UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

2nd ENVIRONMENTAL PERFORMANCE REVIEW

BOSNIA AND HERZEGOVINA

UNITED NATIONS

ECE/CEP/162

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

ENVIRONMENTAL PERFORMANCE REVIEWS

BOSNIA AND HERZEGOVINA

Second Review

UNITED NATIONS
New York and Geneva, 2011

Environmental Performance Reviews Series No. 32

NOTE

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. In particular, the boundaries shown on the maps do not imply official endorsement or acceptance by the United Nations.

The United Nations issued the first Environmental Performance Review of Bosnia and Herzegovina (Environmental Performance Reviews Series No. 20) in 2004.

This volume is issued in English only.

ECE/CEP/162

UNITED NATIONS PUBLICATION
Sales No E.10.II.E.18
ISBN: 978-92-1-117036-8
ISSN 1020-4563

FOREWORD

Environmental Performance Reviews (EPRs) for countries with economies in transition were initiated by Environment Ministers at the second Environment for Europe Ministerial Conference, held in Lucerne, Switzerland, in 1993. Subsequently, the United Nations Economic Commission for Europe (UNECE) Committee on Environmental Policy decided to make the EPRs part of its regular programme. The first cycle of reviews that began in 1994 covered 23 countries from the UNECE region and was carried out until 2004.

At the fifth Environment for Europe Ministerial Conference (Kiev, 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 the Programme should continue with a second cycle of reviews. This support was reconfirmed at the sixth Environment for Europe Ministerial Conference (Belgrade, 2007). This second cycle, while assessing the progress made since the first review process, 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, EPRs are undertaken only at the request of the countries concerned.

The studies are carried out by international teams of experts from the UNECE 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, as well as with the Organisation for Economic Co-operation and Development and other organizations.

This is the second EPR of Bosnia and Herzegovina to be published by UNECE. The review takes stock of the progress made by Bosnia and Herzegovina in the management of its environment since the country was first reviewed in 2004. It assesses the implementation of the recommendations contained in the first review (Annex I). This second EPR also covers nine issues of importance to Bosnia and Herzegovina 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, waste management, climate change, and forestry, biodiversity and protected areas.

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 Bosnia and Herzegovina, 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 Bosnia and Herzegovina began in January 2010 with a preparatory mission. During this mission, the final structure of the report was discussed and established. A review mission took place from 24 May until 3 June 2010. The team of international experts taking part included experts from Canada, Czech Republic, Germany, the Netherlands and Russian Federation, as well as from the secretariats of the United Nations Environment Programme (UNEP) and the United Nations Economic Commission for Europe (UNECE).

The draft EPR report was submitted to Bosnia and Herzegovina for comment and to the Expert Group on Environmental Performance for consideration in October 2010. During its meeting on 29 October 2010, the Expert Group discussed the report in detail with expert representatives of the Government of Bosnia and Herzegovina, focusing in particular on the conclusions and recommendations made by the international experts. The Expert Group decided to address those recommendations of the first EPR of Bosnia and Herzegovina that were still valid in two different ways. If a chapter from the first EPR was also covered in the second EPR, then valid recommendations and their conclusions from the former would be reflected at the end of the respective chapter in the latter. If a first EPR chapter however was not covered in the second EPR, valid recommendations would be mentioned in Annex I-A "Valid Recommendations from the first Environmental Performance Review not covered in preceding chapters". The remaining first EPR recommendations that had been implemented partially or fully would be covered in Annex I-B "Implementation of the recommendations of the first Environmental Performance Review".

The EPR recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the Committee on Environmental Policy on 2 November 2010. A high-level delegation from Bosnia and Herzegovina 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 Bosnia and Herzegovina and its experts who worked with the international experts and contributed their knowledge and assistance. UNECE wishes the Government of Bosnia and Herzegovina further success in carrying out the tasks involved in meeting its environmental objectives, including the implementation of the recommendations contained in this second review.

UNECE would also like to express its deep appreciation to the Governments of Austria, the Netherlands and Switzerland for their financial contributions; to the Governments of Germany and the Netherlands for having delegated their experts for the review; and, to UNEP and the United Nations Development Programme for their support of the EPR Programme and this review.

Team of experts for the second EPR of Bosnia and Herzegovina, 2010

LIST OF TEAM MEMBERS

Mr. Antoine Nunes	ECE	Team Leader
Mr. George Georgiadis	ECE	Project Coordinator
Ms. Julie Corcuff	ECE	Introduction
Ms. Johannah Bernstein	Canada	Chapter 1
Mr. Wike Niessen	The Netherlands	Chapter 2
Mr. Mikhail Kokine	ECE	Chapter 3
Mr. Yaroslav Bulych	ECE	Chapter 4
Mr. Jyrki Hirvonen	ECE	Chapter 5
Mr. Vladislav Bizek	Czech Republic	Chapter 6
Mr. Michael Belau	Germany	Chapter 7
Ms. Rie Tsutsumi	UNEP	Chapter 8
Mr. Alexander Shestakov	Russian Federation	Chapter 9

The mission for the project took place from 24 May to 3 June 2010. The peer review was held in Geneva on 29 October 2010. The ECE Committee on Environmental Policy adopted the recommendations set out in this document.

Ms. Jenny Heap contributed and was involved in drafting some parts of the report.

Information cut-off date: 28 October 2010

UNECE Information Unit
Palais des Nations
CH-1211 Geneva 10
Switzerland

Tel.: +41 (0)22 917 44 44
Fax: +41 (0)22 917 05 05
E-mail: info.ece@unece.org
Website: http://www.unece.org

LIST OF CONTRIBUTORS

National contributors

State level

Ministry of Foreign Trade and Economic Relations Assistant Minister	Mr. Reuf Hadžibegić
	Asst. Prof. Dr. Senad Oprašić Ms. Nermina Skejović – Hurić Ms. Azra Rogović–Grubić Ms. Vanda Medić Mr. Igor Jevtić Ms. Mubera Bičakčić Ms. Brankica Pandurević Mr. Enes Šeperović
Ministry of Communication and Transport	Mr. Miroslav Đerić Ms. Lidija Knežević
Academy of Sciences and Arts of Bosnia and Herzegovina	Prof. Dr. Sulejman Redžić
Administration for Plant Health Protection of Bosnia and Herzegovina	Mr. Milad Zeković Ms. Snežana Akulović
Agency for Statistics of Bosnia and Herzegovina	Ms. Ševala Korajčević Mr. Mirza Agić
National Museum of Bosnia and Herzegovina	Mr. Dražen Kotrošan

Federation of Bosnia and Herzegovina

Federal Ministry of Environment and Tourism	Asst. Prof. Dr. Mehmed Cero Mr. Mladen Rudež Ms. Almira Kapetanović Ms. Suada Numić Ms. Azra Bašić Ms. Sabina Sijarić Ms. Maja Taubman–Bevanda
Federal Ministry of Agriculture, Water Management and Forestry	Ms. Hazima Hadžović Mr. Aziz Čomor Mr. Omer Pašalić Mr. Muharem Bahor Mr. Amer Husremović Mr. Jure Sesar Mr. Vlado Soldo Mr. Muhamed Hodžić
Federal Ministry of Health	Mr. Slavenko Šehović
Federal Administration for Inspection Issues	Ms. Dragica Filipović–Ćurak

	Ms. Azra Gackić Mr. Kemal Karić
Environmental Protection Fund of Federation of Bosnia and Herzegovina	Mr. Safet Harbinja Ms. Aida Kapetanović
Sarajevo Canton, Ministry of Spatial Planning and Environmental Protection	Ms. Zijada Krvavac Ms. Mira Grgić
Sarajevo Canton, Cantonal administration for inspection issues	Mr. Edin Ćiber
Sarajevo Canton, Ministry of Economy	Mr. Nedžad Mekić
Cantonal Public Municipal Enterprise "Rad", Sarajevo	Mr. Selim Babić Mr. Enes Filipović
Cantonal Public Municipal Enterprise "Vodovod i kanalizacija", Sarajevo	Mr. Nermin Drnda Mr. Jasmin Rudelija
Cantonal Public Municipal Enterprise "Park", Sarajevo	Mr. Osman Delić
Sava River Watershed Agency	Mr. Enes Alagić
University of Sarajevo, Faculty of Science	Prof. Dr. Senka Barudanović Prof. Dr. Samir Đug
Grontmij Municipal Programme for Solid Waste Management, Sarajevo	Mr. Gunnar Linder Ms. Rabija Idrizbegovic

Republika Srpska

Ministry of Physical Planning, Civil Engineering and Ecology	Ms. Svjetlana Radusin Ms. Radmila Kostić Mr. Ozren Laganin Ms. Milena Marković Ms. Radojka Popović Mr. Sveto Cvijić Ms. Ljiljana Stanišljević Ms. Biljana Tolimir
Ministry of Agriculture, Forestry and Water Management	Mr. Mihajlo Stevanović Ms. Milanka Jovanović Mr. Ranko Kozomara Mr. Jakšić Nebojša Mr. Alexander Nevotschek Mr. Pero Balotić

Ministry of Finance	Mr. Stevan Brkić
Ministry of Industry, Energy and Mining	Ms. Dragana Kalabić Ms. Nada Milovčević
Water Management Agency	Ms. Aleksandra Kovačević Mr. David Latinović Ms. Velinka Topalović
Republic Institute for Protection of Cultural, Historical and Natural Heritage	Ms. Jelena Kadić Mr. Dragan Kovačević Mr. Goran Panić
Republican Inspectorate, Forestry and Hunting Inspection	Mr. Goran Ljubojević
Republic administration for inspection activities	Mr. Dragan Mijović Mr. Igor Milunović Mr. Slavko Subotić Mr. Goran Vranić
Environmental Protection Fund	Mr. Predrag Tomić Ms. Nataša Zrilić
Agricultural Institute	Prof. Dr. Mihajlo Marković
Clinical Center Banja Luka	Ms. Vida Terkovic
Regional landfill “Dep-ot”	Mr. Aleksandar Lukač Mr. Momčilo Roković Ms. Željka Šobot
University of Banja Luka, Faculty of Forestry	Mr. Zoran Govedar Mr. Vladimir Stupar
Eco Zone – Šipovo	Mr. Nenad Bužanin
Brčko District	
Government of Brčko District	Ms. Nada Ljubojević Mr. Stanko Stančić
Non-Governmental Organizations	
Center for Environment Banja Luka (NGO)	Ms. Nataša Crnković
Hydro-Engineering Institute of Civil Engineering Faculty in Sarajevo	Prof. Dr. Tarik Kupusović
C.I.B.O.S. (Recycling Department), Ilijas	Mr. Vedad Karamehmedović
ENOVA	Mr. Fethi Silajdžić Ms. Maja Ćolović–Daul

Green Visions, Environmental NGO	Mr. Amar Čolakhodžić Mr. Thierry Joubert

International Organizations

Embassy of Sweden, Sarajevo	Ms. Katica Hajrulahović
European Commission Delegation to BiH	Mr. Johann Hesse
KfW Development Bank	Ms. Narcisa Poturak–Dönmez Ms. Claudia Hirtbach
Office of the High Representative	Mr. Archie Tuta
UNDP, Deputy Resident Representative BiH	Mr. Peter Van Ruysseveldt Mr. Goran Vukmir Mr. Siniša Rodić Mr. Igor Palandžić Ms. Amila Selmanagić-Bajrović
UNEP	Ms. Amina Omičević
WWF	Prof. Dr. Branko Vučijak

CONTENTS

Page

LIST OF TABLES

Introduction

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Chapter 7

Chapter 8

Chapter 9

Page

LIST OF FIGURES

LIST OF MAPS

Introduction

LIST OF BOXES

Chapter 4

Chapter 6

Chapter 9

PHOTO CREDITS

Page vi	Mr Yaroslav Bulych	Page 83	Mr Yaroslav Bulych
Page 3	Mr Alexander Shestakov	Page 84	Mr Alexander Shestakov
Page 26	Mr Alexander Shestakov	Page 89	Mr Michael Belau
Page 27	Mr Alexander Shestakov	Page 103	Ms Rie Tsutsumi
Page 35	Mr Michael Belau	Page 105	Mr Michael Belau
Page 47	Mr Yaroslav Bulych	Page 118	Mr Alexander Shestakov
Page 67	Mr Yaroslav Bulych		

LIST OF ABBREVIATIONS

ASCI	Areas of Special Conservation Interest
AECID	Spanish Agency for International Development Cooperation
BiH	Bosnia and Herzegovina
CARDS	Community Assistance, Development, and Stabilisation
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CEFTA	Central European Free Trade Agreement
CFC	chlorofluorocarbons
CIS	Commonwealth of Independent States
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COFOG	Classification of the Functions of Government
CP	Country Programme
CLRTAP	Convention on Long-range Transboundary Air Pollution
CORINE	Coordination of Information on the Environment
CORINAIR	Core Inventory of Air Emissions
COP	Conference of the Parties
CPI	Consumer Price Index
CSD	Commission on Sustainable Development
DAC	Development Assistance Committee
DABLAS	Danube Black Sea
DIKTAS	Dinaric Karst Aquifer System
DNA	Designated National Authority
EC	European Commission
EEA	European Environment Agency
EFFBiH	FBiH Environmental Fund
EBRD	European Bank for Reconstruction and Development
EFRS	RS Environmental Fund
EIA	environmental impact assessment
EIB	European Investment Bank
EIONET	European Environment Information and Observation Network
EMEP	Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
EPA	European Partnership Agreement
EPI	Environmental Performance Index
EPR	Environmental Performance Review
ERDF	European Regional Development Fund
ESD	Education for Suatainable Development
ESPOO	Convention on Environmental Impact Assessment in a Transboundary Context
EU	European Union
EUR	Euro
FBiH	Federation of Bosnia and Herzegovina
FDI	foreign direct investment
FLEG	Forest Law Enforcement and Governance
FSA	Food Safety Agency
GAINS	Greenhouse Gas and Air Pollution Interactions and Synergies
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
GMO	Genetically modified organisms
GDP	Gross Domestic Product
HCVF	High Conservation Value Forest
HDI	human development index
HPI	Human Poverty Index

IBAT	Integrated Biodiversity Assessment Tool
ICPDR	International Commission for the Protection of the Danube River
ICZM	integrated coastal zone management
IDA	International Development Association
IDP	internally displaced person
IESCE	Inter-Entity Steering Committee for the Environment
IIASA	International Institute for Applied System Analysis
IMF	International Monetary Fund
IMS	Inspection Management System
INC	Initial National Communication
IPA	Instrument for Pre-Accession
IPPC	Integrated Pollution Prevention and Control
ISO	International Standards Organization
ISRBC	International Sava River Basin Commission
IUCN	International Union for Conservation of Nature and Natural Resources The World Conservation Union
KFW	Kreditanstalt Für Wiederaufbau (German Development Bank)
KM	konvertibilna marka, or marka
LUCF	Land Use Change and Forestry
MCPFE	Ministerial Conference on the Protection of Forests in Europe
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreement
MET	Ministry of Environment and Tourism
MIFF	Multi-annual Indicative Financial Framework
MIPD	Multi-annual Indicative Planning Document
MLF	Multilateral Fund
MoAFWR	Ministry of Agriculture, Forestry and Water Resources
MoAWMF	Ministry of Agriculture, Water Management and Forestry
MoFTER	Ministry of Foreign Trade and Economic Relations
MOP	Meeting of the Parties
MoPP	Ministry of Physical Planning
MoPPCEE	Ministry of Physical Planning, Civil Engineering and Ecology
MoPPE	Ministry of Physical Planning and Environment
MTDS	Mid-Term Development Strategy
NAP	National Action Plan
NATO	North Atlantic Treaty Organization
NBSAP	National Biodiversity Strategy and Action Plan
NCB	national committee board
NCO	Office of the National Coordinator
NEAP	National Environmental Action Plan
NFP	national focal point
NGO	Non-Governmental Organization
NHDR	National Human Development Report
NIP	National Implementation Plan
NIR	National Implementation Report
NMVOC	non-methane volatile organic compounds
NSCESD	National Steering Committee for Environment and Sustainable Development
NSF	Natural Science Faculties
NTFP	non-timber forest products
OA	Official Aid
ODA	official development assistance
ODS	ozone depleting substances
OG	Official Gazette
OHR	Office of the High Representative
OSCE	Organization for Security and Co-operation in Europe

PCB	polychlorinated biphenyls
PCWAs	Public Companies for Watershed Areas
PE	Personal equivalent
PEHD	polyethylene high-density
PES	Payment for Ecosystem Services
PET	polyethylene terephthalate
PEU	population equivalent unit
PHARE	Pologne Hongarie Assistance à la Reconstruction des Economies (EU, French, Poland and Hungary Assistance for Economic Restructuring Programme)
PIC	prior informed consent
PM	particulate matter
POP	Persistent Organic Pollutants
PRSP	Poverty Reduction Strategy Paper
PRTR	Pollutant Release and Transfer Registers
RAC	Regional Activity Centre
RAD	Sarajevo landfill management company
RAPPAM	Rapid Assessment and Prioritization of Protected Areas Management
RBD	River Basin District
RDB	Red Data Book
RMCEI	recommendation for minimum criteria for environmental inspections
RS	Republika Srpska
SEA	strategic environmental assessment
SEE	South East Europe
SEVESO	EU Directive on the prevention and control of chemical accidents
SGS	Société Générale de Surveillance
SIDA	Swedish Development Agency
TCA	trichloroethane
TPP	Thermal Power Plant
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Science and Culture Organization
UNICEF	United Nations Children's Fund
UNDAF	United Nations Development Assistance Framework
UNIDO	United Nations Industrial Development Organization
UNV	United Nations Volunteers
USAID	United States Agency for International Development
VAT	value added tax
WB	World Bank
WFD	Water Framework Directive
WQM	Water Quality Monitoring
WRI	World Resources Institute
WTO	World Trade Organization
WWF	World Wide Fund for Nature
WWTP	wastewater treatment project

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: 1 Marka (BAM) = 100 Fening

Year	Marka/US$
2000	2.123
2001	2.186
2002	2.078
2003	1.733
2004	1.575
2005	1.573
2006	1.559
2007	1.429
2008	1.335
2009	...

Sources: ECE database. Accessed on 8.3.2010.

EXECUTIVE SUMMARY

The first Environmental Performance Review (EPR) of Bosnia and Herzegovina was carried out in 2003. This second review intends to measure the progress made by Bosnia and Herzegovina in managing its environment since the first EPR and in addressing upcoming environmental challenges.

During the post-war period there has been a persistent, huge current account deficit driven by a large trade deficit. After experiencing massive hyperinflation during and after the war, the situation improved and has stabilized during the past decade. Inflation has dropped to the single-digit level. Despite high gross domestic product (GDP) growth during the past 10 years, the current account imbalance continued to grow. The current account deficit, along with the high unemployment rate, are the two most serious macroeconomic challenges in Bosnia and Herzegovina today.

In spite of relatively low integration in the global economy, Bosnia and Herzegovina has been deeply affected by the 2008 international economic crises. The risk of a knock-on effect on local industries from the drop in European Union (EU) industrial production is significant, as is the big decrease in foreign direct investment and in large per capita remittances coming from the exceptionally high percentage of the population living abroad. By 2009 the economy is estimated to have contracted by about 3 per cent. A three-year US$ 1.5 billion International Monetary Fund (IMF) Stand-By Arrangement was agreed mid-2009.

The current economic downturn presents significant opportunities to reorientate the recovery process by increasing investment in clean and efficient technologies, renewable energy and ecosystem services. These all have potential for increasing economic returns, job creation, poverty reduction and increased foreign direct investment. However, economic priorities continue to be focused on redressing negative GDP trends and ensuring repayment of IMF and World Bank loans.

Policy-making framework for environmental protection and sustainable development

Redressing political fragmentation will continue to be a significant challenge for a complex State such as Bosnia and Herzegovina. With up to four administrative levels (state, entity, cantonal, municipal), environmental administration and regulatory control systems are very complex and in many cases duplicate one another.

The Government has stated its commitment to putting environmental priorities high on its agenda. However, environmental management has not been a priority in the post-war economic recovery process in Bosnia and Herzegovina and environmental management throughout the country suffers from suboptimal institutional, policy and legal frameworks. As a consequence, policies, plans and programmes fail to take into account environmental impacts. However, an important driver in the reform efforts of the environment sector since the first EPR has been the prospect of eventual EU membership and the adoption and transposition of the EU acquis communitaire.

The EU pre-accession period has created important opportunities for the country to start systematically adapting its laws and accessing additional resources and technical assistance. It also brings complex challenges for Bosnia and Herzegovina, since adoption of the entire EU environmental acquis requires extensive changes to the existing institutional and legal framework. Environmental laws have been harmonized in both entities and in line with a number of EU directives.

The State Mid-Term Development Strategy for the period 2004-2007 makes reference to the importance of the environment in poverty reduction. However, environmental priorities were not specified, and for political reasons the strategy has not been effectively implemented. There are currently no plans to develop a long-term development strategy at the State level.

In view of the lack of a State-level environment agency, the inter-entity approach has been a good compromise. The lack of an environmental mandate, authority and capacity at the State level and continuing opposition to any increase in power at the State level contributes to many problems, especially a lack of policy coherence between the State and the entities. Environmental management continues to be the primary responsibility of the two entities, in accordance with article III.3 (a) of the Constitution.

Inter-entity cooperation has been strengthened through the Inter-Entity Steering Committee for the Environment. This has functioned reasonably well in coordination and harmonization of environmental law and policy between the two entities and provides a good example of inter-entity cooperation. However, it has had limited impact in raising environmental issues to State level and in ensuring the necessary level of vertical and horizontal coordination and communication. This is in part because the Committee does not have a legal basis for its existence.

Compliance and enforcement mechanisms

The State Law on Environmental Protection has still to be adopted, as has a strategy for environmental protection and sustainable development. The lack of a State environment law continues to exacerbate a number of problems, such as the scattering of the competencies for environmental legislation and administration over all administrative levels. Because of weak inter-entity coordination mechanisms, legislative and administrative procedures are slow and redundant. Law-making activities at the State level are not based on clear and coordinated policies and priorities. Poor coordination with other sectors in turn leads to limited attention to environmental considerations in those domains.

In both entities a Law on Environmental Protection has introduced significant new instruments for environmental protection and for integrating environmental concerns in economic sectors. These are environmental permits and procedures to carry out environmental impact assessments (EIAs). In addition, since 2006, all entity-level inspectorates, including non-environmental inspectorates, have been subordinated to a single entity-level administration for inspection activities. This consolidation has been accompanied by an institutional separation of inspection and permit issuing processes thus improving the quality and integrity of compliance mechanisms.

The implementation of EIAs began in 2008 and Strategic Environmental Assessment (SEA) has been adopted in both entities but has yet to be implemented. SEA has not been implemented because neither entity has a precise procedure included in the Law on Environmental Protection, nor have they issued a decree. Although both entities have an Environmental Advisory Council to establish a wide social and scientific professional basis for environmental protection, there is a need for greater exchange of experiences on environmental permits and compliance.

Monitoring, information, public participation and education

Specified goals and priorities in environmental monitoring, information management and environmental training were adopted in the 2003 National Environmental Action Plan. Achievements include strengthening the air-quality monitoring network; improving water monitoring; strengthening emission reduction activities and emission monitoring of large emitters; establishing a pollutant emission cadastre; and developing Pollution and Release and Transfer Registers (PRTRs). However, there has been little progress in developing a comprehensive monitoring system, an integral spatial information system or a national environmental information system including a central database. Practical implementation of PRTR also faces a number of challenges, especially insufficiently trained staff.

One of the most important gaps for air quality monitoring is the lack of organization, coordination and communication between different public institutions. Data exchange between the different public institutions is limited and as a consequence there is no centralized database. Also, measurement sites have not been selected using modelling results, so the chosen locations may not reflect the worst pollution. Positive aspects include automation of some monitoring stations allowing, in particular, observations of pollutants dangerous to human health such as ground-level ozone (O3) and particulate matter (PM10 and PM2.5).

In both entities, a Law on Water specifies the institutions responsible for establishing and managing the water management data-processing system. The laws also oblige all other legal bodies, institutions, companies using water or engaged in public water supply, or wastewater discharge, to install devices for measuring and control of water quality and quantity; to carry out measuring and testing; and to keep and submit proper records. The most significant gaps are in monitoring of lakes, bathing waters, coastal waters, groundwater and discharge of harmful and toxic substances in wastewater. Gaps also remain in river monitoring.

Currently there are no specific laws, at the national or entity level that directly address soil protection including monitoring. As a result, soil monitoring does not exist in Bosnia and Herzegovina. Efforts are limited to ad hoc observations on the scope of projects, land valuations, studies and other activities by various institutions.

Waste monitoring currently organized through the entity Statistical Institutes is partially functional and based on a statistical form, which public utility companies are obliged to fill in. Public utility companies present data from their own internal waste-monitoring system. However, the quality of such monitoring is questionable since it is based on estimations, not constant monitoring.

Bosnia and Herzegovina has improved data reporting to the European Environment Agency (EEA) and now submits some 65 per cent of required data. The establishment of a State environmental protection agency has been under discussion since 2002. The Federation of Bosnia and Herzegovina has introduced regular environmental assessment reports based on indicators, but much needs to be done to improve the reliability and consistency of data and indicators contained in its state-of-the-environment report. There are no similar environmental assessments in the Republika Srpska or at the State level.

Bosnia and Herzegovina acceded to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters in 2008. The definitions of environmental information, restrictions to its access and other provisions of the entities' laws correspond generally to those established in the Convention. Environmental authorities at the State, entity and cantonal levels take actions to raise public awareness of environmental problems and citizens' rights on environmental protection. However, contrary to the entity environmental laws, non-governmental organizations are not sitting on the supervisory boards of the entity environment funds.

The public actively participates in environmental permitting procedures, especially with regard to projects subject to environmental impact assessment. The Environmental Advisory Council of each entity, established under its Law on Environmental Protection, is expected to be actively involved in the evaluation of strategic environmental assessments, environmental plans and programmes. These Councils are composed of different stakeholders including environmental associations, organizations and institutions representing professional and economic interests and scientific circles.

Some progress has been made in creating a public system of environmental education in Bosnia and Herzegovina. Curricula and programmes for preschool education and schools now include environmental elements, due to the adoption of a number of laws and strategies. However, these elements are insufficiently linked and coordinated, which prevents the interdisciplinary approach necessary for understanding environmental issues. In higher education, several universities have introduced environmental curricula.

Since the first EPR, Bosnia and Herzegovina has made some progress in compiling information on biodiversity and on forestry. There is much biodiversity data at different institutions. However, these data are frequently neither accessible nor verified. No central or coordinating institution responsible for collecting, registering and analysing biodiversity data has been designated at the entity or at the State level. The second countrywide State Forest Inventory has been under way since 2006.

Implementation of international agreements and commitments

As part of the international community, Bosnia and Herzegovina is aware of the need to take its share of responsibility for solving global ecological problems. More detail is needed for policy formulation, and environmental protection programmes remain to be developed. Nevertheless, the EU agreements already refer to commitments

under Multilateral Environmental Agreeements (MEAs), and the current United Nations Development Assistance Framework (UNDAF) for 2010–2024 includes a target for fulfilment of these commitments by 2014.

Since the first EPR, major steps have been taken to strengthen international cooperation and the participation of the country in international agreements. Bosnia and Herzegovina has ratified or acceded to many global and regional MEAs. Since the first EPR the country has ratified seven environmental conventions and two protocols. However, there is still much to be done as regards practical implementation and enforcement.

By ratifying the Kyoto Protocol in 2008, Bosnia and Herzegovina has demonstrated its interest and need for inclusion in the mechanisms, which are offered to signatories of the Protocol. Bosnia and Herzegovina carries out its Protocol obligations in line with the technical and financial assistance it receives. Country delegations have also regularly participated in the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), as well as at the meetings of expert bodies within the UNFCCC secretariat.

As a potential candidate country, Bosnia and Herzegovina will benefit from the EU Instrument for Pre-Accession Assistance (IPA). The Multiannual Indicative Planning Document for the period 2009–2011 builds on the IPA programme with results and indicators for adoption of an environment strategy; alignment of sectors to the environment; prioritization tools for environmental infrastructure investments, and measures for operationalizing environmental protection; and co-financing mechanisms and enhanced investments in environmental infrastructure.

Economic instruments and expenditure for environmental protection

Since the first EPR, Bosnia and Herzegovina has continued developing and defining its environmental priorities and policies, including with regard to economic instruments. Both entities have created the foundation for environmental legislation, although only a limited amount of legislation relating to environmental economic instruments is as yet operational. In most cases the current Government policy appears to be to manage environmental problems using regulatory instruments rather than market mechanisms.

However, the growing prosperity of Bosnia and Herzegovina since the war has augmented the ability of the population to pay fees, charges and taxes for an improved environment. It has also increased the use of natural resources and overall consumption, and therefore the pressures on the environment, and hence there is a need to better appreciate the importance and value of these natural assets. Both the Federation of Bosnia and Herzegovina and the Republika Srpska laws on environmental protection recognize the polluter pays and user pays principles.

There seems to be a growing awareness of environment-related economic instruments and their use among government officials at the State as well as at the entity level. The use of the instruments that are available seems to depend on the historical importance of the environmental sector and the strength of the institution in charge of the sector.

Because of the fragmented nature of the political structure in Bosnia and Herzegovina, finding statistical data on internal environmental expenditure is virtually impossible. According to the very general information available, the Federation of Bosnia and Herzegovina spent 0.9 per cent of its budget on environmental protection in 2009, while the equivalent expenditure for the Republika Srpska was about 0.2 per cent of its budget.

