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Synopsis

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CONTENTS

Preface

This third Environmental Performance Review (EPR) of Bulgaria takes stock of progress made by Bulgaria in the management of its environment since it was peer reviewed for the second time in 2000. It covers issues of specific importance to the country related to legal and policymaking frameworks, the financing of environmental expenditures, greening the economy, air protection, water and waste management and biodiversity conservation. The review further provides a substantive and policy analysis of the country's climate change adaptation and mitigation measures and its participation in international mechanisms. It also examines the efforts of Bulgaria to integrate environmental considerations in its policies in the energy sector.

The successes of Bulgaria in the achievement of most of the Millennium Development Goals are highlighted, as well as some remaining challenges.

The third EPR of Bulgaria began in February 2016 with a preparatory mission to agree on the structure of the report and the schedule for its completion. A team of international experts took part in the review mission from 12 to 20 April 2015. The draft report was submitted to Bulgaria for comment and to the ECE Expert Group on Environmental Performance Reviews for consideration in November 2015. During its meeting on 6 December 2016, the Expert Group discussed the draft report with expert representatives of the Government of Bulgaria, focusing on the conclusions and recommendations made by the international experts. The recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the Committee on Environmental Policy at its twenty-second session on 26 January 2017. A high-level delegation from Bulgaria participated in the peer review and the Committee adopted the recommendations in this report.

The Committee and the ECE secretariat are grateful to the Government of Bulgaria and its experts who worked with the international experts and contributed their knowledge and assistance. ECE would also like to express its appreciation to the German Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety and the German Federal Environment Agency for their support by providing funds through the Advisory Assistance Programme, and to Norway and Switzerland for their financial contributions. Sincere thanks also go to France, the Netherlands and Portugal for having provided their experts, and to the United Nations Development Programme for its support of this review.

ECE also takes the opportunity to thank Austria, the Netherlands and Switzerland for their general financial support to the EPR Programme and expresses its deep appreciation to Belarus, Estonia, Georgia, Germany, Hungary, Montenegro, Republic of Moldova, Romania, Sweden and Switzerland for having provided their experts for the ECE Expert Group on Environmental Performance Reviews, which undertook the expert review of this report.

Executive summary

The second Environmental Performance Review (EPR) of Bulgaria was carried out in 2000. This third review intends to assess the progress made by Bulgaria in managing its environment since the second EPR and in addressing new environmental challenges.

Environmental conditions and pressures

Annual emissions of sulphur dioxide dropped from 821 Gg in 2007 to 189 Gg in 2014 – a substantial 76.98 per cent decrease. Nitrogen oxide emissions diminished from 166 Gg in 2007 to 133 Gg in 2014. Emissions of total suspended particles decreased by 33.40 per cent, from 144.2 Gg in 2007 to 96.0 Gg in 2014.

The volume of water abstraction has been in steady decline since 2007. The total volume of water abstracted in 2014 was 5,375 million m^3, 13.32 per cent less than in 2007. Total water losses diminished by 28.67 per cent.

Estimated wastewater generation in 2014 was 768.49 million m^3 – 3.86 per cent less than in 2007. In 2014, the major proportion of wastewater (76.33 per cent) was treated before discharge.

The number of functioning urban wastewater treatment plants (WWTPs) rose from 68 in 2008 to 89 in 2014. However, the number of plants using secondary treatments increased from 52 to 56 and the number of plants capable of tertiary treatment rose from 1 to 24. In 2014, 74.9 per cent of the population was connected to a wastewater collection system but only 56.8 per cent of the population was connected to a plant.

Bulgaria has extensive land areas in agricultural use and under forest. In 2012 around 52.6 per cent of land was either agricultural cropland (32 per cent) or pasture grassland (20.6 per cent), while 37.7 per cent was under forest and 6.1 per cent was shrubland. Built-up and artificial areas took up less than 2 per cent and water about 1 per cent of the land area.

At the end of 2015 there were 1,012 protected areas, covering 584,530 ha. This was 6.90 per cent more than at the end of 2006. Although the number of protected areas is vast, the share of the total land area of the country designated as protected area was only 5.27 per cent in 2015 – one of the smallest shares among EU countries.

The generation of municipal solid waste decreased by 23.48 per cent during the review period, from 4,172,000 tons in 2007 to 3,192,500 tons in 2014. While the number of municipal waste landfill sites has quickly reduced from 435 sites in 2007 to 147 in 2014, the share of the population served by municipal waste collection systems has increased from 92.51 per cent to 99.56 per cent.

Legal and policymaking framework and its practical implementation

Bulgaria has strengthened its legal framework for environmental protection and sustainable development. Nevertheless, since 2007, the European Commission has opened 54 infringement procedures against Bulgaria, for 3 of which the country was taken to the European Court of Justice for not sufficiently implementing and enforcing the environmental legislation. Up to the end of May 2016, 44 infringements had been closed.

The 2005 Genetically Modified Organisms Act is in line with the EU legislation, and some parts of it even set stricter conditions. In 2010 Bulgaria adopted an official ban on GMO cultivation. Non-governmental organizations were one of the key drivers behind the current ban on GMOs in Bulgaria.

Since 2007, Bulgaria has strengthened its policy framework for integration of environmental concerns with social and economic concerns. The country adopted the National Development Programme Bulgaria 2020 (NDP BG 2020), the National Reform Programme and the Government Programme for Stable Development for the period 2014–2018.

Bulgaria has continuously strengthened its legal framework to promote its transition towards a green economy. The NDP BG 2020, the National Reform Programme and the Government Programme for Stable Development provide, to some degree, long-term strategic guidance for the transition towards a green economy in Bulgaria.

Sectoral policy approaches to a green economy in Bulgaria are not sufficiently integrated due to the lack of coordination on development, implementation and monitoring of the policies and initiatives to promote a green economy. There are no specific coordinating mechanisms for green economy policies in place.

The Ministry of Environment and Water is the main authority in charge of funding for green economy initiatives through the OP "Environment" and its two subordinated project financing institutions, the Enterprise for Management of Environmental Protection Activities and the National Trust Eco Fund. The Enterprise support for green initiatives in the period 2003–2015 amounted to more than 2,600 contracts worth over six million leva. The Fund has implemented four major programmes to promote green initiatives since 2007.

SEA has been implemented since July 2004. The Environmental Protection Act establishes the general regulatory framework for SEA. The SEA Ordinance further specifies the SEA system.

Bulgaria has established a single environmental ex-ante quality assurance system by integrating Natura 2000-appropriate assessment procedures, as well as coordinating Integrated Pollution Prevention and Control permitting process and integrating the Seveso process of chemical safety in the EIA procedures.

In 2008, the Liability for Prevention and Remedying of Environmental Damage Act was adopted. The law has transposed the 2004 Directive 2004/35/EO on environmental liability with regard to the prevention and remedying of environmental damage.

Bulgaria successfully implements the Regulation (EC) No 1221/2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS). The number of valid ISO 14001 certificates was 6 in 2001 and reached 1,761 in 2014.

Economic instruments for environmental protection and the financing of environmental expenditures

Bulgaria has made progress in the use of economic mechanisms for pollution management, but the polluter-pays principle is applied only partially. A water pollution tax has been introduced, but it is not differentiated according to the type and characteristics of pollutants. Moreover, the uniform charge rates are very low, which raises doubts about their environmental effectiveness.

The main economic instrument for pollution management continues to be sanctions for exceeding established threshold values for the quantity of air, water and soil pollutants discharged into the

environment. This was, however, a blunt instrument for many years, given that the low rates of fines provided little, if any, incentives for changes in the behaviour of polluters.

