412,615
- Hazardous waste (if available, by class of hazard) (t)	..	..	..	..	..	..	..	..	..	..
- Industrial waste (t)	..	..	..	..	..	..	..	..	..	19,659,639
- Municipal waste (t)	..	..	..	400,088	463,947	572,381	589,552	607,239	713,564	752,976
- Radioactive (nuclear) waste (t)	..	..	..	..	..	..	..	..	..	..
Transboundary movements of hazardous waste (t)	..	..	..	..	..	..	..	..	..	..
Waste intensity (total waste generated per unit of GDP) (t/1,000 National currency units)	..	..	..	..	..	..	..	..	..	..
Waste recycling and reuse (t)	..	..	..	..	..	..	..	..	..	429,233.80

Source: *Ministry of Environment and Physical Planning, State Statistical Office*

Health and Demography	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Drinking water quality										
- Samples failing the standards on sanitary-chemical indicators (%)	..	4.2	5.3	7.5	5.6	5.6	3.8	5.6	4.1	5.4
- Samples failing the standards on microbiological indicators (%)	..	1.3	1.5	1.0	1.0	0.8	1.4	1.0	0.9	1.2

Health and Demography (continued)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Population with access to safe drinking water (%)	..	..	..	..	..	..	..	..	..	..
Population with access to improved sanitation (%)	..	..	..	..	..	..	..	..	..	..
Incidence of typhoid, paratyphoid infections (per 100,000 population)	..	..	..	..	..	..	..	..	..	..
Salmonella infections (per 100,000 population)	..	..	..	..	..	..	..	..	..	..
Active tuberculosis incidence rate (per 100,000 population)	..	..	..	..	..	..	..	..	..	..
Viral hepatitis incidence rate, including vaccination cases (per 100,000 population)	..	..	..	..	..	..	..	..	..	..
Health expenditure (% of GDP)	..	..	..	..	..	..	..	..	..	..
Birth rate (per 1000)	12.9	11.9	12.0	11.6	11.5	11.0	11.1	11.1	11.2	11.5
Total fertility rate	1.7	1.5	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Mortality rate (per 1000)	8.4	8.3	8.8	8.8	8.8	9.0	9.1	9.6	9.3	9.3
Infant mortality rate (deaths/1000 live births)	13.2	13.2	11.7	12.8	13.2	12.8	11.5	10.3	9.7	11.7
Female life expectancy at birth (years)	75.6	75.6	75.8	75.7	75.9	75.9	75.9	72.0	76.3	..
Male life expectancy at birth (years)	70.9	70.9	71.0	71.1	71.4	71.6	71.7	76.1	72.1	..
Life expectancy at birth (years)	73.2	73.2	73.3	73.4	73.6	73.8	73.8	74.0	74.2	..
Population aged 0-14 years (%)	22.3	21.8	21.3	20.7	20.2	19.7	19.2	18.7	18.3	17.9
Population aged 65 or over (%)	10.0	10.2	10.5	10.6	10.8	11.0	11.2	11.3	11.4	11.6
Ageing index (number of persons 65 years or over per hundred persons under age of 15)	44.8	47.0	49.3	51.3	53.5	55.8	58.1	60.4	62.6	64.6
Total population (million inhabitants)	2.026	2.035	2.020	2.027	2.033	2.037	2.040	2.044	2.047	2.051
- % change (annual)	0.5	0.4	-0.7	0.3	0.3	0.2	0.2	0.2	0.2	0.2
- Population density (inhabitants/km²)	78.8	79.1	78.6	78.8	79.0	79.2	79.3	79.5	79.6	79.8

Source: *State Statistical Office, Ministry of Environment and Physical Planning*

Socio economic issues	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP										
- change (2000=100)	..	..	-	-	-	-	-	-	-	-
- change over previous year (%)	4.5	-4.5	0.9	2.8	4.6	4.4	5.0	6.1	5.0	-0.9
- in current prices (million National currency)	236,389.0	233,841.0	243,970.0	258,369.0	272,462.0	295,052.0	320,059.0	364,989.0	411,728.0	410,734.0
- in current prices (million US$)	3,587.9	3,436.7	3,768.8	4,757.9	5,514.3	5,985.8	6,560.6	8,161.9	9,834.8	9,318.6
- per capita (US$)	1,770.6	1,688.9	1,865.6	2,347.5	2,713.0	2,938.8	3,215.6	3,994.0	4,804.7	4,539.7
- per capita (US$ PPP per capita)	6,182.9	6,016.7	6,149.2	6.443.74	7,049.9	7,559.8	8,225.8	8,962.7	9,600.3	9,585.0
Industrial output (annual 2000=100)	..	..	..	..	..	..	..	..	..	..
Industrial output (% change over previous year)	..	..	..	..	..	..	..	..	..	..
Agricultural output (% change over previous year)	..	..	..	..	..	..	..	..	..	..
Share of agriculture in GDP (%)	..	..	..	..	..	..	..	..	..	..
Labour productivity in industry (% change over previous year)	..	..	..	..	..	..	..	..	..	..
Consumer price index (CPI) (% change over the preceding year, annual average)	5.8	5.5	1.8	1.2	-0.4	0.5	3.2	2.3	8.3	-0.8
Producer price index (PPI) (% change over the preceding year, annual average)	..	2.0	-0.8	0.0	0.9	3.2	6.8	2.5	10.1	-7.2
Registered unemployment (% of labour force, end of period)	..	..	..	..	..	..	..	..	..	..
Labour force participation rate (% of 15-64 year-old)	..	..	..	..	58.8	60.7	62.2	62.8	63.5	64.0

Socio economic issues	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Employment in agriculture (%) [1)]	..	..	..	..	16.8	19.5	20.1	18.2	19.7	18.5
Current account balance	..	..	..	..	..	..	..	..	..	..
- Total (million US$)	..	..	..	..	..	..	..	..	..	..
- (as % of GDP)	..	..	..	..	..	..	..	..	..	..
Balance of trade in goods and services (million US$)	..	..	..	..	..	..	..	..	..	..
Net foreign direct investment (FDI) (million US$)	..	..	..	..	..	..	..	..	..	..
Net foreign direct investment (FDI) (as % of GDP)	..	..	..	..	..	..	..	..	..	..
Cumulative FDI (million US$)	..	..	..	..	..	..	..	..	..	..
Foreign exchange reserves	..	..	..	..	..	..	..	..	..	..
- Total reserves (million US$)	..	..	..	..	..	..	..	..	..	..
- Total reserves as months of imports	..	..	..	..	..	..	..	..	..	..
Exports of goods (million US$)	..	..	..	..	..	..	..	..	..	..
Imports of goods (million US$)	..	..	..	..	..	..	..	..	..	..
Net external debt (million US$)	..	..	..	..	..	..	..	..	..	..
Ratio of net debt to exports (%)	..	..	..	..	..	..	..	..	..	..
Ratio of net debt to GDP (%)	..	..	..	..	..	..	..	..	..	..
Exchange rate, annual averages (National currency unit/ US$)	..	..	..	..	..	..	..	..	..	..

Source: *State Statistical Office*

1) The data refer to A+B sector of NACE classification

Income and poverty	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP per capita (1,000 US$/capita)	1.77	1.69	1.87	2.35	2.71	2.94	3.22	3.99	4.80	4.54
Poverty										
- Population living below 50% of median income (%)	..	..	..	..	..	..	..	..	..	..
Income inequality (Gini coefficient)	..	..	..	..	..	..	..	..	..	..
Minimum to median wages (minimum wage as a percentage of median wage)	..	..	..	..	..	..	..	..	..	..

Source: *State Statistical Office*

Communications	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Telephone lines per 100 population	39.8	38.9	39.3	35.7	36.0	32.9	32.9	32.6	32.5	33.3
Cellular subscribers per 100 population	4.9	10.9	18.1	30.0	49.1	61.9	69.5	88.3	115.7	103.6
Personal computer in use per 100 population	..	..	..	..	..	..	..	..	..	..
Internet users per 100 population1) 2)	..	..	..	..	21.1	21.1	25.2	29.7	41.5	50.0

Source:State Statistical Office
1) Percentage of individuals aged 16 to 74 who access the Internet in the last 3 months.
2) Data for 2004 and 2005 are the same figure, obtained from ICT survey conducted as a pilot survey in February 2005, covering period of the end of 2004 and beginning of the 2005.