Both entities have their own environmental funds achieving operational status in 2010 after a long process started by the Republika Srpska in 2002 and by the Federation of Bosnia and Herzegovina in 2003. These funds are excellent tools for an economic approach to environmental problems. The cooperation between the funds seems to function well and there is a mutual understanding of the priorities for improving the environment in Bosnia and Herzegovina.

Climate change and environment

Bosnia and Herzegovina ratified the United Nations Framework Convention on Climate Change (UNFCCC) in December 2000 and the Kyoto Protocol in April 2008. Bosnia and Herzegovina has prepared all the necessary legislation and started to establish the administrative structures required to become a beneficiary of the Clean

Development Mechanism (CDM). The Designated National Authority for CDM is being established. The Initial National Communication (INC) was approved by the Government in October 2009 and submitted to UNFCCC. There is no special legislation on climate change in force in Bosnia and Herzegovina either at the State or entity levels, but certain relevant provisions are included in some legal acts, particularly in the field of energy. Studies have indicated great potential for hydropower and other renewable sources, as well as for an increase in energy efficiency.

For successful implementation of its obligations under UNFCCC, Bosnia and Herzegovina has established at the State level, the Climate Change Committee and the Subcommittee for Climate Change. These two bodies include representatives of the State and the two entities and are responsible for reaching common positions on relevant proposals before their submission for official adoption/endorsement.

Greenhouse gas (GHG) emissions in Bosnia and Herzegovina are estimated to grow by almost 30 per cent between 2005 and 2030, driven by the increase in CO2 emissions. Currenlty, 73 per cent of GHG emissions originate from the energy sector, followed by 13.5 per cent from agriculture and 10.4 per cent from industry. The energy sector of Bosnia and Herzegovina is mostly based on coal, which represented around 45 per cent of total primary energy supply in 2005, followed by liquid fuels (21 per cent), renewable energy (20 per cent) and hydropower (10 per cent). The impact of land use change and forestry represents almost 22 per cent of gross national emissions.

Climate change is expected to seriously impact Bosnia and Herzegovina, with the temperature projected to increase from 0.7 to 1.6 °C per 1 °C of global increase during the period 2031–2060. Dry periods, the incidence of torrential flooding and the intensity of land erosion will increase as will the occurrence of hail, storms, lightning and maximum wind velocity, which can represent threats to all forms of human activity. Bosnia and Herzegovina is highly vulnerable to these threats, because of the economic role of climate-sensitive sectors, such as agriculture and forestry, and has very limited capacity to address climate change risks.

Several projects relevant to climate change adaptation and mitigation have been, or are being, undertaken with the support of international donors. However, at present, there is no official strategy or policy document in Bosnia and Herzegovina dealing explicitly with climate change issues. The INC is the most important background document for future climate change mitigation and adaptation strategies, and there are certain other sector-specific documents relevant to climate change in place for the energy sector.

Sustainable management of water resources

Bosnia and Herzegovina is rich in water resources but the water management sector has some serious problems to address. Implementation of concrete measures to improve water management infrastructure has started over the past five years. However, progress has been slow due to lack of funding and the need to prepare a legal and policy framework. Key challenges relate to discrepancies between supply and demand, infrastructure inadequacies and weaknesses in the regulatory and financial framework. The lack of adequate infrastructure due to lack of investment, war damage and insufficient maintenance has resulted in the pollution of water resources and deterioration in the quality of drinking water. The most important issue is the creation of a comprehensive and reliable monitoring system.

The aim of meeting the EU public water supply standards by 2025 is extremely ambitious. The objectives of rehabilitating 50 per cent of the existing water infrastructure and providing safe drinking water for all by the year 2010 have not been met. Public water utilities in the Republika Srpska supply only 46 per cent of the population. In the Federation of Bosnia and Herzegovina, the situation is similar, with 56 per cent of the population having access to the public water supply system.

However, since the first EPR legislation has been implemented at the entity level, in line with EU directives. Both entities' water laws address the majority of water management issues and are 65 per cent compliant with EU regulations. Barriers to compliance remain, including the lack of an effective national regulatory and legislative framework, and the complex administrative system. In combination with the lack of a comprehensive and

consistent monitoring system, inefficient instruments in compliance and enforcement and water pricing which does fully cover the costs, this has resulted in inefficient and weak management of water resources.

Efforts on flood protection have been made by both entities since the first EPR, in terms of legal documents, strategies, programmes and plans. However, no significant investment in new flood control facilities has been made in the past 15 years. In the near future, a detailed analysis of climate impacts on outflows in basins in the Republika Srpska is planned. Even without taking the effects of climate change into account, the normal pattern of major floods, which cause enormous damage, is to be expected in future, unless adequate measures are implemented.

However, the preparation of a number of sanitation projects and programmes has started in both entities. In Bosnia and Herzegovina, as with most countries in development or with economies in transition, the development of sewerage systems has been slow in comparison with those for water supply. As far as industrial wastewater is concerned, the situation is slightly better, mainly due to the fact that industrial production is at less than 30 per cent of the pre-war level.

Waste management

Progress has been made in the area of waste management since the last EPR in 2003. The construction of regional sanitary landfills has started and efforts have been made to remove the accumulated hazardous/chemical waste. There are signs of progress in the development of policies and laws, and modest investments in appropriate infrastructure for treatment of industrial and medical waste, municipal waste management and reduction and recycling of waste.

A start has been made by both entities in closing down illegal dump sites. Countrywide, in Bosnia and Herzegovina 10–15 per cent of illegal dumpsites have recently been closed, although there are estimates of 1,100 dumpsites still in use.

A limited number of initiatives for the separation of waste have been initiated in Bosnia and Herzegovina. In Sarajevo canton the cost of the collection and compressing of the separated waste is more or less covered by selling it on to companies for further processing. Other pioneering recycling projects include a small-scale paper collection in Maglaj and paper and metal collection in public places in the town of Doboj.

In 2009 the State Agency for Statistics started consolidation of a nationwide municipal, industrial and hazardous waste database. There remains much room and need for improvement in the quality and content of the information produced through close collaboration between relevant bodies.

Forestry, biodiversity and protected areas

Bosnia and Herzegovina has made significant progress in the areas of forest management and biodiversity since the first EPR, especially in terms of developing the necessary legal frameworks and strategic and programmatic documents. Many essential elements of the forest management system are in place. However, a number of gaps still exist in terms of effective implementation of existing plans and capacity-building, and current capabilities and funding are dispersed.

Forestry management was poorly regulated after the war, but since early 2000 Bosnia and Herzegovina has made notable progress in building a more effective forest regulatory and management system. This system has many commonalities in both entities, which allows for rigorous and effective forest management in the country. Currently, both the Federation of Bosnia and Herzegovina and the Republika Srpska are in the process of updating their forestry legislation.

At the same time, the forestry sector is treated as an economic sector of secondary importance and suffers from under-budgeting and lack of political commitment. However, during the past 10–15 years forests have provided substantial additional income for rural communities through jobs, firewood, non-timber forest products, hunting

and recreation. Forests were significantly degraded during the war years and will require over 50 years to regain stability and ensure sustainable production.

The 2009 Second National Report to the Convention on Biological Diversity listed the key problems that the country faces in the area of biodiversity conservation and sustainable use. These are: lack of an integrated information system on biodiversity objectives; an ineffective institutional framework (which is a major obstacle to the decision-making process and implementation at the international level); lack of cooperation between the relevant institutions in the Republika Srpska and the Federation of Bosnia and Herzegovina; and an uneven level of implementation of international agreements and EU directives in both entities.

Sustainable and well-managed production of biodiversity resources could provide additional opportunities for development and new jobs. Bosnia and Herzegovina joined the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 2008, but related key obligations have yet to be implemented. However, for some activities, the absence of procedures and regulations under CITES means that the country cannot legally continue trophy hunting and related export activities and so will suffer from significantly reduced economic activity related to international hunting operations and tourism; neither can it adequately control the trade in medicinal plants.

The key priority today for Bosnia and Herzegovina is to increase significantly the area of its territory under protection via the establishment of new protected areas or the redesignation of previously existing ones. Most of the challenges are due to extremely low capacity in this sector, the absence of a designated responsible agency and a lack of political interest in the topic, all of which hinder rapid designation of new areas, due to conflicts of interest with other economic sectors.

INTRODUCTION

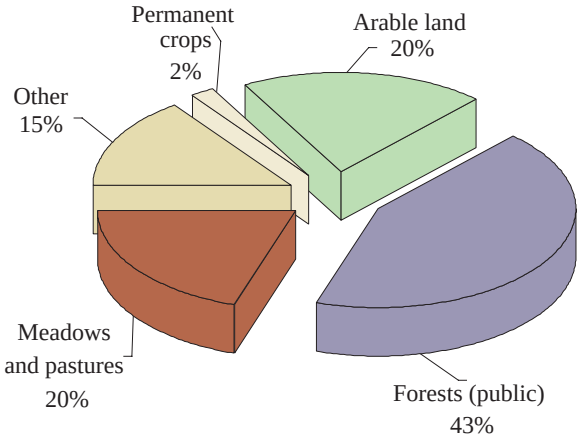
I.1 Physical context

Bosnia and Herzegovina (BiH) is situated on the Balkan Peninsula in South-Eastern Europe and has a land area of 51,197 km^2. The country is bordered by Croatia to the north, west and south-west (border length, 932 km), by Montenegro (249 km) and Serbia (357 km) to the east and south-east. The country also has a short (13 km long) coastline along the Adriatic Sea around the town of Neum.

BiH is a mountainous country. The Dinaric Alps cross the country from its western border with Croatia to the south-east. Of the total surface of the country, 42 per cent is covered by mountains and the average altitude is about 500 m. The highest point of the country, the 2,386 m high peak of Maglić Mountain, is situated on the border with Montenegro.

Forests cover 43 per cent of the country and meadows and pastures 20 per cent. About 20 per cent of the land is arable, and 2 per cent is under permanent crops (see figure I.1). Natural resources include deposits of minerals such as salt, manganese, silver, lead, copper, iron ore, bauxite and coal.

Figure I. 1: Land use



Source: FAO Stat Land, 2007.

The country is located between the continental and Mediterranean climatic zones, which creates three local climatic areas. The northern inland territory has a moderate continental climate with warm summers and cold, snowy winters. The mountain areas above 700 m have a mountain climate with short, cool summers and long, harsh winters. The annual precipitation in these two regions is between 1,500 and 2,500 mm. The southern part of the country has an Adriatic-Mediterranean climate with sunny, warm summers and short, mild, rainy winters, with an annual average precipitation of 600 to 800 mm.

The main river is the Sava (331 km within BiH), which runs along the country's northern border. The Sava and its tributaries, the Bosna (271 km) running through Sarajevo, the Una, the Drina and the Vrbas all flow to the north. A small number of rivers, notably the Neretva (218 km), flow towards the Adriatic Sea. Rivers also define the country's two historical provinces; Bosnia lies in the Sava River valley and Herzegovina is situated in the Neretva River basin and the upper reaches of the Drina.

I.2 Human context

Depending on the source, the total population figures vary significantly, from 3.8 to 4.6 million. According to the latest 2009 estimations, BiH has 3,942,701 inhabitants and the population density is 77 inhabitants/km^2. The largest cities include the capital Sarajevo (population 305,000), Banja Luka (250,000), Zenica (127,105) and Mostar (111,186). The urban population is 47 per cent of the total.

The total population peaked in 1991, but the war of 1992-1995 led to hundreds of thousands of deaths and the displacement of over 1 million people. Most of those who fled the country emigrated to the former Serbia and Montenegro, Germany, Croatia, and Sweden, contributing to a negative annual population growth rate of 1.5 per cent for the period 1990-2000.

In addition to emigration out of the country, there are internally displaced persons (IDPs) within BiH. The return of IDPs and refugees to their place of origin was mandated by the 1995 Dayton Peace Agreement and by the end of 2009, some 580,000 people had returned to their place of origin. However, in 2010 there were still about 113,600 IDPs within the country. In addition to the IDPs, there were more than 7,000 refugees in the country, mainly from neighbouring Croatia, but to a lesser extent also from Serbia.

Table I.1: Demographic and health indices, 2004–2009

	2004	2005	2006	2007	2008	2009
Population (in millions)	3.905	3.915	3.926	3.935	3.940	3.943
Birth rate, crude (per 1,000)	9.5	9.3	9.2	9.1	9.1	..
Total fertility rate	1.2	1.2	1.2	1.2	..	..
Life expectancy at birth (in years)	74.7	74.7	74.8	75.0	75.1	..
Life expectancy at birth: male (in years)	71.3	72.1	72.1	72.1	72.4	..
Life expectancy at birth: female (in years)	76.7	77.5	77.5	77.5	77.7	..
Percentage of population aged 0–14 years	17.7	17.6	17.3	17.0	16.6	16.2
Percentage of population aged 65+ years	13.4	13.7	14.1	14.4	14.8	15.1
Death rate, crude (per 1,000 people)	8.8	9.1	9.4	9.6	9.8	..
Mortality rate, infant (per 1,000 live births)	..	13.4	13.1	12.9	12.7	..

Source: UNECE Statistical database May 2010, UNICEF Country profile 2010, World Bank database. (accessed on 10.08.2010).

BiH has three major population groups: Bosniaks, Croats and Serbs. All are ethnically South Slavs and the primary difference between them is their religion. Bosniaks are generally Sunni Muslims; Croats are Roman Catholics, while Serbs are traditionally Orthodox Christians. Recent evaluations of the population group distribution are very close to 1991 census results: Bosniaks represent 44 per cent of the population, Croats 17 per cent, Serbs 32 per cent, and others 7 per cent. The country has three official languages, Bosnian, Croatian and Serbian, with two different alphabets in use, Latin and Cyrillic. All three languages are South Slavic languages with only minor differences.

The largest cities had mixed populations in 1991, but the war made populations almost homogeneous. No census has been conducted since the war, but unofficial sources indicate that Sarajevo is to a large extent Bosniak (77 per cent), while Banja Luka remains by a vast majority Serb (92 per cent). The first post-war housing and population census is expected by 2011.

Latest available figures (2008) give a life expectancy of 77 years for women and 72 years for men. The country's fertility rate decreased from 1.6 before the war to 1.2 in 2007, which is lower than the European Union average (1.5 in 2006). BiH indicators are close to Slovakia and Poland (1.24 and 1.27 respectively), but way behind France with 2 children per female. The infant mortality rate has decreased from the 1990 pre-war 15.3 deaths per 1,000 live births to 12.7 in 2008. Unfortunately, the crude death rate for the total population (annual deaths per 1000 people) has been on the rise, increasing from 7.8 (per 1,000) in 2000 to 9.8 in 2008.

Primary education is compulsory for all children from age 6 to 15 and both primary and secondary education are free of charge. The country has eight universities: Banja Luka, Bihać, two in Mostar (East and West Mostar), two in Sarajevo (Sarajevo and Eastern Sarajevo), Tuzla, and Zenica. According to the United Nations Children's Fund (UNICEF), the adult literacy rate has increased in recent years, from 93 per cent in 2001 to 97 per cent in 2008.

The country's human development index (HDI) has been measured by the United Nations Development Programme (UNDP). HDI criteria for country rankings are measured on a scale from 0 to 1, with the number 1 indicating the best attainable human development. The BiH 2007 HDI was 0.812, which placed the country in 76th position out of 182 countries reviewed, putting BiH among countries with high human development, ranked just behind Brazil and before Colombia.

The UNDP Human Poverty Index (HPI) which measures quality of life, access to education and standard of living, ranked BiH fifth out of 135 developing countries, putting it ahead of neighbouring Albania, Montenegro, Serbia and the former Yugoslav Republic of Macedonia.

Photo I.1: Waterfall in Jaice

The Environmental Performance Index (EPI) of Yale University ranks countries according to how well they have achieved their environmental policy goals. The 2010 Yale Index ranks BiH 98th out of 163 countries, achieving 55.9 per cent of its environmental objectives. This performance placed it below its geographic group average result (59 per cent), ranking the country far behind Albania (23rd place), Serbia (29th), Croatia (35th), and the former Yugoslav Republic of Macedonia (73rd). According to this ranking, BiH is distinguishing itself for excellent results in forestry and water management, but has unfortunately achieved a very low success rate in biodiversity protection.

I.3 Historical and economic context

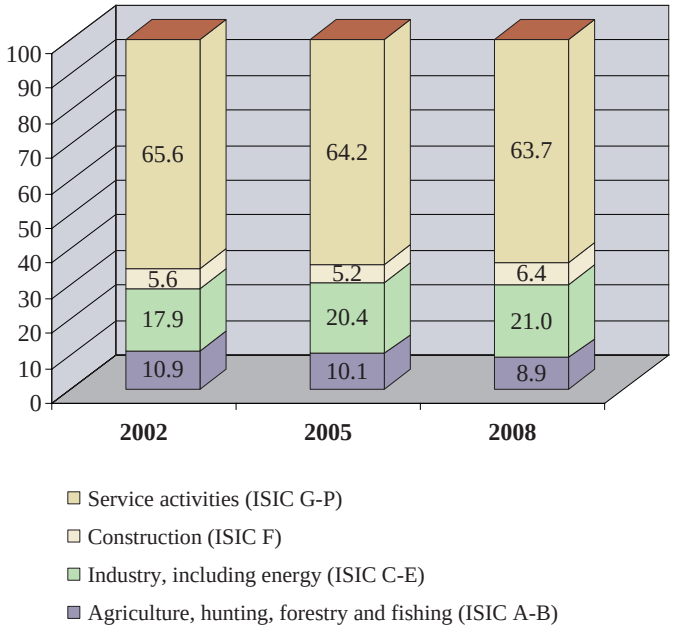
History

By the end of 1990, the lack of political convergence, rising nationalism, disagreements over economic policies and unwillingness to accept common institutions among the constituent republics of the federal Yugoslavia led to multiparty parliamentary elections in all six republics. Slovenia and Croatia had already separated from federal Yugoslavia when in March 1992, the Government of the Socialist Republic of Bosnia and Herzegovina, held a referendum in which 67 per cent of the population voted in favour of independence. The independence of Bosnia and Herzegovina was declared on 5 April, while the Serbian Democratic Party formally proclaimed a separate independent Republika Srpska.

A conflict, in which all groups tried to consolidate their control over the country, erupted the same week, escalating to a war which continued until late 1995. The war ended with the signing of the Dayton Peace Agreement on 14 December 1995 in Paris. This Agreement established a State of Bosnia and Herzegovina formed of two entities: the Federation of Bosnia and Herzegovina (FBiH) covering 51 per cent of the country's territory with a mostly Bosniak and Croat population; and Republika Srpska (RS) with a mostly Bosnian Serb population, covering 49 per cent of the country's territory. The Dayton Peace Agreement also established a constitution for the country and created the Office of the High Representative (OHR) to oversee the implementation of the civilian aspects of the agreement.

Since gaining independence, BiH has signed several international agreements and participated in international forums, and is currently serving as a non-permanent member of the United Nations Security Council for the period 2010-2011. It started accession negotiations with the European Union (EU) in November 2005 and is at present a potential candidate for membership. BiH is also negotiating its entry into the World Trade Organization (WTO) and since April 2010, has been a candidate for NATO membership. It has been a member of the Council of Europe since 24 April 2002 and was a founding member of the Mediterranean Union upon its establishment on 13 July 2008. In 2006, the country signed the Central European Free Trade Agreement (CEFTA) with neighbouring countries.

Figure I.2: GDP by sector in 2002, 2005, and 2008, percentage of total GDP



Source: UNECE database (accessed on 30.6.2010).

Economy

Since the 1990s, the structure of the economy has moved from agricultural and industrial production to being service-based. Industrial production, which used to account for 43 per cent of GDP before 1992, has gradually lost its importance dropping to 17.9 per cent in 2007 but increasing slightly to 21 per cent in 2008, while the service sector stood at 63 per cent of GDP.

The economic recovery began after the 1995 Dayton Peace Agreement. The very low level of economic activity during the war meant that GDP grew by 88.9 per cent in 1996. Fast growth continued for several years, but has since slowed down and has remained at between 2 and 7 per cent since 2000. In 2008, the GDP growth rate was 5.4 per cent, above the Western Balkan country average of 5.1 per cent. The steady pace of GDP growth has markedly eased employment recovery, although registered unemployment was still 24.1 per cent in 2009 – one of the highest rates in the region.

After experiencing massive hyperinflation during and after the war, the situation improved and has stabilized during the past decade. The general fall in inflation since the end of the conflict has largely been achieved by introduction of the new national currency, the konvertibilna marka, or marka (KM) in 1997. Since then, inflation has dropped to single-digit level and even the 2006 introduction of value added tax (VAT) to ensure fiscal revenues, did not cause inflation to pick up. In 2008, the Consumer Price Index (CPI) growth rate was 7.4 per cent but dropped to a negative -0.4 per cent in 2010.

One of the main features of the BiH economy during the post-war period has been a persistent, huge current account deficit driven by a large trade deficit. In spite of rather high GDP growth during the past 10 years, the current account imbalance has continued to grow, increasing from 7.2 per cent of GDP in 2000 to 14.9 per cent of GDP in 2008. In monetary terms, the negative current account balance is even more remarkable – the deficit rose from US$ 396 million in 2000 to US$ 2.76 billion in 2008. The current account deficit, along with the high unemployment rate, are the two most serious macroeconomic problems the country is facing.

Interestingly, the huge emigration to other countries has led to a massive inflow of remittances from those working abroad. According to UNDP, remittances recently peaked, bringing approximately US$ 2.52 billion into the country in 2007. Average remittances per person were US$ 640, compared with the average for Central and Eastern Europe and the Commonwealth of Independent States (CIS) of US$ 114. At the same time, net foreign direct investment inflows also peaked, reaching a level never before attained of US$ 2 billion in 2007, although this dropped to US$ 1 billion in 2008.

Table I.2: Selected economic indicators, 2000–2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP (% change over previous year; in 2005 prices)	5.4	2.0	4.9	3.8	6.3	3.9	6.9	6.6	5.4	..
GDP at current prices, millions of NCUs	11689	12565	13821	14505	15786	17127	19252	21760	24701	..
GDP at current prices and PPPs, millions of US$	..	17772	18940	20080	21944	23848	27007	29833	34270	..
GDP per capita at current prices, NCUs	2764	2941	3224	3380	3676	3988	4489	5073	5763	..
GDP per capita at current prices and PPPs, US$	..	4160	4418	4679	5111	5553	6297	6956	7995	..
Inflation, GDP deflator (% change over the previous year)	28.9	5.4	4.9	1.1	2.4	3.2	5.7	6.7	7.8	
CPI (% change over the previous year, annual average)	..	..	..	..	..	..	6.1	1.5	7.4	-0.4
Registered unemployment (% of labour force, end of period)	..	..	..	..	..	..	31.1	29.0	23.4	24.1
Current account balance (million US$ at current exchange rate)	-396.0	-743.0	-1,191.0	-1,631.0	-1,639.0	-1,844.0	-981.0	-1,594.0	-2,764.0	..
Current account balance (as % of GDP)	-7.2	-12.9	-17.9	-19.5	-16.4	-17.1	-8.0	-10.5	-14.9	..
Net FDI inflows (million US$ at current exchange rate)	146.0	118.0	268.0	382.0	708.0	607.0	718.0	2,088.0	1,042.0	..
Net FDI flows (as % of GDP)	2.7	2.1	4.0	4.6	7.1	5.6	5.9	13.7	5.6	..
Foreign exchange reserves (million US$)	..	..	..	..	..	..	..	..	..	..
Gross external debt (million US$)	1860	2017	2233	2522	2757	2630	2750	2953	2953	..
Exports of goods and services (% of GDP)	..	..	..	..	29.4	32.6	36.5	37.3	36.8	..
Imports of goods and services (% of GDP)	..	..	..	..	70.7	73.8	65.7	69	69.5	..
Exchange rates: annual averages (NCU/US$)	2.12	2.19	2.08	1.73	1.58	1.57	1.56	1.43	1.34	..

Source: UNECE and World Bank database, 2010.

In spite of relatively low integration in the global economy, BiH has been deeply affected by the 2008 international economic crises. The risk of a knock-on effect on local industries from the drop in EU industrial production is significant, whilst the decrease in foreign direct investment is threatening the economy. Both elements, combined with a heavy public spending programme which increased the current account deficit, are revealing a degree of weakness in the public finances. With the global economic crisis, economic activity has been on the decline and, although there is no official data as yet, the economy is estimated to have contracted by about 3 per cent in 2009.

To mitigate the effects of the global financial crisis, in July 2009 the International Monetary Fund (IMF) approved a three-year US$ 1.5 billion Stand-By Arrangement for the country. This loan is to support an economic programme designed by the BiH authorities. It is aimed mainly at consolidation of the public finances, currency board safety, adequate liquidity maintenance, securing sufficient external financing and restoration of confidence. The funds are planned to be disbursed in four installments and they will be subject to review by the Fund.

I.4 Political organization and institutions

Administrative and political structure

The present political divisions of BiH and its structure of government were created by the Dayton Peace Agreement. The constitution, which was agreed upon as a part of the Agreement, gave BiH a very complex political structure with a multilayer administrative structure and an exceptionally heavy institutional configuration. At the top of this administration is the State of Bosnia and Herzegovina dealing with State issues. Under the State administration are two almost independent entities: Republika Srpska and the Federation of Bosnia and Herzegovina. Each entity has its own political structure and administration, with a central entity government.

The central Government of BiH consists of a rotating tripartite Presidency, a Council of Ministers and a bicameral Parliamentary Assembly.

The three-member joint Presidency consists of one Bosniak, one Croat and one Serb elected by popular vote: two from FBiH and one from RS. All three serve for four years and have equal rights. The chairmanship of the Presidency rotates every eight months. The Presidency is responsible for the foreign policy of the country; it ratifies international treaties after approval by the Parliamentary Assembly and represents BiH in international organizations and institutions.

The Council of Ministers is the executive branch of the Government, responsible for carrying out policies and implementing decisions. It is composed of a Chairman and nine ministers, all appointed along ethnic lines. The Chairman of the Council of Ministers is nominated by the Presidency and confirmed by the national House of Representatives. The Chairman of the Council of Ministers appoints the other ministers.

The Parliamentary Assembly of BiH, responsible for adopting laws and for State budget institutions, is divided into a House of Representatives and a House of Peoples. The House of Representatives has 42 directly elected members, of whom two thirds are elected from FBiH and one third from RS. The House of Peoples has 15 members, elected for a four-year term, and representing the constituent peoples, Bosniaks, Croats, and Serbs.

Each entity has its own government, flag and coat of arms, president, parliament, police and customs departments, and postal system.

The political structure of FBiH is divided into three levels: the entity level, the cantonal level and the municipal level. At the entity level, FBiH has its own constitution, a bicameral Parliament and a Government headed by a Prime Minister, who is nominated by Parliament. At cantonal level, each of the 10 cantons has its own parliamentary assembly with the power to adopt cantonal laws and appoint the cantonal government. The third political level is the municipal one, where each self-governing municipality has its own municipal council and administrative structures.

Republika Srpska (RS) has no cantons, only 63 municipalities. At the entity level, there is a National Assembly, a Council of Peoples, a President, two Vice-Presidents, and a Government under a Prime Minister. The municipalities, as in FBiH, all have their own assemblies and administrative structures.

In both entities, the responsibilities of the municipalities include child care, primary and secondary school buildings, employment agencies, social care, culture, sports, housing and urban planning, municipal utilities (sanitation, sewage treatment, and water supply), public order, tourism, and management of municipal properties.

In addition to the entities, BiH has a small autonomous entity, the District of Brčko created from part of the territory of both entities. Brčko is a shared territory that belongs to both entities but comes under the exclusive sovereignty of the State of BiH. The Brčko authorities consist of the District Assembly, a multi-ethnic Government, police force and judiciary.

Institutions

The Office of the High Representative

The Office of the High Representative (OHR) was established as a result of the Dayton Peace Agreement. At the beginning of the peace process, OHR acted as a bridge builder between the wartime parties. The High Representative is supported by a Peace Implementation Council, seeking to stabilize the country. Currently, the High Representative's main task is to ensure that the institutions function effectively and responsibly. Since 2003, the High Representative is also the Special Representative for the EU, and coordinates the activities of all EU actors in BiH. The High Representative has substantial political power (Bonn Powers) and can remove public officials from office if they violate legal commitments or the Dayton Peace Agreement. While OHR had intended to withdraw entirely by 2008, its current plan is to maintain its presence until all reforms called for in the Peace Agreement have been fully implemented.

The Constitutional Court

The highest judicial authority in BiH is the Constitutional Court. The Constitutional Court is there to uphold the Constitution and has exclusive jurisdiction to decide any dispute that arises under it, whether between the entities, between BiH and one or other, or both of the entities, or between the country's institutions. The court has nine judges, of whom six are selected by the respective assemblies or parliaments of the entities (four are elected by the FBiH House of Representatives and two by the RS People's Assembly). The remaining three judges are appointed by the President of the European Court of Human Rights after consultation with the Presidency of BiH.

The Court of Bosnia and Herzegovina

The Court of BiH was established on 3 July 2002 by the BiH Parliament. The competencies of the Court are regulated by the Law on the Court of BiH and are related to the criminal, administrative and appellate jurisdictions. The Criminal Division deals with war crimes, organized crime, economic crime and corruption, among others, while the Administrative jurisdiction of the Court adjudicates cases pertaining to complaints against decisions issued by BiH institutions as part of their public functions. The judges and President of the Court are appointed by the High Judicial and Prosecutorial Council, the autonomous organ ensuring the maintenance of an independent, impartial and professional judiciary at the State level and in the Brčko.