In the area of waste management, Bulgaria applies enhanced producer responsibility (EPR) schemes, which aim at internalizing environmental externalities. These schemes are associated with quantitative recovery and recycling targets and a landfill tax. There is little transparency as regards the recovery fees charged by each of the recovery organizations and competition among the organizations in the market for a given product group is not regulated. There is also no information on the extent to which EPR schemes cover the costs related to the management of these waste streams.

Charges for water abstraction were increased in 2012, but the extent of cost recovery is still low. In a similar vein, fees for irrigation water are not cost reflective, and the bill collection rate is also low. The authorities have started to introduce incentive tariffs for the use of water-saving irrigation technologies. In the face of insufficient mobilization of financial resources, the irrigation infrastructure has deteriorated significantly.

In the water supply and sewerage services sector a range of problems exist. These include high proportions of non-revenue water due to technical losses and low bill collection rates, which is depressing the revenues of water companies. In general, tariffs allow for the recovery of operating costs only.

Environmental monitoring, information and education

Air quality monitoring in Bulgaria has been significantly modernized and upgraded since 2000. The most noteworthy change has been a shift from a system that was largely based on manual sampling (52 stations reported in 2000) to automatic sampling stations (16 stations reported in 2000). This has improved the quality and regularity of air quality measurements and data as well as ensuring that comprehensive statistics on air quality are automatically analysed and published.

Bulgaria has operationalized a national system for noise monitoring to prevent adverse health and environmental effects from the impact of noise. In 2014, the national system on noise carried out monitoring activities in 710 locations across the country and data from the national system for noise monitoring covers noise levels in 35 cities.

The present biodiversity monitoring system was developed between 2004 and 2006 and, based on experience and activities between 2007 and 2015, was updated and upgraded in 2016. Moreover, as a part of developing Bulgaria's monitoring system, a practical guide was made available on monitoring and assessment methodologies by biological groups and for particular species.

Bulgaria has a long history and tradition of forest management, which includes large-scale monitoring. The Executive Environment Agency maintains a network of permanent sampling plots where data have been actively and manually collected over long periods. This network provides the long-term data needed for analyses, assessments and forecasts to support the preservation and protection of Bulgarian forests.

The present water monitoring systems consist of 500–600 points to monitor the physical and chemical status of surface water, 372 points for groundwater and 700–800 points for hydro-biological monitoring of surface water. Seawater quality is also checked at monitoring stations located on the coast and at the mouths of the rivers flowing into the Black Sea and there are at present 24 automatic monitoring stations for surface water that provide early warning of pollution.

Due to insufficient financial capacities, the Executive Environment Agency has been dependent on project-based funding to support parts of its biodiversity monitoring system. This has resulted in a shortage of scientific data as regards certain species and habitats covered by the system.

As a consequence of lacking financial resources the register of polluted areas has also been delayed. The national database on soil quality is not upgraded and an online system with services that makes pertinent data on soil quality publicly available has not yet been created.

Implementation of international agreements and commitments

Bulgaria became party to the vast majority of global and regional multilateral environmental agreements (MEAs) prior to its accession to the EU in 2007. After 2007 the country became party to very few agreements, including the 2003 Protocol on Pollutant Release and Transfer Registers, in 2010; and the 2010 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization and the 2015 Paris Agreement, in 2016.

Implementation of MEAs is a priority for the Ministry of Environment and Water and other governmental institutions. Good efforts are applied and clear criteria for prioritization of meetings exist to ensure the participation of Bulgaria in all important meetings under MEAs, given financial constraints. National implementation reports are generally submitted on time and focal points are appointed for all MEAs to which the country is a party.

The implementation and compliance cases against Bulgaria in various MEAs indicate some systemic issues with MEA implementation, e.g. for biodiversity treaties, such an issue is the rapid development of wind energy in the absence of strong nature protection legislation.

Bulgaria ensures public participation in the development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs. Consultations with NGOs have been organized prior to and after important MEA meetings, representatives of NGOs have been included in national delegations to MEA meetings. In many cases, draft national reports are published with an invitation to the public to submit comments. However, in general there is no systematic policy on how to involve the public and NGOs in development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs.

Climate change

Bulgaria is particularly vulnerable to climate change and to related extreme events, such as flash floods and droughts. Climate-related risks are expected to increase in the next decades.

Although warming generally has a negative impact on agriculture in the country, rising temperatures allow the cultivation of early agricultural products outdoors or in greenhouses, where energy costs decrease.

In general, Bulgaria’s transport system was designed, built and operated on the basis of the country’s own specific geographic conditions, including those related to climate factors. Because of the diverse peculiarities of the weather in the different parts of the national space, the transport system is relatively flexible, recognizing both the normal atmospheric conditions and local characteristics and manifestations of extreme meteorological phenomena that directly or indirectly affect the functioning of the transport sector.

Emissions from the energy sector decreased by 37.17 per cent from 83,081 Gg CO_2 eq. in the base year 1988 to 51,072 Gg CO_2 eq. in 2011. The main source of emissions in the energy sector is fuel combustion of solid fuels, which is responsible for 65.8 per cent of the emissions.

The 2012 Third National Action Plan on Climate Change for the period 2013–2020 outlines the framework for action to combat climate change. Bulgaria focuses its efforts on actions leading to reduction of the negative impacts of climate change and implementation of the commitments undertaken under the UNFCCC and the Kyoto Protocol.

As a party to the Kyoto Protocol Bulgaria is committed to developing a national adaptation strategy. The same commitment also arises from the Climate Change Mitigation Act. The Ministry of Environment and Water initiated a process towards developing a national adaptation strategy, which should comprise the period up to 2030.

Bulgaria successfully participated within the framework of the Joint Implementation mechanism. Twenty-eight projects have been approved in Bulgaria, 21 of which have already been achieved and have verified emission reductions. The execution of those projects led to GHG emission reductions of around 8 million tons of CO_2 eq. for the period 2008–2012.

Water management

In the period 2010–2014, 23 new and modernized urban WWTPs were put into operation with a total capacity of 1,116,000 PE. In 2014, 89 urban WWTPs were operating, of which 56 had secondary treatment and 24 had more stringent treatment than secondary.

By European standards, Bulgaria has a high rate of access to piped water (99 per cent of the population). More than 5,000 towns and villages are covered by centralized water supply systems, with a total pipe length of more than 75,000 km. Only two districts in Bulgaria have less than full coverage from centralized piped water.

In 2013, Bulgarian tap water quality generally met the requirements for safe drinking water. For the larger drinking water zones, typically with more than 5,000 inhabitants or more than 1,000 m^3 of water supplied per 24 hours, Bulgaria meets the tap water quality criteria in more than 95 per cent of cases for microbiological, physical, chemical and organoleptic indicator parameters. Notwithstanding this success, there are quality issues in some, mainly smaller, drinking water zones, where microbiological non-compliance exceeds 5 per cent.

Bulgaria has one of the highest rates of water abstraction per capita and relies mainly on surface water sources due to the large volumes of water used for cooling in energy production. A continuing trend towards improving the quality of surface waters is reported. Likewise, a gradual improvement in groundwater quality, on most indicators, is being observed.

The current water monitoring regime has more of an informative nature and there is no analysis of reasons, causes, sources or measures for solving the problems. The results from the current monitoring show that, in practice, this monitoring does not provide the necessary volume of information to definitively determine the status of water bodies.

Bulgaria has adopted the Black Sea Strategic Action Plan. In order to reduce the pressure on the littoral and territorial waters for the period 2016–2021, additional measures are planned, linked mainly to reducing the introduction of waste from land-based sources.

Air protection

Significant reductions have been achieved in recent decades for most emissions of air pollutants. Emissions from large industrial sources have been reduced by more than 80 per cent for SO_2 and halved for NOx. This is partly the result of the shutting down of obsolete industrial installations, and predominantly the result of applying modern emission abatement techniques and control measures to reduce emissions.