Education	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Literacy rate (%)	..	..	..	..	..	..	..	..	..	..
Education expenditure (% of the GDP)	3.5	3.6	3.6	3.8	3.6	3.4	3.5	3.2	..	..

Source: State Statistical Office.

Annex IV

LIST OF MAJOR ENVIRONMENT-RELATED LEGISLATION IN MACEDONIA

LEGAL ACTS REGULATING THE CONSTITUTIONAL SYSTEM

- Constitution of the Republic of Macedonia ("Official Gazette of RM" No. 52/91) and Amendments to the Constitution of the Republic of Macedonia (Decision for Proclamation of the Amendments to the Constitution of RM, "Official Gazette of RM" No. 52/91, 1/92, 31/98, 91/01,84/03)

SECTORAL LAWS AND OTHER RELEVANT LAWS SYSTEM RELATED LAWS AND REGULATIONS (IN ALPHABETICAL ORDER)

- Law on Administrative procedure (Official Gazette of RM" No.38/05, amended in 2008)
- Law on Budget of RM for 2011 Official Gazette of RM" No.161/2001
- Law on Civil Procedure Official Gazette of RM" No. 79/05 amended in 2008/09/10/11
- Law on Free access to public information of public character (off. Journal no. 13/06 and 86/08 amended in 2010)
- Law on Government of Republic of Macedonia (Official Gazette of RM" No.59/00, amended in 03/04,05, 06, 07, 08, 10)
- Law on Misdemeanours ("Official Gazette of RM" No.62 / 2006 amended in 2009
- Law on the Local Self-Government ("Official Gazette of RM" No. 5/02)
- Law on Organisation and Operation of the State Administrative Bodies ("Official Gazette of RM" No. 58/00, 44/00),
- Law on the financing of the Local Self-Government ("Official Gazette of RM" No. 55/04)
- Criminal Code ("Official Gazette of RM" No. tax40/06 ammended in 2008),
- Law on Civil Servants ("Official Gazette of RM" No. 59/00, 112/00, 34/01, 103/01, 43/02, 98/02, 17/03, 40/03, 85/03, 17/04, 69/04)
- Law on Customs Administration ("Official Gazette of RM" Nos. 21/98, 26/98, 63/98, 86/99, 25/00, 109/00, 31/01, 4/02, 55/02, 42/03),
- Law on Customs Tariff ("Official Gazette of RM" Nos.23/03, 69/04)
- Law on Concessions and public- private partnership ("Official Gazette of RM" No. 07/08 ammended in 08/09/10).

LIST OF STRATEGIC AND LEGAL ACTS (LAWS AND SUBSIDIARY LEGISLATION) IN THE AREA OF ENVIRONMENT (BY SUBJECT, PROCEDURE AND CHRONICAL ORDER)

ENVIRONMENT		
Law on environment		
1.	Law on environment	"Official Journal of RM" no. 53/05 from 05.07.2005
2.	Law on amendments and supplements of the Law on environment	"Official Journal of RM" no. 81/05 from 27.09.2005
3.	Law on amendments and supplements of the Law on environment	"Official Journal of RM" no. 24/07 from 01.03.2007
4.	Law on amendments of the Law on environment	"Official Journal of RM" no. 159/08 from 22.12.2008

5.	Law on amendments of the Law on environment	"Official Journal of RM" no. 83/09 from 03.07.2009
6.	Law on amendments and supplements of the Law on environment	"Official Journal of RM" no. 48/10 from 09.04.2010
7.	Law on amendments and supplements of the Law on environment	"Official Journal of RM" no. 124/10 from 20.09.2010
Subsidiary legislation based on the law of environment		
Orders for trade restrictions		
1.	Order on restrictions of production, trade and use of detergents for mechanical washing of textile products containing phosphorus in organic or inorganic form with over 0.5% by weight	"Official Journal of RM" no. 27/05 from 26.04.2005
2.	Order prohibiting the importation of used refrigerators, freezers and other cooling or freezing devices and import of substances that depleting the ozone layer	"Official Journal of RM" no. 87/06 from 01.08.2006
3.	Order for termination of validity of the injunction prohibiting internal trade, purchase and export of scrap and waste products from iron, steel, aluminum, copper, lead, zinc, tin, bronze and brass	"Official Journal of RM" no. 113/07 from 20.09.2007
4.	Order prohibiting the use of plastic bags for transport and trade in stores, offices and markets r trade of food products and minor products for general consumption	"Official Journal of RM" no. 109/08 from 29.08.2008
5.	Order prohibiting the use of plastic bags for trade and transport of goods and of fine products for personal consumption in shops, stores, warehouses, offices, green markets and specific markets, for sale of food products in shops and kiosks	"Official Journal of RM" no. 48/09 from 13.04.2009
6.	Order to restrict imports of air conditioning systems containing chlorofluorocarbons (HCFC)	"Official Journal of RM" no. 92/10 from 09.07.2010
7.	Order to restrict the import of substances that deplete the ozone layer	"Official Journal of RM" no. 92/10 from 09.07.2010
8.	Order prohibiting the manufacture and sale of substances that deplete the ozone layer as well as production and trade of products containing substances that deplete the ozone layer	"Official Journal of RM" no. 92/10 from 09.07.2010
9.	Order banning the import and export of products containing chlorofluorocarbons (HCFC)	"Official Journal of RM" no. 92/10 from 09.07.2010
Sub-legislation on export- import permits		
1.	Guidelines for data required for issuing a license on import- export of goods under the mark-D4	"Official Journal of RM" no. 91/04 from 23.12.2004
Sub-legislation on Fees		
1.	Decision on determining the products for which a trade, import / export fee is charged	"Official Journal of RM" no. 75/05 from 07.09.2005
2.	Ordinance on the conditions, manner and procedure for the refund of the fee for the production of tobacco products, petroleum derivatives, plastic products and packaging from plastic	"Official Journal of RM" no. 115/05 from 28.12.2005

3.	Ordinance on the manner, procedure and deadlines for determining, calculating, payment of fees, the manner and procedure for running, maintaining and keeping records of calculated and paid compensation, the content, method and deadlines for establishing, maintaining and keeping records of the bonds, and the method of data submission for keeping records	"Official Journal of RM" no. 115/05 from 28.12.2005
4.	Decision on determining the type of packaging material from which compensation is calculated for the plastic products and packaging from plastic, the method of calculation of compensation and its disclosure, the types of products that are packaged in packs and types of bags and bags which compensation is calculated	"Official Journal of RM" no. 65/07 from 30.05.2007
5.	Ordinance on the manner and procedure for the determination, calculation and payment of compensation for energy production from fossil fuels	"Official Journal of RM" no. 77/07 from 20.06.2007
6.	Decree on the type and extent of the installations that produce energy produced from burning fossil fuels	"Official Journal of RM" no. 84/07 from 04.07.2007
7.	Decree on the methodology for allocation of funds generated as income from fees for energy production from fossil fuels	"Official Journal of RM" no. 12/08 from 23.01.2008
8.	Program for environmental investment in 2008	"Official Journal of RM" no. 13/08 from 25.01.2008
9	Program amending and supplementing the Program for environmental investment in 2008	"Official Journal of RM" no. 37/08 from 19.03.2008
10.	Ordinance amending the ordinance on the manner, procedure and deadlines for determination, calculation, payment of fees, the manner and procedure for running, maintaining and keeping records of calculated and paid compensation, the content, method and deadlines for establishing, maintaining and keeping records of the bonds, as and the method of data submission for keeping records	"Official Journal of RM" no. 152/08 from 05.12.2008
11.	Program for environmental investment in 2009	"Official Journal of RM" no. 6/09 from 15.01.2009
12.	Program for environmental investment in 2010	"Official Journal of RM" no. 8/10 from 21.01.2010
13	Program for environmental investment in 2011	"Official Journal of RM" no. 6/11 from 17.01.2011
14	Decree amending the Decree on the methodology for allocation of funds generated as income from fees for energy production from fossil fuels	"Official Journal of RM" no. 22/11 from 23.02.2011
Sub legislation on Inspection		
1.	Ordinance on form and content as well as the manner and procedure for issuance and revocation of the identification of the state environmental inspector, inspector of nature protection and the Authorized Inspector of Environment	"Official Journal of RM" no. 80/05 from 23.09.2005
2.	Ordinance on the cost of activities carried out from the administrative proceedings at the request of private parties	"Official Journal of RM" no. 100/05 from 21.11.2005
3.	Ordinance the content of the annual report of the inspection and the method and deadline for its submission	"Official Journal of RM" no. 71/06 from 08.06.2006
4.	Ordinance on content, form and manner of adoption of the plan for performing the inspection	"Official Journal of RM" no. 128/07 from 19.10.2007