Table I.3: Ministries of Bosnia and Herzegovina

Ministry of Foreign Affairs
Ministry of Security
Ministry of Defence
Ministry of Finance and Treasury
Ministry of Justice
Ministry of Foreign Trade and Economic Relations
Ministry of Communications and Transport
Ministry of Human Rights and Refugees
Ministry of Civil Affairs

Source: http://www.vijeceministara.gov.ba/Default.aspx?pageIndex=1 (accessed on 30.6.2010).

Table I.4: Ministries of the Federation of Bosnia and Herzegovina

Ministry of Interior
Ministry of Justice
Ministry of Finance
Ministry of Energy, Mining and Industry
Ministry of Transport and Communications
Ministry of Labor and Social Policy
Ministry for Displaced Persons and Refugees
Ministry for Issues of Veterans and Disabled Veterans of the Defensive-Liberation War
Ministry of Health
Ministry of Education and Science
Ministry of Culture and Sports
Ministry of Trade
Ministry of Physical Planning
Ministry of Agriculture, Water-Management and Forestry
Ministry of Development, Entrepreneurship and Crafts
Ministry of Environment and Tourism

Source: http://www.fbihvlada.gov.ba/english/ministarstva/index.php (accessed on 7.5.2010).

Table I.5: Ministries of Republika Srpska

Ministry for Economy, Energy and Development
Ministry of Finance
Ministry of Education and Culture
Ministry of Justice
Ministry of Internal Affairs
Ministry of Administration and Local Self-Governance
Ministry of Health and Social Protection
Ministry of Agriculture, Forestry and Water Resources
Ministry of Transport and Communications
Ministry of Trade and Tourism
Ministry of Physical Planning, Civil Engineering and Ecology
Ministry of Labor and Soldiers and Invalid Protection
Ministry for Economic Relations and Coordination
Ministry for Refugees and Displaced Persons
Ministry of Science and Technology
Ministry of Family, Youth and Sports

Source: Law on Ministries of Republika Srpska, Official Gazette of Republika Srpska, 70/02.

Table I.6: Departments of the District of Brčko

Department of Professional and Administrative Affairs
Department of Public Records
Department of Health and other services
Department of Agriculture, Forestry and Water Management
Department of Urban Planning and Property Affairs
Department of Economic Development, Sports and Culture
Department of Public Affairs
Department of Education
Department of Municipal Affairs
Department for Displaced Persons, Refugees and Housing
Department of Public Safety
Department of Public Works

Source: http://www.bdcentral.net/institucije-bd-bih/Institucije-sr?set_language=sr (accessed on 09.08.2010).

Map I.1: Map of Bosnia and Herzegovina

Source: United Nations Cartographic Section, 2010.

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

PART I: POLICYMAKING, PLANNING AND IMPLEMENTATION

Chapter 1

POLICYMAKING FRAMEWORK FOR SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL PROTECTION

1.1 Description of the current situation

An important driver in the reform efforts of the BiH environment sector since the first environmental performance review (EPR), carried out in 2003 has been the prospect of eventual European Union (EU) membership and the adoption and transposition of the EU acquis. The pre-accession period has created important opportunities for the country to start systematically adapting its laws and accessing additional resources and technical assistance, before completing the stabilization and association process. However, the EU accession process has created complex challenges for BiH, since adoption of the entire EU environmental acquis requires extensive changes to the existing institutional and legal framework.

In a recent World Bank report on the importance of adopting the EU environmental acquis, pre-accession countries were rated in terms of the fragmentation of their environmental institutions. BiH was ranked as the third most fragmented, after Serbia and Croatia.

Redressing fragmentation will continue to be a significant challenge for a federal State such as BiH. Environmental administration and regulatory control systems are very complex and in many cases duplicate one another, especially when considering that up to four administrative levels (state, entity, cantonal, municipal) have to work together. Federal systems elsewhere in Europe have proven adept at environmental management, however in order to work effectively in BiH the system will require rigorous coordination, clearly defined roles and responsibilities, and a strong will for cooperation between all levels of government.

Despite the stated commitment of the State Government of Bosnia and Herzegovina (BiH) to put environmental priorities high on its agenda, environmental management throughout the country suffers from suboptimal institutional, policy and legal frameworks.

Indeed, the absence of a State-level environment agency, unclear division of responsibilities between the different levels of Government, insufficient capacity, and a low level of political will and public awareness have all hindered further progress with regard to its environmental performance. These problems are further described throughout this chapter.

One of the central problems that BiH faces is the lack of an environmental mandate, authority and capacity at the State level. This contributes to many problems, especially a lack of policy coherence between the State and the entities. Since there is continuing opposition to any increase in power at the State level, any chance of strengthening environmental authority at the level where it is needed most will continue to be problematic.

In addition to these important political challenges, economic recovery continues to be a critical issue in BiH. Official unemployment is registered at 24.1 per cent and gross domestic product (GDP) continues to decline, along with entity revenues and foreign direct investment flows. As a result, economic priorities continue to be focused on redressing these negative trends and ensuring repayment of IMF and World Bank loans. Unless and until the economic benefits of environmental protection can be understood, environmental spending will continue to be an extremely low priority in the State and entity budgets.

1.2 Institutional framework

The Office of the High Representative

The Office of the High Representative (OHR) continues to oversee economic reconstruction, governmental institution-building, and promotion of a stable market economy in BiH, but not environmental management.

State level

At the State level, environmental matters continue to be the responsibility of the Sector on Natural Resources,

Photo 1.1: Miljacka River in Sarajevo

Energy and Environment of the Ministry of Foreign Trade and Economic Relations (MoFTER). The Sector is divided into six departments, dealing, respectivelity, with (1) environment, (2) primary energy and policies, (3) secondary energy and projects, (4) tourism, (5) water resources and (6) implementation of projects.

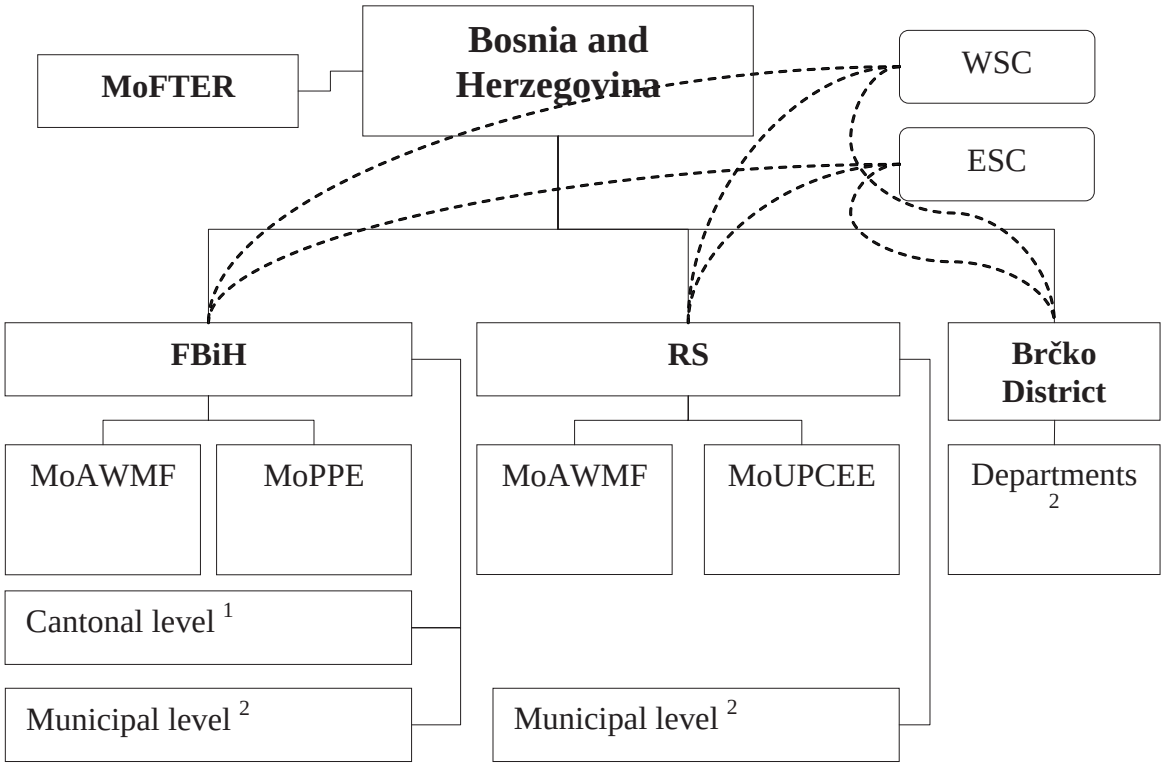
The role of MoFTER is limited and constrained by the fact that it does not have the necessary legal authority to formulate policy and legislation. This lack of an environmental "centre of gravity" is due in part to the division of powers that has been enshrined in the BiH constitution, which assigns primary environmental responsibility to the entities. It is also exacerbated by the fact that it has been impossible for the State to create the State-level environment agency, which was called for in the first EPR.

An alternative to a state-level environment agency, which would strengthen environmental protection, would be a reorganization of the Sector on Natural Resources, Energy and Environment. This would involve removing environmental protection responsibilities from the current Sector and creating a new Sector for Environmental Protection alongside a reorganized Sector for Natural Resources and Energy. From a legal point of view, this reorganization would be possible without a new State law on environmental protection, or a constitutional amendment, because it would be considered an internal institutional change for MoFTER. Such an institutional change would already be authorized by the legislation that first established MoFTER (2003 Law on Ministries and Other Administrative Bodies of Bosnia and Herzegovina). It is important to note that discussions on this alternative have been ongoing since 2005, but unfortunately current circumstances continue to impede any progress.

In terms of the inter-entity bodies that were described in the first EPR, it should be emphasized that the only one that is currently operational is the Inter-Entity Steering Committee for the Environment (IESCE). The IESCE mandate was originally determined by the entities and consists of coordination and harmonization of environmental law and policy between the two entities. Each entity is represented by four members, who are elected for four-year terms. Based on consultations with government officials, it appears that IESCE has functioned reasonably well, and provides a good example of inter-entity cooperation, both in formal meetings and informal knowledge exchange. An important indicator of its success is the degree to which entity environmental laws have been harmonized.

IESCE has assisted in promoting the ratification of international conventions and the implementation of EU projects, however, it has had a limited impact in raising environmental issues to the State level. This is due in large part to the fact that it does not have a legal basis for its existence. While it has a political mandate, its decisions carry no legal weight and, as a result, it has struggled to push environmental considerations up the country's political agenda. Moreover, it has had limited success in ensuring the necessary level of vertical and horizontal coordination and communication that is so important in a country with a federal political structure.

Figure 1.1: Environmental Competencies

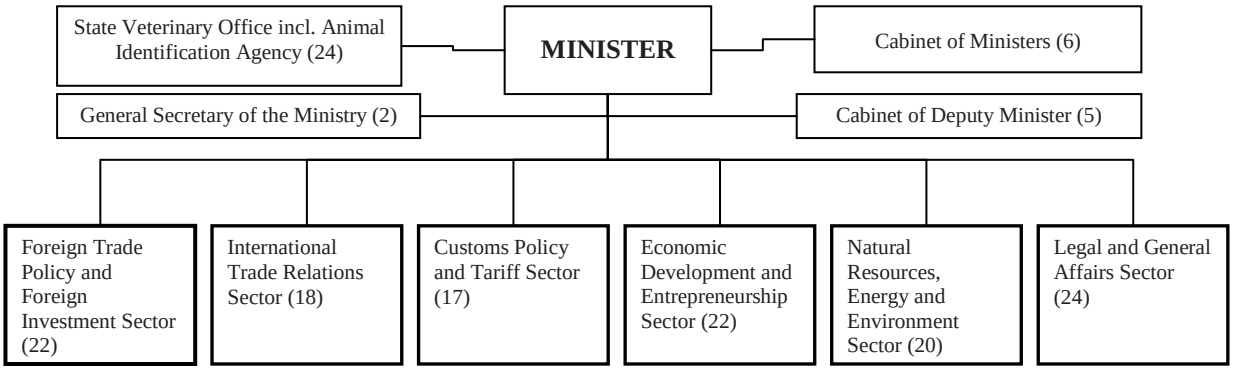


Notes:

[1] No standard organization, but usually two ministries covering water and environment.

[2] In the municipalities there is usually a department for communal affairs.

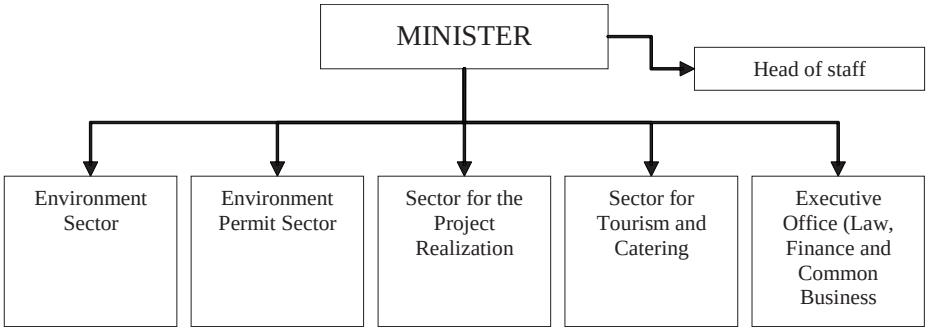
Figure 1.2: Structure of the Ministry of Foreign Trade and Economic Relations



The National Steering Committee for Environment and Sustainable Development (NSCESD) was established at the State level in 2002. Its original aim was to improve cooperation between the State, the entities, the communal level and civil society on a wide range of environmental issues. However, because of its lack of a legal basis or of continuing financial support, NSCESD is no longer operational. This is a lesson for IESCE in terms of the importance of having a clear legal mandate to protect its continued existence.

The Inter-entity Commission for Water was originally established to promote cooperation on all water management issues between the relevant ministries of both entities; however, it is no longer active. This could be potentially problematic for the future horizontal coordination of water-related policymaking and law–making, which is especially relevant in light of the current political climate. In view of the lack of an environmental authority at the State level, the inter-entity approach has been a good compromise.

Figure 1.3: Structure of the Federal Ministry of Environment and Tourism



Entity level

Environmental management continues to be the primary responsibility of the two entities, in accordance with article III.3 (a) of the constitution, which states that, "All governmental functions and powers not expressly assigned by the Constitution to the institutions of BiH shall be those of the Entities".

Federation of Bosnia and Herzegovina

At the time of the first EPR, environmental matters were addressed jointly by the Ministry of Physical Planning and Environment (MoPPE) and the Ministry of Agriculture, Water Management and Forestry (MoAWMF).

In 2006, in accordance with the Law on Federal Ministries and other Administrative Bodies (FBiH OG 19/2003), the division of responsibilities between these two ministries was realigned and enhanced competence was allocated to the Ministry of Environment and Tourism (MET). MET performs administrative and expert tasks related to air, water and soil protection; monitoring and environmental standards; drafting environmental strategy and policy; tourism development; and other tasks as set out in the applicable legislation.

Following the reorganization between MoPPE, MET and MoAWMF, MoPPE became the Ministry of Physical Planning (MoPP). However it retains environmental responsibilities in relation to spatial planning and land use. MoAWMF continues to exercise responsibilities related to agriculture, water management, forestry and veterinary services, including overall management of the two FBiH watersheds (see chapter 7).

Coordination between MET and MoPP on environmental and other issues has been effective. However, despite the reorganization, the number of staff working on environmental issues in FBiH has not increased since 2003

MET has published a "state of the environment" report, which provides a detailed assessment of the natural environment in FBiH and the effectiveness of the environmental protection measures that have been adopted. This is the first in a series of planned reports on the environment, which aim to establish environmental information systems and to facilitate the exchange of environmental data within FBiH.

In 2006, the Advisory Board for the Environment was created, with the task of providing scientific and professional support to the Ministry and the FBiH Government. It has a consultative and advisory role, the aim of which is to establish better coordination between the federal and cantonal levels by reviewing and providing opinions on strategy and planning documents. The Board consists of 13 members selected from scientific organizations and institutions representing professional and economic interests. Ten are appointed by cantonal ministries with responsibility for environmental protection while the other three are proposed by MET, the BiH Academy of Sciences and Arts, and the BiH Regional Environmental Centre (REC).

Other FBiH ministries regulating energy, industry, mining, health, transport and culture, as well as public professional institutions working with the Government, address environmental issues as prescribed by law and required in their mandates. However, integration of environmental concerns into these other sectors has been limited.

There are currently no formal mechanisms for the exchange of data and coordination between these institutions and MET, no institutionalized channels of consultation, and a lack of human resources. The administration is inefficient and costly. As a result, the quality of information regarding environmental

management is compromised, duplication of tasks is common and a culture of poor delegation of responsibilities and unaccountability has developed. There are significant gaps between legally defined functions and those that are actually fulfilled.

FBiH consists of 10 cantons and 84 municipalities. Environmental policy and natural resource use are the responsibility of both the FBiH Government and the cantons. Where responsibility is not expressly granted to FBiH, the cantons have full responsibility (article 3.4 of the Constitution of FBiH) for the provision of public services, local land use, local energy production facilities, and cantonal tourism. These responsibilities may be performed jointly or separately, or by the cantons in coordination with FBiH.

Republika Srpska

In RS, the Ministry of Physical Planning, Civil Engineering and Ecology (MoPPCEE) is responsible for environmental protection. The structure of the Ministry has remained largely unchanged since 2003. Within the Ministry, the Department for the Protection of the Environment has eight staff members – up from seven in 2003. Their responsibilities range from dealing with environmental protection issues (land, air and water) to solid and hazardous waste management, legal affairs, and biodiversity issues.

The Ministry of Agriculture, Forestry and Water Resources (MoAFWR) is responsible for water strategy and policy. It issues approvals and permits, sets standards and regulations, and oversees compliance with laws and regulations through licensing and inspections.

Unlike FBiH, RS has not yet published a state of the environment report because the assessment methodology has not yet been developed.

The Law on Environmental Protection requires coordination between MoPPCEE and the 63 municipalities in RS. Workshops and information sessions are frequently organized by MoPPCEE in order to enhance local ownership and respond to reservations about the new system.

Other ministries regulating health, economy, energy development and water, as well as the units responsible for construction, water and waste management and environmental inspection at the level of the larger municipalities, address environmental issues indirectly, as required by their mandates.

Brčko District

There has been an institutional reorganization of the responsibilities of the 10 departments in Brčko District since the first EPR was carried out.

In 2003, environmental protection was the responsibility of the Department of Utilities. That authority has now been transferred to the Department for Urban Planning and Property Affairs, which is responsible for most issues related to the environment. There are three senior expert associates on environmental protection, an increase from the one environmental specialist employed in 2003.

The Department of Agriculture, Forestry and Water Management is in charge of issuing licences for water use, water discharge and other water-related issues, and for maintaining flood protection infrastructure such as embankments, channels and pumping stations.

Other Government departments are involved in environmental protection through their participation in the adoption of laws and by-laws, issuing environmental permits and resolving various issues related to the environment. These include the Departments of Public Works; Health and other services; Education; Economic Development, Sport and Culture.

There is also an inspectorate in Brčko which employs one environmental inspector. The inspector is in charge of implementation of regulations and control in the field of environmental protection.

1.3 Policy framework

State level

Unusually complex governance structures and constitutional arrangements, and the lack of effective coordination at the State level continue to prevent the development of a coherent environmental policy framework in BiH. This is reflected in the continuing lack of a national strategy for sustainable development, which is in part related to delays in the adoption of the State law on environmental protection, as discussed below.

The five-year National Environmental Action Plan (NEAP) was adopted by each of the entities in 2003 for the period 2003-2008. The entities have not adopted new NEAPs. There is still no State-level environmental protection policy that would address environmental priorities together with sustainable

development strategies, in the ongoing transition process. This gap at State level is due in large part to the fact that there is still no State law on environmental protection for the reasons described above.

The Mid-Term Development Strategy (MTDS) for the period 2004-2007 did not adequately address environmental priorities and, for political reasons, it has not been effectively implemented. As a result, despite references to the importance of the environment in poverty reduction, surprisingly little donor attention has been mobilized. The 2006 UNDP Donor Mapping Report states that only 0.6 per cent (an amount of €2.7 million) of official development assistance (ODA) was allocated to environmental protection.

There are currently no plans to develop a long-term development strategy at the State level.

In terms of new policies and strategies, the new European Partnership Agreement (EPA) between the EU and BiH was adopted by the European Council on 18 February 2008 (2008/211/EC, Council Decision of 18 February 2008). The environmental priorities contained in the EPA call for:

(a) Adoption of a State environmental law to create the framework for nationwide harmonized environmental protection;
(b) Further implementation of environmental impact assessment legislation;
(c) Ratification and commencement of implementation of key multilateral environmental agreements, including the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) and the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention);
(d) Establishment and proper functioning of a State environment agency;
(e) Further strengthening of the administrative capacity of environment-related institutions, in particular at the State level, and improved communication and coordination between those institutions.

Additionally, the United Nations Country Team in BiH has prepared a new United Nations Development Assistance Framework (UNDAF) for 2010-2014, in consultation with the State Government. It sets the direction for United Nations Development Assistance over the next four years. The environmental priorities addressed in the UNDAF include:

(a) Strengthening the legal framework;
(b) Improving the capacity for sustainable resource management and participatory sustainable development planning, at the local level;
(c) Supporting formulation and implementation of mechanisms for local environmental action plans.

It is interesting to note that these objectives reflect the recommendations that were made in the first EPR. The first objective regarding the importance of a legal framework reflects once again the fundamental importance of a more clearly defined role for the State.

Entity level

At the entity level, policies are developed under the ambit of entity laws, as opposed to laws being developed under overarching policies and strategies. For example, the FBiH Environmental Strategy and Action Plan have been developed under the Law on Environmental Protection. However, the activities described in the Action Plan have not been implemented. This is due to the fact that the FBiH fund for environmental protection is not yet operational, because the relevant economic instruments, which would be the primary source of revenue for the fund, have not yet been implemented (see chapter 5).

1.4 Legal framework[1]

State level

The first EPR recommended that MoFTER should adopt a new State law on environmental protection and a strategy for environmental protection and sustainable development. Neither has yet been adopted.

The current draft of the State Law on Environmental Protection addresses the following issues: preparation and authorization of implementing international and inter-entity documents related to the environment; coordination between institutions with respect to the environment; development of a long-term environmental protection policy that will merge policy from all the entities; creation of a State-level "state of the environment" report; and, transboundary environmental impacts. The draft State law is silent on the issue of the State environment agency. While the substantive context may continue to evolve in the coming months, it is highly unlikely, given the political climate, that any reference to the proposed

[1] The legislation adopted since the first EPR is set out in annex IV.

State environment agency will be included at this point.

The adoption of the State Law on Environmental Protection is clearly specified as a short-term priority in the European Partnership Agreement. However the matter has been pending since 2006. Because of the delays, the European Commission has cancelled €2 million from the Community Assistance, Development, and Stabilisation (CARDS 2006) programme. Another €2 million from the Instrument for Pre-Accession Assistance (IPA) 2008 is available to assist MoFTER in fulfilling its obligations with regards to EU integration. In total, the EU has contributed €49.5 million since 2002 through CARDS and IPA, with another €40 million committed for 2010. However these funds will not be accessible until the State law on environmental protection is adopted.

The lack of a State law continues to exacerbate a number of problems. For example, the competencies for legislation and administration continue to be scattered over all administrative levels. Because of weak inter-entity coordination mechanisms, legislative and administrative procedures are slow and redundant. Law-making activities at the State level are not based on clear and coordinated policies and priorities. Poor coordination with other sectors leads in turn to limited attention to environmental considerations in those domains.

The overall challenges of promoting sustainable development, complex preparations for EU accession, and limited progress with horizontal legislation at the State level, all point to the urgent necessity of adopting a State law on environmental protection.

Entity level and Brčko District

At the beginning of the decade, FBiH and RS developed a package of six parallel environment-related laws. These include:

- The Law on Environmental Protection
- The Law on Air Protection
- The Law on Water Protection
- The Law on Waste Management
- The Law on Nature Protection
- The Law on the Environment Fund.

The package was adopted in RS in 2002 and in FBiH in 2003. Brčko District passed a related and similarly harmonized set of laws, with the exception of the Law on the Environment Fund.

While the laws of each entity differ in structure, in so far as FBiH has a cantonal system and RS does not, they are harmonized to a large extent. In FBiH, out of the 23 by-laws called for under the Law on Environmental Protection, only 6 have been adopted thus far, despite the fact that the deadlines for their adoption have long since passed. In RS, a large number of regulations and secondary legislation have been adopted in accordance with the framework laws, but implementation of this legislation continues to be a challenge. In 2006 and 2007 the Brčko District Government adopted 18 by-laws related to environmental protection and air and water management, which have also been harmonized with those of the entities.

As regards EU approximation, in 2006 FBiH amended the Law on Environmental Protection to harmonize it with the EU Directive on Environmental Impact Assessment and other relevant directives. In RS, the Law on Environmental Protection was amended in 2005 to include provisions for regulating environmental risks, including the public in decision-making and addressing issues relating to permits. In 2007, the RS Law was amended to further harmonize it with the Directive on Environmental Impact Assessment and other relevant EU directives. Further amendments in 2008 and 2010 have addressed the issue of deadlines when applying for environmental permits for existing industrial plants.

With regard to the Law on Air Protection, rulebooks[2] were adopted in FBiH in 2005 (No.12/05), and additional by-laws were adopted in 2009. In RS, a strategy and action plan for air protection is in the process of adoption. In 2005, many by-laws and regulations on air quality management and emissions were adopted. Brčko District is in the process of drafting a rulebook on air quality limit values and a rulebook on amendments to the Rulebook on Air Pollutants Emission Limit Values.

FBiH amended the Law on Water Protection in 2008 to broaden its scope and take into account water-related issues beyond environmental protection, and to ensure approximation with EU water directives. RS passed similar amendments in 2006. Brčko District has also been working on amendments to the Law on Water, and plans to forward it to the Assembly in the final quarter of 2010.

The FBiH Law on Waste Management has been supported by a number of by-laws, which were

[2] Similar to guidance notes that describe how the regulations are to be implemented.

adopted in 2005 and 2006, in accordance with the State Waste Management Strategy. In RS, the Law on Waste Management was amended in 2008 and secondary legislation has been adopted. Transboundary waste transport and management seems to be a looming environmental issue in the region and will likely require additional legislative support.

The Law on Nature Protection has also been supported by a number of by-laws in both entities. It was deemed ineffective in FBiH, however, and there is a new draft in preparation. In FBiH, the Law on the Una National Park (2009) established the first national park, and transposition of the EU Habitats and Wild Birds Directives is at an early stage. The lack of a spatial plan is, however, a problem in FBiH. Such a plan would be an umbrella strategy document, on the basis of which the use of space will be defined and development plans will be prepared.

RS amended the Law on Nature Protection in 2008, and the Government plans to develop a nature protection strategy with a related action plan in 2010. Proposals for a law on national parks are being developed alongside new legislation on the Environmental Fund, a new law on energy efficiency, and a decision on packaging and packaging waste.

A key legislative challenge for both entities relates to the continuing limited human resource capacity to draft and implement secondary legislation. It is estimated that in RS, which employs only one lawyer in the ecology department, approximately one third of all secondary legislation remains to be drafted and adopted, while FBiH does not have a single environmental legislation specialist within its government administration. Capacity-building through the hiring of more staff in environmental departments, or the engagement of legal expertise from outside will be crucial.

It will be equally essential to ensure that the adoption of outstanding secondary legislation is properly coordinated, to avoid duplication and to ensure that the new by-laws are duly aligned with the priorities enshrined in the framework laws.

Both entities will also have to enhance cooperation to ensure optimal implementation of the various international conventions and agreements that have been signed by the State.

Finally, each entity has a considerable backlog of legislation that remains to be harmonized with EU standards and regulations. This challenge will become even more considerable once the full transposition and implementation of the entire EU environmental acquis is required.

Brčko District

Brčko is in the process of drafting the following by-laws: rulebook on conditions for legal entities conducting activities in the field of environmental protection; rulebook on air quality limit values; rulebook on registers of plants and pollutants; and rulebook on amendments to the Rulebook on Air Pollutants Emission Limit Values.

The Brčko District Government also holds public hearings on matters related to environmental protection.

1.5 Conclusions and recommendations

Environmental management in BiH has suffered from the absence of a State-level authority with a strong legal mandate, and from a very complex administrative system that is further complicated by the poor delineation of responsibilities between the State and the entities. However, BiH has to improve its environmental performance to continue to receive EU support under its 2008 European Partnership Agreement. The latter specifically calls for the adoption of a State law on environmental protection and the establishment of a State environment agency.

Even if the establishment of the State-level environmental agency may not be feasible at this point, at the very least the current organizational structure within MoFTER, which groups together resource management, energy and environmental protection into one Sector, must be changed. The current structure is problematic because it pits resource extraction priorities against environmental protection imperatives.