For some pollutants, the levels of air pollution in urban areas in Bulgaria are exceeding the national and European standards for shorter and longer periods. The levels of NOx, lead, CO, benzene, nickel and arsenic are below the air quality limits. For cadmium and SO_2, only a small number of local exceedances have occurred, and for ozone and PAHs the number of exceedances is limited. The overall trend for all pollutants shows a decrease in their levels.

The European Environment Agency has estimated that 100 per cent of the inhabitants of urban areas in Bulgaria were exposed to levels of PM_{10} above the EU standards for air quality over the period 2009–2011. The National Statistical Institute reports that air quality limits are exceeded on half the days of the year in the two largest cities in Bulgaria. This is suspected to have serious impacts on public health.

The causes of urban air pollution are not fully identified in the country. Domestic heating with solid fuels is suspected to be the largest source of emissions of particulate matter during winter in urban areas. The Ministry estimates that domestic heating is the predominant cause of high levels of PM_{10} in the winter in Bulgarian cities, in combination with unfavourable weather conditions.

Air pollution by particulate matter is exceeding the limit values for air quality during the winter period. Most of the occurring high levels of pollution are caused by a combination of an unfavourable meteorological situation and high levels of emissions of PM during winter. Particulate matter, especially PM_{10} and $PM_{2.5}$, can have a severe impact on public health. However, information on the costs for society of the impact of air pollution on public health is not easily available in Bulgaria.

Waste management

The total amount of municipal waste generated decreased from close to 5 million tons in 2000 to slightly more than 3 million tons in 2014. The amount of waste generated per capita decreased accordingly, from more than 600 to 442 kg/capita/year. The number of settlements and inhabitants served by collection services increased substantially. Nowadays, 99.6 per cent of the population is covered with waste services.

The formal system of separate collection of packaging waste was introduced in Bulgaria in 2004. At that time, only slightly more than one third of the generated packaging waste was recycled, and by 2014 this proportion had reached 61.7 per cent.

Bulgarian policy on organic waste is to reduce landfilling, especially of biodegradable organic waste. Construction of regional sanitary landfills is the first step to reducing the environmental burden of such waste (preventing contamination of the soil and groundwater and reducing methane emissions). Bulgaria has a target to reduce biodegradable waste on landfills to 35 per cent of the total quantity of organic waste generated in 1995 until 2020. The Ministry of Environment and Water has set a target of 25 per cent separate collection of municipal biowaste in 2016, 50 per cent in 2020 and 75 per cent in 2025.

The fourth National Waste Management Plan for the period 2014–2020 aims at discontinuing the link between economic growth and waste by preventing the generation of waste and by setting specific quantitative targets for preparation of reuse, recycling and other forms of recovery for specific wastes.

For the first time, within the scope of development of the Plan, a National Waste Prevention Programme has been developed.

As a means of deterrent against waste disposal, a landfill tax was introduced for municipal waste in 2011. The level of the landfill tax is doubled for the disposal of waste in non-compliant landfills.

Biodiversity and national ecological networks

There has been a 43 per cent increase in the number of protected areas, from 858 in 2004 to 1,012 in 2014, and a 25.56 per cent increase in the area covered by protected areas, from 544,394.9 ha in 2004 to 584,530 ha in 2015. At the end of 2015, the protected areas network included three national parks, 11 nature parks, 55 reserves and 35 managed reserves, 564 protected sites and 344 nature monuments.

Bulgaria is still among the EU countries with the lowest percentage of terrestrial and marine areas that are nationally designated protected areas. This ambivalence is rooted in the state policy, which was directed towards expanding the network of protected areas, mostly by the designation of "protected sites" and "nature monuments". These sites, although large in number, are usually very small in area.

In 2015, Bulgaria reviewed its entire UNESCO Biosphere Reserve Network (16 sites), which was established in the 1970s. Fifteen of the biosphere reserves are strict reserves and one (Srebarna) is a managed reserve; both categories are quite strict and do not allow human activities related to sustainable use of natural resources to be performed within their boundaries. Consequently, none of the 15 strict reserves correspond to the zoning and functional requirements of the UNESCO Seville Strategy and Statutory Framework of the World Network of Biosphere Reserves, and thus a revision of the biosphere reserve status is under way.

The biological richness of Bulgaria’s flora and fauna creates opportunities as well as challenges for the national conservation strategies. Bulgaria is among the European countries with the highest territorial share of Natura 2000 sites. Whereas the average across the EU is 18 per cent coverage, Bulgaria has 34.4 per cent of its territory inscribed on the list. The total area of the network is more than 4 million ha, of which 56.47 per cent is forests, 32.35 per cent agricultural land and the rest is other types of land.

Due to the country’s abundance of biological diversity and hosting of a large proportion of species that are threatened at European level, Bulgaria has a particular responsibility for biodiversity conservation. A large proportion of the natural diversity, e.g. 20.5 per cent of the vascular plants, is threatened by various negative factors, such as deterioration, fragmentation and loss of habitats due to infrastructure development, competition with invasive alien species and intensive land use.

Energy and environment

Bulgaria’s energy dependence for the last few years is significantly lower than the average of EU member countries. It was made possible thanks to the measures undertaken in the last few years to stimulate energy efficiency, increased energy generation from renewable energy sources (from 12.2 per cent in 2009 to 19 per cent in 2013) and projects realized by the new capacities of local coal have shown a positive reflection in the energy dependence indicator.

The major local energy resource of Bulgaria is lignite coal. It is dominant in the coal production structure, accounting for 93.0 per cent in 2014. Lignite coal is followed by brown coal at 7.0 per cent and black coal at 0.001 per cent (or 300 tons).

The extraction of natural gas in Bulgaria is on a decreasing trend: 278 million m^3 in 2013, 179 million m^3 in 2014 and 82 million m^3 in 2015. Oil is produced in insignificant amounts and oil demand is mostly covered by import.

Electricity production also peaked in 2011, was decreasing during 2012–2013 and then trended upward again in 2014–2015. The structure of electric power generation is dominated by thermal power plants using coal, followed by Kozloduy nuclear power plant. Major sources for the generation of electrical power are local coal and nuclear fuel.

As to the energy intensity of its economy Bulgaria ranks last among the 28 EU member countries, having the highest energy intensity rate of 610.6 kgoe/€1,000 (according to comparable prices for 2005). The average European intensity is 141.6 kgoe/€1,000. However, the different parity purchasing powers within the EU mitigate this dramatic contrast without eliminating it.

In 2004, Bulgaria's share of renewables in gross final energy consumption amounted to 9.6 per cent. Since then the country made remarkable progress and by 2012 had already achieved its 2020 renewable energy target: the share of renewables in gross final energy consumption stood at 16.3 per cent, against a target of 16 per cent for 2020.

In the last decade, Bulgaria managed to substantially reduce the total amount of emissions of the main pollutants into atmospheric air from power stations and industrial fuel combustion. For example, emissions of sulphur oxides were reduced more than fivefold: from 795,071 tons in 2007 to 139,860 tons in 2014. This remarkable achievement was reached by modernization of old TPPs and installation of desulphurization equipment. Emissions of nitrogen oxides were reduced by half, thanks to improvements of the burning processes.

CONCLUSIONS AND RECOMMENDATIONS

Chapter 1: Legal and policymaking framework and its practical implementation

Currently, no effective system exists to monitor the implementation of environmental policy documents (strategies, programmes and plans) across the country. Environmental authorities have difficulties to fulfil the monitoring obligations, in particular in terms of producing regular progress reports on the implementation of the various overarching and specialized national and subnational environmental policy documents. This significantly limits coordinated **and transparent** policy documents implementation. The Government maintains a website with all national level policy documents, including those related to sustainable development and environmental protection (www.strategy.bg) .