Subsidiary legislation on evironmental labeling		
1.	Ordinance the format and content of environmental labels, manner, conditions and procedures for its allocation and utilization, and composition and method of forming a working committee for environmental labels	"Official Journal of RM" no. 109/05 from 14.12.2005
2.	Ordinance on the criteria that must be met for obtaining an eco-label to detergents for manual dishwashing	"Official Journal of RM" no. 165/08 from 30.12.2008
3.	Ordinance on the criteria that must be met for obtaining an eco-label for tourist accommodation	"Official Journal of RM" no. 2/09 from 05.01.2009
4.	Ordinance on the criteria that must be met for obtaining an eco-label for furniture	"Official Journal of RM" no. 44/10 from 31.03.2010
5.	Ordinance on the criteria that must be met for obtaining an eco-label for textile products	"Official Journal of RM" no. 44/10 from 31.03.2010
6.	Ordinance on the criteria that must be met for obtaining an eco-label for paints and varnishes	"Official Journal of RM" no. 46/10 from 09.04.2010
7.	Ordinance on the criteria that must be met for obtaining an eco-label for paper hygiene	"Official Journal of RM" no. 117/10 from 02.09.2010
8.	Ordinance on the criteria that must be met for obtaining an eco-label for footwear	"Official Journal of RM" no. 117/10 from 02.09.2010
9.	Ordinance on the criteria that must be met for obtaining an eco-label for soaps, shampoos and hair conditioners	"Official Journal of RM" no. 117/10 from 02.09.2010
Sub legislation on Prizes and awards		
1.	Ordinance on the procedure, manner and conditions for awarding prizes and awards for achievements in the protection and promotion of the environment, and the method of operation and composition of the committee on awards	"Official Journal of RM" no. 109/05 from 14.12.2005
Access to information		
1.	Decision on publishing a list of entities that possess or that hold environmental information	"Official Journal of RM" no. 82/07 from 29.06.2007
2.	Ordinance on the manner and procedure for providing access to environmental information	"Official Journal of RM" no. 93/07 from 26.07.2007
Sub-legislation on Strategic Environmental assessment		
1.	Ordinance on the composition of the committee and manner of work, on the manner of taking the exam, the fee for taking the exam and the fee for establishing and maintaining a list of experts for strategic environmental assessment and the manner of acquisition and loss of the status of an expert on strategic environmental assessment, and the manner and procedure for inclusion and exclusion from the list of experts	"Official Journal of RM" no. 129/07 from 24.10.2007
2.	Decree on the criteria being a basis for deciding whether certain planning documents could have a significant impact on the environment and human health	"Official Journal of RM" no. 114/07 from 30.11.2007
3.	Decree for the content of the report on strategic environmental assessment	"Official Journal of RM" no. 153/07 from 20.12.2007

4.	Decree on the strategies, plans and programs, including amendments in those strategies, plans and programs, which must be a procedure for assessing their impact on the environment and the lives and health	"Official Journal of RM" no. 153/07 from 20.12.2007
5.	Decree on public participation during the drafting of regulations and other acts, as well as plans and programs from the environment	"Official Journal of RM" no. 147/08 from 26.11.2008
Sub-legislation on Environmental Impact assessment		
1.	Decree determining projects and the criteria on the basis of which the need for conducting the assessment of environmental impacts	"Official Journal of RM" no. 74/05 from 05.09.2005
2.	Ordinance for the content of the notice of the intention to implement the project, the decision from the need for assessing the impact of the project on environmental assessment study of the impact of the project on the environment, a report on the adequacy of the study on impact assessment the project on the environment and the decision to give consent or consultation of the public rejects the project implementation, and manner for conducting consultation	"Official Journal of RM" no. 33/06 from 20.03.2006
3.	Ordinance on the form, content, procedure and method of preparation of the report on the adequacy of the assessment study project on the environment, and the procedure for authorization of persons from the list of experts for assessment of environmental impact, which will prepare a report	"Official Journal of RM" no. 33/06 from 20.03.2006
4.	Ordinance on the content of the requirements to be met the study assessing the impact of project on environment	"Official Journal of RM" no. 33/06 from 20.03.2006
5.	Ordinance on the information that should include the notice of intention for the project and the procedure to determine the need assessment of the impact from the project on environment	"Official Journal of RM" no. 33/06 from 20.03.2006
6.	Ordinance for the content of the report on the environmental situation/ state	"Official Journal of RM" no. 35/06 from 23.03.2006
7.	Ordinance on the composition of the committee and manner of its proceeding, the work program and the manner of taking the exam, the fee for taking the exam and the fee for establishing and maintaining a list of experts and manner of acquisition and loss of status of an expert assessment the impact of the project on the environment, and the manner and procedure for the inclusion and exclusion from the list of experts	"Official Journal of RM" no. 93/07 from 26.07.2007
8.	Ordinance on the form and content of elaborate for environmental protection, the procedure for their approval, as well as keeping the register of approved elaborates	"Official Journal of RM" no. 50/09 from 15.04.2009
9.	Decree on the activities and actions for which an elaborate must be developed, and which is approved by a competent mayor, Mayor of the City of Skopje and the Mayors of the Municipalities in the City of Skopje	"Official Journal of RM" no. 80/09 from 26.06.2009
10.	Decree on the activities and actions for which an elaborate must be developed and which is approved by competent authority to perform professional activities from the environment	"Official Journal of RM" no. 80/09 from 26.06.2009
11.	Decree amending the Decree on the determination of the projects and the criteria that determines the need for conducting the environmental impact assessment	"Official Journal of RM" no. 109/09 from 02.09.2009

12.	Ordinance on the types and amount of expenses for conducting impact assessment of the project on the environment, which compensates the investor	"Official Journal of RM" no. 116/09 from 22.09.2009
Sub-legislation on Integrated pollution prevention and control		
1.	Decree on the determination of the activities of the installations for which an environmental permit or permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued	"Official Journal of RM" no. 89/05 from 21.10.2005 год
2.	Ordinance on the procedure for obtaining the A integrated environmental permit	"Official Journal of RM" no. 04/06 from 13.01.2006
3.	Ordinance on the procedure for obtaining the B integrated environmental permit	"Official Journal of RM" no. 04/06 from 13.01.2006
4.	Ordinance on the procedure for obtaining the integrated environmental permit with adjustment plan	"Official Journal of RM" no. 04/06 from 13.01.2006
5.	Ordinance for detailed requirements that need to meet members of the scientific-technical committee for Best Available Techniques(BAT)	"Official Journal of RM" no. 71/06 from 08.06.2006
6.	Regulation on the fee paid by operators of installations carrying out activities which are issued to comply with operational plan	"Official Journal of RM" no. 117/07 from 01.10.2007
7.	Decree on the amount of compensation that should be paid by operators of installations carrying out activities for B integrated environmental permit	"Official Journal of RM" no. 117/07 from 01.10.2007
8.	Decree on Amending the Regulation on the fee paid by operators of installations carrying out activities which are issued to comply with operational plan	"Official Journal of RM" no. 64/10 from 10.05.2010
9.	Decree amending the Decree on Fees which is to pay the operators of installations carrying out activities for B integrated environmental permit	"Official Journal of RM" no. 64/10 from 10.05.2010
10.	Decree on the amount of compensation paid by operators of installations carrying out activities which are issued by A - environmental permit	"Official Journal of RM" no. 64/10 from 10.05.2010
11.	Ordinance on Substances that must be prescribed emission limit values in the A integrated environmental permit	"Official Journal of RM" no. 72/10 from 27.05.2010
Sub-legislation on Industry		
1.	Ordinance for the content of internal and external emergency plans, as well as their approval	"Official Journal of RM" no. 50/09 from 15.04.2009
2.	Ordinance on hazardous substances, limit values (thresholds) for the presence of hazardous substances or properties and criteria under which the substance is classified as dangerous	"Official Journal of RM" no. 25/10 from 19.02.2010
3.	Ordinance for the content of information on safety measures, as well as the actions of those who would affect disaster caused from the system	"Official Journal of RM" no. 22/11 from 23.02.2011
Sub-legislation on Torts		
1.	Ordinance for keeping the records of violations, penalties and sanctions decisions in infringement proceedings, as well as access to information contained in the records	"Official Journal of RM" no. 144/08 from 18.11.2008
2.	Ordinance on the form and content of the call for payment of the fine in the mandate proceeding	"Official Journal of RM" no. 16/09 from 04.02.2009 год