Recommendation 1.1:
The State Ministry of Foreign Trade and Economic Relations should take the following steps to strengthen the environmental mandate, authority and capacity at the State level:

- *(a) Elevate the current Department for Environmental Protection into a new Sector;*
- *(b) Expedite the adoption of the State law on environmental protection and all relevant secondary legislation. Specifically, the State law should ensure:*
  - *(i) A clear allocation of competencies to various administrative levels;*

(ii) That further provisions are made for the implementation of an obligatory reporting and coordination system for legislative drafting in order to avoid duplication;
(iii) Principles and mechanisms are put in place for integrating environmental concerns into other sectors.

Since the 1992 World Conference on Environment and Development in Rio, sustainable development has been considered to be the way forward for future global action. Agenda 21 was adopted in Rio as a vehicle for implementing the model of sustainable development. It is a global action programme for the 21st century, which calls on all nations to formulate concepts and strategies for sustainable development. Promoting environmental consideration to other areas of economic and social activities remains a much needed objective for guaranteeing not only sustainable development but also public health and social well-being. Effective intersectoral cooperation is a prerequisite for achieving this goal. Unfortunately, there is still no National Commission on Sustainable Development that would be entrusted with strategic guidance of sustainable development efforts.

In the post-war economic recovery process in BiH, economic priorities such as job creation, infrastructure reconstruction and GDP growth have in many cases trumped environmental concerns. This has resulted in large part from the lack of a long-term vision for development that balances the importance of economic growth with environmental considerations.

Environmental considerations thus receive inadequate attention. This means that policies, plans and programmes systematically fail to take into account environmental impacts. This problem is also exacerbated by the current organizational structure within MoFTER, as discussed above, which does not provide enough political support for environmental concerns.

The current economic downturn presents significant opportunities to reorient the recovery process by increasing investment in clean and efficient technologies, renewable energy, and ecosystem goods and services, all of which have potential for increasing economic returns, job creation, poverty reduction and increased foreign direct investment.

<u>Recommendation 1.2:</u>
The State Ministry of Foreign Trade and Economic Relation in cooperation with the relevant authorities in the Federation of Bosnia and Herzegovina and Republika Srpska, and with broad participation from all stakeholders, should:
(a) Develop the legal basis for a sustainable development strategy;
(b) Prepare and propose for adoption a draft a strategy for sustainable development, and specify the policy instruments and indicators to monitor and track progress, and the economic instruments that will be required to ensure its full implementation;
(c) Elaborate an action plan for the implementation of the strategy. The action plan should be fully integrated into the budget process to ensure that it is allocated the financial resources needed to achieve its objectives.
(d) Set up a national commission on sustainable development, to include members of major groups, which would be entrusted with strategic guidance of sustainable development efforts.

Despite adoption of a number of environmental laws, including the harmonization of the six framework laws, there is a tremendous backlog of secondary legislation that has not yet been drafted or adopted. The latter is required to ensure implementation of the framework laws. At the same time EU approximation efforts must be stepped up considerably in light of the large volume of legislation that remains to be approximated. The difficulties stem from severely limited human, financial, and technical resources.

In addition, limited coordination between, and institutional fragmentation within, the entities have weakened environmental management and led to inefficiencies. The requirements for legislation, implementation and monitoring all draw from the same limited pool of expertise, funding and human resources. The State should play a role in streamlining and coordinating the efforts of the entities, reducing redundancy and maximizing resource use.

<u>Recommendation 1.3:</u>
The Federal Ministry of Environment and Tourism and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should expedite the adoption of secondary legislation and approximation of the EU environmental acquis. Specifically they should:
(a) Strengthen legal capacity within the ministries to develop and implement environmental laws and policies;
(b) Monitor evolving EU requirements and new EU legislation to which approximation efforts must be aligned.

See also recommendation 5.1(a)

Recommendation 1.4
The entities Government should:
(a) Assess the extent of institutional weakness of environmental institutions affecting environmental policy, regulatory functions, and funding;
(b) Where relevant, redress institutional fragmentation through improved reorganization of roles and responsibilities within the respective ministries.

Recommendation 1.5:
The Federal Ministry of Environment and Tourism and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should strengthen their overall capacity for environmental management by:
(a) Strengthening institutions by implementing capacity-building and training programmes;
(b) Encouraging other sectors to integrate environmental concerns into their policy and legislative frameworks.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

With the structure established by the Dayton Peace Agreement, it is difficult to streamline environmental legislation, policies and activities or make them consistent. The division of responsibilities among the different authorities is not always clear. This further complicates the situation and has a negative impact on implementation and enforcement. Considerable progress has been made through the establishment of, first, two inter-entity bodies – the Inter-entity Commission for Water and the Inter-entity Steering Committee for the Environment – and, more recently, the National Steering Committee for Environment and Sustainable Development. There appears to be a movement towards strengthening the role of the State in environmental matters, as evidenced by the creation of this National Committee and the decision of the Council of Ministers that the Ministry of Foreign Trade and Economic Relations should draft both a State-level environmental protection bill and a strategy for environmental protection and sustainable development. This could be extremely helpful in rationalizing environmental management in the country.

Under the ReREP programme, a feasibility study is examining the possible establishment of a national environment agency with the support of the European Commission Delegation to Bosnia and Herzegovina. However, much work remains to be done to reach consensus about such an agency and define its role, structure, scope and jurisdiction. It seems clear that the need is growing for a coordinating body for international agreements and programmes for environmental protection and the use of natural resources in Bosnia and Herzegovina. Mechanisms must be found to allow the State to play an appropriate role in environmental affairs, enabling Bosnia and Herzegovina to participate regionally and globally, as well as to maintain a level of consistency between the entities and Brčko District in developing national environmental policy and management.

EPR I - Recommendation 1.1:
The Council of Ministers should establish an environment agency, which should:
(a) Provide advisory services to the authorities and institutions on both State and entity level in creation of strategy of sustainable development, environmental policy and management and protection of environment, natural resources and natural heritage;
(b) Collect environmental monitoring data and report, as appropriate, to international bodies, convention-governing bodies and the European Environment Agency;
(c) Manage, supervise and coordinate the implementation of the entities' plans for management and protection of waters, air, land, forests, as well as management of waste and chemicals (POPs, ODS, transboundary pollutants and dangerous pesticides);
(d) Develop methodologies to facilitate a common approach to environmental management; and
(e) Provide training, capacity building and awareness rising.

The environment agency should rely on and assist the inter-entity bodies.

Because of the war in 1992-1995, Bosnia and Herzegovina could not take part in many of the activities under Agenda 21, which resulted from the 1992 United Nations Conference on Environment and Development in Rio de Janeiro (Brazil). Its National Environmental Action Plan was the first comprehensive document about the environmental problems in the country and their prioritization. The proposals of the NEAP provided a basis for the assessment of needs for environment and water

management in the Mid-term Development Strategy of Bosnia and Herzegovina. The NEAP, however, has not been adopted at the State level. In any case, these documents cannot substitute for a national strategy for both sustainable development and protection and management of the environment.

EPR I - Recommendation 1.2:
Pursuant to the decision of the Council of Ministers, the Ministry of Foreign Trade and Economic Relations should begin as soon as possible to draft:

(a) A new State law on environmental protection and all relevant secondary legislation; and
(b) A strategy for environmental protection and sustainable development, in cooperation with the relevant Environment Ministries in the Federation of Bosnia and Herzegovina and Republika Srpska, and with broad participation from all stakeholders.

The strategy should aim at:
- *Strengthening the institutional capacity for designing and implementing environmental policy at all levels;*
- *Developing and institutionalizing communication among sectors and ministries within and among the State, the entities and Brčko District;*
- *Establishing procedures for communication between officials and stakeholders in decision-making for sustainable development; and*
- *Improving the knowledge of the general public about the significance of environmental protection and encouraging the preparation of awareness-raising programmes.*

A review of the institutional framework for environmental protection in Bosnia and Herzegovina shows the weaknesses of the system, including a shortage of staff and funding. Additionally, the number and relative independence of the cantonal ministries in the Federation of Bosnia and Herzegovina may create obstacles to integrated environmental management. A stronger Ministry of Physical Planning and Environment could result in the establishment of uniform regulations, ensuring a consistent standard of environmental licensing throughout the Federation. It would also help standardize inspection procedures and help the Ministry attain the necessary legal competence for its work.

The Ministry of Physical Planning, Civil Engineering and Ecology in Republika Srpska is also understaffed. Its Ecology Sector currently has only seven staff. A stronger Ecology Sector within the ministry or new environment ministry would have several benefits. It would facilitate the integrated management of the main environmental media. Through the clear assignment of authority for licensing and for environmental quality and through better coordination with the other line ministries (agriculture, water, industry, energy and mining) and municipalities, the Ministry could secure standardized environmental licensing, installation inspections and the necessary legal competence.

EPR I - Recommendation 1.3:
The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should be strengthened, as a matter of priority, so that they are able to:
(a) Prepare all secondary legislation required by the new Laws on Environmental Protection, Air Protection, Water Protection, Waste Management, Nature Protection and the Environmental Fund;
(b) Organize and implement effectively environmental permitting, inspection and control; and
(c) Implement all the tasks incumbent upon them as ministries.

Both Ministries may be strengthened either by increasing the number of permanent staff or by hiring external experts ad hoc.

Chapter 2

COMPLIANCE AND ENFORCEMENT MECHANISMS

2.1 Developments since 2004

Each entities' law on environmental protection introduced significant new instruments for environmental protection and for integrating environmental concerns in economic sectors, namely environmental permits and details for the preparation of environmental impact assessments (EIAs). Furthermore, since 2006 all entity level ministry inspectorates (including non-environmental ones) have been subordinated to a single entity-level administration for inspection activities. This consolidation of inspection activities has been accompanied by an institutional separation of inspection and permit-issuing processes, an important condition of EU directives, which was introduced at all relevant governmental/administrative levels in the country, thus improving the quality and integrity of compliance mechanisms.

However a great deal remains to be accomplished in order to develop an efficient and effective system of compliance and enforcement. There is still inadequate vertical coordination and communication between cantons/municipalities and entities but also insufficient horizontal coordination at the inter-entity, inter-ministerial and inter-communal level. A very significant problem which the review has demonstrated is the shortage of staff and funding to carry out tasks and activities at all governmental levels.

The analysis in the first EPR of 2004 showed that Bosnia and Herzegovina (BiH) should undertake a number of important activities to ensure adequate compliance with environmental requirements, such as:

(a) Preparation of all secondary legislation required by the laws on Environmental Protection; Air Protection; Water Protection; Waste Management; and, Nature Protection;
(b) Establishment of a detailed EIA policy and procedure;
(c) Establishment of a detailed strategic environmental assessment (SEA) policy and procedure;
(d) Organization and implementation of an effective system for issuing environmental permits, especially under the Law on Environmental Protection, and inspection procedures;
(e) Updating of the industrial plant inventory and establishment of new registers of polluters.

All of the above-mentioned recommendations are still relevant in the present context and have been considered in this second EPR. Overall, although progress has been made in some areas, such as secondary legislation, EIA policy, and the system of permits, other areas, such as SEA policy and the industrial plant inventory, are not yet adequately developed or implemented.

2.2 Environmental permit and enforcement authorities

In BiH there are as many as four administrative layers and the mandate of the State is very limited with regard to permits, and the control and enforcement functions. In fact MoFTER does not have a clear steering role in compliance or enforcement mechanisms. Instead, compliance and enforcement are the prerogatives of the entity level and below.

The Federation of Bosnia and Herzegovina (FBiH) has reorganized some of its ministries and since 2005 there has been a special department for the environment as part of the Ministry of Environment and Tourism. The Ministry of Agriculture, Water Management and Forestry is responsible for water management, forestry, protected areas and biodiversity, (see chapters 7 and 9)

Separate departments are in charge of policymaking, issuing permits and inspections, at both the entity and cantonal levels. The Administration of Inspection Services, which is independent, is the overall inspection body for FBiH, in which all the inspectorates of the various ministries are brought together.

All of the 10 cantons in FBiH have their own environmental divisions, with different departments for issuing permits and undertaking inspections. The lowest-level environmental (urban) permits are granted and controlled by the municipalities, but there is no formal coordination of environmental activities between municipalities, or between the cantons.

Photo 2.1: Vrelo Bosne

In Republika Srpska (RS) the Ministry of Agriculture, Forestry and Water Resources (see chapters 7 and 9) is responsible for water management and forestry, while responsibilities on protected areas and biodiversity are shared with the Ministry of Physical Planning, Civil Engineering and Ecology

In RS, the municipalities issue environmental permits for smaller companies and carry out inspections of such permits. The inspectorates of the ministries are combined in the Administration for Inspection Activities, which is also an independent body.

At the inter-entity level there are two coordination committees, one for water, which is currently inactive (see chapter 1), and one for the environment, the Inter-Entity Steering Committee for the Environment. The latter meets periodically and discusses the fine-tuning of environmental rules and transboundary pollution. Coordination between the entity ministries on environmental matters, although regulated by the entities' law on environment protection, still remains incidental and difficult, which in practice means that environmental issues are not high on the agenda. Moreover, the narrow mandates of each ministry play a much more important role than a comprehensive inter-ministerial approach to matters of great environmental impact.

2.3 Legal framework (the Law on Environmental Protection)

Since 2002/2003 BiH has adopted a set of environmental laws. These are the Law on Environmental Protection; the Law on Waste Management; the Law on Air Protection; the Law on Water Management; the Law on Nature Protection; and, the Law on the Environment Fund.

These environmental protection laws are prepared in accordance with the most important horizontal EU directives, such as the EIA Directives 85/337/EEC 97/11/EC and 2003/35/EC; SEA Directive 2003/35/EC; the Integrated Pollution Prevention and Control (IPPC) Directive 96/61/EC; and, the Chemical Accidents (SEVESO II) Directive 96/82/EC.

In addition to these environmental laws, approximately 40 environmental regulations have been adopted so far.

The basic principles of the Law on Environmental Protection are sustainable development; precaution and prevention; substitution; cooperation; public participation and access to information; the "polluter pays" principle; and, integrated protection of environmental elements.

The Law on Environmental Protection introduced a number of new instruments in BiH. Before 2003, the country had no experience of environmental permits or the drawing up of EIAs.

In so far as it has been adopted and implemented, the current legal framework on environmental protection is adequate in terms of EU rules

Photo 2.2: Vrelo Bosne

2.4 Assessment tools

An SEA is a system for incorporating environmental considerations into policies, plans and programmes. An SEA must be carried out if environmental plans, as described in the Laws on Environmental Protection of both entities, could involve detrimental regional impacts. For the most part an SEA should be conducted before a corresponding EIA is undertaken. This would mean that information on the environmental impact of a plan could cascade down through the tiers of decision-making and be used in an EIA at a later stage. This should reduce the amount of work that needs to be undertaken.

Although this assessment tool has been adopted in both entities, it has not yet been implemented because there is no precise procedure included in the Law on Environmental Protection, nor has a decree been issued. The secondary legislation is thus inadequate, especially for ministries other than those responsible for environmental matters.

In order to investigate the possible positive or negative impact that a proposed project or installation may have on the environment, including the natural, social and economic aspects, an EIA may be carried out. The main difference in the treatment of installations[3] within the framework of an EIA is between smaller installations that do not require an EIA study, and heavy industrial installations which are obliged to have one, depending on their individual environmental circumstances, because they come under the Seveso directive. In practice, 30-40 per cent of all installations require an EIA study. A comprehensive description of the obligations, responsibility, process and public participation relating to EIAs is included in the Law on Environmental Protection. In BiH, there are concerns about the transparency of the process at government level and in particular about the ability of environmental NGOs to participate effectively and exert an influence on the outcome of a number of EIAs.

The implementation of EIAs began in 2006 and to date 70 EIAs have been carried out in RS. The majority of them relate to the extraction industry and energy production facilities. In FBiH, EIA studies started in 2004.

Both entities have an Environmental Advisory Council, to which the RS Ministry of Physical Planning, Civil Engineering and Ecology and the FBiH Ministry of Environment and Tourism can turn for advice. The members of the two Councils represent stakeholders from the environmental field and their main goal is to establish a wide social and scientific professional basis for environmental protection.

[3] According to the Law on Environmental Protection, installations are defined as "a site with a plant or one or more stationary technical units where activities are carried out that have or might have adverse impact [on the environment]".

2.5 Environmental permits and compliance assistance

The responsible ministries in both entities grant integrated permits under the Law on Environmental Protection. Between 2003 and the time of the second EPR review in May 2010, the FBiH Ministry of Environment and Tourism received about 400 requests for permits and granted 140 permits, while the cantons granted about 650 permits. In RS, the Ministry of Physical Planning, Civil Engineering and Ecology granted 189 permits over the same period.

The entity ministries are the competent authorities for issuing permits for large and medium-sized installations, or for activities above the threshold defined in the implementing regulations, and for installations falling under the major accidents provisions (category A). The cantonal ministries in FBiH and the municipalities in RS are responsible for smaller installations or activities below the defined threshold (category B). The threshold has to do with the complexity of the installation, the amount of pollution emitted and the risk of accidents. There are small differences between the A and B category thresholds in FBiH and RS.

In FBiH, the permit registries at the cantonal and federal levels are linked together in a network. In RS, the entity environmental permit registry is not linked to the municipality registries.

Most enterprises fail to request an environmental permit for "not knowing" or "not willing" reasons. Only the FBiH Administration of Inspection Services and the RS Administration for Inspection Activities have the authority to force enterprises to file an environmental application. However, at the moment this is not regarded as a priority by either inspectorate. In most cases an applicant for an environmental permit will be advised by one of the 27 FBiH or 18 RS authorized consultants.

According to the entity Laws on Environmental Protection, all the installations defined in the implementing regulation for which a permit had been issued before these laws came into force, had to have an environmental permit by 2008 at the latest. This deadline has now been shifted to 2011, partly due to understaffing, which leads to delays, and partly due to the fact that only a fraction of the operators and installations who should request a permit have done so.

The existing environmental permit system is based on the concept of best available techniques. The environmental permit contains the following information:

- Emission limit values for pollutants
- Requirements for protection of air, soil, water, flora and fauna
- Measures concerning the management of waste generated by plants and installations
- Measures for minimization of long-distance or transboundary pollution
- A self-monitoring system, specifying measurement methodology and frequency
- Measures relating to conditions other than normal operating conditions.

Emission limit values, equivalent parameters, or technical measures are based on best available techniques, taking into account the technical characteristics of the installation, its geographical location and local conditions.

Where environmental quality standards require stricter conditions than those achievable by the use of the best available techniques, additional measures will be required in the permit (e.g. limits to operation hours, less polluting fuels etc.).

According to the Laws on Environmental Protection, the FBiH Ministry of Environment and Tourism and the RS Ministry of Physical Planning, Civil Engineering and Ecology provide advice and training to the cantons and municipalities, respectively, on environmental matters, in order to achieve better compliance. One example is is a training organized in 2006 by the RS Ministry of Physical Planning, Civil Engineering and Ecology a training for all 63 municipalities, including NGOs and all interested institutions. Another example is a comprehensive course that was organized in 2009 by the FBiH Ministry for environmental civil servants, NGOs and other invited guests who work in the environmental field. Among other subjects, the course dealt with the Law on Environmental Protection and associated by-laws, procedures for issuing permits, and best available techniques. About 800 people took this course. The evaluation of this course proved that there is an enormous need for environmental education and exchange of experiences.

2.6 Inspections and enforcement

In the first six months of 2010, the RS environmental inspectors conducted a total of 146 inspections. In 59 of them there were non-compliance issues and the

inspectors issued 55 decisions to remove irregularities, while 4 of the operators were fined. Most of the irregularities involved operators not adhering to the conditions laid down in the environmental permit. The data for statistical inspection reports is generated using the inspection management system which has been operational since the beginning of 2010.

In the first half of 2010, FBiH environmental inspectors carried out 277 inspections and issued 191 decisions to remove irregularities and 58 fines. Most of the irregularities involved operators not adhering to the conditions laid down in the environmental permit.

Before 2006 the environmental inspectorate was part of the respective ministries for environmental protection in FBiH and RS. Since 2006, the FBiH Administration of Inspection Services and the RS Administration for Inspection Activities have operated as hubs of the inspectorates of the various ministries, although each ministry still has its own inspectorate. This reorganization was carried out as a result of a World Bank project. The main argument for combining the inspectorates of the different ministries was to separate compliance, enforcement and the granting of environmental permits. A further important issue was that of the synergies that could be achieved by creating an integrated inspectorate.

The entity inspection administrations are independent agencies and are directly accountable to the respective Ministers of Environment and Tourism (FBiH) and Physical Planning, Civil Engineering and Ecology (RS).

There are 4 regional units in FBiH, with about 150 inspectors who represent all the ministries and 6 units in RS with 250 inspectors.

The FBiH Inspectorate of Physical Planning, Construction and Environment and the RS Inspectorate of Physical Planning, Civil Engineering and Ecology are the bodies which control the permit system under the Law on Environmental Protection.

Each year, the Inspectorates make an inspection plan, a strategic document which includes an inspection programme, scheduling inspections and other activities. The FBiH Ministry of Environment and Tourism and the RS Ministry of Physical Planning, Civil Engineering and Ecology put forward suggestions for prioritized environmental inspections for the programme. The prioritizing of inspections is based primarily on a risk assessment.

The RS Administration for Inspection Activities has developed a very sophisticated inspection management system (IMS) (ISO 14001) for the inspectorates of the 10 RS Government ministries. This system functions, among other things, as an archive and regulates 30 different types of standardized inspections. The IMS is linked in to the municipalities and the Administration for Inspection Activities has organized training programmes on how to use it. Part of the IMS is a risk assessment module that defines the degree of risk for the environment (and humans) if an accident occurs. The outcome of the IMS is specifically based on the results of inspections carried out by the inspectors, combined with the risk assessment. In fact, it provides the framework for a well-considered inspection programme establishing priorities and non-priorities.

Environmental inspections, including site visits, may be:

(a) Routine, i.e. carried out as part of a planned inspection programme
(b) Non-routine, i.e. carried out in response to complaints, in connection with the issuing, renewal or modification of an authorization or permit, or the investigation of accidents, incidents and instances of non-compliance. A court order is not required for such inspections to take place.

Inspectors may enter all premises, working areas, and buildings of an installation and may inspect all documents, data and materials present, and take samples and measurements. The operator and his staff must assist the inspection by providing all necessary information, data and documents. The inspector has to prepare a report that includes any instances of non-compliance detected and the reasons and explanations given by the operator.

In many cases, inspections are joint inspections carried out with colleagues of other entity inspectorates, or with cantonal or municipal inspectors. The reasons for joint inspections are overlapping responsibilities and a reduction in the pressure on installations that are being inspected.

The inspectors report on every inspection and the FBiH Inspectorate of Physical Planning, Construction and Environment and the RS Inspectorate of Physical Planning, Civil Engineering and Ecology report the results of these inspections to the departments which issue environmental permits at the FBiH Ministry of Environment and Tourism and the RS Ministry of Physical Planning, Civil Engineering and Ecology.

This provides those departments with information about the level of compliance, which can then be used in cases where a permit is under reconsideration or requires updating.

In cases of non-compliance, an inspector must issue a compliance order to the operator, setting out the necessary measures and remedial actions to be taken, and the deadline for these remedial actions.

In cases of repeated non-compliance, or in case of serious danger for human health and the environment, an inspector can request suspension of the environmental permit or make out a charge against the operator.

2.7 Conclusions and recommendations

It is obvious that BiH is trying hard to transpose, adopt and implement EU rules and standards in the environmental field. Step by step, headway has been made and will continue to be made with this process.

The public administration in BiH is very complex for political and institutional reasons, including the existence of up to four layers of administration that are not always well coordinated. In these circumstances, it is essential that the regulatory and control aspects are very precisely defined. Delays, gaps, overlapping, duplication, unequal application of standards, and unequal treatment of violations may occur. Adequate horizontal and vertical coordination mechanisms are of great importance.

Furthermore the status of the environmental authorities is still low and, although all the fundamental institutional elements of a regular environmental administration system are present, they are understaffed at all levels for the work that has to be done now and for the challenges that lie ahead. Economizing on staff for environmental jobs would cost it much more in the future.

<u>Recommendation 2.1:</u>

(a) *At all levels of Government, adequate formal and informal coordination of environmental matters (planning, permits, inspections and enforcement) is essential;*
(b) *The State's Ministry of Foreign Trade and Economic Relations should make a precise estimate of the staff required for environmental tasks and ensure that vacancies are properly filled;*
(c) *The main environmental authorities at entity level should provide regular education and training on the job, on a non-commercial basis, to ensure that staff who are responsible for issuing permits and for inspections, at the entity level, as well as at the cantonal and municipal levels, adapt their skills accordingly.*
See also recommendation 7.2 in this report.

In BiH there are several thousand installations, which do not have an environmental permit and it is estimated that more than 50 per cent of those which are obliged to request one, do not do so. The FBiH Administration of Inspection Services and the RS Administration for Inspection Activities are mandated to take action against this and this illegal situation needs to be resolved. Drawing up a comprehensive register of these installations and ensuring effective coordination within each entity between the respective environmental authorities and the inspectorates, will be a basis for further success.

<u>Recommendation 2.2:</u>

The Federal Administration of Inspection Services and Republika Srpska's Administration for Inspection Activities should ensure that operators of enterprises and installations file an environmental application, by preparing and publicizing a list of operators who should apply for environmental permit, accompanied by a schedule for mandatory application.

As a result of the 2006 reorganization of the entity-level environmental inspectorates, the functions dealing with permits and inspections are strictly separated. Although this separation is essential for a well-functioning compliance and enforcement mechanism, other requirements also exist. For example, an adequately clear permit system is unarguably part of a successful compliance regime. Inspectors cannot do their work if requirements are unclear and could be interpreted in different ways. Furthermore, mutual exchange of experience, advice, draft permits and the outcome of inspections between the relevant ministries and the inspectorates for environment and ecology at the entity level is of great importance. The purpose of this exchange should be to achieve a more efficient system for issuing permits, which will be to the advantage of all parties, including the operators.

The same applies to communication between different departments at the cantonal and municipal levels.

<u>Recommendation 2.3:</u>

The Federal Ministry of Environment and Tourism and Administration of Inspection Services, and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, and the Administration for

Inspection Activities must keep each other informed about the content of permits (in outline at least), and the results of inspections, through an institutionalized procedure.

In 2001 the European Parliament and Council adopted recommendation 2001/331/EC, providing for minimum criteria for environmental inspections (RMCEI). The purpose of the RMCEI is to strengthen compliance with, and contribute to a more consistent implementation and enforcement of, European Community environmental law in all EU member States.

The RMCEI establishes criteria for environmental inspections of installations and of other enterprises and facilities whose air emissions, water discharges or waste disposal or recovery activities are subject to authorization, permit or licensing requirements under Community law ("controlled installations"). Planning of inspection activities is a key requirement of the RMCEI.

The FBiH Administration of Inspection Services and the RS Administration for Inspection Activities comply with most of the RMCEI criteria. In particular, the inspection management system of the RS Administration is a useful instrument for carrying out inspection activities. Overall, considerable progress has been achieved on certain aspects of the compliance and enforcement system (secondary legislation, EIA policy, system of permits). In other areas, such as SEA policy and industrial plant inventory, procedural and structural aspects have not yet been adequately developed.

Extra attention still needs to be paid to planning inspections on the basis of a risk assessment, and the inspectorates should be able to learn from each other and to make use of the experience gained.

Recommendation 2.4:
The Federal Administration of Inspection Services and Republika Srpska's Administration for Inspection Activities should exchange experiences on planning of inspection activities on the basis of risk assessment;This could also be usefully undertaken at other relevant governmental institutions.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

In the longer term, Bosnia and Herzegovina wishes to accede to the European Union and it, therefore, has to align its legislation with European Community law. The framework environmental laws have been produced under the CARDS Programme for both entities. They transpose to a great extent the most important European Commission's environment-related directives. Although this package of laws was adopted in Republika Srpska in the summer of 2002 and in the Federation of Bosnia and Herzegovina in the autumn of 2003, the legislation cannot be implemented because of a lack of regulations. This situation is all the more problematic because the most important tools for their implementation, such as environmental impact assessment and integrated environmental (IPPC) permits, have only recently been adopted in Bosnia and Herzegovina. It is expected that the secondary legislation will establish procedures, approaches and competences that could contradict the old laws and regulations.

EPR I - Recommendation 1.4:
The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should develop the necessary secondary legislation for the implementation of the new framework Law on Environmental Protection and other specialized environmental laws as soon as possible. The most urgent issues are:

(a) Establishment of a detailed to environmental impact assessment (EIA) procedure with all the necessary steps: preparation of the list of activities that are subject to EIA, early notification, screening and scoping, public participation at all levels, access to information and decision-making;
(b) Establishment of a detailed SEA procedure for plans and programmes;
(c) Development of a permitting system under the Law on Environmental Protection, including integrated (IPPC) permits; and
(d) Updating of their industrial plant inventories and establishment of new registers of polluters.

Chapter 3

MONITORING, INFORMATION, PUBLIC PARTICIPATION AND EDUCATION

3.1 Environmental monitoring

Air quality

A significant amount of ambient air quality measurement is currently carried out in Bosnia and Herzegovina (BiH). There are many useful data showing the historical trends in concentrations and the spatial distributions of concentrations in a few urban areas. Air quality monitoring is carried out, either by public institutions or by the polluters, in most of the hot spots in the country. The current air-quality monitoring network is presented in table 3.1.

There have been some positive developments in the area since the first EPR. Some monitoring stations have been automated owing, to a great extent, to the support from international projects. This has allowed, in particular, observations of pollutants dangerous to human health such as ground-level ozone (O3) and small particles (PM10 and PM2.5).