Recommendation 1.1:
The Government should:

(a) Ensure systematic monitoring of implementation of national and local environmental policy documents (strategies, programmes and plans), in particular municipal environmental policies and plans and municipal waste management plans;
(b) Strengthen its administrative capacity to monitor the implementation of local environmental policy documents;
(c) Ensure that all implementation reports of national and local environmental policy documents are posted in the respective websites.

Environmental legislation and the policy framework for environmental protection and sustainable development driven by the EU requirements has been strengthened. However, effective implementation of legislation and policies remains a challenge. Bulgaria has been particularly slow in implementing the environmental legislation at the subnational level in areas demanding high infrastructure investments, such as waste and water management. Several key overarching environmental policies have not yet been adopted or have been adopted with delays.

At the same time, there are various requirements for specialized environmental policies, in particular at the local level, which further increase policy fragmentation and the administrative burden. The processes of strategic planning are poorly linked to budget plans. At all levels, there is insufficient capacity to develop and implement the wide range of environmental policies. The necessary level of legislative and policy coordination between national and local environmental authorities has not yet been achieved. Bulgaria has established a legislative framework specifying the procedure, scope, methodology and quality assurance system for the obligatory RIA. The scope and the implementation of RIA on the ground has included assessment of environmental impacts.

Recommendation 1.2:
The Government should:

(a) Consolidate the air quality legislation;
(b) Consolidate the water legislation;
(c) Harmonize the national and local waste management legislation;
(d) Ensure timely adoption or revision of the key overarching environmental policies, including the National Environmental Strategy and the national adaptation strategy;
(d) Strengthen with additional capacity-building measures and develop methodologies on the application of the regulatory impact assessment system as an integral part of the law-making procedure, including obligatory assessment of the environmental impacts of all legislation.

The existing SEA legislation needs improvement of the quality control of SEA, especially at regional level. There is a legal obligation to maintain a central public register providing an overview of all the SEA procedures across Bulgaria at national and subnational levels and the Ministry of Environment and Water maintains susch a register on its website. Currently, this information is stored at the level of each of the 16 RIEWs, which publish separate information about the ongoing procedures within their territory.

Recommendation 1.3:
The Ministry of Environment, in cooperation with the Regional Inspectorates on Environment and Water, should improve the quality assurance mechanism ensuring the effective implementation of the obligations of the Strategic Environmental Assessment, especially at regional level and the provision of support to those carrying out Strategic Environmental Assessments.

The NDP BG 2020, the National Reform Programme and the Government Programme for Stable Development for the period 2014–2018 provide, to some degree, long-term strategic guidance for a transition towards a green economy in Bulgaria. While Bulgaria has been scaling up investment in a green economy, sectoral policy approaches to a green economy are not sufficiently integrated due to the lack of coordination on development, implementation and monitoring of the policies and initiatives to promote a green economy. There are no specific coordinating mechanisms for green economy policies in place.

Recommendation 1.4:
The Government should adopt an overarching strategic framework for a green economy aimed at strengthening coordinated and coherent development and implementation of green economy initiatives across the country, and establish institutional mechanisms for intersectoral coordination of green economy initiatives.

Bulgaria does not have national environmental labelling schemes. Instead, the country follows the EU Ecolabel scheme and CE marking. EU Ecolabels are awarded by the Ministry of Environment and Water. However, the scheme is not widely applied in the country and there are only three license holders with 18 products.

As an EU Member State, Bulgaria implements Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS). The Ministry of Environment and Water undertakes measures and initiatives for the promotion of EMAS – workshops, presentations at different events, brochures, etc. Despite all these efforts, only six organizations were registered under EMAS from 2007 to 2015. Currently, five more applications are in progress.

Recommendation 1.5:
The Ministry of Environment and Water should promote the application of the:

(a) EU Ecolabel scheme among Bulgarian producers;
(b) Community eco-management and audit scheme (EMAS).

NGOs have been active in relation to the conflicts between local development interests and environmental protection in highly sensitive nature areas. Environmental NGOs' activities resulted in stronger protection of national parks and the banning of GMOs on the territory of Bulgaria. However, NGOs generally play a marginal role in the formulation and implementation of environmental legislation and policies. The involvement of NGOs in the advisory and expert councils of the Ministry of Environment and Water and in the interministerial working groups has been limited.

There is no budget line in the national budget specifically for the environmental NGOs. Some local funds have reserved for NGO activities, but amounts remain marginal. Since the EU accession in 2007, the funding conditions for NGOs have changed and many international donors have reduced or ceased to provide their financial support to NGOs. As a result, many environmental NGOs that were set up in the 1990s closed down as a consequence of new financial and social conditions.

Recommendation 1.6:
In line with its obligations under the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the Government should:

(a) Endeavor to provide access to civil society groups, including NGOs, to national funding for activities on matters related to the environment;
(b) Improve conditions for the involvement of NGOs in the advisory and expert councils and in the interinstitutional working groups in relation to environmental matter

Chapter 2: Economic instruments for environmental protection and the financing of environmental expenditures

Bulgaria has made progress in the use of economic mechanisms for pollution management, but the polluter-pays principle is applied only partially. A water pollution tax has been introduced, but it is not differentiated according to the type and characteristics of pollutants. Moreover, the uniform charge rates are very low, which raises doubts about their environmental effectiveness. The main economic instrument for pollution management continues to be sanctions for exceeding established threshold values for the quantity of air, water and soil pollutants discharged into the environment. This was, however, a blunt instrument for many years, given that the low rates of fines provided little, if any, incentives for changes in the behaviour of polluters.

Close monitoring is required in order to gauge the extent to which the significantly higher sanctions that were introduced in 2013 are creating effective incentives for pollution abatement. Another issue is the lack of complementarity between the water pollution tax, which is not pollution specific, and the pollution-specific system of sanctions for exceeding pollution thresholds. More generally, the introduction of the water pollution tax raises the issue of why a similar tax is not applied to emissions of major industrial air pollutants.

Recommendation 2.1:
The Government should:

(a) Ensure the environmental effectiveness of the water pollution tax by taking into account the quantity, type and characteristics of major pollutants (substances) discharged into surface water and groundwater and setting charge rates at a level that creates incentives for pollution reduction;
(b) Ensure complementarity between the water pollution tax and the system of sanctions for exceeding established pollution standards and the cost effectiveness of the two systems;
(c) Ensure the environmental effectiveness of the system of sanctions for other polluting activities taking into account the technical and economic feasibility of corresponding regulations.

In the area of waste management, Bulgaria applies enhanced producer responsibility (EPR) schemes, which aim at internalizing environmental externalities, i.e. the costs of environmentally sound end-of-life management of certain products. These schemes are associated with quantitative recovery and recycling targets and a landfill tax. There is little transparency as regards the recovery fees charged by each of the recovery organizations (ROs) and competition among the organizations in the market for a given product group is not regulated. There is also no information on the extent to which EPR schemes cover the costs related to the management of these waste streams (net of revenues from sales of recycled materials), which include *inter alia* costs for collection, transport and treatment of this waste and the costs of adequate monitoring and regulation.

Recommendation 2.2:
The Government should:

(a) Require transparency by recovery organizations as regards their recovery fees;
(b) Regulate effective competition between recovery organizations operating in the same market for end-of-life products;
(c) Gauge and monitor the overall costs of the enhanced producer responsibility schemes, including the costs of public sector administrations, with a view to ensuring their cost effectiveness.

Fees for municipal waste collection in Bulgaria paid by residents and companies have traditionally been based on the tax value of the real estate or the book value of the company assets. This has created no incentives for generating less waste or for recycling. The Government is aware of this and has initiated a waste tariff reform towards a pay-as-you-throw system. But implementation is not straightforward and, in the face of related problems, has been postponed until the beginning of 2017. At the time of writing it is not known whether and to what extent this new deadline will be met. Such a reform, however, could well be implemented gradually without aiming from the onset for an "optimal" approach.