Sub-legislation on Cross- boundary consultation		
1.	Ordinance for the conduct of cross-border consultations	"Official Journal of RM" no. 110/10 from 20.08.2010
Sub-legislation on Environmental Report		
1.	Ordinance on the form, content, objectives, method of preparation and the type of data sources used for the preparation of the report as well as the evaluation report	"Official Journal of RM" no. 81/10 from 17.06.2010
NATURE PROTECTION		
Law on nature protection		
1.	Law on Nature Protection	"Official Journal of RM" no. 67/04 from 04.10.2004
2.	Law Amending and supplementing the Law on Nature Protection	"Official Journal of RM" no. 14/06 from 03.02.2006
3.	Law Amending and supplementing the Law on Nature Protection	"Official Journal of RM" no. 84/07 from 04.07.2007
4.	Law Amending and supplementing the Law on Nature Protection	"Official Journal of RM" no. 35/10 from 12.03.2010
Orderes for restricting		
1.	Order prohibiting the collection for use and trade of plant species on gentiana lutea and gentiana punctata	"Official Journal of RM" no. 86/06 from 26.07.2006
2.	Order prohibiting the collection for use and trade of indigenous fungi samonikni smrchki from gender-morchella, verpa i pitchovera	"Official Journal of RM" no. 161/08 from 24.12.2008
3.	Order amending the order to ban the collection for use and trade of indigenous fungi samonikni smrchki from gender-morchella, verpa i pitchovera	"Official Journal of RM" no56/09 from 30.04.2009
4.	Order amending the order to ban the collection for use and trade of indigenous fungi samonikni smrchki from gender-morchella, verpa i pitchoverpa	"Official Journal of RM" no86/10 from 01.07.2010
Sub legislation on Advisory bodies		
1.	Decision establishing the National Council for Nature Conservation	"Official Journal of RM" no. 113/09 from 11.09.2009
Sub legislation on Protected areas		
1.	Decree declaring the forest areas around Mavrovo Field -National Park	"Official Journal of NRM" no 10 from 05.05.1949
2.	Correction of the decree declaring the forest areas around Mavrovo Field National Park	"Official Journal of NRM" no.20 from 01.10.1949
3.	Law Amending the Law on Declaration of forest areas around Mavrovo Field National Park	"Official Journal of SFRJ" no.23 from 23.04.1952
4.	Law Amending the Law on Declaration of forest areas around Mavrovo Field National Park	"Official Journal of SFRJ" no.16 from 06.04.1965
5.	Law on Protection of Ohrid, Prespa and Dojran	"Official Journal of SFRJ" no. 45/77 from 09.09.1977
6.	Law Amending the Law on Protection of Ohrid, Prespa and Dojran lake	"Official Journal of SFRJ" no. 8/80 from 15.02.1980

7.	Decision declaring the forest areas of Sara mountain asforest reserves and hunting grounds	“Official Journal of SFRJ“ no. 41/77 from 22.07.1986
8.	Program for Protection of Ohrid, Prespa and Dojran Law Amending the Law on Protection of Ohrid, Prespa and Dojran Lake	“Official Journal of SFRJ“ no. 7/87 from 09.02.1987
9.	Law Amending the Law on Protection of Ohrid, Prespa and Dojran Lake	“Official Journal of SFRJ“ no. 51/88 from 19.08.1988
10.	Law Amending the Law on Protection of Ohrid, Prespa and Dojran	“Official Journal of SFRJ“ no. 10/90 from 23.02.1990
11.	Law Amending the Law on Protection of Ohrid, Prespa and Dojran	“Official Journal of RM“ no. 62/96 from 13.10.1993
12.	Law on declaring site "Ezerani" Prespa Lake, as strict nature reserve	“Official Journal of RM“ no. 37/96 from 29.07.1996
13.	Law declaring the site site Tikves – Crna Reka, for a strict nature reserve	“Official Journal of RM“ no. 35/97 from 04.06.1997
14.	Ordinance to implement measures to protect the strict nature reserve "Ezerani" at Lake Prespa	“Official Journal of RM“ no. 29/97 from 25.06.1997
15.	Decision on Determining organization for the protection, promotion and maintenance of strict nature reserve Ezerani the Prespa Lake	“Official Journal of RM“ no. 60/97 from 28.11.1997
16.	Ordinance to implement measures to protect the strict nature reserve Tikves – Crna Reka	“Official Journal of RM“ no. 44/97 from 10.09.1997
17.	Decision amending the Decision on determining the organization for the protection, promotion and maintenance of strict nature reserve Ezerani the Prespa Lake	“Official Journal of RM“ no. 38/98 from 31.07.1998
18.	Determining an organization to protect, manage and maintain the strict nature reserve Tikves – Crna Reka	“Official Journal of RM“ no. 41/98 from 14.08.1998
19.	Resolution on Dojran Lake	
20.	Decision on determining organization for the protection, promotion and maintenance of strict nature reserve Ezerani at the Prespa Lake	“Official Journal of RM“ no. 29/03 from 18.04.2003
21.	Decision to implement measures to protect the strict nature reserve Tikves – Crna Reka	“Official Journal of RM“ no. 29/03 from 18.04.2003
22.	Law declaring the site "Ploche -Litotelmi" for strict nature reserve	“Official Journal of RM“ no. 71/03 from 05.11.2003
23.	Decision on the Establishment of public enterprise management and protection of multi-area "Jasen" - Skopje	“Official Journal of RM“ no. 90/05 from 25.10.2005
24.	Decision amending the decision establishing the public enterprise management and protection of multi-area "Jasen"-Skopje	“Official Journal of RM“ no. 101/05 from 24.11.2005
25.	Decision on acceptability of the proposal to re-declaring the site "Marko's Towers" monument of nature	“Official Journal of RM“ no. 109/05 from 14.12.2005
26.	Decision on acceptability of the proposal to re-declaring the site "Smolare waterfall” for monument of nature	“Official Journal of RM“ no. 109/05 from 14.12.2005
27.	Ordinance on the content of management plans for protected areas and content of annual programs for nature conservation	“Official Journal of RM“ no. 117/05 from 29.12.2005
28.	Decision on the establishment of a public utility for management and protection of National Park Mavrovo	“Official Journal of RM“ no. 09/06 from 25.01.2006