At the entity level, according to their Law on Air Protection (RS OG 53/02 and FBIH SG 33/03), the ministries in charge of the environment are responsible for ensuring regular monitoring of air quality. In practice, these ministries together with the ministries of health should designate an institution - one for each entity - in charge of establishing and maintaining an air quality monitoring network; of maintaining a data base on air quality measurements and producing, on an annual basis, an assessment report on air quality. The designated institutions have also to ensure that up-to-date information on air quality is routinely made available to the public as well as to appropriate organisations.

To support the implementation of their Law on Air Protection, both entities have recently adopted rules for air quality monitoring setting technical details and procedures. These include: what pollutants to measure, how to measure (reference measurement techniques, use of modelling and other alternative techniques, positioning of monitoring stations, density and frequency of measurement, basic quality assurance/quality control (QA/QC) requirements). This secondary legislation follows the provisions for air quality monitoring detailed in existing European Union (EU) legislation.

The current situation on air quality monitoring has major shortcomings. One of the most important is the lack of organization, co-ordination and communication between different public institutions: each institution conducts its own monitoring activities according to its own rules and procedures. Data exchange between the different public institutions is limited and as a consequence there is no centralized database for raw data, or for statistics on air quality. Reporting and dissemination of information is poor and, in particular, does not reach the policy and decision makers or the general public.

Gaps in parameters measured relate to benzene and heavy metals. Some heavy metals are measured sporadically depending on financing. Coverage of ground-level ozone and small particles monitoring is not sufficient. There is no rural and background monitoring in the country. There is no defined national or entity level air quality monitoring network. There is evidence that some existing measurement equipment in BiH has not been correctly positioned and is not being correctly operated because of lack of finance to pay operating costs. One further significant problem is that QA/QC procedures are more or less deficient in all BiH institutions. None of air-quality monitoring work subjected to independent QA/QC. Without an independent QA/QC system, operating at the State or entity level, the validity and comparability of results from measurement stations cannot be assessed. Another problem is that the sites for measurement have not been selected using modelling results. This means that one cannot be sure that the measurements are being made at locations where pollution is the worst. Currently entity Ministries for environment are conducting a procedure to establish a rulebook and questionnaires or data collecting.

Table 3.1: Network of air-quality monitoring stations

Institutions	Stations			Parameters measured
	Number	Type	Location	
Public bodies				
FBiH Meteorological Institute of Sarajevo	2	automatic	Sarajevo Ivan Sedlo	SO2, CO, NOx, O3, PM10
(FBiH) Directorate for Environmental Protection of Tuzla canton	6	automatic	Tuzla	SO2, CO, NOx, particles, O3, NMVOC and PM2.5
(FBiH) Metallurgical Institute of Zenica	1	manual	Zenica	SO2, particles, NOx
(FBiH) Cantonal Institute for Public Health of Zenica	2	automatic	Zenica	SO2, CO, NOx, particles
(FBiH) Cantonal Institute for Public Health of Sarajevo	8	5 manual 3 automatic (3 fixed & 1 mobile)	Sarajevo	SO2, black smoke SO2, CO, NOx, particle
(FBiH) Cantonal Institute for Public Health of Mostar	1	manual	Mostar	SO2, black smoke
RS Hydro-meteorological Institute	1	automatic	Bamja Luka	SO2, CO, NOx, O3, PM10
(RS) Institute for Protection, Ecology and Information	14	manual	Banja Luka, Gradiska and some other municipalities	SO2, black smoke
Brčko District Government	3	automatic	Brčko District	SO2, CO, NOx, particles, black smoke
Companies				
Cement Factory of Kakanj	1	automatic	Kakanj	SO2, CO, particles, NOx
Power Utility of BiH	2	automatic	Kakanj, Tuzla	SO2, CO, particles, NOx
Power Utility of RS	2	automatic	Ugljevik, Gacko	SO2, CO, particles, NOx
Pharmaceutical Company "Bosnalijek" (through a sub-contract with a Dvokat company)	1	automatic	Sarajevo	SO2, CO, particles, NOx

Source: FBiH Ministry for Physical Planning and Environment and RS Ministry for Physical Planning, Civil Engineering and Ecology, 2010.

Since 2006, an automatic station has been operational at Ivan Sedlo for the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) under the Convention on Long-range Transboundary Air Pollution.

Emissions

The entities' Framework Laws on Environmental Protection oblige the ministries in charge of the environment to keep a register of installations and of polluters. According to these laws, the operators of the installations for which an environmental permit has been issued have to regularly inform the competent ministry of the results of emission monitoring, the requirements of which are specified in detail in the permits. Furthermore, in each entities' Law on Air Protection, it is stipulated that the cadastre/inventory must be maintained and a register of data on air emission sources, operators and pollutants discharged must be kept. Both entities' Law on Air Protection also prescribe that all operators of stationary sources falling under the obligation of requiring environmental

Photo 3.1: Wastewater treatment plant, Sarajevo

permit have the obligation to report to the competent authorities on an annual basis.

Both entities have recently undertaken the development of pollution registers. They developed questionnaires in order to collect emission, discharge and waste data from point sources. The results of the first questionnaires demonstrate that much training needs to be done for the relevant staff of polluting enterprises and the respective entity Ministries to ensure that meaningful and reliable data is submitted, processed, made available for use in decision-making and made accessible to the public.

Currently, data, including statistical data necessary to calculate emission values are missing to a large extent. However, the FBiH Meteorological Institute produces national emission values for SO2; NOx; CO2; CO; NMVOC; CH4; N2O and NH3. Data required as input are either interpolated from the pre-war situation or obtained from direct contacts with "known" polluters. Analysis is carried out following the CORINAIR (Core Inventory of Air Emissions) methodology and appropriate tools are developed. The RS Hydrometeorological Institute produces emission values for RS according to IPCC methodology but only with direct contact with polluters.

Water

Key pieces of legislation relevant to water monitoring are each entities' Law on Water (FBiH 70/06 and RS 50/06 and 92/09).

According to the both entities' Law on Water, responsible institutions are defined for watershed areas. In FBiH, two water agencies for the Sava River and Adriatic Sea Basin are responsible for establishment and management of the water management data processing system In the RS the responsible institutions are the Water Agency for Sava River District and the RS Hydrometeorological Institute. The systems in RS and FBiH consist of data regarding water quantity and quality, water resources management structures and systems as well as data from water management cadastre. Furthermore, the laws oblige all other legal bodies, institutions, companies that use water or are engaged in public water supply (public utility companies) or discharge wastewater, to install devices for measuring and control of water quality and quantity and to carry out measuring and testing, to keep proper records and to submit data to the FBiH PCWAs and RS MoAFW, respectively.

The FBiH Meteorological Institute and the RS Hydrometeorological Institute are obliged to monitor water level and to perform forecasting of floods and to submit these data to the water agencies in charge for that water area. Water testing for potable water supply has be done only by authorized laboratories, while conditions that must by fulfilled by these labs have to be issued by the FBiH Federal Ministry of Health and the RS Ministry for Health and Social Affairs, respectively.

Monitoring of rivers in RS is centralized and is organized by the RS Directorate of Waters (part of

RS MoAFW). The RS Directorate of Waters provides monitoring data received from these institutes to all interested parties. It publishes an annual report on monitoring of the surface-waters quality in RS.

Monitoring of rivers in FBiH is organized through two water agencies and the FBiH Meteorological Institute. Monitoring of the Una and Sana rivers (Western BiH) is done by a private Company IBG Bihac.

The following parameters are measured for BiH rivers:

- Basic physical-chemical parameters (temperature, pH, conductivity, dissolved oxygen);
- Microbiological parameters;
- Chemical parameters (solids; volatile matters; suspended matters; $CaCO_3$; calcium; magnesium; all forms of nitrogen; phosphates; chemical and biological oxygen demand; Iron; Copper; Chrome; Nickel; and Cadmium);
- Water flow;
- Geometrical and hydraulically characteristics.

Details of river monitoring stations are provided in the chapter on Water Management.

There are gaps in river monitoring: coverage, parameters measured and frequency of measurements. However, the more significant gaps are in monitoring of lakes; bathing-waters; coastal waters; ground waters and harmful and toxic matters.

There is only partial lake monitoring in BiH. Two lakes are monitored in RS: Bilecko Lake (supplying water for around 100,000 people) and Goricko Lake (small lake along Trebisnjica River - southern BiH). In FBiH, monitoring is conducted on Modrac and Snjeznica Lakes in the north-east part of the country and on Lakes Boračko, Blidinje and Hutovo Balto, and the reservoirs of the hydroelectric power plants.

The following parameters are measured in the lakes:

- Physical-chemical characteristics (temperature; colour; saturation; Ph; taste; suspended matters; conductivity; dissolved oxygen; CO2; suspended solids; Ca; Mg; Fe; Mn; Cl; SO4; PO4; NO3; NO2; NH4; some heavy metals and detergents);
- Microbiological parameters.

There appears to be no legal basis for monitoring bathing waters in BiH. Respective water authorities and agencies in both entities occasionally monitor bathing water quality but the results are not available to the public.

There is no overall system of groundwater monitoring in BiH. The quality of groundwater is monitored only in areas where water is abstracted for the public water supply..The Agency for food safety of Bosnia and Herzegovina, in cooperation with relevant institutions of entities and Brčko District, drafted three rulebooks, which regulate potable water. They were adopted by the Council of Ministers of BiH: the Rulebook on Natural Mineral and Natural Spring Waters, No. 26/10, Rulebook on Health Certificate for Potable Water and Rulebook on Bottled Water, No. 40/10. The Agency gathers, processes and analyses data regarding the laboratory anlysis of potable water within the country.

Coastal waters along the country's 21-km long coastline are monitored in Neum at three stations during the summer period in June, July and August.

A number of companies in BiH (e.g. the Cement Factory Kakanj; the Pharmaceutical Company Bosnalijek SA; the Power Utility Company SA; and the Power Utility Company HZ HB) monitor their discharges.

According to the RS annual basis programme of statistical research and the FBiH annual work plan on implementation of the statistical research, the respective Institute of Statistics of RS and FBiH prepare forms for collection of water-related data that are sent to the relevant organizations. These include forms for: a) collection and distribution of water; b) public sewage system; and c) water use and water protection from pollution.

Soil

Currently there are no specific laws, at the BiH or at the entity-level, that directly address soil protection or monitoring. As a result, soil monitoring does not exist in the country. Efforts are limited to ad hoc observations on the scope of projects, soil quality evaluations, studies and other activities performed by such institutions as the Institute for Agropedology in Sarajevo, the Agriculture Institute of Banja Luka and the Agronomy Institute of Mostar. One example includes the inventory of the post-war land resource situation in BiH, implemented under the Food and Agriculture Organization (FAO) project in 2007. Another example is a pilot project being implemented in several RS municipalities by the RS Agriculture Institute, to identify parameters, plots and pollutants for soil monitoring. A sustained data flow does not exist because all soil monitoring in the country is performed

only on a contractual basis (road construction, etc.) or for study and project purposes.

Biodiversity including forestry

Since the first EPR, BiH made some progress in compiling information on biodiversity status. Recent National Reports to CBD contain detailed information on diversity of species, ecosystems and landscapes. Data collection for these reports was obtained on an ad hoc basis from studies and surveys by individuals and research institutions, for other scientific purposes.

The first full scale forest inventory in BiH was conducted in 1964-68. The second country-wide State Forest Inventory covering all of BiH has been underway since 2006. This inventory covers all productive and non-productive forests and forest lands as well as other areas within the forest fund (Chapter 9).

The main research institutions in BiH dealing with biodiversity include, inter alia, the Natural Science Faculties (NSF) in Banja Luka and Sarajevo, the Agricultural Faculties from Banja Luka, Mostar and Sarajevo, the Forestry Faculties from Banja Luka and Sarajevo, the RS Institute for protection of cultural-heritage and natural inheritance, and the Land Museum in Sarajevo.

According to both entities' Law on Nature Protection (RS OG 53/02 and FBiH OG 33/03), ministries responsible for environmental issues are obliged to establish and operate the Nature Information System and to provide institutional background for monitoring. By-laws have to be adopted to cover the state and use of nature and, the measures to be taken by public administration bodies, enterprises and other organizations. These by-laws define the issues related to monitoring, collection, registering and analyzing data, facts and other relevant information. Such by-laws have not been prepared so far.

As a result, biodiversity monitoring in BiH does not really exist. There is a lot of biodiversity data at different institutions (public authorities, museums, research institutes, NGOs etc.) but these data are frequently neither accessible nor verified. No central or coordinating institution responsible for collecting, registering and analysing biodiversity data has been designated at the entity or at the State levels.

Waste

Each entities' Law on Waste Management (RS OG 53/02 and FBIH 33/03) sets general monitoring requirements of the waste producer, waste installations operator and landfill operator. Producers of waste and operators of waste management installations are to carry out a control and monitoring programme, to keep records of the permit conditions and other relevant data, and to report to the entity environmental authority at least once a year. The report must contain, as a minimum, types of the waste according to the waste list and the composition of the waste, quantity of waste and the origin or source of wastes. The landfill operator is obliged to send an annual (at least) report on the types and quantities of waste disposed of and the result of the monitoring to the competent authority.

At present, waste monitoring organized through the entity Statistical Institutes is partially functional and is based on a statistical form, which Public Utility Companies are obliged to fill in. The form requires the following data to be reported:

- Waste collection from households, waste similar to household waste. and solid waste (data on the location of the waste; number of households included in waste collection; quantity of transported waste in tons and m3; and the location of disposal area)
- Waste disposal (total surface of disposal area; requirements for the disposal area; and the total amount of all waste collected on the disposal area).

Public Utility Companies present the data registered by them in their internal waste monitoring system. The quality of such monitoring is questionable. Public Utility Companies do not undertake constant monitoring but mostly work on estimations. These methods of estimations have significant limitations (e.g. a container could be filled by a very small amount of waste, and this would give an inaccurate result of total volume of waste produced). There is also no system for municipal waste separation. Municipal waste very often includes waste from households, commercial organization and shops, small enterprises (workshops, garages, and light industry) and industrial non-hazardous waste. There is also a large number of uncontrolled dump sites, which are not part of the information required on the forms.

In 2009, the BiH Agency for Statistics published the data on quantities, types and flow of waste generated in 'production process in industry, crafts and other processes' for 2008. The data was consolidated

based on reporting from companies with 10 or more employees engaging the following activities: i) mining and quarrying; ii) manufacturing; and iii) electricity, gas and hot water supply.

There is no statistical information on generation of medical waste in BiH. (See Chapter 8 for more information on waste)

Environmental laboratories

According to the BiH Law on Accreditation, accreditation is mandatory only for oil and food industry laboratories. As a result, most environmental laboratories in the country have not applied to the BiH Accreditation Institute and its regional branches in Banja Luka and Mostar. Thus far, only the Bjelaina Institute of Waters Laboratory has been accredited to analyze water samples in the Sava River Basin. No private laboratory in the country has been accredited for environmental testing. Moreover, there is no cooperation between environmental ministries at the state and cantonal levels with the BiH Accreditation Institute and its branches.

3.2 Environmental information management

Few formal mechanisms exist for the transfer of data and information between institutions dealing with the environment in the two entities. Much exchange is voluntary. The only bodies ensuring some form of homogeneity in data collection and presentation are the institutes of statistics of both entities and the Agency for Statistics of Bosnia and Herzegovina. There is no centralized database on the environment at the State level.

Since 2007, the entities' ministries responsible for environment have started developing entity Pollution and Release and Transfer Registers (PRTRs). Hardware and software were provided to both ministries as part of an EU/CARDS project. In 2007, Rulebooks on Registration of Installations and Pollutants were adopted by both entities. Enterprises have been obliged to report data since 2008 and entity environmental inspectors have the right to fine the companies and their management for non-compliance. Reporting obligations cover air emissions, waste water discharges, solid waste disposal, installation characteristics and details on permits. A series of training workshops was organized for all stakeholders including NGOs. The practical implementation of PRTR development faces a number of challenges, especially insufficiently trained staff in both enterprises and environmental authorities. As a result, enterprise reports submitted to the authorities have significant gaps in data and the PRTR systems are far from being operational and useful for decision-makers and accessible to the public.

BiH is a collaborating non-member country of European Environment Agency (EEA)/ European Environment Information and Observation Network

(EIONET). It has not yet formally designated its national focal point. It has improved data reporting to EEA, presently submitting some 65 per cent of required data. BiH participates in the UNECE Working Group on Environmental Monitoring and Assessment, which assists countries in transition to strengthen their monitoring and assessment capacities.

Discussion has been continuing in the country since 2002 on the establishment of a State environmental protection agency to be responsible for an integrated environmental information system - a multimedia electronic system; the preparation of country-wide environment assessment reports based on indicators, cooperation with EEA/EIONET and data and information reporting to the international community. No progress has been made to this end so far.

3.3 Environmental reporting

Each entities' Law on Environmental Protection obliges regulatory bodies and public authorities to make environmental information widely available. The laws explicitly stipulate that the environment ministry shall disseminate actively environmental information in a continuous, transparent and effective way. Information shall be published in printed and electronic form, in a way which is easily accessible to the public. The ministries are further obliged to analyse and evaluate the state of the environment and its protection, and what they have learned from their experience in protecting, using and developing the environment.

FBiH has recently introduced a system of producing regular environmental assessment report based on indicators. It published the first such report in 2009. Much needs to be done in FBiH to improve the reliability and consistency of data and indicators contained in its state-of-the-environment report. In RS and at the State level, there are no similar environmental assessments. The absence of regular objective assessments of the state of the environment and of trends in the main environmental indicators leads to difficulties in appreciating the impacts and the effectiveness of decisions taken.

Contrary to the recommendations of the European Environment and Health process, BiH is not publishing environment and health reports linking environmental pollution and health. Moreover, no environmental health information is available on the websites of the entity health ministries. The same ministries only publish bulletins of the epidemiological situation in the entities.

The national Agency for Statistics has increased the scope of environment statistics published in its national statistical yearbooks. It is presently developing a statistical form on environmental protection expenditures, revenue and investments. Both the national agency and the entity statistics institutes upload their environment statistics on their websites. The entity environment institutes do not produce publications.

3.4 Public participation in decision making

Each entities' Law on Environmental Protection establishes that each individual and organization shall have the opportunity to participate in decision-making processes. The laws oblige regulatory bodies and public authorities to facilitate and encourage public awareness and participation by making information widely available. The laws also guarantee that effective access to judicial and administrative proceedings, including redress and remedy, shall be provided. The right to access to information will cover, in particular, future registers of installations and of pollution.

The definitions of environmental information, restrictions to its access and other provisions of the entities' laws correspond generally to those established in the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) to which BiH has recently acceded in 2008. The same holds for the provisions on public participation and access to justice. The definition of public authority is interpreted in the laws rather narrowly, however, by obliging mainly the environment ministries to provide environmental information to the public and to create participation mechanisms for the public.

Environmental authorities at the State, entity and cantonal levels have take actions to raise public awareness of environmental problems and citizens' rights on environmental protection. For instance, to implement the BiH Council of Ministers conclusion of 20 April 2010 (05-07-01-1279-31/10) on the adoption of a programme on celebrating important dates related to human rights in BiH for 2010, they published a number of promotional materials with regard to the World Water Day, Earth Day, Environment Day and the Ozone Layer Protection Day.

There are numerous environmental NGOs in BiH, which define themselves as grass-roots organizations or associations of environmental professionals. Environmental awareness raising and education remain their main activities. The majority of NGOs operate locally or regionally. The Regional Environmental Centre (REC) office in BiH plays an important role in promoting NGO participation in environmental decision-making and raising environmental awareness in the country. It maintains a directory of environmental NGOs in BiH.

NGO registration and activities are regulated by the State and the entities' Law on Associations and Foundations. They give NGOs a wide range of rights in the scope of their missions. They allow, in particular, NGOs from one entity to operate in the other entity. NGOs enjoy the status of a legal person, which provides them with greater opportunities and makes it easier for them to initiate court proceedings. Moreover, associations of citizens enjoy certain tax privileges.

There are several cases in BiH of public participation in the discussions on draft environmental laws. For instance, in 2009, NGOs participated in the FBiH Parliament's discussion of the draft law on the protection against noise. The FBiH environment ministry involved NGOs in five roundtables discussing the draft FBiH Strategy on Environmental Protection with an action plan for the period 2008-2018. However, the involvement of NGOs in Governmentally-established working groups that influence the formulation and implementation of environmental policy continues to be low. NGOs do not participate in the meetings of the Inter-entity Steering Committee for the Environment. Contrary to the entity environmental laws, NGOs are not sitting on the supervisory boards of the entity environment funds.

NGOs have access to financial support from entity environmental authorities. For instance, the RS Environmental Protection Fund has provided financial support to several NGO projects since 2008 through public tenders. The FBiH Environment Ministry supported some fifty NGO projects over the last three years, including public awareness campaigns, festivals and television publicity.

The public actively participate in environmental permitting procedures, especially with regard to

projects subject to environmental impact assessment (EIA). The entities' ministries of environment (or cantonal authorities in the case of FBiH) invite NGOs and the local community to participate in the issuance of permits three months in advance through their respective websites. Non-technical summaries of EIA are made available to the public. The date of public hearings is generally provided to the public 30 days in advance. The entities' ministries of environment together with the investors organize public hearings while it is only the respective entity ministry of environment who is drafting the public hearings report. The investor is required to reply to the comments made by members of the public, through the entity ministry of environment (or the cantonal authority, as applicable), at a hearing within 15 days. Some 20 NGOs are regularly involved in EIA in the country. A project on the road from north to south over the period 2008-2010 is an example of a project that was amended in the light of public hearings. At present, a project on the construction of a hydropower plant on the Drina River is at the stage of extensive public consultation.

To establish a wide basis for environmental protection, each entities' Law on Environmental Protection requires the creation of environmental advisory councils to assist the Environment Ministers and the entities' Governments. The councils have to be composed of different stakeholders including environmental associations, organizations and institutions representing professional and economic interests and scientific circles. The councils are expected to be actively involved in the evaluation of strategic environmental assessments, environmental plans and programmes. No progress has been made in both entities to establish such councils, however.

3.5 Environmental education

Some progress has been made in creating a public system of environmental education in BiH. Curricula and programmes for pre-school children and schools now include environmental elements, due to the adoption of a number of laws and strategies. The laws are: the Law on Primary and Secondary Education adopted in 2003; on Pre-Primary Education, adopted in 2007; and, on Vocational Education Schools, adopted in 2008. The strategies are: the Strategy for Improvement of Education in BiH, adopted by the Council of Ministers of BiH in 2008, with a plan of implementation for the period 2008-2015; Developing Vocational Schools in BiH, adopted in 2007 for the period 2007-13; on Higher Education in BiH, adopted in 2007; and, for Development of Pre-Primary Education, adopted for BiH in 2004.

A common curriculum for pre-primary institutions that was developed in 2009 covers environmental issues. In primary schools, these elements are dealt with in a course entitled Meet Your Nature. Starting in the fifth school year, some environmental issues are taught in classes on chemistry and biology. In high schools, biology and sociology are the main subjects where environmental issues are taught. They are insufficiently linked and coordinated, however, which prevents an interdisciplinary approach necessary for understanding environmental issues.

In several vocational training schools, environmental technicians are trained in forestry and wood processing and in chemistry and non-metals industries. Training modules for these occupations were developed in 2005-8. Environmental aspects are also taught in other occupational training.

In higher education, several universities have introduced environmental curricula. Examples include faculties of agriculture and forestry at the Universities of Banja Luka and Sarajevo. The Universities of Banja Luka and Tusla have introduced a curriculum on environmental protection while the University of Sarajevo and Zenica have introduced a curriculum on environmental management. The Rulebook of Academic Titles adopted by the BiH State Government on 3 December 2009 lists several Bachelor's degrees on environment: spatial planning, geology, geography, meteorology, biology and environmental engineering (mining and geology engineers). Each engineering study programme includes a mandatory course on environmental protection. Study courses for lawyers, economists and management do not cover environment.

The entity environmental authorities organized several professional training courses for their staff, officials of other public authorities and relevant personnel of enterprises. For instance, in 2009, the FBiH Ministry of Environment and Tourism organized a series of seminars in ten cantons on environmental permits and environmental protection for civil servants. Eight hundred participants took part in these seminars. Representatives of business and NGOs also took part in these seminars. In 2010, five workshops were organized by the same ministry on updates of environmental protection procedures. The RS Institute of Protection, Ecology and Information organized in 2006-7 environmental training courses for inspectorates and communal police.

The REC in BiH and environmental NGOs are actively promoting environmental education in the country. For instance, the REC has helped to distribute educational "Green Packs" for teachers of elementary schools and their students and to organize training for teachers. It is also involved in the sub-regional (BiH, Serbia and Montenegro) project to promote cooperation between municipalities and elementary schools on education for sustainable development (ESD).

BiH has not adopted a national strategy on education for sustainable development, as recommended by the UNECE Strategy on ESD. Moreover, no inter-agency commissions or expert groups involving all stakeholders have been established at the State level to develop and to promote the implementation of a national strategy.

3.6 Policies and strategies

The National Environmental Action Plan (NEAP) adopted in 2003 by the governments and assemblies of both entities presents, under the priority area of environmental management, specified goals and priorities (short- and medium-term) in environmental monitoring, information management and environmental training. In pursuance of the NEAP, a number of activities have been undertaken within both entities and between them with the support of the international community. BiH has been successful in working on NEAP's priorities on strengthening the air-quality monitoring network, including the renovation of the country's only EMEP station, and on training environmental staff in using geographic information system (GIS) software. Some progress has been made in improving water monitoring, strengthening emission and emission monitoring of large emitters, establishing a pollutant emission cadastre according to CORINAIR methodology and developing PRTRs. No or little progress has been made on the NEAP priorities to establish a comprehensive monitoring system, an integral spatial information system, a national environmental information system including a central database.

The Poverty Reduction Strategy Paper accepted by the Council of Ministers in February 2004 envisaged specific measures to strengthen air, water, soil and land, forests, waste and biodiversity monitoring. Some repeated measures that were already included in NEAP and the results of their implementation are mentioned above. Others included harmonizing the country's environmental and quality standards with European standards and drawing up and adopting a red list and a red book of plants, fungi and animals following the criteria set by the World Conservation Union (IUCN). It appears that BiH has hardly made any progress in these directions.

3.7 Conclusions and recommendations

Bosnia and Herzegovina has made progress in improving its environmental observations, especially air-quality monitoring. Entity environmental laws have been completed recently by a series of detailed regulations (rulebooks) regarding various types of monitoring activities. Progress has been made, moreover in improving environmental self-monitoring and reporting by large polluters. The establishment of entity Pollution Release and Transfer Registers (PRTRs) is underway. However, for some environmental topics, like soil and biodiversity, monitoring remains weak. The country continues to lack a comprehensive environmental monitoring system. Overall, more than 80 technical (expert) institutions are collecting environmental data with practically no coordination and policy guidance. These institutions do not ensure data compatibility, or take each other's practices into account, when purchasing software and upgrading or developing systems for data collection and management.

Recommendation 3.1
Based on the Memorandum of Understanding on National Environmental Information Systems, the State Ministry of Foreign Trade and Economic Relations, in cooperation with the Inter-entity Steering Committee for the Environment, the Inter-entity Commission for Water and relevant entity institutions and the DB should take steps to create an integrated monitoring system in BiH.

See also recommendation 9.1 in this review.

Few formal mechanisms exist for the transfer of data and information between institutions dealing with the environment in the two entities. Much exchange is voluntary. The only bodies ensuring some form of homogeneity in data collection and presentation are the institutes of statistics of both entities and the Agency for Statistics of Bosnia and Herzegovina. There is no centralized database on the environment at the State level.

FBiH introduced a system of producing regular environmental assessment reports based on indicators. It published the first such report in 2009. There is no similar system in RS or at the State level. The absence of regular objective assessments of the state of the environment and of trends in the main environmental

indicators leads to difficulties in appreciating the impacts and the effectiveness of decisions taken. Both entities' Law on Environmental Protection leaves important information management functions to the State. Discussions has been underway between entities since 2002 on the development of coherent national environmental information covering, inter alia, modalities for data sharing, processing and integration, publishing a national state-of-the-environment report and delivering environmental data and information to the international community on behalf of BiH. No progress has, however, been made so far.

Recommendation 3.2
The State Ministry of Foreign Trade and Economic Relations, the Federal Ministry of Environment and Tourism, and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should complete the development of specific modalities for sharing, processing and integration of environmental data, publishing indicator-based environmental assessment reports for BiH, and their circulation and uploading on the Internet to make them available to the general public.

BiH has recently acceded to the Aarhus Convention. It has made significant progress in involving the public in environmental decision-making. The public actively participates in environmental permitting procedures, especially with regard to projects subject to EIA. To establish a wide basis for environmental protection, each entities' Law on Environmental Protection requires the creation of environmental advisory councils to assist the Environment Ministers and the entities' Governments. The councils have to be composed of different stakeholders including environmental associations, organizations and institutions representing professional and economic interests and scientific circles. The councils are expected to be actively involved in the evaluation of strategic environmental assessments, environmental plans and programmes. However, no progress has been made in the entities to establish such councils.

Recommendation 3.3
The Federal Ministry of Environment and Tourism, and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should ensure that existing environmental advisory councils work on the principles of the Aarhus Convention.