Recommendation 2.3:
The Government, in cooperation with the National Association of Municipalities and other stakeholders involved, should:

(a) Establish municipal waste collection fees based on volume of waste generated;
(b) Consider using, at least at an initial stage, practicable proxy indicators for the volume of waste generated, such as fixed waste charges per capita for each household.

Fees for use of timber resources from state-owned forests are mainly based on concessions and tenders. Among non-timber forest resources (other than game), fees have been paid only for the commercial collection of medicinal plants, most of which are exported. These fees have remained unchanged since 2000. In contrast, fees for use of natural resources (other than medicinal plants) in protected areas – exclusively state property and particularly in national parks have generally been increased from the levels also established in 2000 to reverse their significant erosion by high cumulative inflation.

Recommendation 2.4:
The Government should ensure that fees for the collection of medicinal plants and for obtain of other natural resources from forests and protected areas – exclusively state property – provide an adequate rate of return for public finances and therefore adjust fee rates accordingly.

Charges for water abstraction were increased in 2012, but the extent of cost recovery is still low. In a similar vein, fees for irrigation water are not cost reflective, and the bill collection rate is also low. There are, notably, important cross-subsidies between the two types of irrigation systems (gravity-fed and pumped systems) and two main crops (rice and non-rice crops). The authorities have started to introduce incentive tariffs for the use of water-saving irrigation technologies. In the face of insufficient mobilization of financial resources, the irrigation infrastructure has deteriorated significantly.

Recommendation 2.5:
The Government should:
(a) Introduce, if necessary in a gradual fashion, cost-reflective tariffs for use of water resources such as water abstraction and for use of water for irrigation in agriculture;
(b) Progressively eliminate existing cross-subsidies in the irrigation sector;
(c) Promote the introduction of water-saving irrigation technologies.

In the water supply and sewerage services sector a range of problems exist, which are partly mutually reinforcing. These include high proportions of non-revenue water due to technical losses and low bill collection rates, which is depressing the revenues of water companies. In general, tariffs allow for the recovery of operating costs only. In the event, the sector lacks own funds for participating in the financing of investment in the rehabilitation and extension of the water sector infrastructure, notably as regards wastewater treatment facilities. A major constraint on improving the financial performance of water companies is the concern about the affordability of higher tariffs for the population, given the lack of an adequate mechanism for dealing with this problem.

Recommendation 2.6:
The Government should:

(a) Take appropriate measures to diminish or end the water supply revenue losses caused by low collection rates and high levels of technical water losses;

(b) Pursue a policy of gradual increases in water tariffs to levels that allow the generation of sufficient revenues to cover the costs of efficient operations by water companies and their substantive participation in the financing of necessary investments;
(c) Develop adequate social support policies and measures to ensure the affordability of higher tariffs for low-income households.

Bulgaria levies excise duties on energy products used as motor fuels and for heating by households and industry, in line with the existing EU legal provisions. At the same time, the Government also uses the existing scope for exemptions from some of these taxes for households, and farmers, in the pursuit of mainly social objectives. However, the question is whether tax expenditures are really the most cost-efficient instrument for achieving these objectives. A case in point is the indiscriminate exemption of all households, rich and poor, from excise duties on certain energy products, as is the refund of excise duties on the use of diesel to *all* agricultural producers.

Recommendation 2.7:
The Government should review the existing system of full or partial exemptions from excise duties on certain energy products with a view to determining whether they are really the most effective and efficient instruments for achieving the underlying policy objectives.

Transport vehicles are subject to a property tax, which for passenger cars increases with the engine power. At the same time, tax reductions are applied that increase with the age of the vehicle, which is not very satisfactory given that older vehicles tend to meet less stringent pollution standards than do newer ones. As of 2014, however, the Government has added another provision that grants tax rebates to passenger cars, depending on the vehicle emission standard. While this policy measure points in the right direction, it applies only to passenger cars with an engine power up to 74 kW (100 hp), i.e. most cars are not eligible for this scheme.

Recommendation 2.8:
The Government should consider revising the vehicle property tax by using both the engine power and the vehicle emission standard as the general tax base and diminishing, in a gradual fashion, the tax reductions granted to older cars.

Electricity tariffs for households are below cost recovery levels, reflecting the use of tariffs as a social policy instrument. This policy, however, has mainly benefited above-average income earners, which tend to have higher energy consumption than lower income households. Despite a high bill collection rate, revenues from tariffs in the electricity sector are insufficient for financing adequate maintenance of the infrastructure and new investments. This partly also reflects the hidden costs of generous feed-in tariffs for RES for end users of electricity, which rather fell on the distribution companies and the public provider NEK.

Recommendation 2.9:
The Government, in cooperation with the Energy and Water Regulatory Commission, should:

(a) Initiate a tariff reform that leads to a gradual increase in household electricity tariffs to cost-reflective levels taking into account the need for support to vulnerable consumers through preferential block tariffs and other non-tariff exemptions and protection and/or through the social welfare system;
(b) Ensure transparency for consumers as regards the costs of social policy support for energy consumption as well as of support for renewable energy sources through feed-in tariffs;
(c) Promote measures designed to improve the energy efficiency of buildings to reduce energy costs for final energy users.

It is generally recognized that the further development and improvement of performance standards for utility services, namely municipal waste collection and disposal, water supply and sewerage, wastewater treatment, and energy supply, will have to go along with the gradual introduction of cost-reflective tariffs for financing efficient operating and maintenance costs of the utility companies, and for mobilizing the resources required for financing or co-financing the necessary infrastructure investments. Such a process would also be a necessary condition for promoting public–private partnerships in these sectors. A major concern in this regard is the issue of affordability of higher tariffs for vulnerable consumers of these services, which has not been addressed by the Government to date.

Recommendation 2.10:
The Government should:

(a) Establish financial mechanisms that ensure adequate access for vulnerable consumers to utility services;
(b) Monitor and assess the affordability of all utility services based on pertinent statistics from household budget surveys and income distribution studies conducted by the National Statistical Institute.

There have been major shifts in the role played by the various domestic and external sources of financing of environmental expenditure since 2007. More than half of total environmental investment expenditure is now financed through the EU OP "Environment", reflecting the improved absorption capacities for these funds. The role of EMEPA, the national environmental fund, has diminished significantly, which is also due to reduced revenues from product fees related to waste management. For the years ahead, the Government can rely on further substantive resource flows from the EU cohesion and structural funds, but these will have to be complemented by sufficient domestic funds to meet EU requirements in areas such as wastewater treatment and waste management, and to improve conditions in many other areas, such as ambient air pollution, water pollution, flood protection and biodiversity protection.

Recommendation 2.11:
The Government should:

(a) Ensure that domestic environmental funds have a stable and sufficient revenue base for financing their activities;
(b) Ensure effective and efficient use of these funds based on selecting and prioritizing projects that support the main environmental policy goals as well as the adequate monitoring and auditing of the activities of the funds;
(c) Ensure effective complementarity between the various public sector financing sources and external financing sources;
(d) Continue strengthening capacities at the central and local government levels as required for the effective and efficient absorption of EU funds.

Chapter 3: Environmental monitoring, information and education

Developments such as public registries that are available online (e.g. of protected areas and old trees, and the open data portals under the Council of Ministers and under the Executive Environment Agency) are encouraging. However, not all environmental data are publicly available. The ongoing implementation of an SEIS would prevent further segregation of the environmental information system and processes and establish harmonized conditions of access to environmental data and information.