29.	Decision on the establishment of a public utility for management and protection of National Park Galicica	“Official Journal of RM“ no. 09/06 from 25.01.2006
30.	Decision on the Establishment of public utility for management and protection of multi-area "Pelister"	“Official Journal of RM“ no. 09/06 from 25.01.2006
31.	Law declaring the site "Smolare waterfalls” for monument of nature	“Official Journal of RM“ no. 35/06 from 23.03.2006
32.	law declaring the site "Marko's Towers" for monument of nature	“Official Journal of RM“ no. 49/06 from 14.04.2006
33.	Decision on giving consent to the Statute of the public utility national park Mavrovo	“Official Journal of RM“ no. 64/06 from 25.05.2006
34.	Decision on giving consent to the Statute of the publicutility national park Pelister Bitola	“Official Journal of RM“ no. 68/06 from 31.05.2006
35.	Decision on giving consent to the Statute of the publicutility national park Galicica Ohrid	“Official Journal of RM“ no. 68/06 from 31.05.2006
36.	Decision on acceptability of the proposal to re-declaring the site "Slatinski izvori " for Natural Monuments	“Official Journal of RM“ no. 74/06 from 16.06.2006
37.	Decision on the establishment of a public utility for management and protection of NP Galicica	“Official Journal of RM“ no. 09/06 from 25.01.2006
38.	Decision on the establishment of a public utility for management and protection of NP Pelister	“Official Journal of RM“ no. 09/06 from 25.01.2006
39.	Decision on the establishment of a public utility for management and protection of NP Mavrovo	“Official Journal of RM“ no. 09/06 from 25.01.2006
40.	Decision on the Establishment of public enterprise management and protection of multi-area Mavrovo	“Official Journal of RM“ no. 09/06 from 25.01.2006
41.	Decision on consent of the statute of public institution NP Pelister Bitola	“Official Journal of RM“ no. 68/06 from 31.05.2006
42.	Decision on consent of the statute of public institution NP Galicica Ohrid	“Official Journal of RM“ no. 68/06 from 31.05.2006
43.	Decision on acceptability of the proposal for declaring the site Slatinski izvori for natural monument	“Official Journal of RM“ no. 74/06 from 16.06.2006
44.	Decision on acceptability of the proposal for declaring the site Kuklica protected area in the category of Natural Monument	“Official Journal of RM“ no. 18/07 from 15.02.2007
45.	Decision on acceptability of the proposal to re-declaring part from Mount Pelister protected area in the category of national park	“Official Journal of RM“ no. 40/07 from 30.03.2007
46.	Programme to support sustainable development of local communities NP Pelister	“Official Journal of RM“ no. 58/07 from 11.05.2007
47.	Decision on giving consent for pricing for hunting and services in the t areas of PE for management and protection of multi-area "Jasen" - Skopje	“Official Journal of RM“ no. 85/06 from 24.07.2006
48.	Decision on giving consent to the pricing of wood and wood productsin the area of PE for management and protection of the multipurpose area "Jasen" - Skopje	“Official Journal of RM“ no. 85/06 from 24.07.2006
49.	Decision on consent of the statute of PE management and protection of the multipurpose area "Jasenr" - Skopje	“Official Journal of RM“ no. 85/06 from 24.07.2006

50.	Law declaring part from Mount Pelister National Park	"Official Journal of RM" no. 150/07 from 12.12.2007
51.	Decision on consent of the statutory decision on amending the Statute of the public National Park Pelister, Bitola, Macedonia	"Official Journal of RM" no. 157/07 from 27.12.2007
52.	Decision on acceptability of the proposal to re-declaring the site ploce-litotelm for protected area in the category strict nature reserve	"Official Journal of RM" no. 16/08 from 31.01.2008
53.	Act declaring the site Kuklica for Monument of nature	"Official Journal of RM" no. 103/08 from 19.08.2008
54.	Decision on acceptability of the proposal to re-declaring the integral whole Ostrovi for protected area in the category of Monument of nature	"Official Journal of RM" no. 3/09 from 09.01.2009
55.	Decision on acceptability of the proposal to re-declaring the Prespa Lake protected area in the category of Natural Monument	"Official Journal of RM" no. 31/09 from 02.03.2009
56.	Decision on acceptability of the proposal to re-declaring Doyran Lake protected area in the category of Natural Monument	"Official Journal of RM" no. 31/09 from 02.03.2009
57.	Decision on acceptability of the proposal for declaring the site Monospitovsko marsh protected area in the category of Natural Monument	"Official Journal of RM" no. 33/09 from 06.03.2009
58.	Act declaring the site Alshar Natural Monuments	"Official Journal of RM" no. 83/09 from 03.07.2009
59.	Decision on acceptability of the proposal to re-declaring the canyon Matka for protected area in the category of Natural Monument	"Official Journal of RM" no101/09 from 10.08.2009
60.	Decision on acceptability of the proposal for declaring an integral whole Ratkova scale, the Osogovo for mountain protected area in the category of Natural Monument	"Official Journal of RM" no. 138/09 from 17.11.2009
61.	Law declaring the site "Lokvi - Great Konjari" for Natural Monuments	"Official Journal of RM" no. 124/10 from 20.09.2010
62.	Ordinance on measures and activities for protection of monuments of nature and content of the consent form for the application of specific measures and actions for the protection and restoration of monuments of nature	"Official Journal of RM" no. 126/10 from 22.09.2010
63.	Ordinance on measures and actions to protected Nature Parks	"Official Journal of RM" no. 126/10 from 22.09.2010
64.	Ordinance for the content of the program for expert exam for the guard in the protected area and the manner and procedure for taking the exam	"Official Journal of RM" no. 126/10 from 22.09.2010
65.	Law declaring the site of Ploce -Litotelmi for strict nature reserve	"Official Journal of RM" no. 145/10 from 05.11.2010
66.	Act declaring the part from the mountain Galicica for a national park	"Official Journal of RM" no. 171/10 from 30.12.2010
67.	Act declaring the cave Slatinski izvori for Natural Monument	"Official Journal of RM" no. 23/11 from 24.02.2011
Sub legislation on Permitting		
1.	Ordinance for issuance of a permit for a scientific research into the nature	"Official Journal of RM" no80/09 from 26.06.2009
2.	Ordinance for granting permission to collect relevant and protected wild plants, fungi and animals and their part	"Official Journal of RM" no102/09 from 13.08.2009

3.	Ordinance on the form and content of the application form, license and certificate for trade of affected and protected wild plants, fungi, animals and their parts, and required documentation attached to	"Official Journal of RM" no134/10 from 07.10.2010
4.	Decree on the manner and procedure for issuing the license or certificate, as well as the type of permit or certificate and determination of border crossings through which can be done with affected trade and protected species of plants, fungi, animals and their parts	"Official Journal of RM" no135/10 from 08.10.2010
PROTECTION		
Law on noise protection in the environment		
1	Law on noise protection in the environment	"Official Journal of RM" no. 79/07 from 25.06.2007
2	Law amending and supplementing the Law on noise protection in the environment	"Official Journal of RM" no. 124/10 from 20.09.2010
Sub legislation on Inspection		
1.	Ordinance on the form and content of the seal of the State Environmental Inspectorate, the Inspector of Environment of the municipality and the municipality in Skopje and the Inspector of the City	"Official Journal of RM" no. 112/07 from 19.09.2007 год
2.	Decision on determining under what cases the peace of the citizens from harmful noise is considered disturbed	"Official Journal of RM" no. 1/09 from 01.01.2009 год
Noise indicators		
1.	Ordinance on the application of noise indicators, additional indicators of noise, method of measuring noise and methods of assessment indicators for Environmental Noise	"Official Journal of RM" no. 117/08 from 29.08.2008
2.	Ordinance limits the level of noise in the environment	"Official Journal of RM" no. 147/08 from 26.11.2008
3.	Ordinance on maximum permissible noise strength or the maximum allowed amount of emissions that are created during takeoff, during flight and landing of aircraft	"Official Journal of RM" no. 119/08 from 10.09.2010
Sub legislation on Noise Monitoring		
1.	Ordinance for the locations of measuring stations and measuring points	"Official Journal of RM" no. 120/08 from 23.09.2008
2.	Ordinance for detailed requirements regarding the necessary equipment that should have certified professional organizations and scientific institutions and other legal entities and individuals to perform professional activities in monitoring and noise	"Official Journal of RM" no. 152/08 from 05.12.2008
3.	Ordinance on the manner, conditions and procedure for the establishment and operation of networks, methodology and methods for monitoring, and the conditions, manner and procedure for submission of information and data from monitoring the situation in the field of noise	"Official Journal of RM" no. 123/09 from 09.10.2009
4.	Ordinance for the content closer to the strategic noise maps and action plans for noise, method of preparation and method of data collection for preparation of strategic noise maps and action plans for noise, and the manner of their collection, storage and recording	"Official Journal of RM" no. 133/10 from 06.10.2010