Some progress has been made in creating a public system of environmental education in Bosnia and Herzegovina. Several initiatives, like the education reform programme, led to visible improvements. Environmental issues have been included in pre-school and school curricula. In higher educational institutions a number of environmental subjects have been included in curricula. Many NGOs are actively promoting extra-curricular environmental education for children and adults. The entity environmental authorities organized several professional training courses for their staff, officials of other public authorities and relevant personnel of enterprises. These efforts have been unsystematic and unstructured, however. There continues to be a lack of experts in BiH on such issues as environmental management, environmental impact assessment and environmental law. BiH has not adopted a national strategy on education for sustainable development (ESD), as recommended by the UNECE Strategy on ESD. No inter-agency commissions or expert groups, involving all stakeholders, have been established at the State level to develop and to promote the implementation, thereafter, of a national strategy.

Recommendation 3.4
The State Agency for Education, in close cooperation with the State The Ministry of Foreign Trade and Economic Relation and entities' education and environment ministries, media representatives and other stakeholders, should establish a national commission on education for sustainable development (ESD). The commission should be entrusted with the preparation of the national strategy for ESD, as a priority.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

At present there is no comprehensive environmental monitoring system in Bosnia and Herzegovina, but there are some isolated data collection, maintenance, processing and dissemination. Overall, more than 60 technical (expert) institutions are collecting environmental data with practically no coordination and policy guidance. For some environmental topics, there is not enough monitoring capacity to cover the whole country or even parts of it. Data are frequently collected case by case. There is no monitoring of compliance by economic actors with legal environmental obligations. There are neither registers of polluters nor information systems of environmental inspections.

The institutions in both entities that collect environmental data tend to do so independently, according to their often outdated mandates. Generally,

these institutions do not ensure data compatibility or take each other's practices into account when purchasing software and upgrading or developing systems for data collection and management. There is no systematic use of internationally accepted monitoring methodologies to collect environmental data on particular topics. This is due to the lack of coordination between the monitoring institutions and the absence of commitment to using these methodologies.

The new environmental laws adopted in the two entities provide a much-needed framework to strengthen environmental monitoring in a coordinated manner. The Laws on Air Protection, Water Protection, Waste Management and Nature Protection set specific requirements for collecting, recording, analysing and reporting environmental data. The Laws on Environmental Protection oblige the Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology to establish and operate systems for monitoring the state and use of the environment in their jurisdictions including the measurement, collection, processing and registration of data. Polluters are obliged to monitor their emissions and the impact of their installations and to provide data to the authorities.

These environmental laws need to be further detailed through regulations. The entities' Environment Ministries should have adopted such regulations within one year of these laws entering into force. This has not been done so far. Neither human nor financial resources were provided to them to cope with their new, expanded responsibilities in environmental monitoring and information.

EPR I - Recommendation 3.1:
The Ministry of Physical Planning and Environment of the Federation of Bosnia and Herzegovina and the Ministry of Physical Planning, Civil Engineering and Ecology of Republika Srpska should issue, without delay, regulations to specify, in particular:

- *New procedures for setting or revising environmental quality standards harmonized with European standards;*
- *Measurements, monitoring and reporting requirements for operators;*
- *Criteria for the qualification of experts for self-monitoring by polluting enterprises; and*
- *Modalities for the registers of installations and of pollution taking into account the requirements of the UNECE Protocol on PRTRs.*

Few formal mechanisms exist for the transfer of data and information between institutions dealing with the environment in the two entities. Much exchange is voluntary. The only bodies ensuring some form of homogeneity in data collection and presentation are the Institutes of Statistics of both entities and the Agency for Statistics of Bosnia and Herzegovina. There is no centralized database on the environment at the State level.

There is no environmental reporting either to the State or to the entities. Parliaments and Governments do not receive state-of-the-environment reports to serve as a basis for law- and policy-making. The absence of regular objective scientific assessments of the state of the environment and of trends in the main environmental indicators leads to difficulties in appreciating the impacts and the effectiveness of decisions taken. Information to the general public is provided mostly through some newsletters, irregular brochures and upon request. The authorities do not use international guidelines for the production of environmental reports such as the UNECE Guidelines for the Preparation of Governmental Reports on the State and Protection of the Environment endorsed by the Kiev Ministerial Conference "Environment for Europe".

The newly established web sites of the Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology provide information on legal and institutional matters mainly. Bosnia and Herzegovina's reporting to the governing bodies of the applicable international environmental conventions and EIONET is poor. The country intends to accede to the Aarhus Convention soon but it risks failing to meet the Convention's explicit requirement to publish regular state-of-the-environment reports.

What is definitely missing is an authority at the State level to take responsibility for data integration and national environmental reporting.

The entities' Laws on Environmental Protection leave important information management functions to the State. According to these laws, an inter-entity environmental body will be in charge, inter alia, of setting and monitoring environmental standards and procedures, coordinating environmental monitoring and information systems, and collecting and sharing information. This should be done through the development of inter-entity environmental programmes and issuing guidelines and expert opinions for the entities' relevant ministries. The laws

stipulate that the said body may take decisions that will be mandatory for implementation by governmental bodies and agencies of both entities, as far as such decisions comply with State regulations.

The development of a coherent national environmental information system requires, first of all, a legal and institutional basis at the State level. A legal framework should be established to assign countrywide data collection and reporting responsibilities to institutions at different levels. It should spell out the modalities for sharing information, both horizontally and vertically. An institution (agency) should be made responsible at the State level for providing administrative and expert support to the envisaged inter-entity environmental body. It should, in particular, set up and operate a national environmental information system, publish a national state-of-the-environment report and deliver environmental data and information to the international community on behalf of Bosnia and Herzegovina.

On 16 May 2002, the Council of Ministers adopted a decision instructing the State Ministry of Foreign Trade and Economic Relations to draft an environmental law. No progress has, however, been made so far.

EPR I - Recommendation 3.3:
When the State Ministry of Foreign Trade and Economic Relations prepares the environmental law for Bosnia and Herzegovina it should cover, among other things, the specific modalities for setting up, financing and operating a national environmental information system. The law should specify the responsibilities of the entities and the State's institutions (including the national agency to be established) regarding:

(a) The collection of environmental data and information, their storage, evaluation and dissemination;
(b) The development, on the basis of international experience, of environmental indicators for data collection in the entities and the State and reporting to them;
(c) The publication of state-of-the-environment reports for consideration by the Parliamentary Assembly and the Council of Ministers of Bosnia and Herzegovina, their circulation among interested institutions at various levels and uploading on the Internet to make them available to the general public;
(d) Transmission of environmental data and reports, on behalf of Bosnia and Herzegovina, to governing bodies of applicable international conventions;
(e) Participation in EIONET, including the designation of a national focal point, national reference centres and expert institutions, and in other international programmes on environmental monitoring and assessment; and
(f) Training of experts in monitoring and information management.

Chapter 4

IMPLEMENTATION OF INTERNATIONAL AGREEMENTS AND COMMITMENTS

Main developments since the first environmental performance review

Since the first environmental performance review (EPR), major steps have been taken to strengthen international cooperation and the participation of the country in international agreements. Since 2004, Bosnia and Herzegovina (BiH) has ratified seven conventions and two protocols (see annex II) and the Convention on the Transboundary Effects of Industrial Accidents is in the process of being ratified. Although it was recommended in the first EPR, Bosnia and Herzegovina has still not acceded to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), or the protocols to the Convention on Long-range Transboundary Air Pollution (CLRTAP).

The State-level Strategy for Biodiversity Protection was adopted in the Federation of Bosnia and Herzegovina (FBiH) in 2010, but still awaits adoption by Republika Srpska (RS). The National Ozone Depleting Substances Phase-out Plan was adopted by the BiH Council of Ministers in 2008.

However, much remains to be done to strengthen implementation and improve the country's ability to better absorb and utilize external assistance and investment. The fragmentation of competencies among State and entity authorities is still a major obstacle to intensifying international cooperation. The National Steering Committee for Environment and Sustainable Development is no longer operational (see chapter 1), although it was conceived to facilitate work on international projects and implementation of international agreements. Additionally, significant shortcomings remain in the institutional, legal and policy framework at both State and entity levels.

4.1 Framework for international environmental cooperation

Legal framework

According to the 2002 RS Framework Law on Environmental Protection and the 2003 FBiH Framework Law on Environmental Protection, the scope of these laws is to cover the performance of environmental tasks arising from international conventions, if the provisions of an international convention do not stipulate otherwise. Both laws state that the enforcement of environmental interests shall be encouraged through bilateral or multilateral international agreements on environmental protection, and other agreements on cooperation, and on the provision of information and assistance related to environmental protection, in particular in its relationship with neighbouring countries. Even in the absence of international agreements, the environmental interests of other countries, the abatement of the transboundary loading of, or posing hazard to, the environment and the prevention of pollution and damage to the environment are to be taken into consideration.

The framework laws regulate international cooperation issues and state that the entities, via the competent inter-entity environmental body, are to act in international cooperation in the environmental field through the responsible ministry at the State level of BiH.

The framework laws state that the competent inter-entity environmental body is to deal with all the issues related to the environment which require a harmonized approach by the entities, including international treaties and programmes concerning environmental matters, and cooperation with international organizations and foreign States.

Another obligation of the inter-entity environmental body is to adopt an inter-entity environmental programme. The programme is to cover all those issues, which require a harmonized approach by the entities,

paying special attention to international cooperation and international commitments. Although the inter-entity environmental body was required to adopt the programme within six months of the framework laws entering into force, this legal provision has not been implemented.

Policy framework

In 2003, the first National Environmental Action Plan (NEAP) was adopted by the Governments and assemblies of both entities. It was envisaged that the national environmental protection programme and appropriate cantonal and local programmes be prepared in order to ensure realization of the projects included in the NEAP, however such programmes have not been developed.

The NEAP does not have a special chapter devoted to multilateral environmental agreements (MEAs). However the country's international obligations are sporadically mentioned in different parts of the NEAP. For instance, as part of the international community, BiH is aware of the need to take its share of responsibility for solving global ecological problems such as climate change, damage to the ozone layer, degradation of water resources, and protection of biodiversity.

Overall, there is no policy document in BiH with regard to implementation of MEAs.

The 2008 Stabilisation and Association Agreement between the European Union (EU) and Bosnia and Herzegovina pays little attention to environmental issues in general, and to the implementation of MEAs in particular. It states that cooperation between the EU and BiH could also centre on the development of strategies to significantly reduce transboundary air and water pollution, including waste and chemicals, and to establish a system to execute environmental impact assessments (EIAs) and strategic environmental assessments (SEAs). Special attention is to be paid to the ratification and implementation of the Kyoto Protocol.

The environmental priorities contained in the 2008 European Partnership Agreement (see chapter 1), in particular, call for ratification and commencement of implementation of key multilateral environmental agreements, including the Aarhus and Espoo Conventions.

One of the key objectives of the new United Nations Development Assistance Framework (UNDAF) for 2010-2014 is to ensure that by the end of 2014 the State Government of BiH has fulfilled its commitments under the multilateral environmental agreements (see chapter 1).

4.2 Cooperation in global multilateral environmental agreements

Convention for the Protection of the Ozone Layer (Vienna Convention)

As a party to the Vienna Convention for the Protection of the Ozone Layer and the accompanying Montreal Protocol on Substances that Deplete the Ozone Layer, BiH is responsible for taking the necessary measures to protect the ozone layer and achieve phase-out schedules for ozone depleting substances (ODSs). The national focal point (NFP) and the National Ozone Unit have been very active in taking the necessary steps in this regard.

BiH is fulfilling its reporting obligations under the Convention: pursuant to article 7, since 2001 regular annual reports on consumption of ozone depleting substances have been submitted to the United Nations Environment Programme (UNEP) Ozone Secretariat. Reports on implementation strategy have also been submitted to the United Nations Industrial Development Organization (UNIDO), to the BiH Council of Ministers on Country Programme (CP) implementation, and to the Multilateral Fund (MLF) on the Country Programme.

Country representatives have regularly participated in the meetings of the Implementation Committee under the non-compliance procedure for the Montreal Protocol and in the meetings of the parties to the Vienna Convention and the Montreal Protocol. The BiH NFP has been elected to the Bureau of the twenty-first Meeting of the Parties to the Montreal Protocol.

BiH has developed a legal framework to ensure the implementation of its obligations under the Convention and Protocol. The Decision of the Council of Ministers on Conditions and Procedures for the Implementation of the Montreal Protocol and Phase-out of Substances that Deplete the Ozone Layer in Bosnia and Herzegovina is fully harmonized with the laws on air protection of both entities and other relevant by-laws. This legal act also determines the conditions and procedures for the management of substances and products containing ODSs in BiH. The National ODS Phase-out Plan was adopted by the Council of Ministers in 2008.

Photo 4.1: Banja Luka

Specific legislation on the phasing out of ozone depleting substances has also been approved in both entities:

- Decree on phasing out ODSs of Republika Srpska;
- Decree on phasing out ODSs of the Federation of Bosnia and Herzegovina.

As an article 5 country (developing) BiH has received US$ 3 million from the Multilateral Fund for Implementation of the Montreal Protocol for technical assistance and investment projects. Nineteen investment projects have been implemented for phasing out ODSs.

Since the first EPR, BiH has made significant progress in phasing-out the consumption of chlorofluorocarbons (CFCs), trichloroethane (TCA), methyl bromide and halons. The country has dramatically improved its compliance under the Convention and since 2009 fully complies with all its obligations on all regulated substances.

The system of licences and permits for ODS import and export is established and functioning. There are regular national training sessions and a manual for customs officers. The manual for training regional activity centre (RAC) technicians has also been prepared. Public awareness campaigns have been regularly carried out and the International Day for the Preservation of the Ozone Layer has been celebrated on 16 September every year since 1995.

Despite the progress achieved, the country is still experiencing some obstacles to the implementation of its obligations under the Convention. For instance, equipment imported for the projects on phasing out ODSs is not exempt from value added tax (VAT). The tendering and procurement process is quite lengthy and both time- and resource-consuming, and there is a shortage of staff in the Ministry of Foreign Trade and Economic Relations (MoFTER) to undertake the necessary procedures.

Convention on Biological Diversity

During the period under review, Bosnia and Herzegovina has taken a number of steps towards implementation of the Convention on Biological Diversity (CBD). The State-level Strategy for Biodiversity and Landscape Protection was adopted in FBiH in 2010, but has still to be adopted by RS.

Three national reports on the state of biodiversity and implementation of the CBD have been prepared and submitted to the CBD secretariat. The first national report was supported by the Global Environment Facility (GEF) and UNEP as part of the preparation of the National Biodiversity Strategy and Action Plan (NBSAP). The first report was published in 2009 and contains a comprehensive overview of the state of biological and landscape diversity in the country. The fourth national report was also drafted in 2009 (see chapter 9).

Cartagena Protocol on Biosafety to the Convention on Biological Diversity

BiH acceded to the Protocol on Biosafety by acceptance on 1 October 2009 and the Protocol came into force for the country on 30 December 2009. The NFP has not been yet appointed. The legal provisions for implementation of the Protocol are based on the 2004 Law on Food, No. 50. Genetically modified organisms (GMO) are specifically addressed in some articles of the Law. Apart from the Law on Food, GMOs are also regulated by the 2009 Law on GMOs No. 23. The Council of Ministers of BiH established the Council for GMOs at the State level. The Coucil is composed of seven experts in this area. Four laboratories in BH were authorized by the Council for the control of the GMO in food

Article 3 of the Law defines GMO as organisms, other than human beings, in which the genetic material has been intentionally altered in a way that does not occur naturally by mating and/or natural recombination.

Article 30 of the Law states that, in order to place new food on the market in BiH for the first time, the applicant shall obtain permission in accordance with the provisions of the Law and related secondary regulation. In circumstances where scientific uncertainty exists about the harmful effects on human health of new food and/or food ingredients, which contain genetically modified organisms or are made of them, the Law allows the placement of such food on the market to be temporarily banned.

To implement the provisions of the Law, as well the obligations under the Protocol and international treaties in the field of food safety, a Food Safety Agency (FSA) has been established at the State level. The management board of the Agency, which consists of 15 representatives of bodies including MoFTER, the Veterinary Office, the Authority for Plant Health Protection, the FBiH Ministry of Agriculture, Water Management and Forestry, and the RS Ministry of Agriculture, Forestry and Water Resources, ensures a good level of coordination between the FSA and other State and entity bodies.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

BiH acceded to CITES in 2009. Many key obligations under the Convention have still to be implemented, e.g. designation of management and scientific authorities and development of a national system of permits (see chapter 9). As a party to the Convention, BiH has to fulfil its reporting obligations and submit an annual report on its CITES trade, containing a summary of information on, inter alia, the number and type of permits and certificates granted; the States with which such trade has occurred; the quantities and types of specimens involved; and the names of species as stipulated in appendices I, II and III of the Convention. The report for 2009 has to be submitted by 31 October 2010. A biennial report for 2009-2010 on legislative, regulatory and administrative measures taken to enforce the Convention is to be submitted in 2011. Some of the information on international trade in wildlife and wild products from BiH can be obtained from BiH trade partners (see chapter 9).

Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention)

BiH fulfils its reporting obligations under the Ramsar Convention. The national reports were submitted to the 9th and 10th Meetings of the Conference of the Contracting Parties (in 2005 and 2008 respectively).

A national wetland policy is not yet in place in BiH. Wetland issues are not incorporated into national strategies for sustainable development, including national poverty reduction plans. The quantity and quality of water available to, and required by, wetlands have not been assessed, and SEA practices are not applied when reviewing policies, programmes and plans that may impact upon wetlands.

There are three Ramsar sites in BiH. Two of them have been listed since the first EPR.

Bardača wetland was designated as a Ramsar site in 2007. It is situated in the floodplain of the Sava River near the border with Croatia. About half of the Bardača wetland comprises fishponds constructed since the early 20th century and further enlarged in the 1960s for irrigation purposes. The ponds, floodplain forest, meadow and swamp areas support a range of endangered species and make an important nesting and stopover site for birds. There is a rich fish fauna, a range of amphibians and the pond tortoise. With assistance from the Ramsar Small Grants Fund, a management plan is currently under development.

Livanjsko polje was designated as another Ramsar site in 2008. With its territory of 46,000 hectares, it is one of the biggest flat limestone depressions in the world. With half of its territory regularly flooding,

the Livanjsko Polje combines valuable wetland, an important bird habitat, marsh, peat and grassland; all teeming with endemic and rare species.

The Livanjsko Polje is still one of the best-preserved wetlands of BiH, but projects were under consideration which could have involved draining and large-scale lignite excavation. The implementation of these projects could have had a devastating effect on the polje's complex hydrology and productive grasslands. Because of this the World Wide Fund for Nature (WWF) has chosen the Livanjsko Polje for special safeguarding and the potential projects have been terminated.

Much remains to be done to strengthen implementation of the Ramsar Convention. The country does not have a comprehensive national wetland inventory and the existing data is not made accessible to all stakeholders. The status and trends of the ecological character of all wetlands, and Ramsar sites in particular, have not been assessed.

The water-related guidance of the Convention has not been applied to decision-making related to water resources planning and management. For instance, guidance on wetlands and coastal zone management has not been used in integrated coastal zone management (ICZM) planning and decision-making, nor have the wetland restoration/rehabilitation programmes and projects been implemented, or the guidance on wetland restoration been used. No strategy has been developed, nor have priorities been established for any further designation of Ramsar sites, using the Strategic Framework of the Ramsar List. The required updates of the information sheets on Ramsar wetlands have not been submitted to the Ramsar secretariat.

The measures required to maintain the ecological character of all Ramsar sites have been defined but not implemented and none of the three Ramsar sites in BiH have management plans. Evaluation of the effectiveness of the management of the sites has not been carried out

Future actions to further implement the Ramsar Convention include, but are not limited to:

- Development of a national wetland policy
- Completion of the national wetland inventory
- Better integration of wetland issues (conservation, wise use, restoration/rehabilitation) into sectoral strategic and planning processes and documents at all administrative levels

Establishment of a national Ramsar committee as a group of experts and advisory body on wetland issues for relevant ministries

- Implementation of projects on wetlands biodiversity and management
- Wide usage of the guidance documents prepared under the Convention.

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

BiH acceded to the Bern Convention in 2008. As a party to the Convention, BiH has been taking action to promote national policies for the conservation of wild flora and fauna, and their natural habitats; have regard to the conservation of wild flora and fauna in its planning and development policies, and in its measures against pollution; promote education and disseminate general information on the need to conserve species of wild flora and fauna and their habitats; and encourage and coordinate research related to the purposes of the Convention.

Well before accession to the Convention two projects on the establishment of the Emerald network of Areas of Special Conservation Interest (ASCI) in BiH were implemented, in 2004 and in 2006 respectively. These projects were supported by the Council of Europe and aimed at capacity-building and methodology development at national level. The habitat types in BiH were identified and the data entered into the Emerald software. ASCIs on the territory of BiH have been recognized and a database containing both abiotic and biotic parameters for the chosen sites has been developed.

United Nations Framework Convention on Climate Change (UNFCCC)

In accordance with inter-entity agreements, the UNFCCC focal point for BiH was created at the entity level in RS. Currently its Ministry of Physical Planning, Civil Engineering and Ecology carries out the functions of national contact institution. BiH delegations have regularly participated in all meetings of the Conference of the Parties (COP) as well as at the meetings of expert bodies within the UNFCCC secretariat. As a non-Annex I party, in accordance with article 4 of the Convention, BiH carries out its obligations to the extent that it receives technical and financial assistance.

As a non-Annex I party BiH was required to submit its initial communication within three years of the

entry into force of the Convention in BiH, but the Initial National Communication (INC), which was only finalized and published in October 2009, was submitted late.

By ratifying the Kyoto Protocol in 2008, BiH has demonstrated its interest and need for inclusion in the mechanisms which are offered to signatories of the Protocol (see chapter 6).

United Nations Convention to Combat Desertification (UNCCD)

In accordance with inter-entity agreements, the UNCCD focal point for BiH was created at the entity level in RS. Currently the RS Agricultural Institute carries out the functions of national contact institution.

BiH has improved its reporting obligations under UNCCD. The first national report on implementation was submitted in 2007.

A national committee board (NCB) has not yet been established, nor has a national action plan (NAP) for combating desertification been developed. The NAP would help to identify the priority regions facing the risk of desertification; define the main factors resulting in desertification for these areas; and determine short- and medium-term action measures for combating it, along with setting out an expected outcomes and implementation schedule. Specifically, the NAP could propose scientific research measures, as well as biodiversity conservation, public environmental awareness-building, desertification monitoring, and agricultural and international cooperation measures.

Some of the measures related to desertification/land degradation have been included in environmental documents developed in BiH, such as the 2003 NEAP and the 2009 INC to UNFCCC.

BiH is eligible for US$ 150,000 in financial support for activities relating to the UNCCD 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018). These activities include in particular monitoring and assessment activities that comply with the reporting requirements decided upon at the ninth session of the Conference of the Parties (COP9), and capacity development initiatives, such as the UNEP/GEF project to enhance reporting against indicators at national and local levels.

Convention on Persistent Organic Pollutants (Stockholm Convention)

It took BiH nine years to ratify the Convention on Persistent Organic Pollutants (POPs). As mentioned in the first EPR, BiH signed the Convention in Stockholm in 2001, when it was first open for signature. The decision of the Presidency of BiH on ratification of the Stockholm Convention was taken on 2 March 2010.

Before ratification, BiH fulfilled the preconditions for UNIDO assistance in preparing the National Implementation Plan (NIP). As a new party to the Convention, BiH has to prepare a National Action Plan (NAP) along with the NIP within two years of the date of the Convention entering into force. A US$ 500,000 GEF-financed project will be implemented in 2010-2012 and will support activities to facilitate implementation of the Convention. An inventory system on production, trade, use, storage, release and disposal of POPs will be established in the country. The current legal, institutional and technical capacities for management and monitoring of POPs and the socio-economic implications of reduction in the use of POPs will be assessed. Priority actions will be identified to eliminate the use of POPs.

BiH actively participates in regional activities of the countries of Eastern Europe, the Caucasus and Central Asia on introducing the best available techniques to reduce or eliminate unintentionally produced POPs from industry.

The Government of Norway supports the implementation of two projects, one on capacity-building for local implementation of the Convention and the second on investigation of POPs in the Bosna and Neretva Rivers.

In line with the provisions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, some waste containing PCBs was exported to France for final treatment.

Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention)

BiH acceded to the Rotterdam Convention in 2007. The NFP has been appointed and the country representative has actively participated in international meetings under the Convention, including the fourth meeting of the Conference of the Parties (COP 4) that was held in 2008 in Rome. The designated national authority, which is responsible for performing administrative

Table 4.1: Generation and transboundary movements of hazardous wastes and other wastes, 2006

Generation	Amount of hazardous wastes generated under Art. 1(1)a (Annex I: Y1-Y45) of BC	4.447
	Amount of hazardous wastes generated under Art. 1(1)b of BC	
	Total amount of hazardous wastes generated	4.447
	Amount of other wastes generated (Annex II: Y46-Y47)	Not reported
Export	Amount of hazardous wastes exported	4.447
	Amount of other wastes exported	Not reported
Import	Amount of hazardous wastes imported	0
	Amount of other wastes imported	0

Source: Basel Convention Country Fact Sheet.

functions required by the Convention, was appointed in February 2010.

BiH has adopted a set of by-laws and developed an institutional framework to facilitate implementation of the Convention. The country has also started to work on the import response procedures based on article 10 of the Convention that sets out the obligations of parties with respect to the future import of chemicals listed in annex III of the Convention and subject to the prior informed consent (PIC) procedure. The work is being done in cooperation with both entities.

The country needs to develop greater capacity to strengthen the integration of chemicals management into national development and planning processes. To strengthen a level of awareness and understanding on chemicals and pesticides management, there is a need to conduct capacity-building activities among different stakeholders.

Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)

As was mentioned in the first EPR, both BiH entities have legal provisions on the transboundary movements of waste.

Regarding restrictions on transboundary movements, BiH has no restrictions on the export of hazardous wastes and other wastes for final disposal and recovery, but restricts the import of such wastes. This restriction applies to all countries and all types of waste. The country does not have the capacity for recovery or disposal of hazardous wastes, recycling, recovery or re-use of hazardous wastes. BiH puts no restrictions on the transit of hazardous and other wastes.

Table 4.1 below shows data on the generation and transboundary movements of hazardous wastes and other wastes in BiH in 2006. The data is approximate and based on the quantity of hazardous wastes exported. The data for 2007-2009 is not available.

BiH has fulfilled its reporting obligations and submitted annual national reports pursuant to article 13(3) of the Convention.

4.3 Cooperation in regional multilateral environmental agreements

Convention on Long-range Transboundary Air Pollution (Air Convention)

As a party to the CLRTAP and the Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), Bosnia and Herzegovina has made only minor progress in implementing its obligations under these MEAs. During the period under review, the country has neither signed nor acceded to any of the remaining seven protocols to the CLRTAP. There was no focal point on the CLRTAP and the country only sporadically participated in meetings under the Convention.

However there are some positive developments in FBiH. At the end of 2005, an automatic station for air quality monitoring was set up at the meteorological station Ivan Sedlo (for background monitoring), pursuant to the EMEP programme (see chapter 3). Further actions have been planned for the next three years:

- Appointment of the focal point for the CLRTAP
- Ratification and implementation of the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone
- Accession to other protocols
- Preparation of a study on the threshold value of SO2 for thermal power plants in line with the emission threshold of the CLRTAP, Directive

2001/80/EC on the limitation of emissions of certain pollutants into the air
- Changes and amendments to the emission threshold values from combustion facilities.

In order to assist the five western Balkan countries in ratifying and implementing the last three[4] protocols to the CLRTAP, a Netherlands-funded project was launched in 2009 in cooperation with the secretariat of the CLRTAP. These protocols combined address some of the most harmful air pollutants, including sulphur, nitrogen oxide, persistent organic pollutants, lead and mercury, amongst others. The second consultation meeting under the project that was held in Montenegro in March 2010, revealed the lack of progress made by BiH since the launch of the project. Unlike Montenegro, Serbia and the former Yugoslav Republic of Macedonia, which have already developed their National Action Plans, BiH has not yet started work on its NAP.

Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)

As a large part of the watercourses in BiH are international waterways (the Sava forms the country's northern border, the Una part of its western border, and the Drina most of its eastern border), the country acceded to the Water Convention in December 2009. However it is still not a party to the Protocol to the Convention on Water and Health. BiH signed the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (Kiev, 2003) but, similarly to other countries which are signatories of the Protocol, has not yet ratified it.

In line with the Convention, BiH has signed an agreement with Croatia on water management in transboundary watercourses. Based on this agreement the activities of the international BiH-Croatia water commission have been revitalized. The commission aims to solve problems relating to transboundary watercourses, water supply and sewage systems, exploitation of river gravel, navigation, and flood protection. Recently BiH initiated the establishment of similar framework agreements with Montenegro and Serbia.

[4] The Protocol on Heavy Metals, the Protocol on Persistent Organic Pollutants and the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol).

Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)

As a party to the Barcelona Convention, in 2005 BiH adopted a NAP for reduction of marine pollution caused by land-based activities. The Office of the National Coordinator (NCO) for the Mediterranean Action Plan was established. Thanks to support from international donors the NCO carried out a range of activities in 1999-2005. However since 2005 the NCO has reduced its activities and there is no evidence that BiH has been making progress in implementing its NAP.

Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention)

As some 40 per cent of the Sava river sub-basin, the second largest sub-basin of the Danube river basin, lies in BiH, the country acceded to the Convention in 2005. BiH was the last country in the basin to ratify the Convention. By ratifying the convention, the country has committed to cooperating with the other 12 countries and the European Commission on essential concerns regarding water resources, and to undertake appropriate legal, administrative, and technical measures to improve the environment and water quality in the basin.

The main watercourses that make up the Sava river sub-basin – and thus the Danube river basin district in BiH – are the Una (covering 9,130 km^2), the Vrbas (6,386 km^2), the Bosna (10,457 km^2), the Drina (7,240 km^2) and the remaining smaller river tributaries (5,506 km^2).

The Sava and its tributaries undergo significant anthropogenic pressure. The tributaries are extensively used in hydro energy: there are 12 hydropower plants, some shared with neighbouring countries. In addition, nearly the entire length of the Sava in BiH is used for navigation, although it has not been identified as an international navigation course.

International Commission for the Protection of the Danube River (ICPDR)

BiH officially joined the ICPDR in 2005. To facilitate its integration, an ICPDR presidential mission was carried out in September 2005 and provided tailored assistance to support BiH efforts.

International Sava River Basin Commission (ISRBC)

The Sava has the largest discharge of water into the Danube of any tributary and is the second largest by catchment area (95,719 km²). The Sava river basin is shared by BiH, Croatia, Montenegro, Serbia and Slovenia. The International Sava River Basin Commission (ISRBC) was established in 2005 and BiH is a member. The Commission implements the Framework Agreement on the Sava River Basin and its Protocol on the Navigation Regime, both signed in 2002, which promote regional cooperation on issues related to navigation, economic development, comprehensive water management and environmental protection.

BiH actively participated in the implementation of the UNDP/GEF Danube Regional Project - development of the Sava River Basin Management Plan, pilot project - that was finalized in February 2007. The project provided an overview of the quality and quantity of data gaps for implementation of the Water Framework Directive (WFD) and supported the development of a pragmatic Sava River Basin Management Plan in 2007. This plan, together with national plans, serves as the basis for action on transboundary issues in the Sava river basin and for future investments by international and bilateral donors.

The Sava river basin analysis report has been prepared. The Commission participated in the development of the "Flood Mapping Study for the Sava River", as well as the project entitled "Water and Climate Adaptation Plan for the Sava River Basin" which will run until the end of 2010.

Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)

In May 2003, BiH signed the Protocol on Pollutant Release and Transfer Registers (PRTR) but has yet to ratify it. BiH ratified the Aarhus Convention in 2008. As BiH became a party to the Convention after the last Meeting of the Parties the country has had no obligation as yet to submit a National Implementation Report (NIR). A working group is about to be established to prepare its first NIR and an NFP will be appointed to coordinate the work. The public will be broadly involved in the preparation of the NIR. The first NIR can serve as a powerful tool to foster the implementation of the Convention in the country, as it will help to identify accomplishments, gaps and actions needed to improve implementation. The Organization for Security and Co-operation in Europe (OSCE) is considering providing support for an Aarhus Centre in BiH.

Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)

BiH acceded to the Espoo Convention on 14 December 2009. It has also signed the Protocol to the Convention on Strategic Environmental Assessment but not yet ratified it.

As BiH was not a party in the period reviewed, it had no reporting obligations and rarely participates in meetings under the Convention. The NFP has not yet been appointed. Although BiH was represented at

Box 4.1: Enforcement of the Aarhus Convention in the Adriatic region

The project "Enforcement of the Aarhus Convention in the Adriatic region" was launched in January 2010. The project will help to improve and promote access to justice, as well transparency and public participation, in the area of environmental matters in BiH, Croatia and Montenegro; strengthening of the role of non-governmental organizations (NGOs); and development of sustainable partnerships and networks between Western Balkan and EU environmental organizations, and organizations working in the field of transparency and democratization regarding the monitoring and improvement of enforcement of obligations arising from the Aarhus Convention in the Adriatic region countries.

Within the scope of the project, an information and cooperation network of civil society environmental organizations and organizations, working in the field of transparency and democratization on implementation of the Aarhus Convention in BiH, will be developed. Implementation of Aarhus Convention standards in the national courts of BiH will be improved by building the capacities of lawyers, judges and journalists, and transferring knowledge and practices of the European Court of Justice and the European Court of Human Rights. Other activities under the project include awareness-raising campaigns on the Convention; good practices and legal measures among stakeholders and improving the knowledge of the public of legal rights arising from the Convention; and capacity-building through transfer of knowledge, experience and practices in implementing the Convention in the EU.

the fourth Meeting of the Parties (MOP) at Bucharest in 2008, it did not sign the multilateral agreement between the countries of South-Eastern Europe for implementation of the Convention, since at the time it was not a party to the Convention. Now, being a party to the Convention, BiH may consider signing the multilateral agreement, upon a formal request from Romania as the depository of the agreement.

The main provisions of the Espoo Convention and the SEA Protocol are reflected in the entity laws on environmental protection. For instance, the provisions for EIAs and SEAs, including those specifically devoted to transboundary environmental effects, are explicitly covered in the entity laws on environmental protection. According to these laws, EIA rules in a transboundary context shall be used in all cases where the project is likely to have significant effects on the environment of the other entity, or where any international contract obliges the State to do so, or on the basis of bilateral agreements, reciprocity or other considerations.

The EU Directive on Environmental Impact Assessments is almost completely transposed into the laws of the entities. However, no progress has been made as regards the transposition of the Directive on Strategic Environmental Assessments and not enough attention is paid to the transboundary dimensions of the EIA Directive.

Specific provisions related to EIAs are set out in the regulations and governmental decrees issued by ministries in both entities. These regulations determine the following:

- Projects and installations for which an EIA is mandatory, and the criteria for determining the obligation and extent of an EIA (OG RS No. 7/06)
- Installations and facilities whose operation may be commenced only if the environmental permit has been granted (OG FiBH No. 19/04, OG RS No. 7/06)
- Specific requirements for submitting an environmental permit application for installations and sections for which environmental permits were issued prior to enacting the Law on Environmental Protection (OG FBH No. 68/05, OG RS No. 24/06)
- Time frame for applying for an environmental permit for installations issued with an environmental permit before the Law on Environmental Protection entered into force (OG FBiH No. 68/05, OG RS No. 24/06,).

In addition, regulations on the mandatory requirements and criteria for enterprises and institutions authorized to carry out professional activities in environmental protection, such as compiling EIA studies, have been passed in both entities (OG FBiH No. 68/05 and OG RS No. 15/07).

Convention on the Transboundary Effects of Industrial Accidents

BiH has not made significant progress in becoming a party to the Convention on the Transboundary Effects of Industrial Accidents, although the country is proceeding with some preparatory work on the matter.

A fact-finding mission was organized in September 2009 to verify implementation of the basic tasks under the Convention and discuss the need for assistance in implementing the complex tasks involved. The ratification and implementation of the Convention and the limitation of technological risk, have to be a priority for BiH, especially in view of the relatively large chemical industry located in the north-east of the country.

A few steps were identified with regard to implementing the Convention, such as nominating one or more competent authority(ies) and focal point(s), starting to use the Industrial Accidents Notification System, and capacity-building at the State and entity levels.

BiH has committed to preparing a report assessing the current situation in the country, referencing the basic tasks, and making a preliminary identification of possible gaps. It has also undertaken to prepare an action plan that would include the steps to be taken to accomplish all the basic tasks and eliminate gaps, together with a timeline for these tasks. According to the action plan that has been prepared, BiH expects to finalize ratification of the Convention by the end of 2010. Regarding the above-mentioned report, at the time of the mission there was no evidence that such a report was being drafted or will be prepared at all.

4.4 International cooperation

Multilateral cooperation

Between 2001 and 2006, the main source of EU assistance for BiH was the Community Assistance for Reconstruction, Development and Stabilisation (CARDS) programme, which provided support, inter alia, to strengthen capacity in the environmental field. BiH also benefited from the regional CARDS

Table 4.2: Environment-related IPA financed projects

Title of the project	Years	million EURO	Brief information
Support to BiH water policy	2008-2010	1.0	The project supports the development and implementation of entity water laws, in accordance with the principles of the EU Water Framewotk Directive and other water sector related EU directives. The project further strengthens BiH capacities for coordination and implementation of international conventions to which BiH is a party to.
Support to implementation of the IPPC Directive	2008-2010	1.5	The project supports the integrated approach for sustainable development and compliance control with regards implementation of the IPPC and the "European Pollutant Transfer and Release Registry" (EPRTR) Directives, focussing on the energy production and combustion sectors.
Construction of sewage collection facilities in Zivinice	2008-2011	1.5	The purpose of the project is to protect the environment from the adverse effects of urban wastewater by providing wastewater collection in Zivinice.
Strengthening of BiH environmental institutions, preparation for pre-accession funds and support to environmental infrastructure development	2008-2011	4.0	The project supports strengthening BiH environmental institutions and preparing for Pre-accession funds; and investment in the environmental infrustructure projects in the water/waste water and solid waste sectors throgh preparation of feasibility studies, master plans, technical design documentation and/or construction works
Rehabilitation and construction of the water supply and sewerage collection infrastructure in BiH	2008-2011	16.5	The purpose of the project is improved accessibility to quality drinking water and decreased wastewater pollution in 17 municipalities of the BiH, through the rehabilitation and construction of the water and wastewater infrastructure in FBiH; the construction of water supply system and the sewerage network in Bijeljina municipality; the construction of sewerage system along the Vrbas river, with installation of pumping stations and the construction of a secondary sewerage network and house connections in Banja Luka.
Rehabilitation and construction of water, wastewater and solid waste infrastructure in BiH	2010-2014	40.0	The purpose of the project is supporting the sustainable environmental development by generating local economic growth and creating job opportuities through environmental infrastructure in BiH: rehabilitation and construction of water and wastewater infrastructure in selected municipalities both in FBiH and RS; extension of the water supply system in the Dubrave region, FBiH; rehabilitation and construction of wastewater treatment plants and sewage systems in Sarajevo, Zivinice and Ljubuski in FBiH as well as improvement of the existing regional sanitary landfills in Mostar, FBiH and Banja Luka, RS; construction of the sewerage system in Banja Luka, RS.

Source: MoFTER, 2010.

programme, which supported infrastructure development, institution-building and cross-border cooperation.

In 2007, the Instrument for Pre-Accession Assistance (IPA) replaced the CARDS programme and covers the period 2007–2013. The main objective of the IPA is to help BiH face the challenges of European integration. BiH, as a potential candidate country, will mainly benefit from two components of the IPA, namely the support for transition and institution-building, and cross-border cooperation.

The Multi-annual Indicative Planning Document (MIPD) 2007–2009 was the key strategic planning document for assistance to BiH in the framework of the IPA. The overall financial scope of the 2007-2009 MIPD amounts to €226 million.

The MIPD 2009-2011 that is built on assistance programmed under the IPA in 2007 and 2008 includes the following results and indicators on the environment:

- A countrywide environment strategy is adopted and implemented
- The alignment of the sector to the environmental acquis is advanced
- Tools for prioritization of environmental infrastructure investments and determination of measures for environmental protection are operational
- Generation of co-financing mechanisms for environmental infrastructure is advanced
- Enhanced investments in environmental infrastructure are undertaken.

The indicative allocation to BiH under the Multi-annual Indicative Financial Framework (MIFF) for 2009-2011 amounts to €303.2 million. The environment-related IPA financed projects are listed in table 4.2 above.

BiH also participates in three cross-border cooperation programmes under the MIPD 2009-2011.

According to the cross-border cooperation programmes between BiH and Croatia, Montenegro and Serbia, the expected results include sustainable use of natural resources in place; studies and awareness-raising campaigns in environmental protection implemented; and capacities for the protection of the environment increased.

The expected results in the Adriatic cross-border cooperation programme are joint management and risk prevention of the sea and coastal environment in place; management of natural resources improved; and quality of tourist destinations improved.

The expected results of cooperation in the European Regional Development Fund (ERDF) South-East Europe and Mediterranean programmes for BiH on environment are water management in place; energy efficiency improved; risk prevention for fire, droughts and floods established; maritime security promoted; and natural heritage protection enhanced.

Box 4.2: Bilateral projects

Hungary: supporting Aarhus Convention Implementation in Bosnia and Herzegovina, €5,000, 2010 – 2013
Italy: the creation and promotion of environmental and sustainable tourism in the Neretva, Drina, Una and Sana valleys, €1.65 million, 2009 – 2012
The Netherlands: strengthening capacities in BiH to address environmental problems through remediation of high priority hot spots, €2.25 million
The Netherlands: Joint Forces for a Green Agenda in the Western Balkans, €0.29 million, 2007– 2011
The Netherlands: educational initiatives to raise awareness about environment and development, US$ 135,000
The Netherlands: implementation of a programme of cooperation that aims to establish a network between universities in a number of World Bank countries and three universities in the Netherlands, €0.43 million, 2008 – 2010
Norway: energy saving and biodiversity, €0.5 million
The Spanish Agency for International Development Cooperation (Spain/AECID): renewable energy, €0.25 million
Swedish Development Agency (SIDA): Municipal Programme for Solid Waste Management in BiH, €10 million
Sweden/SIDA: support to five municipalities in BiH in developing local environmental action plan, €0.63 million, 2007-2011
Sweden/SIDA: support to civil society organization capacity across BiH to deal with environmental issues, €0.74 million, 2006-2010
Switzerland/Swiss Agency for Development and Cooperation/State Secretariat for Economic Affairs: regional project on sustainable management of shared natural resources (water resources), €0.25 million

Source: MoFTER

Table 4.3: Environment-related MDGs

MDG target	Indicator	Source	Estimates for BiH (2000/2001)	2007	2010	2015
VII/9	Percentage of forested land	World Development Indicators (WDI) 2002, World Resources Institute (WRI)	44.6			
		NHDR/MDG Report	55.6			
	Percentage of land protected to maintain biodiversity	WDI 2002, WRI	0.5	1.5	3.0	6.0
	GDP by unit of energy consumed (indication of economic efficiency(, in US$	Based on WDI 2002, calculation in NHDR/ MDG report	47.5	40.0	30.0	25.0
	Carbon dioxide emission/pc (1,000 kg)	NHDR/MDG Report	3.2	3.5	4.0	5.0
VII/10	Percentage of population connected to water supply systen	NHDR/MDG Report	53.0	58.0	62.0	67.0
VII/11	Percentage of population with access to hygiene/percentage of households with sewage	NHDR/MDG Report	33.0	36.0	38.0	40.0
	Percentage of population with access to property	WB BiH poverty Assessment 2003 (derived assessment by NHDR/MDG team)	around 71	75.0	85.0	90.0

Source: The BiH National Human Development Report/Millennium Development Goals, 2003.

Bilateral cooperation

Apart from the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB); the World Bank and the United States Agency for International Development (USAID); Canada; Germany; Italy; Japan; Norway; Spain; Sweden; Switzerland; and, the United Kingdom support approximation to European standards, including those relating to the environment. Some of the recent and ongoing bilateral projects are listed in box 4.2.

4.5 Sustainable development

The BiH National Human Development Report/ Millennium Development Goals (NHDR/MDG) was prepared in 2003. The document presents a set of policy suggestions to help the country move towards the full achievement of locally-relevant MDGs and their 18 BiH specific targets. These are coupled with 48 indicators and milestones for more accurate monitoring of progress. Synergy was envisaged between NHDR/MDG and the Poverty Reduction Strategy Paper (PRSP) for BiH and in consequence these documents complement each other, even though the NHDR/MDG report is focused on the long term (2003-2015) while the PRSP was focused on the medium term (2003-2007). The implementation of the BiH Poverty Reduction Strategy could permit the implementation of MDGs in the relevant period, and monitoring of progress on both documents could facilitate the efficient preparation of other documents addressing development strategies and policies. MDG 7 (Ensure environmental sustainability) consists of three targets (9-11, see table 4.3).

There is no national commission on sustainable development in BiH and a country strategy on sustainable development has never been developed. There is no evidence that BiH is planning to develop such an instrument.

Since the first EPR, BiH has not submitted to the United Nations Commission on Sustainable Development (CSD) national reports for CSD cycles 12/13, 14/15, 16/17 and 18/19. Furthermore, the country does not report on MDG indicators. It is not clear to what extent the country has implemented the 2004 Mid-term Development Strategy. The last progress report is dated October 2005 and since then progress has not been assessed.

4.6 Conclusions and recommendations

BiH has ratified or acceded to many global and regional multilateral environmental agreements. Since the first EPR in 2004 the country has ratified seven conventions and two protocols. However, there is still much to be done in practical implementation and enforcement. National focal points for a number of MEAs have not been appointed, the necessary institutional setting has not been established, and the relevant programme and plans have not been prepared and adopted. These shortcomings are often due to lack of adequate capacity and funding.

Recommendation 4.1:
The State Ministry of Foreign Trade and Economic Relation *should:*

(a) Strengthen the practical implementation and enforcement of the global and regional multilateral environmental agreements that have been ratified;
(b) Ensure the appointment of national focal points for all MEAs;
(c) When necessary and/or envisaged by obligations under the MEAs, ensure establishment of the necessary institutional setting and adoption of the relevant programmes and plans including their adequate financing.

Despite the progress achieved by BiH in ratification or accession to global and regional multilateral environmental agreements, there are still a number of MEAs that have been signed but are still awaiting ratification. For instance, the Protocol on Pollutants Release and Transfer Registers to the Aarhus Convention; the Protocol on Strategic Environmental Assessment to the Espoo Convention; and, the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters, to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, were signed during the Fifth Ministerial Conference "Environment for Europe" (Kiev, 2003) but have still not been ratified.

Recommendation 4.2:
As soon as appropriate capacities for implementation are available, the Government of Bosnia and Herzegovina should accede to the following conventions and protocols:

- *Convention on the Transboundary Effects of Industrial Accidents;*
- *Convention on the Conservation of Migratory Species of Wild Animals;*
- *The relevant Protocols to the Convention on Long-range Transboundary Air Pollution;*
- *The relevant protocols to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean;*
- *Protocol on Pollutants Release and Transfer Registers to the Aarhus Convention;*
- *Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes*
- *Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents;*
- *Protocol on Strategic Environmental Assessment to the Espoo Convention.*

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

Since the end of the war in 1995, Bosnia and Herzegovina has made progress in its international environmental cooperation at bilateral, regional, European and global levels. However, there is still important work to be done, in particular in clarifying institutional responsibilities. Some challenges, including many of those that are expressed in the Assessment on Sustainable Development in Bosnia and Herzegovina, the National Environmental Action Plan and the Mid-term Development Strategy, are of transboundary or regional importance and are being considered by the respective ministries as top national priorities. In a continuing process of stabilization and accelerated regional and international integration, Bosnia and Herzegovina will be able to continue to rely on the support of the international community. It can be expected that important cooperation programmes will continue and new ones be created, especially in the context of cooperation with the European Union.

One issue of concern is the lack of a systematic, strategic approach to international cooperation. A strategy and action plan in this area could provide a blueprint for cooperation to assist the country in identifying the bilateral and multilateral agreements most appropriate for it. Such a strategy could also help

to prepare Bosnia and Herzegovina to harmonize its legislation with that of the European Union.

EPR I - Recommendation 4.1:
The State Ministry of Foreign Trade and Economic Relations, working closely with the Federation's Ministries of Physical Planning and Environment and of Agriculture, Water Management and Forestry, Republika Srpska's Ministries of Physical Planning, Civil Engineering and Ecology of Agriculture, Forestry and Water Management and the appropriate authorities in Brčko District, should develop a national strategy and action plan for international environmental cooperation consistent with the Strategy for environmental protection and sustainable development proposed in recommendation 1.2. The strategy should address the role in international cooperation of all relevant actors, including non-governmental.

PART II: ECONOMIC INSTRUMENTS AND FINANCIAL RESOURCES

Chapter 5

ECONOMIC INSTRUMENTS AND EXPENDITURE FOR ENVIRONMENTAL PROTECTION

5.1 Introduction

Since the first EPR, Bosnia and Herzegovina (BiH) has continued the process of developing and defining its environmental priorities and policies, including with regard to economic instruments. At the time of the second EPR review, evidence shows that in most cases the current policy of the Government of BiH is to manage environmental problems with regulatory instruments and not through market incentives that could rectify the incorrect pricing of environmental services in the country.

However, economic instruments have several benefits as compared to regulatory instruments. The Federal Government can collect money and raise revenues through environmental taxes, fees and charges, and use these funds to improve the state of the environment e.g. build water treatment plants with the monies raised from effluent charges. Another important aspect is that it is often easier to change consumption and production patterns through economic instruments than through regulation: a good example in BiH would be the recycling of plastic bottles. Finally, in comparison to regulatory instruments the management and administrative burden of economic instruments is relatively light.

The focus of the creation and adoption of the legal basis for environmental management has concentrated on regulatory instruments at the entity level. Both entities have adopted a set of environmental laws, decrees, regulations and rulebooks (see annex IV) and have, in a difficult political situation, created the foundation for environmental legislation, although only a limited amount of legislation relating to environmental economic instruments is operational as yet. The entities have already started issuing environmental permits and establishing monitoring procedures, while an essential part of a fully fledged environmental policy - the use of economic instruments - is not yet fully integrated into the policy toolkit.

Up to now recovery from the devastation of the war has been the overriding social imperative - using economic incentives such as taxes for environmental protection did not fit well with the need to raise the living standards of the population. Secondly intra-national, domestic financing was not very high on the agenda of the Government of Bosnia and Herzegovina since international grant money from the international assistance organizations was flowing into the country, providing financing for the most urgent environmental projects.

BiH has prioritized its environmental protection effort in the most essential sectors - water and waste - but this allocation of resources has left other areas, especially air quality, inadequately addressed. For a long time, air emissions were not seen as an important issue because industrial activity had collapsed after the war, leading to diminished emissions, and the growth in the vehicle fleet was not yet critical. Both of these issues are changing - industrial production is picking up again and mobile source emissions are on the rise as the number of vehicles increases (see chapter 6).

Environmental management is also hindered by the fragmented political and administrative State structure and the delegation of authority on environmental governance to the entities, cantons and municipalities**.** This complex structure makes it difficult not only to acquire information on the state of the environment but also on environmental revenues and expenditures.

The development of environmental management seems to suffer from a lack of political will at all levels of administration to make any changes in the current structures. For many environmental issues, such as air and water basin pollution, a countrywide policy approach would be more effective and better suited to solving sectoral problems than trying to tackle these problems at the municipal level. Currently, however, the political status quo created by the Dayton Peace Agreement takes precedence over potentially desirable changes in environmental administration structures.

5.2 The economic context for environmental policy

Before the war of 1992-1995, industry was the most important economic sector, producing about 50 per cent of the GDP of BiH, but the physical destruction of the war and consequent lack of investment brought about the effective deindustrialization of the country. This, combined with the growth in the service economy, especially the growth of public administration, reduced the share of industry to 21 per cent of GDP (in 2008), while services accounted for about 64 per cent of GDP. Since the war, the economy has grown and even though the share of GDP accounted for by industry has diminished, absolute production is again increasing, which has an effect on industrial emissions.

The economic development of the country shows regional differences, although these disparities are between the municipalities rather than at the entity level. Since the last EPR, the differences in per capita net wages between the entities have disappeared. In 2008, the average net wages in the Federation of Bosnia and Herzegovina (FBiH) and in Republika Srpska (RS) were almost identical - KM 751 and KM 755 KM per month respectively. GDP per capita almost doubled (1.92 times) between 1997 and 2008 from KM 2,470 to KM 4,758 (in 2005 prices), noticeably increasing the affluence of the population. This growing prosperity has not only increased the use of natural resources and overall consumption, and therefore the pressures on the environment, but has also augmented the ability of the population to pay fees, charges and taxes for an improved environment.

The level of foreign direct investment (FDI) grew from almost zero in 1999 to US$ 2 billion in 2007 and although the annual amount dropped to US$ 1billion in 2008, the FDI accumulated between 1999 and 2008 stood at US$ 6.3 billion. How much of this has been used for environmental projects is unclear, but the inflow of investments has definitely had an effect on the country's post-war economic development and prosperity.

Post-conflict international assistance has been extremely important for BiH and without it the economic and social situation of the country would be very different. For example, in per capita terms, the World Bank assistance programme, which consisted of International Development Association (IDA) interest-free loans and grants, has been the largest in the history of the organization in any post-conflict country. Since 1996, the World Bank has distributed over US$1.1 billion to BiH through 50 projects. About 1 per cent of this assistance went to the environmental sector.

5.3 Economic instruments for environmental protection

The State of BiH has not yet adopted a law on the environment. However, the entities have adopted their own environmental protection laws. Both the FBiH and RS Laws on Environmental Protection (OG FBiH 33/2003 and OG RS 53/2002 respectively), are very comprehensive in their structure and include not only economic instruments for environmental protection, such as charges, tax incentives for environmentally friendly products, technologies and services, and deposit-refund systems, but also penalties and compensation for environmental damage, and finally financial guarantees for possible environmental damage. Most importantly these laws recognize the "polluter pays" and "user pays" principles by stating that the level of penalty rates should encourage a reduction in the use of natural resources and in pollution.

The economic instruments currently in use include water abstraction and water pollution charges; municipal user charges for water supply and sewerage; municipal waste charges (water laws of the entities); excise and customs duties on fuels (annual registration fees for vehicles); taxes on use of natural resources; and taxes on forest use (for the latter, see chapter 9). The air emissions charges, although included in the relevant laws of the entities, are not applied because the secondary legislation defining the level of charges has not been adopted.

The use of the instruments that are available seems to depend on the historical importance of the environmental sector and the strength of the institution in charge of the sector. The charging and fee structure for water management, for example, is well developed because water issues have been important for the country and water management has therefore been well organized for a long time. The legal basis for this are the FBiH and RS Laws on Water (OG FBiH 18/1998 and OG RS 18/1998 respectively).

A framework law with well-detailed environmental economic instruments but which is lacking secondary legislation is likely to be ineffectual for environmental protection. A good example is the air sector, where the law on air includes economic instruments, such as charges and fines, but no penalties apply for exceeding emission limits and no fines are collected from emitters

because the amounts of such fines are not defined. As a result, the sector relies more on the issuing of permits. Therefore, even though the environmental laws have officially entered into force and the economic instruments are included in them, these laws cannot be implemented until the entity Governments and ministries adopt the necessary secondary legislation (by-laws, regulations and guidelines). At the moment, development of secondary legislation is lagging behind and there is no clear time frame for its finalization and implementation. This secondary legislation is needed not only to specify the amount of fees and charges to be paid by polluters and natural resource users, but even more importantly for detailing fines and penalties in cases of non-compliance.

There seems to be a growing awareness of environment-related economic instruments and their use among government officials at the State as well as at the entity level. However, this has not yet been translated into action in the different environmental protection sectors, apart from the water and transport sectors.

Information on the use and effectiveness of economic instruments, fee collection rates and enforcement in the case of non-compliance is not readily available anywhere. There are no statistical yearbooks on environment at the State or entity level. More worrying, there seems to be no countrywide data on fee collection rates, no combined database on the amount of environment-related fees and charges which have been collected, and no information on the enforcement of the relevant instruments. In addition, the lack of research on the few current instruments in use makes it impossible to adjust the fee level in such a way as to actually change the behaviour of producers and consumers in a more environmentally friendly direction. Without readily available environmental data, environmental policymaking is reduced to guesswork and an analysis of the effectiveness of those policies becomes impossible.

In the current economic situation, where the purchasing power of the population is increasing, a carefully designed set of pollution charges and non-compliance penalties, such as fines, could be politically acceptable and environmentally effective, while generating revenues for financing public investment in sound infrastructure development. Even without detailed information on the optimal level of charges and fees, such revenue generation would be attractive to public policymakers and these charges would provide consistent signals to municipalities and industry to encourage them to develop long-term environmental strategies for emission, effluent and pollution prevention.

Instruments for water resource management

The most developed environment-related economic instruments in BiH are all used in water resource management. The water sector levies fees for water supply and wastewater disposal services paid by all users such as households, businesses and institutions; water abstraction fees paid by water utilities (vodovods); water pollution fees paid by all companies and institutions, including vodovods, as compensation for water pollution; and fees for the extraction of materials like gravel and sand from streams or other bodies of water. Water abstraction fees and fees for the extraction of material from streams are further discussed in the section below on instruments for natural resource management.

The tariffs for water supply and wastewater discharge vary between municipalities, since tariffs are set by the municipal water utilities and approved by the municipality, or in some cases by the cantonal governments. The local water utility companies collect payments for water use and discharge. Wastewater discharge however is not charged in those municipalities which do not have wastewater treatment plants – the rationale being that the water utility cannot charge for a service it is not providing.

The water price in Sarajevo Canton is different for households and legal entities and consists of several items. Water charges for households are 0.7 KM/m^3 for water supply and 0.3 KM/m^3 for sanitation (wastewater discharge). For businesses and other legal entities prices are significantly higher – 1.82 KM/m^3 and 0.78 KM/m^3, respectively. The water bills in all municipalities and cantons include a tax for water use and sanitation, which in Sarajevo Canton in 2010 was 17 per cent of the base water price. In addition to paying 2.5 times higher water prices than households, legal entities are paying special water compensation fees based on the pollution level of the water discharged. The effect of the special water compensation fees on water use and pollution level is questionable, since the difference between the lowest and highest compensation amount is relatively small - the smallest adding 1.2 per cent and the highest 6 per cent to the price per m^3 of water (see table 5.1).