Recommendation 3.1:
The Government should:

(a) Continue to work towards the implementation of a shared environmental information system that provides relevant, comprehensive, accurate and publicly accessible data and information on the state of the environment;
(b) Expand the Open Data Portal of the Council of Ministers to cover all environmental information and data in line with Open Data, Shared Environmental Information System principles and INSPIRE implementing rules as well as promote the re-use of public sector information.

The current air quality monitoring system is well developed; however, some issues remain, such as addressing the validation process associated with the automatic data flows and ensuring that the technical difficulties associated with the software used to submit data to the European Environment Agency is resolved.

Recommendation 3.2:
The Ministry of Environment and Water, through its Executive Environment Agency, should continue improving the automatic monitoring system pertaining to air quality monitoring to provide comprehensive, accurate and publicly accessible information and data on air quality.

Level I of the forest monitoring system is characterized by fixed sampling points; however, these sites are not taken into account either as part of the process of issuing harvesting permits or in regional planning. This has resulted in some of the sites having been harvested. To avoid further destruction of the network of sampling sites, it would be crucial to ensure that the monitoring network is sustained over time to guarantee that the programme can continue to provide accurate and high quality information and data on forests.

Joint steps taken by the Ministry of Environment and Water and the Ministry of Agriculture and Food towards the establishment of a shared online platform and database with public access pertaining to all environmental information on forests is encouraging. Finalizing the joint platform would improve the forest-related information system and associated decision-making processes affecting forests.

Recommendation 3.3:
The Ministry of Agriculture and Food and the Ministry of Environment and Water should improve the forest monitoring system by:

(a) Ensuring that the network of sampling points, particularly Level I, concerning forest monitoring is preserved and incorporated into regional planning;
(b) Supporting the continued development of the collaborative forest information system in accordance with the principles of the shared environmental information system.

Due to insufficient financial capacities, the Executive Environment Agency has been dependent on project-based funding to support parts of its biodiversity monitoring system. This has resulted in a shortage of scientific data as regards certain species and habitats covered by the system. .

The present Operational Programme "Environment" 2014-2020 principally encompasses field studies and data collection for species that are of interest to the European Community, to meet legal requirements. Monitoring activities of almost all species that are not on this list do not receive funding from the Ministry of Environment and Water. This has resulted in certain species of national importance not being monitored adequately.

Recommendation 3.4:
The Ministry of Environment and Water should:

(a) Address the shortage or, in certain cases, the lack of scientific data in some areas and components related to primary biodiversity monitoring processes and the systematic monitoring of biodiversity;
(b) Focus additional monitoring attention on species/habitats of national importance that are not being monitored.

The public procurement process, as part of the legal procedure for tendering, has resulted in delays and non-implementation of certain monitoring activities (e.g. due to the appeals process). The Executive Environmental Agency is not allowed to issue direct contracts for the adequate provision of biodiversity monitoring activities to relevant actors to guarantee the operationalization of biodiversity monitoring, although there is an ongoing legislative process to review these procedures.

Recommendation 3.5:
The Government should address delays in the public procurement process as an impediment to biodiversity monitoring and continue supporting the legislative review of the public procurement process to improve the tendering mechanism.

Communication and cooperation between the Ministry of Environment and Water and the Ministry on Health on water monitoring is limited. Efforts are not made to increase data sharing, to adhere to SEIS principles, improve data flows and accessibility, but also to find solutions that reduce costs and improve water monitoring and reporting overall. Dissemination of information to the public, such as water-quality data, is not addressed.

Recommendation 3.6:
The Ministry of Environment and Water and the Ministry on Health should implement shared environmental information system principles on water-related information and data to streamline data collection and improve accessibility.

Many steps have been taken to improve the laboratory equipment used to analyze environmental samples. Certain dangerous substances discharged into aquatic (and other) environments are presently not being monitored due to the absence of specific equipment.

Recommendation 3.7:
The Ministry of Environment and Water should invest in laboratory equipment that would allow targeted monitoring of certain dangerous substances.

The register of polluted areas has been delayed, as a consequence of lacking financial resources. The national database on soil quality is not upgraded and an online system with services that makes pertinent data on soil quality publicly available has not yet been created.

Recommendation 3.8:
The Ministry of Environment and Water should:

(a) Increase the capacities of the Executive Environment Agency regarding soil monitoring;
(b) Ensure that the national database on soil quality is upgraded and the register of polluted areas is created, and that they are developed in accordance with the principles of a shared environmental information system.

The educational framework concerned with sustainable development and the environment has seen great improvements in recent years, particularly on a legislative level; however, the training of teachers has not been systematic but ad hoc and project based.

Recommendation 3.9:
The Ministry of Education and Science should ensure regular training for teachers to enhance national educational capacities as regards teaching on sustainable development and environment-related topics, from preschool to secondary education levels.

Chapter 4: Implementation of international agreements and commitments

Bulgaria is party to the vast majority of MEAs. Nonetheless, a few gaps remain.

As of early 2016, the country has not yet taken steps towards acceptance of the amendments to the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, the Protocol on Heavy Metals and the Protocol on POPs to the Convention on Long-range Transboundary Air Pollution, although Bulgaria does not expect to have difficulties with implementation of the amended protocols.

Bulgaria does not participate in the 2004 Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention) which enters into force in September 2017. A decision was taken at national level that the ratification steps would be undertaken after the entry into force of the Convention.

Bulgaria signed the 1999 Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes but has not ratified the treaty. Although the situation with access to water supply and sanitation has significantly improved in recent years, there are remaining issues with contamination of water with nitrates and magnesia in some areas, regularity of water supply, wastewater treatment and access to sanitation in small settlements. There has been no discussion among governmental authorities in the country about the costs and benefits of ratification, which NGOs advocate. There is an opinion held by government officials in Bulgaria that, as an EU Member State with EU legislation in place, Bulgaria would not receive additional benefits from becoming party to the Protocol. However, the Protocol is a useful tool for EU Member States also – which fact is supported by the participation of 16 EU Member States in this instrument. With regard to the key obligation under the Protocol, that of setting targets, there is no comprehensive overlap between the scope of the EU directives and the provisions of the Protocol. Rather, the Protocol provides EU Member States with a platform for defining and addressing national priorities that are beyond the scope of the EU legislation.

Recommendation 4.1:
The Government should start the necessary preparatory work and proceed with:

(a) Acceptance of amendments to the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol), the Protocol on Heavy Metals and the Protocol on Persistent Organic Pollutants to the Convention on Long-range Transboundary Air Pollution;
(b) Accession to the 2004 Convention for the Control and Management of Ships' Ballast Water and Sediments;
(c) Ratification of the 1999 Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

Implementation of MEAs is a priority for the Ministry of Environment and Water and other governmental institutions. Good efforts are applied and clear criteria for prioritization of meetings exist to ensure the participation of Bulgaria in all important meetings under MEAs, given financial constraints. National implementation reports are generally submitted on time. Focal points are appointed for all MEAs to which the country is a party. In general, focal points are well aware of their roles and responsibilities, although in some cases a lack of continuity from outgoing to new focal points is observed. Focal points submit reports after every meeting attended.

The implementation and compliance cases against Bulgaria in various MEAs (two cases in the Bern Convention; the implementation review process under the AEWA; the Pirin National Park process under the Convention concerning the Protection of the World Cultural and Natural Heritage; two cases under the Aarhus Convention, and the non-compliance found in 2010 under the UNFCCC), indicate some systemic issues with MEA implementation, e.g. for biodiversity treaties, such an issue is the rapid development of wind energy in the absence of strong nature protection legislation. The number of implementation and compliance cases against Bulgaria also indicates a problem with communicating the importance of addressing MEA implementation and compliance issues from focal points to the leadership in the Ministry of Environment and Water and further, to other ministries.