5.	Ordinance on the manner of cooperation between the authorities responsible for the preparation of strategic noise maps and action plans for noise with the authorities responsible for making the strategic noise maps and preparation of action plans for noise from a neighboring country	"Official Journal of RM" no. 163/10 from 17.12.2010
6.	Decree for agglomerations, major roads, major railways and major airports to be preparing strategic noise maps	"Official Journal of RM" no. 15/11 from 09.02.2011
MANAGEMENT		
Law on waste management		
1.	Law on waste management	"Official Journal of RM" no. 68/04 from 05.10.2004
2	Corrections to the Law on waste management	"Official Journal of RM" no. бр.71/04 from 13.10.2004
3	Law amending and supplementing the Law on waste management	"Official Journal of RM" no. 107/07 from 07.09.2007
4	Law amending and supplementing the Law on waste management	"Official Journal of RM" no. 102/08 from 18.08.2008
5	Law amending and supplementing the Law on waste management	"Official Journal of RM" no. 134/08 from 13.11.2008
6	Law amending and supplementing the Law on waste management	"Official Journal of RM" no. 124/10 from 20.09.2010
7.	The Law on waste management (consolidation)	"Official Journal of RM" no. 09/11 from 25.01.2011
Sub legislation for basic rules for waste management		
1.	Ordinance on the general rules for handling municipal and other non-hazardous waste	"Official Journal of RM" no. 147/07 from 07.12.2007
2.	Ordinance for the amount of the costs of inspection is performed at the request of a legal or natural person and the manner of their payment	"Official Journal of RM" no. 101/09 from 10.08.2009
3.	Ordinance on the amount of biodegradable compounds in waste to be disposed	"Official Journal of RM" no. 108/09 from 31.08.2009
4.	Ordinance on limit values of emissions during the incineration of waste and the conditions and manner of operation of incineration and combustion	"Official Journal of RM" no. 123/09 from 09.10.2009
5.	Correction of Ordinanceot quantity of biodegradable compounds in waste must be disposed of ("Official Journal of RM" no.. 108/09	"Official Journal of RM" no. 142/09 from 25.11.2009
Basel convention		
1.	Law on Ratification of the Basel Convention	"Official Journal of RM" no. 49/07 from 30.11.1997
2.	Law on Ratification of the amendment to the Basel Convention	"Official Journal of RM" no. бр.00/00 from 00.00.2004
3.	Ordinance on the form and content of the transboundary movement of waste	"Official Journal of RM" no. 37/03 from 04.06.2003
4.	Correction of Ordinance on the form and content of the transboundary movement of waste	"Official Journal of RM" no. 38/03 from 10.06.2003

Types of wastes		
1.	List of the types of wastes	“Official Journal of RM“ no. 100/05 from 21.11.2005
Waste manager		
1.	Ordinance Amending the Ordinance on the program and manner for examination for waste manager, the form and certificate as well as the amount and manner of payment of the fee for taking the exam	“Official Journal of RM“ no. 133/07 from 02.11.2007
2.	Ordinance Amending the Ordinance of the examination program for waste manager, the form of a certificate, and the amount and payment of the fee for taking the exam for waste	“Official Journal of RM“ no. 39/09 from 20.03.2009 год
3.	Ordinance of the examination program \for waste manager, the form of a certificate, and the amount and payment of the fee for taking the exam for waste	“Official Journal of RM“ no. 137/09 from 12.11.2009 год
Recording		
1.	Ordinance on the form and contents of the log records for handling waste, the form and content of forms of identification and transportation of waste and the form and content of annual reports on waste handling	“Official Journal of RM“ no. 7/06 from 19.01.2006
2.	Ordinance on the content and manner of keeping, storing and maintaining records in the register of waste	“Official Journal of RM“ no. 39/09 from 20.03.2009
Integrated network for waste disposal		
1.	Ordinance on the manner and conditions for the functioning of an integrated network of waste disposal	“Official Journal of RM“ no. 7/06 from 19.01.2006
Waste management Permitting		
1.	Ordinance on the form and content of the application form and contents of license for collection and transportation of municipal and other types of hazardous waste, and the minimum technical requirements for performing collection and transportation of municipal and other types of hazardous waste	“Official Journal of RM“ no. 8/06 from 23.01.2006
2.	Ordinance on the form and content of the application for permit processing, treatment and / or storage of waste, the form and content of the permit and the minimum technical requirements for performing processing, treatment and / or waste storage	“Official Journal of RM“ no. 23/07 from 27.02.2007
3.	Ordinance amending the Ordinance on the form and content of the application for permit processing, treatment and / or storage of waste, the form and content of the permit and the minimum technical requirements for performing processing, treatment and / or storage of waste	“Official Journal of RM“ no. 76/07 from 18.06.2007
4.	Ordinance on the form and content of the permit application and the register of issued licenses to trade with non-hazardous waste, the manner and procedure for issuing a permit for keeping the records and the terms of the method for performing trade in hazardous waste	“Official Journal of RM“ no. 115/07 from 25.09.2007
5.	Ordinance Amending the Ordinance on the form and content of the application form and contents of license for collection and transportation of municipal and other types of hazardous waste	“Official Journal of RM“ no. 133/07 from 02.11.2007
6.	Ordinance on the form and content of the application for a permit and the form and content of the permit for the landfill operator	“Official Journal of RM“ no. 140/07 from 21.11.2007

7.	Ordinance Amending the Ordinance on the form and content of the application for permit processing, treatment and / or storage of waste, the form and content of the permit and the minimum technical requirements for performing processing, treatment and / or waste storage	"Official Journal of RM" no. 122/08 from 29.09.2008
8.	Decision of the Constitutional Court of the Republic U. no. 132-2008 from December 3, 2008	"Official Journal of RM" no. 162/08 from 25.12.2008
9.	Ordinance on the form and content of the application for a permit and the form and content of the license for performing operator of the incineration or combustion of waste	"Official Journal of RM" no. бр.108/09 from 31.08.2009
10.	Ordinance on the form and content of the authorization for collection and transportation of hazardous waste	"Official Journal of RM" no. бр.118/10 from 06.09.2010
Transfer stations		
1.	Ordinance on the minimum technical requirements in terms of environmental protection that need to meet transfer stations, the conditions required to meet the locations of which are built or placed transfer stations, and deadlines for the storage of waste transfer stations according to species Waste	"Official Journal of RM" no. 39/07 from 29.03.2007
Handling of special waste types		
1.	Ordinance on the manner of handling waste from asbestos waste from products containing asbestos	"Official Journal of RM" no. 89/06 from 11.08.2006
2.	Ordinance on the manner and conditions for dealing with PCBs, the method and conditions to meet the installations and facilities for disposal and decontamination of PCBs, used PCBs and method of labeling of equipment containing PCBs	"Official Journal of RM" no. 48/07 from 16.04.2007
3.	Ordinance on the manner of handling medical waste, as well as the packaging and labeling of medical waste	"Official Journal of RM" no. 146/07 from 06.12.2007
4.	Ordinance on the procedures and method of collecting, transporting, processing, storage, treatment and disposal of waste oils, keeping records and submitting data	"Official Journal of RM" no. 156/07 from 26.12.2007
5.	Ordinance for detailed requirements for handling hazardous waste and the method of packaging and labeling of hazardous waste	"Official Journal of RM" no. 15/08 from 30.01.2008
6.	Ordinance on the manner of handling waste from titanium dioxide, the manner of conducting monitoring and form, content and method of delivering data	"Official Journal of RM" no. 108/09 from 31.08.2009
7.	Ordinance on the manner of dealing with waste tires, as well as requirements to meet legal and natural persons that import used tires	"Official Journal of RM" no. 108/09 from 31.08.2009
8.	Ordinance on measures for environmental protection that must take the manufacturers, owners and entities acting with used vehicles, their components and materials, goals and deadlines for achieving them and the manner and conditions of storage, and content of the certificate of undertaking means of destruction, the form and content of the form for reporting and keeping records	"Official Journal of RM" no. 108/09 from 31.08.2009
9.	Ordinance Amending the Ordinance on the manner and conditions for dealing with PCBs, the method and conditions to meet the installations and facilities for disposal and decontamination of PCBs, used PCBs and method of labeling of equipment containing PCBs	"Official Journal of RM" no. 130 from 28.10.2009

10.	Correction of Ordinance on the manner of handling waste from titanium dioxide, the manner of conducting monitoring and form, content and manner of delivering information ("Official Journal of RM" no.. 108/09)	"Official Journal of RM" no. 142/09 from 25.11.2009
11.	Ordinance amending the Ordinance on the measures for environmental protection that must take the manufacturers, owners and entities handling used vehicles, their components and materials, goals and deadlines for achieving them and the manner and conditions of storage, and content of certificate for taking the vehicle for destruction, the form and content of the form for reporting and keeping records	"Official Journal of RM" no. 164/10 from 20.12.2010
Storage of waste		
1.	Ordinance on the manner and conditions for storage of waste, as well as requirements to meet the sites that carried waste storage	"Official Journal of RM" no. 29/07 from 09.03.2007
Landfills		
1.	Ordinance on the form and content of the request for establishment of a landfill for non-hazardous and inert waste	"Official Journal of RM" no. 133/07 from 02.11.2007
2.	Ordinance on the manner and procedure for operation, monitoring, control and operation of the landfill during the operation, monitoring and control of landfill in the phase of closure and after-care of the landfill is closed, and the method and conditions for the care of the after ceasation of the work	"Official Journal of RM" no. 156/07 from 26.12.2007
3.	Ordinance on the criteria for acceptance of waste from landfills each class, the preparatory procedures for the acceptance of waste, common testing procedures, sampling and acceptance of waste	"Official Journal of RM" no. 8/08 from 17.01.2008
4.	Ordinance on requirements to be meet by the landfill	"Official Journal of RM" no. 78/09 from 22.06.2009
5.	Ordinance on conditions in terms of technical means and equipment for the activity of waste disposal, as well as conditions and methods for training and employee training program	"Official Journal of RM" no. 108/09 from 31.08.2009
6.	Decision on launching the procedure for granting a concession to finance, design, construction and management of a regional landfill for municipal solid waste planning region Polog	"Official Journal of RM" no. 44/10 from 31.03.2010 год
7.	Decision on launching the procedure for granting a concession to finance, design, construction and management of a regional landfill for municipal solid waste in the Southwest Planning Region	"Official Journal of RM" no. 44/10 from 31.03.2010
Waste management strategy		
1.	Strategy for Waste Management of the Republic of Macedonia (2008-2020),	"Official Journal of RM" no. 39/08 from 24.03.2008
2	Action Plan for Waste Management (2009-2015) of the Republic of Macedonia	"Official Journal of RM" no. 77/09 from 19.06.2009
Managing of packages and packaging waste		
Law on Managing of packages and packaging waste		
1.	Law on Managing of packages and packaging waste	"Official Journal of RM" no. 161/09 from 30.12.2009
2.	Law amending and supplementing the Law on Managing of packages and packaging waste	"Official Journal of RM" no. 17/11 from 11.02.2011

Subsidiary legislation		
1.	Ordinance on the form and content of the form for keeping records of legal persons handling waste from packaging producers and independent managers of waste from packaging, keeping records and the form and content of the form of certificate of registration of the independent manager of the waste from packaging	"Official Journal of RM" no. 41/10 from 25.03.2010
2.	Ordinance on conditions for packages with a long lifespan and the types of packages that serve as indicators that the packaging has a long lifespan	"Official Journal of RM" no. 48/10 from 09.04.2010 год
3.	List of illustrative examples of packaging	"Official Journal of RM" no. 52/10 from 16.04.2010
4.	Ordinance on the manner of numbering and abbreviations on which the system is based on the identification and marking of the materials from which packaging is produced, and the form and content of the label for handling packaging	"Official Journal of RM" no. 62/10 from 06.05.2010
5.	Ordinance for the manner, form and content closer to the database and information system for packaging and packaging waste from	"Official Journal of RM" no. 113/10 from 27.08.2010
6.	Ordinance on the form and content of the form of annual report on the type and quantity of packaging are imported or released to the market in Macedonia in the previous calendar year and for handling waste from these packages, the form and content of the form of production specifications, form and contents of the form of records of the total package that is put on the market or imported into Macedonia as well as the records kept	"Official Journal of RM" no. 117/10 from 02.09.2010
BATTERIES AND ACCUMULATORS		
Law on batteries and accumulators and waste batteries and accumulators		
1.	Law on batteries and accumulators and waste batteries and accumulators	"Official Journal of RM" no. 140/10 from 21.10.2010
2.	Rulebook on the format and the content of the form of the annual report on waste batteries and accumulators handling and manner of its submission, as well as the format and the content of the form for keeping records of the quantities and types of batteries and accumulators circulated on the market in the Republic of Macedonia.	"Official Journal of RM" no. 167/10 from 23.12.2010
3.	Rulebook on the form and the content of the forms of the reports for the quantities of the collected waste batteries and accumulators and for the quantities of the collected treated and recycled waste batteries and accumulators, as well as the manner of their preparation and submission.	"Official Journal of RM" no. 167/10 from 23.12.2010
AMBIENT AIR QUALITY		
Law on Ambtient air quality		
1	Law on Ambient air quality	"Official Journal of RM" no. 67/04 from 04.10.2004
2.	Law amending and supplementing the Law on Ambient air quality	"Official Journal of RM" no. 92/07 from 24.07.2007
3.	Law amending and supplementing the Law on Ambient air quality	"Official Journal of RM" no. 35/10 from 12.03.2010

Measuring the hazardous substances		
1.	Ordinance for the necessary personnel, equipment and premises must have the organizations of associated labor, determined to control the pollution of air and measurements of harmful substances discharged into the air	“Official Journal of SFRJ “ no. 7/76 from 20.02.1976
2.	Ordinance on the manner and deadlines for submission of reports on the measurements, control and record from harmful substances dischrged into the air	“Official Journal of SFRJ “ no. 9/76 from 5.03.1976
3.	Ordinance on the manner and time frame for measurement, control and record the measurements of harmful substances discharged into the air from buildings, plant and equipment that can contaminate the air above the maximum allowable concentrations	“Official Journal of SFRJ “ no. 13/76 from 2.04.1976
4.	Ordinance on the manner and conditions for notification to the competent authorities for the completion of systematic observation and examination of air pollution on the territory of the republic	“Official Journal of SFRJ “ no. 7/76 from 20.02.1976
Monitoring of the ambient air quality		
1.	Ordinance on the criteria, methods and procedures for evaluating the quality of ambient air	“Official Journal of RM“ no. 82/06 from 13.07.2006
2.	Ordinance on the methodology for monitoring of ambient air	“Official Journal of RM“ no. 138/09 from 17.11.2009
3.	Ordinance on the content and mode of transmission of data and information on conditions in the management of ambient air quality	“Official Journal of RM“ no. 138/09 from 17.11.2009
4.	Ordinance on the quantities of the upper-limits thresholds emissions of polluting substances in order to identify projections for a period of time relating to reducing the quantities of emissions of pollutants annually	“Official Journal of RM“ no. 2/10 from 08.01.2010
Maximum allowed emissions		
1.	Ordinance on maximum permissible concentrations and quantities and other harmful substances that can be released into the air from different sources of pollutionDictionary - View detailed dictionary	“Official Journal of SFRJ “ no. 3/90 from 19.01.1990
2.	Decree on limit values for the levels and types of pollutants in ambient air and alert thresholds, deadlines for achieving the limit values, margins and tolerance limit value, target values and long-term goals	“Official Journal of RM“ no. 50/05 from 27.06.2005
3.	Ordinance on the methodology for inventory and determining the level of emissions of polluting substances into the atmosphere in tons per year for all types of activities, and other data for submission of the Program for Monitoring Air Europe (EMEP)	“Official Journal of RM“ no. 142/07 from 26.11.2007
4.	Ordinance to limit values for allowable emission levels and types of pollutants in waste gases and vapors that are emitted by stationary sources in the air	“Official Journal of RM“ no. 141/10 from 25.10.2010
Surveillance and determination of the harmful substances in the air		
1.	Ordinance on the methodology for monitoring and identification of harmful substances in the air	“Official Journal of SFRJ “ no. 9/76 from 5.03.1976
Classification of objects and zones polluting the air		
1.	Ordinance on classification of objects in the discharge of harmful substances can contaminate the air in the settlements and the establishment of sanitary protection zones	“Official Journal of SFRJ “ no. 13/76 from 2.04.1976