Recommendation 4.2:
The Ministry of Environment and Water should:

(a) Continue efforts to ensure the participation of Bulgaria in the meetings and activities under multilateral environmental agreements (MEAs) and implementation of reporting obligations under MEAs;
(b) Ensure that guidance and training is provided to MEAs' focal points to enable early identification of and effective communication within the Ministry on potential issues with implementation and compliance.

There are several formal ways in which Bulgaria ensures public participation in the development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs. There are examples of consultations with NGOs having been organized prior to and after important MEA meetings. There are cases of representatives of NGOs having been included in national delegations to MEA meetings. Some national focal points involve NGOs in the preparation of national reports on MEA implementation. In many cases, draft national reports are published with an invitation to the public to submit comments. However, in general there is no systematic policy on how to involve the public and NGOs in development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs.

Recommendation 4.3:
The Ministry of Environment and Water should review the current practice of ensuring public participation in development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs and provide guidance to the focal points on the issue.

Two public communications with regard to Bulgaria in the Aarhus Convention Compliance Committee outline the systemic problems with the implementation of the access to justice pillar of the Aarhus Convention. In addition, some public associations that are environmental NGOs in the meaning of Article 2(5) of the Convention are denied the opportunity to bring cases to courts. Also, there is a lack of clarity with regard to opportunities for the public to challenge in courts the omissions by public authorities that contravene the provisions of the national environmental legislation (Article 9(3) of the Convention). NGOs are cautious to bring cases to courts due to the

increasing costs of litigation. Bulgaria has not yet established or designated the Aarhus Clearinghouse national node.

Recommendation 4.4:
In line with its obligations under the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), the Government should:

(a) Bring the legislation into line with the Convention regarding access to justice;
(b) As part of training programmes for judges and prosecutors, raise their awareness and capacity to deal with cases initiated by members of the public, including environmental organizations, on the basis of environmental legislation and the Convention;
(c) Consider to establish the Aarhus Clearinghouse national node to provide the public with full up-to-date information about the implementation of the Aarhus Convention with the possibility to subscribe to RSS Feeds

Chapter 5: Climate change

The Bulgarian Government has made an effort since 2000 to develop climate change policies. After Bulgaria joined the EU in 2007, the context of climate policy in the country changed considerably because, apart from its international commitments under the UNFCCC and the Kyoto Protocol, the country was aligned with the existing and newly adopted European legislation in this area. The results of this effort were the overachievement of the country's commitment under the Kyoto Protocol regarding mitigation policies.

At the same time, as a party to the Kyoto Protocol, Bulgaria is committed to developing a national adaptation strategy. The same commitment also arises from the Climate Change Mitigation Act. However, Bulgaria is at an early stage of developing a national adaptation strategy, which should comprise the period up to 2030.

Recommendation 5.1:
The Government should adopt and implement a national adaptation strategy to climate change building on the national climate change risk and vulnerability assessment and on the insurance options for climate change adaptation in Bulgaria, elaborated both in 2014

Chapter 6: Water management

Bulgaria has one of the highest rates of water abstraction per capita and relies mainly on surface water sources due to the large volumes of water used for cooling in energy production. A continuing trend towards improving the quality of surface waters is reported. Likewise, a gradual improvement in groundwater quality, on most indicators, is being observed. But the status of many water bodies is not yet well aligned with the requisites of the Water Act and water-related legislation. The situation appears to be worse in 2016 than in 2012 but, thanks to recent monitoring campaigns, a more correct assessment of the status of the water bodies has become possible.

The current water monitoring regime has more of an informative nature and there is no analysis of reasons, causes, sources or measures for solving the problems. The results from the current monitoring show that, in practice, this monitoring does not provide the necessary volume of information to definitively determine the status of water bodies. The same situation applies with respect to an inventory of emissions and losses of priority substances and other relevant pollutants, and the programmes for self-monitoring by water users do not always contribute, if at all, to determining the emissions contribution of the site.

Recommendation 6.1:
The Government should continue to reinforce the monitoring of water bodies, in line with the findings of the River Basin Management Plans for the period 2016–2021 and other strategic plans, and predominantly resort to direct methods for the evaluation of the pressures, by systematically using the self-monitoring information, agricultural and industrial statistics, and data provided by municipalities, and by resorting to inquiries to water users.

Probably because there has been a reduction in industrial activity, manufacturing industry has been registering a reduction in water consumption. On the other hand, there has been an increase in water consumption by agriculture and some water consumption in other industrial activities has begun to occur. Public water supply represents a relatively small share of total abstraction (on average, 16 per cent of freshwater abstraction), but focuses the attention as it provides drinking water to 99 per cent of the population.

Recommendation 6.2:
The Government should prioritize water-related investments to improve efficiency of water supply systems and reduce water losses.

The Danube River Basin and Black Sea are of great concern to all riparian states, including Bulgaria. At this stage, the Danube River Basin Directorate does not have sufficient information to assess the extent of the impact of shipping on the ecological and chemical status of the river. A programme is in place for monitoring the concentrations of petroleum products and other potential pollutants from shipping in the river but no data are available on the deterioration of the ecological and chemical status of the river due to pollution from shipping.

Bulgaria has adopted the updated Black Sea Strategic Action Plan. In order to reduce the pressure on the littoral and territorial waters for the period 2016–2021, additional measures are planned, linked mainly to reducing the introduction of waste from land-based sources.

Recommendation 6.3:
The Ministry of Environment and Water should continue monitor closely the ecological and chemical status of the Danube River and adopt measures aiming at the implementation of the Marine Strategy and the Black Sea Strategic Action Plan, including reduction of pressure on these waters, from both economic activities such as navigation and fishing and in-land sources of pollution.

No National Centre for Water Management in Real Time, for monitoring and forecasting rainfall and river flows, including the exploitation of dams, has been established. The Centre would provide hydrological forecasts for the water resources, and assess the flood and drought risk and perform activities related to water management and protection from their negative impact, which would assist the competent authorities to make timely decisions and to undertake adequate measures, increase the security of the population and prevent risks to human health and the environment. Similarly, no centres to increase the preparedness of the population for an adequate response to floods are established.

Recommendation 6.4:
The Government should:

(a) Establish the National Centre for Real-Time Water Management and regional centres to increase the preparedness of the population for an adequate response to floods;
(b) Implement the measures related to flood risk prevention and management, including ecosystem-based approach.

A number of issues create obstacles to WSS sector development. These include the complexity and uncertainty surrounding infrastructure asset ownership and management; a lack of predictability and transparency in regulation of service levels and tariffs, including a tariff-setting methodology that assumes that financing is easily available at low or no cost to WSSCs, which is not the case; and political pressure to influence day-to-day operations of both WSSCs and the EWRC. While it is considered that EU funds will be able to finance 30–40 per cent of the total capital investment in WSSCs required over the current Strategy period (2014–2020), the remaining 60–70 per cent will have to come from central government sources and own financing by utilities. Poor financial viability and the lack of economies of scale make it difficult for WSSCs to finance and implement large capital investment programmes. A number of Bulgarian WSSCs do not cover their operating costs.

Recommendation 6.5:
The Government should:

(a) Remove the obstacles identified in the strategic plans for water management and water supply and sewerage (WSS) services that are referred to here, namely in regard to tariff-setting methodology;

(b) Allow WSS service operators to recover all costs or have access to subsidies in order to fund capex and opex, including replacements and repairs capex;

(c) Encourage WSS service operators to adopt asset management best practices

Chapter 7: Air protection

Air pollution by particulate matter is exceeding the limit values for air quality during the winter period. Most of the occurring high levels of pollution are caused by a combination of an unfavourable meteorological situation and high levels of emissions of PM during winter.

Particulate matter, especially PM_{10} and $PM_{2.5}$, can have a severe impact on public health. However, information on the costs for society of the impact of air pollution on public health is not easily available in Bulgaria.