2.	List of zones and agglomerations of ambient air	"Official Journal of RM" no. 23/09 from 19.02.2009
Sub-legislation on Plans and programmes		
1.	Ordinance on the detailed content and method of preparing an action plan to protect the ambient air	"Official Journal of RM" no. 108/09 from 31.08.2009
2.	Ordinance on the detailed content and method of preparing the national plan for protection of ambient air	"Official Journal of RM" no. 108/09 from 31.08.2009
3.	Ordinance on the detailed content and method of preparing the program for reducing pollution and improving air quality	"Official Journal of RM" no. 108/09 from 31.08.2009
GMO		
Law on GMO		
Law on GMO		"Official Journal of RM" no. 35/09 from 14.03.2008
Sub-legislation on Areas and surfaces restricted for GMO release		
1.	Decree to establish the areas with surfaces restricted for release of genetically modified reproductive material into the environment	"Official Journal of RM" no. .112 /09 from 09.09.2009
2.	Addemdum of the Decree to establish the areas with surfaces restricted for release of genetically modified reproductive material into the environment	"Official Journal of RM" no. .113 /09 from 11.09.2009
Deliberate release of GMO		
1.	Ordinance for the content of information on the implementation of risk assessment as a result of deliberate release of GMOs	"Official Journal of RM" no. .148 /09 from 14.12.2009
2.	Ordinance for the content of the emergency response plan	"Official Journal of RM" no. .163 /09 from 31.12.2009
Restricted use of GMO		
1.	Ordinance on the limited use of genetically modified organisms	"Official Journal of RM" no. .08/11 from 24.01.2011
PHYSICAL PLANNING		
Spatial plans		
1.	Decision on adopting a plan for space development of NP Galicica	"Official Journal of SFRJ" no. 43/88 from 22.07.1988
2.	Decision on adopting a plan for space development of NP Pelister	"Official Journal of SFRJ" no. 43/88 from 22.07.1988
3.	Decision on adopting a plan for space development of NP Mavrovo	"Official Journal of SFRJ" no. 43/88 from 22.07.1988
4.	Programme for developing and adopting a spatial plan of the Republic of Macedonia	"Official Journal of RM" no. 17/95 from 28.03.1995
5.	Program for amending the program for preparation and adoptiom of a spatial plan of the Republic of Macedonia	"Official Journal of RM" no. 29/98 from 24.06.1998
6.	Decision on adoption of a spatial map of the region of the reservoir Kozjak	"Official Journal of RM" no. 49/99 from 30.07.1999
7.	Physical map of the region of the source protection zones Rasche	"Official Journal of RM" no. 98/02 from 27.12.2002

8.	Spatial Plan of the Republic of Macedonia	"Official Journal of RM" no. 39/04 from 18.06.2004
9.	Ordinance on the procedure, method of preparation, the contents of the reports on the situation and changes in space and deadlines for their submission	"Official Journal of RM" no. 42/05 from 07.06.2005
10.	Ordinance amending the Ordinanceot the procedure, method of preparation, the contents of the reports on the situation and changes in space and deadlines for their submission	"Official Journal of RM" no. 111/06 from 27.10.2006
11.	Physical map of the region at the confluence of the River Treska	"Official Journal of RM" no. 25/07 from 02.03.2007
		WATER MANAGEMENT
Law on waters		
1.	Law on waters	"Official Journal of RM" no. 87/08 from 15.07.2008
2.	Law amending and supplementing the Law on waters	"Official Journal of RM" no. 6/09 from 15.01.2009 год
3.	Law amending the Law on waters	"Official Journal of RM" no. 161/09 from 30.12.2009 год
4.	Law amending the Law on waters	"Official Journal of RM" no. 83/10 from 23.06.2010 год
Classification and categorization of waters / watercourses		
1.	Decree on classification of waters	"Official Journal of RM" no. 18/99 from 31.09.1999
2.	Decree on categorization of watercoursess, lakes, accumulations and groundwaters	"Official Journal of RM" no. 18/99 from 31.09.1999
River basins		
1.	Ordinance on the content and method of preparation of the RB management plans	"Official Journal of RM" no. 148/09 from 14.12.2009
2.	Ordinance on the methodology for assessment of river basins	"Official Journal of RM" no. 148/09 from 14.12.2009
Programme of measures		
1.	Ordinance on the content and method of preparation of the programme of measures	"Official Journal of RM" no. 148/09 from 14.12.2009
Monitoring of waters		
1.	Ordinance on the content and method of preparation of cartographic maps information about the activities of monitoring the water	"Official Journal of RM" no. 148/09 from 14.12.2009
Advisory bodies		
1.	Decision on establishment of the National Council on waters	"Official Journal of RM" no. 149/09 from 15.12.2009
Water management		
1.	Ordinance on the methodology for the content, manner and procedure revision of the Water Master Plan the RM	"Official Journal of RM" no. 148/09 from 14.12.2009

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Law on management the World natural and cultural heritage in the Ohrid Region		
1.	Law on management the World natural and cultural heritage in the Ohrid Region	"Official Journal of RM" no. 75/10 from 07.06.2010
INTERNATIONAL COOPERATION		
1.	Law on Ratification of the Agreement between the Government and the Government of the Federal Republic of Yugoslavia on cooperation in the field of environment	„Official Journal of RM" no. 13/03 from 04.03.2003
2.	Law on Ratification of Agreement between the Government of Republic of Macedonia and the Council of Ministers of the Republic of Albania for the Protection and Sustainable Development of Lake Ohrid and its watershed	"Official Journal of RM" no. 46/05 from 20.06.2005
3.	Law on ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	"Official Journal of RM" no. 113 /09 from 11.09.2009
4.	Law on Ratification of the Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Long-Term Financing of the Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (EMEP)	"Official Journal of RM" no. 24/10 from 19.02.2010
5.	Law on Ratification of the Protocol to the 1979 Geneva Convention on long-range transboundary air pollution concerning the control of emissions of nitrogen oxides or their transboundary fluxes	"Official Journal of RM" no. 24/10 from 19.02.2010
6.	Law on Ratification of the Protocol to the 1979 Convention on long-range transboundary air pollution on further reductions of sulphur emissions	"Official Journal of RM" no. 24/10 from 19.02.2010
7.	Law on Ratification of the Protocol to the 1979 Convention on long-range transboundary air pollution on emission the control of emissions of volatile organic compounds or their transboundary fluxes	"Official Journal of RM" no. 24/10 from 19.02.2010
8.	Law on Ratification of the Law on Ratification of the Protocol to the 1979 Convention on long-range transboundary air pollution on further reductions of sulphur emissions for at least 30 %	"Official Journal of RM" no. 24/10 from 19.02.2010
9.	Law on Ratification of the The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	"Official Journal of RM" no. 83/2010 from 23.06.2010
10.	Law on Ratification of the Protocol to the 1979 Convention on Long Range Transboundary Air Pollution on Persistent Organic Pollutants	"Official Journal of RM" no. 135/2010 from 08.10.2010
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13.	Law on Ratification of the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Heavy Metals	"Official Journal of RM" no. 135/2010 from 08.10.2010
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Printed at United Nations, Geneva
GE.11-25413 - December 2011 - 1,236

ECE/CEP/164

United Nations publication
Sales No. E.12.II.E.1
ISSN 1020-4563

USD 39
ISBN 978-92-1-117054-2