Recommendation 7.1:
The Ministry of Environment and Water and the Ministry of Health should:

(a) Carry out a cost–benefit study to assess the health and social benefits in the event of a reduction of air pollution by PM in urban areas;
(b) Raise the awareness of the population of the impact of air pollution on health and of the costs induced to health care due to bad air quality.

A dispersion model describing the flow of air for all of Bulgaria could help to define and control sources of PM emissions in Bulgaria and in neighbouring states. This model can be used to predict the impact of measures and actions on the levels of air pollution. However, the Government does not use models to calculate and predict air pollution at a national level. Some tools exist such as AirQ+: software tool for health risk assessment of air pollution.

Recommendation 7.2:
The Government should develop a national air quality model, based on emission and monitoring data, and use it to estimate future trends in air quality.

The composition of particulate matter in Sofia during winter points to domestic heating being an important source of PM_{10}. The composition of dust during winter could be related to the composition of biomass fuels used for domestic heating. To prevent local emissions during the winter, the use of solid fuels for residential heating is to be reduced. This can be achieved by reducing energy demand, starting with improving the thermal insulation of houses, and by improving the efficiency of heating equipment. Along with better use of solid fuels, a fuel switch is needed. Use of natural gas is an option, but renewable energy can be an alternative. Geothermal energy is well suited for low temperature applications such as residential heating.

Recommendation 7.3:
The Government should:

(a) Promote the use of better heating appliances and the switch to clean fuels;
(b) Improve thermal insulation of houses, starting in large urban areas, to reduce the consumption of fuel during winter.

The main source of particulate matter during winter in Sofia is secondary aerosols, which result from chemical reactions in the air between gaseous compounds, mainly SO_2 and NOx or NH_3. Secondary aerosols contribute about 40 per cent of the PM_{10} concentrations during winter. An effective measure to prevent the formation of secondary aerosols is to reduce the background concentrations of SO_2, NO_x and NH_3.

Recommendation 7.4:
The Government should increase efforts to reduce total emissions of SO_2, NOx, NH_3 and PM from industrial and transport sources in order to reduce the formation of secondary aerosols.

Chapter 8: Waste management

Municipalities are obligated to ensure the availability of terrains, facilities and installations for municipal and construction and demolition waste.

Moreover, facilities and installations for treatment of waste are classified as elements of the technical infrastructure. This creates additional administrative barriers and delays in their planning and construction as it requires the elaboration of a special feasibility study, even if the terrain is determined by a feasibility study to be for industrial purposes, i.e. it remains unclear why terrains that have via a spatial planning plan been classified as industrial, and hence energy, chemical, metallurgical or other similar sites may be constructed as a means to initiate projects for waste management, for example for a composting or separation installation, need to undergo a procedure for a new feasibility study.

From the standpoint of the characteristics, significance, complexity and operational risks, these installations are classified as second category constructions out of a total of six categories, where the first category includes the most complex and high-risk constructions and the six category contains constructions of insignificant risk and complexity. Many categories of waste facilities involve no or low risk for the environment and public health.

Recommendation 8.1:
The Government should initiate an amendment of the Spatial Planning Act in order to facilitate the establishment of waste treatment facilities and remove impediments.

Recommendation 8.2:
The Government should ensure that the elaboration of waste-related programmes is subject to more precise planning and realistic deadlines for implementation of the measures.

Formal systems of recycling and EPR are hindered by informal (but rather well-organized) waste collection of recyclables (especially packaging waste). PROs have to buy materials from these informal collectors to meet the recycling targets. Moreover, with the street containers for separate collection of packaging materials low results are reached. Despite that, reported recycling rates, especially of packaging waste, are quite high. However, large quantities of packaging waste are still found in residual waste in the materials recovery facilities (MRFs).

Recommendation 8.3:
The Ministry of Environment and Water should:

(a) Reconsider the collection system for packaging waste;
(b) Charge the packaging Producers Responsibility Organizations for the recyclables found in residual waste;
(c) Strengthen the supervision over the system of recycling and extended producer responsibility.

The new EU package on Circular Economy means higher targets for the recycling of municipal waste. It is already doubtful whether Bulgaria is able to meet present targets, for example for recycling, let alone the more ambitious targets in the Circular Economy package.

Recommendation 8.4:
The Government should align its policies on recycling with the European initiatives.

Chapter 9: Biodiversity and national ecological network

At present, a range of national and thematic strategies, including cross-sectoral strategies, exists. The National Biodiversity Strategy and Action Plan was prepared prior to the accession to the EU and may be updated because of Natura 2000. The update would not only allow the inclusion of the Aichi targets in national planning documents but also offers the chance to address other important issues such as over- and underexploitation of resources (e.g. pasture, fish stocks), long-term funding schemes for biodiversity management, management of Natura 2000 sites, and invasive species.

Recommendation 9.1:
The Ministry of Environment and Water should finalize the new National Biodiversity Strategy and Action Plan.

Bulgaria has taken on a European responsibility by designating more than 30 per cent of the country's territory as Natura 2000 sites. Designation of Natura 2000 sites, and the required regulations associated with it, brought a general boost for conservation of biodiversity and habitats in Bulgaria.
Enlarging sites and securing strict conservation is not envisaged; national parks, and certainly also a set of Natura 2000 sites are not at all protected from economic interests. The financial and staff communications capacity in the administration is limited, making it difficult to improve the challenging task of stakeholder integration. Land acquisition and compensation schemes in favour of the protected area are not part of the negotiation tools between private and governmental stakeholders.

Recommendation 9.2:
The Government should strengthen the status, value and role of protected areas by:

(a) Enhancing their administrative, financial and information capacity, including management;
(b) Using land acquisition and compensation schemes;
(c) Increasing the percentage of strictly protected areas to achieve Aichi targets.

Natura 2000 sites do not exclude human activities, which in turn offers a chance to improve their public acceptance if the area is not off limits for any human activity. A definition on the long-term management of every Natura 2000 site has not yet been developed, discussed and moderated at local level.

In particular, special efforts are needed to develop management approaches for sustainable land use and conservation in Natura 2000 sites and social acceptance of the sites remains low.. The administrative, financial and communications capacity of the Natura 2000 division within the Ministry of Environment and Water is limited to complying with the national and European requirements.

Recommendation 9.3:
The Ministry of Environment and Water should develop appropriate administration, communications and management capacities for the Natura 2000 sites by:

(a) Developing appropriate management plans;
(b) Improving the general public's understanding of the concept of Natura 2000 and acceptance of the Natura 2000 sites

Chapter 10: Energy and environment

Since 2007, Bulgaria substantially reduced the total amount of emissions of the main pollutants into atmospheric air from power stations, including sulphur oxides (a fivefold decrease) and nitrogen oxides (some 50 per cent decrease). Despite this remarkable achievement, the total emissions of some pollutants, especially sulphur oxides, are still not negligible, e.g. 139,860 tons in 2014.

Recommendation 10.1:
The Ministry of Energy should continue implementing measures to reduce emissions of the main pollutants into atmospheric air from thermal power stations.
In 2004, Bulgaria's share of renewables in gross final energy consumption amounted to 9.6 per cent. Since then, the country made remarkable progress and in 2012 the country's share of renewables in gross final energy consumption already stood at 16.3 per cent, against a target of 16 per cent for 2020. Thanks to the support mechanisms introduced in 2007, the Bulgarian wind energy market was able to triple its installed capacity during a single year (from 112.6 MW at the end of 2008 to 335 MW by the end of 2009).

After the very rapid development and construction of 488 MW in the period 2007 through 2010, the grid capacity faced its technical limits. The issue became so apparent that the Bulgarian authorities had to start imposing limits on wind power development.

Recommendation 10.2:
The Ministry of Energy should continue improve the electronic grid capacity to accommodate the increase of generation of wind energy.