Consumption of piped water is measured and water rates are set per m^3. Older apartment buildings usually have one water meter per building but some new buildings have individual meters for every apartment.

Table 5.1: Sarajevo Canton water utility water price, 2010

KM per m^3

	Household	Legal entities		
		Level of wastewater pollution		
		Small	Medium	Large
Water	0.70	1.82	1.82	1.82
Tax on water (VAT 17%)	0.12	0.31	0.31	0.31
Sanitation	0.30	0.78	0.78	0.78
Tax on sanitation (VAT 17%)	0.05	0.13	0.13	0.13
Total above	1.17	3.04	3.04	3.04
Special water compensation/charge for water consumption (fee for abstraction)	0.01	0.01	0.01	0.01
Special water compensation/charge for water protection	0.04	0.04	0.1	0.2
Total water price	1.22	3.09	3.15	3.25

Source: http://viksa.ba/. 2010.

Table 5.2: Federation of Bosnia and Herzegovina water charges

Charge	Unit of measurement	Amount of Charge
General water charge		0.5% net pay
Special water charge		
Use of surface and ground waters		
Water abstraction for public water supply	KM/m3	0.01
For abstraction of water and mineral water used for bottling	KM/m3	2.00
Water abstraction for irrigation	KM/m3	0
Water abstraction for fish farming	KM/m3	0
Water abstraction for other purposes	KM/m3	0.03
Water abstraction for industrial processes, including TPP	KM/m3	0.03
For power generation through hydropower	KM/kWh	0.001
For power generation through TPP		
For water protection		
Vehicle running on petroleum fuels or petroleum derivatives	PE i.e. population equivalent	2.00
For wastewater discharge	PE i.e. population equivalent	2.00
For fish farming	KM/kg of sold fish	0.05
For use of artificial fertilizers	KM/kg production or sale	0.01
Use of plant protection products	KM/kg production or sale	0.075
Extraction of material from water courses	KM/m3	1.50
For flood protection		
Protected agricultural, forest land or building land*	KM/ha	5.00
Protected housing, business and other facilities.*	KM/m2	0.10

Source: Water Law of FBiH (70/06).
**-not applied, until conditions for calculations are provided for.*

Photo 5.1: Castle in Travnik

In the case of one meter per building, the bill for a particular household is based on the total consumption of the building and the number of people in the household. There is therefore no individual billing, with its economic incentive for households to save water.

The water utilities have several economic inefficiencies in their tariff level and structure, billing and operations. Firstly, water tariffs at their current levels do not cover the full cost of water delivery and sewerage. Secondly, the revenue situation of the water utilities was made worse by low water bill collection rates, although this has now improved and the average collection rate is believed to be somewhere around 80 per cent, but with variations between entities and municipalities. Finally, water losses in the water delivery system are very high. The amount of abstracted water which never reaches the customer, and therefore is not billed, can be as high as 70 per cent.

The water utilities are generally subsidized by the municipalities and in some cases receive additional subsidies from the entity or, in FBiH, the canton. Nevertheless, even with these subsidies their funds are insufficient to meet all the requirements for normal operation and maintenance. According to officials the investment in infrastructure development is low.

The water laws of both entities are similar and lay down the water charges presented in table 5.2 below – the only difference is that RS does not have a general water charge. All revenues from these water charges are collected by public water management companies, two in FBiH and one in RS. They also receive the taxes on water use and pollution collected by the vodovods through the water bills. Inspectors from the public water management companies control the receipt of payments. These special water compensation charges are distributed slightly differently in the entities: in FBiH, 10 per cent of the revenues are transferred to the entity budget, 20 per cent to the cantonal budgets and 70 per cent to the respective public water management companies; in RS, 35 per cent of revenues are transferred to the entity budget and 65 per cent to the Water Directorate.

Another source of financing for water management is the water protection charge of KM 20 paid by all motor vehicle owners through annual registration

Table 5.3: Total annual revenues from water charges based on the revenues of the agencies

Charge	2008	2009	per cent of total 2009
A: General water charge	**1,744,755.02**	**2,117,075.35**	**25.19**
B: Special water charge total	**5,081,146.25**	**6,286,417.27**	**74.81**
of which:			
1. Use of surface and ground waters total	**2,452,643.35**	**3,678,250.75**	**43.77**
Water abstraction for public water supply	124,549.20	99,001.06	1.18
Abstraction of water and mineral waters for bottling	536.38		
Water abstraction for irrigation*			
Water abstraction for fish farming*			
Water abstraction for other purposes		650.00	0.01
Water abstraction for industrial processes including TPP	28,598.82	351,862.88	4.19
Water abstraction for power generation	2,298,958.95	3,226,736.81	38.40
2. Water Protection total	**2,628,502.90**	**2,582,504.60**	**30.73**
For vehicles using petroleum fuels or petroleum derivatives	2,041,809.00	2,220,156.44	26.42
For wastewater discharge	586,693.90		
For fish farming			
For the use of artificial fertilizers			
For the use of plant protection products		362,348.16	4.31
3. Extraction of material from water courses	**0.00**	**25,661.92**	**0.31**
OVERALL TOTAL (A+B)	**6,825,901.27**	**8,403,492.62**	

Source: Federal Ministry of Agriculture, Water Management and Forestry, 2010.
** - rates are 0*

with the police department. Although the charge levied on vehicles would usually be a transport and air emission-related instrument (see the section below on instruments for air quality management and those related to transport), in BiH it is a very significant source of revenue for water management. In 2009, vehicle water pollution charges brought in over KM 2.2 million in FBiH, which was 26 per cent of the total annual revenues from water charges. Strictly speaking, this charge is not an economic instrument since it is not related either to the "polluter pays" or the "user pays" principles, nor does it have the behaviour-changing element. Even though it does not have an effect on mobile source air emissions or the use of water, it is a good and easily manageable way of collecting money for environmental purposes.

In both entities, water pollution fees for businesses are calculated on the basis of population equivalent units (PEU). PEU is a theoretical, calculated, burden on the environment, which takes into account the type of business activity, the quantity of water used and discharged by a company and the chemical and biological indicators of wastewater. In theory, such fees could be an important instrument not only for raising revenues, but also for encouraging companies to install efficient wastewater treatment equipment. For this to happen, the fees need to be set at levels that would make investments in wastewater treatment equipment economically attractive compared to paying the fees. In practice, companies find paying the fees at their current levels the less expensive option.

Instruments for waste management

Municipal enterprises that provide waste management services are responsible for setting the fees and charges for waste collection and the municipalities approve these rates. The waste collection fee for families is based on the surface area (m^2) of their dwelling. There is no centralized database on fees but just to illustrate how small the indicative waste collection price is, the monthly fee in Sarajevo Canton is about 0.11 KM/m^2 and in the municipality of Žepče in Zenica-Doboj canton 0.12 KM/m^2. Nonetheless, it seems that since the last EPR the collection rates have increased quite noticeably. For example the collection rates in Sarajevo Canton and the municipality of Žepče are 70 and 75 per cent respectively.

Rates for businesses depend on the type of business. Offices pay lower rates than meat-processing and meat-selling enterprises, cafes and restaurants. In many cases, municipal enterprises issue only one bill covering the full range of services (water supply, wastewater disposal, heating and waste collection), which may not be itemized. No specific enforcement measures seem to be applied to users who are in arrears in their payments.

According to municipal officials the waste management sector operates below cost recovery collection rates. Available data on waste is not very good and for applying economic instruments like fees and charges it is crucial to have a clear idea of the real costs. In the first EPR it was estimated that with a 100 per cent collection rate, the monthly waste collection fee should be above 0.075 KM/m^2 to cover the estimated cost of waste collection, transport and disposal. The current monthly rate is higher in Sarajevo Canton and the municipality of Žepče, but of course this rudimentary comparison does not include inflation or the increase in collection costs in general. Studies on the optimal level of charges could improve the efficiency of waste management and provide a solid economic basis for decisions to be taken on the levels at which rates should be charged.

The legal provisions on waste management are very clear: the FBiH and RS Laws on Waste Management (OG FBiH No. 33/03 and OG RS No. 53/02 respectively) state that the "polluter pays" principle shall be taken into consideration when implementing the law. According to the laws of both entities, the producer of waste is responsible for the costs of prevention, recovery and disposal of waste, and both laws stipulate clearly that waste management services are to be provided for a fee.

Although the surface area of the dwelling unit might be a good approximation for the amount of waste a household produces, waste charges are not a true economic instrument because the surface area of the dwelling and not the amount of waste produced is the basis for charging. When deciding what to charge, the authorities have to think of waste collection in connection with fly-tipping and health issues and therefore it might be too optimistic to expect that charges can be rapidly increased to the extent that they will fully cover the costs incurred. It is quite likely that municipalities will continue to have to allocate budget funds to cover the difference in future.

The waste laws do have provisions for collecting waste separately according to type, and introducing recycling for certain types of waste. Such changes in the waste management system are certainly desirable from the environmental perspective, but the mechanism for introducing them and particularly the economic aspects are not clear. The only economic incentive for recycling at present is the deposit-refund system in Sarajevo for some domestically produced glass bottles, but data on this is not available. From the legal point of view, the selective collection of waste and recycling of some special materials could be instituted relatively fast if the secondary legislation referred to above, which has already been drafted, is adopted.

The waste laws in both entities state that fines and penalties established in separate regulations can be imposed for violations of the law and that these fines are to be paid to the environmental funds (see section 5.5). Compliance with the waste laws cannot be implemented because no such regulations have so far been prepared in either entity.

Instruments for air quality management and mobile source emissions

The "polluter pays" principle is an essential part of the FBiH and RS Laws on Air Protection (OG FBiH 33/2003 and OG RS 53/2002 respectively) and both laws make clear that the cost of air pollution abatement is borne by the polluters. However, for most activities causing emissions, the laws specify regulatory rather than explicit economic instruments, through a system of environmental, urban, construction, and user

Table 5.4: Vehicle fleet size

number

	1995	2005	2008
Total	**63,100**	**382,397**	**691,026**
Passenger cars	62,450	379,019	686,938
Motor coaches, buses and trolley buses	650	3,378	4,088

Source: Statistical year book 2009, Republika Srpska and Statistical year book 2009, Federation of Bosnia and Herzegovina.

permits. Whether there should be a specified price for these permits is not mentioned, except that there is a fee for conducting an air quality study before a permit can be issued. Neither is it clear whether the prices for permits for different types or quantities of air pollutants will vary. The laws specify that fines are to be paid for operating without a permit, exceeding emission values specified in the permit, and other violations. The implementation of the entity Laws on Air Protection will be possible only after adoption of secondary legislation defining the charges and penalties for non-compliance. It will also be important that any future secondary legislation and regulations contain provisions not only for differentiating prices for permits but also for the quantities and toxicity of emissions.

As pollution from transport grows with the increasing number of motor vehicles, the economic instruments related to transport are becoming more important. The size of the vehicle fleet has increased 11-fold since 1995 (see table 5.4) causing increasing air emissions. On the other hand, the vehicle fleet is relatively new and meets the latest low emission regulations because the Law on Foreign Trade Policy (Official Gazette, 7/98) restricts the import of motor vehicles by banning the import of cars that are more than 7 years old and trucks, buses, and trailers that are more than 10 years old.

Given the fact that the State of BiH does not have the authority to impose environmental taxes at the State level, it is interesting to note that this obstacle has been bypassed by using the excise tax as an environmental economic tool. Motor fuels and other oil derivatives are subject to an excise tax (Law on Excise, OG BiH 49/2009), which slightly subsidizes heating oil as against petrol and adds a special tax on all fuel used in vehicles. Petroleum, diesel fuel and heating oil (both extra light and special light) carry a KM 0.30 tax per litre and unleaded petrol carries a tax of KM 0.35 per litre. Leaded petrol was phased out in January 2010. In addition to excise duty, the law introduced an indirect tax on diesel and unleaded petrol. The tax rate has two components, which do not go towards the environment: KM 0.15 per litre is paid for road maintenance and KM 0.10 per litre for construction of highways. Excise taxes, paid by the producers and importers of fuel, do not appear to have any overt environmental purpose and the revenues raised are absorbed by the central budgets of the entities and not earmarked for the environment.

At the entity level, vehicle owners pay several specific environment-related fees through the annual vehicle registration process. In addition to the normal administrative and technical check-up fees, the vehicle owner pays a tax and a road use fee, both based on the size of the engine, as well as the obligatory registration fee, which also is based on engine size. It is unclear if the revenue raised is used for transport infrastructure or for the environment. The annual registration fee also includes a fee for water pollution as mentioned above.

Instruments for natural resource management

The legislation in both entities outlines the use of economic instruments in the management of natural resources. The FBiH and RS Laws on Nature Protection (OG FBiH 33/2003 and OG RS 50/2002) both stipulate that polluters and users shall pay fees, charges, taxes or other payments for pollution, or for the use of nature or natural resources. Both laws clearly specify which violations of the provisions are subject to a fine, but leave the particularities of the charges and fines to be established by future regulations and secondary legislation.

There are few existing economic instruments for natural resource management and available information on them is limited. Among these instruments are water abstraction fees and fees for the extraction of material from streams mentioned in the section on instruments for water management. As sources of revenue, these fees are insignificant. For example, the water abstraction fee in FBiH is KM 0.01 per m^3 (paid by the vodovods) and the fee for extraction of material from streams, applied to companies excavating gravel and sand, is currently KM 1 per m^3. The total amount of revenues collected is therefore very low. The water abstraction fee produced 1.18 per cent of total water charges in 2009 and the revenue from the extraction fee was even smaller at 0.31 per cent.

Both entities have similar taxes related to the use of forestry resources. Forest lands in both entities are divided into forest management areas, which are controlled and exploited by public forest enterprises. Any use of forestry resources by private companies is managed through the appropriate forest management enterprises, which allocate a proportion (5 per cent in FBiH and 10 per cent in RS) of their forestry income to the municipal budgets. Both entities also apply a 0.07 per cent forest tax to the profits of all legal entities operating in the country. This money goes to the entity budgets and is used for forestry development (see chapter 9). Both of these taxes are sources of revenue for environmental protection, but neither of them have an effect on how or to what extent forest resources are used.

In addition to the above-mentioned taxes, FBiH levies a fee for conversion of forest land into mining areas, requiring the mining companies to pay for felling in the forest and also for 20 years of maintenance of the afforested area. Revenue from this fee is divided 60 per cent to the canton and 40 per cent to FBiH.

There are some charges levied on the export of timber but information on quantities and revenues is not readily available (see chapter 9). Similarly, fines for illegal logging in excess of the quantity specified in the licence may be imposed, but no information on the revenues from these charges is available.

5.4 Environmental expenditures and their financing

Because of the fragmented nature of the political structure in BiH, finding statistical data on internal environmental expenditure is virtually impossible. The entity budgets available on the Internet do not have specific information on environmental expenditure, and the information needed to analyse how the revenues collected from environment-related fees and charges are used is not readily available. The current budget calculation/presentation method of the RS Ministry of Finance makes it impossible to clearly separate environmental expenditure from other expenditures. The same seems to apply to some extent to FBiH budgeting. Both entities have also delegated some environmental work to the cantons and municipalities, and the environmental expenditures of these lower-level administrative units do not appear in the entity budgets. Utilizing the Classification of the Functions of Government (COFOG) method in budgeting would allow better analysis of environmental expenditures and at the same time enable comparisons to be made between the entities and with other countries.

According to the very general information available, RS spent 0.2 per cent of its budget and 0.1 per cent of GDP on environmental protection in 2009, while the equivalent expenditure of the FBiH Ministry of Environment and Tourism was about 0.9 per cent of the budget. However, the figures for the two entities may not be comparable because the calculation methods could be different. It would be beneficial for both policymaking and analytic purposes if both entities had similar accounting and budget procedures, and if the Federal Government published comparable harmonized data on both entities. Lack of comparability hinders and complicates efforts for nature protection, since decision makers do not have a clear idea as to how much funding is available for the environmental sector, nor do they know how much has been spent, where and on what project.

Foreign environmental official development assistance (ODA) for BiH has undergone a fundamental change in the past few years. Overall commitments dropped by 28 per cent between 2002 and 2008, but disbursements for the environment decreased by 60 per cent during the same period. At the same time, the focus of assistance moved away from the environment: in 2002, about 8 per cent went to the environment, while in 2008 the figure was just under 4 per cent.

The source of disbursed assistance has radically changed as well. Development Assistance Committee (DAC) country disbursements used to form the bulk of assistance to the environmental sector. In 2002, DAC country disbursements were 10 times higher than multilateral assistance. However, in 2008 DAC country assistance had decreased to 11 per cent of its 2002 level and multilateral assistance had increased 2.3 times, accounting for almost 75 per cent of total assistance disbursements for the environment.

Not only has the source and level of assistance changed but the composition of grants and loans might also be in the process of transformation. The Donor Mapping Report 2008-2009 of the Donor Coordination Forum (DCF) shows that between 2006 and 2008 (see table 5.6) the amount of loans almost tripled while the increase in grants was only 40 per cent. Since the report did not have full-year figures for 2009, this trend is not yet clear but if it continues BiH will in future find the financing of development projects more expensive, even when the interest rates on these loans are lower than for normal commercial loans. It is also interesting to note how low on the priority list environmental protection is - according to the Donor Mapping Report the environmental protection sector got 0.4 per cent of total allocated funds in 2008.

International financing can be used to fund environmental protection but it is not an economic instrument. A change in environmental behaviour is triggered through the fees, taxes, and fines collected from the users of environmental resources or the polluters of the environment. If economically possible, it is often preferable to use domestic financing rather than foreign loans for environmental protection - this diminishes the dependency on foreign donor priorities, lowers the debt burden and at the same time imposes costs on users or polluters, forcing them to change their environmental behaviour.

Table 5.5: Environment-focused ODA/OA, 2002-2008

2008 constant million US$

Donor			Policy Objective	2002	2003	2004	2005	2006	2007	2008
Total		Commitments	Total	756.2	655.7	738.9	549.8	573.7	501.0	537.5
			Environment	66.1	40.1	5.9	11.4	44.7	19.0	36.8
		Disbursements gross	Total	566.8	485.4	600.3	718.3	498.9	458.1	478.3
			Environment	45.5	32.9	59.0	6.7	10.6	19.9	18.2
		Environment as per cent of gross disbursements		8.0	6.8	9.8	0.9	2.1	4.3	3.8
	DAC countries, total	Commitments	Total	415.4	474.7	461.4	413.3	407.3	330.1	376.6
			Environment	39.3	34.5	3.7	2.1	2.1	11.5	31.1
		Disbursements gross	Total	421.9	416.4	348.6	447.0	353.5	317.8	331.3
			Environment	41.5	31.9	10.1	3.1	2.6	9.5	4.8
	Multilateral, total	Commitments	Total	340.8	180.9	277.5	136.5	166.5	170.9	160.9
			Environment	26.8	5.6	2.2	9.3	42.6	7.5	5.8
		Disbursements gross	Total	144.9	69.0	251.7	271.3	145.4	140.2	147.1
			Environment	4.0	1.1	48.8	3.7	8.0	10.4	13.4

Source: OECD/DAC [http://www.oecd.org/dac/stats/idsonline]. 2010.

Table 5.6: Donor Coordination Forum grants and concessional loans, 2006-2009

million US$

	2006	2007	2008	2009*
Total	**488.9**	**716.3**	**1126.3**	**600.3**
Grants	180.7	263.0	252.4	255.3
Loans	308.2	453.3	873.9	344.9

Source: Bosnia and Herzegovina. Ministry of Finance and Treasury. Donor Mapping Report 2008-2009.
Note: * not final

5.5 Environmental funds

In addition to the State and entity level environmental administrations, both entities have their own Environmental Fund (Ekofond). The process of establishing the funds and making them operational has been excruciatingly slow. RS started this process in 2002 and FBiH in 2003, while the funds are only achieving operational status in 2010. These funds are excellent tools for an economic approach to environmental problems and in future they may partially fill the void of a non-existent environment agency, by promoting important legislation and financially supporting environment-related research.

Environmental Fund of the Federation of Bosnia and Herzegovina

The FBiH Environmental Fund (EFFBiH) was established by the 2003 Law on the Environmental Fund of FBiH, No. 33, and registered at the Municipal Court in Sarajevo in March 2006, as a non-profit, public institution. The Fund is governed by a seven-member management board nominated by the FBiH Government. A three-member supervisory board, also nominated by the FBiH Government, controls the work of the Fund and a Director nominated by the management board manages it.

EFFBiH collects and distributes financial assets for environmental protection on the territory of FBiH and instigates and finances the preparation, implementation and development of programmes, projects and similar activities in the fields of conservation, sustainable environment use, protection and improvement of the state of the environment, and use of renewable energy sources. EFFBiH resources are collected through compensation from polluters, users of natural resources, motor vehicle registration fees, the FBiH budget, loans and donations. The revenue is divided

between the 10 cantons and the EFFBiH in a ratio of 70 per cent to the cantons and 30 per cent to the EFFBiH. Since 2006, additional revenue arising from a percentage of collected water fees has been allocated to the Fund.

Environmental Fund of Republika Srpska

The RS Environmental Fund (EFRS) was established by the 2002 Law on the Environmental Fund of RS, No. 01-626, which entered into force on 28 August 2002. EFRS was established to collect and redistribute financial means for environmental protection and to finance programmes whose aim is to improve the state of the environment in the territory of RS.

EFRS has a seven-member management board and a five-member supervisory board, both nominated by the RS national Assembly. The Director who manages the Fund is nominated by the RS Government.

The EFRS is largely funded through the State budget but it has the right of independent collection of funds from foreign and international sources, e.g. from IFI loans or soft loan schemes. The main sources of funding are the users of natural resources, the RS budget, fees paid by polluters, and grants and donations. Because 15 per cent of total water fee revenues is allocated to EFRS, the RS Ministry of Agriculture, Forestry and Water Resources requires that EFRS dedicate those funds to water protection activities.

The EFRS is operational and has already funded environmental projects, while the EFFBiH is still in the process of collecting revenues and has not yet undertaken any projects.

Environmental funds and policy

The cooperation between the funds seems to be functioning well and there is a mutual understanding of the priorities for improving the environment in BiH. Both funds are keen on pushing secondary legislation through their respective governments and are well aware of the impact and role of environmental economic instruments in the improvement of the environment.

The environmental funds have already taken the initiative to give direction to environmental policies by supporting the adoption of several important drafts for secondary legislation. This essential secondary legislation covers electrical and electronic waste, recycling used tyres, disposal of used motor vehicles, collection and recycling of old batteries, and collection and disposal of used oil products.

5.6 Conclusions and recommendations

Against the backdrop of its parallel and multilayered administrative structure and with a relatively small workforce spread out across multiple organizations, it is no wonder that environmental policymaking in BiH is cumbersome. To streamline and speed up the environmental policy processes, the European Union and several international organizations, UNECE included, have recommended that BiH should establish an environmental agency at the State level to lead and coordinate the national environmental work. However, there has been no development on this issue since the last EPR was published in 2004.

Environmental economic instruments are based on the idea of the "user and polluter pays" principles. Setting a price for using natural resources or for polluting emissions should change the behaviour of people or legal entities in a more environmentally friendly direction. To change behaviour, taxes, charges and fees are needed.

BiH already has a collection of well-thought-of environment laws in which the "user and polluter pays" principles are included, but unfortunately it is impossible to use these laws for protection of the environment until secondary legislation is adopted, incorporating the necessary tax rates, fees and charges. To have the desired effect, secondary legislation needs to have enforceable and meaningful non-compliance penalties, and enforcement of the law needs clearly defined competencies within the administration.

There are no studies on the social and economic impact of economic instruments and therefore setting taxes, fees and charges at the optimal level is total guesswork. However, starting from even a very low level of charging would provide some funding for protection of the environment, while at the same time introducing the idea of the "user and polluter pays" principles to the population. Charging levels have to be regularly adjusted for inflation and the real level of charges can be altered at the same time.

Recommendation 5.1:
The entity Governments should:

(a) Introduce the secondary legislation which is still missing into all entity-level environmental legislation. This secondary legislation should have an unambiguous fee structure;

(b) Strengthen compliance with the "user and polluter pays" principles through adequate penalties and enforcement in cases of non-compliance;
(c) Start to collect all fees and charges instituted by the new secondary legislation [in order to ensure full-cost recovery];
(d) In case it has not been politically possible to make environmental fees high enough for them to have an effect on the environment, increase or adjust the level of fees and charges at a later date.

Currently BiH does not have readily available data on the environment neither on environmental accounting. There is no yearbook on environmental statistics and the data which is available is spread across multiple government offices at the State, entity and municipal level. Without good, accurate and up-to-date data on the environmental situation, conducting feasibility studies on potential policies is impossible. Neither can the effectiveness or outcome of the policies or economic instruments used be compared. Inadequate information can lead decision-makers to select and endorse environmental policies without a full understanding of the social and economic implications of a new policy or piece of legislation.

Quite often the emission and pollution fees are set too low, below the marginal abatement cost level, and thus the fines or charges do not trigger a change in production or consumption patterns. It is important to study the effects of the economic instruments foreseen in the new environmental laws. Such studies would allow fees, charges, taxes and penalties to be set at rates that encourage sound environmental management, while taking into account the current state of economic development in BiH and the affordability of environment-related payments for businesses and the general population. This would ensure that all stakeholders accept the use of economic instruments, making it easier to implement and enforce them and, ultimately, provide for higher collection rates and availability of more funds for protection of the environment.

Recommendation 5.2:
The Council of Ministers of BiH should strengthen the role of the State Agency for Statistics in:
(a) Collection, analysis and dissemination of environmental accounting data;
(b) Conducting analysis on the efficiency of environmental taxes and fees and cost-benefit analysis of them.

The environmental funds in both entities are operational, although the fund in FBiH is not yet engaged in projects. The primary task of the funds is the selection, evaluation and financing of environmental projects. Both funds are operating with limited financial resources and their workforce is very small, taking into account the variety of tasks they perform, from raising money for the funds through project evaluation and financing to policy development. The funds are providing an invaluable service and the entity Governments should provide all the financial support they need.

Recommendation 5.3:
The entity Governments should:
(a) Strengthen the organizational structure of the environmental funds, and
(b) Increase their sources of funding, in accordance with relevant secondary legislation.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

The economic instruments for environmental protection are generally not well developed and their use is limited. Many have been inherited from the former Socialist Federal Republic of Yugoslavia and do not reflect Bosnia and Herzegovina's current economic and social development or the state of its environment. In areas where economic instruments are relatively well developed and used, such as water management, they often remain inefficient because the established tariffs and the rates of collection are too low to cover the cost of services, let alone to make the necessary investment in infrastructure development. In other cases the charges are not collected at all. Often the main purpose of an economic instrument is to raise revenue for the government budget (entities, cantons or municipalities) or for the public utility. Its effect on the environment is not a priority – if considered at all. Few of the charges have an explicit environmental purpose. The purpose of economic instruments and their impact on the environment are poorly understood. Together with the inadequate service and the low incomes of some people, this often results in a low collection rate of user fees.

Recently adopted environmental legislation in the Federation of Bosnia and Herzegovina and in Republika Srpska clearly outlines the objectives of economic instruments for environmental protection. The "polluter pays" and "user pays" principles are

an integral part of the legislation. The legislation is almost identical in both entities and so sets a good basis for harmonized policies, including in the area of economic instruments. Unfortunately, the development of secondary legislation (by-laws and regulations) is lagging. Consequently, the provisions of these laws related to economic instruments cannot be implemented until such secondary legislation is drawn up. To make the new economic instruments efficient, several requirements must be met. For instance, the "polluter pays" and "user pays" principles must be implemented; the instruments must be socially acceptable, this means introducing lower rates or subsidies for the poor; and companies must have incentives to apply technologies that significantly reduce pollution and their impact on the environment.

EPR I - Recommendation 2.1:

(a) The Ministry of Physical Planning and Environment of the Federation of Bosnia and Herzegovina and the Ministry of Physical Planning, Civil Engineering and Ecology of Republika Srpska in cooperation withthe State Ministry of Foreign Trade and Economic Relations, should draw up by-laws and regulations to introduce the economic instruments stipulated in the environmental laws and ensuring the consistency with the State environmental policy.

(b) When developing the secondary legislation, they need to propose adequate levels of charges, fees, taxes and penalties. If it is not feasible to introduce instruments at the desired levels (for example, user fees at the level of full cost recovery for the service provided), the charges may be reduced at first, but should increase incrementally with a clear time frame until they reach the desired levels.

EPR I - Recommendation 2.2:

The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should establish a regularly updated and readily accessible database of economic instruments for the environment. This would enable all levels of government, businesses and the general public to have a clear understanding of the instruments that exist, their main purpose, the recipients of the revenues (and the amounts) and whether the revenues are used for environmental purposes. The changes in rates, when necessary, and the reasons for such changes would also become transparent. These databases should be made available to the State for policy-making.

EPR I - Recommendation 2.3:

The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with environmental NGOs, the media and other stakeholders, should organize a public awareness campaign with the aim of increasing collection rates for services related to the use of natural resources as well as for waste management. Such a campaign should inform the public of the importance and the positive impact of economic instruments on the environment.

The country's privatization process has been going on for more than six years, yet many of its objectives have so far not been realized. There are a number of successful privatization projects, which turned loss-making companies into profitable businesses and even increased employment opportunities, but society's overall attitude towards privatization remains largely negative. For companies privatized through tenders, the privatization agreement either does not include environmental requirements or it has only a general clause requiring the new owner to comply with environmental legislation. As a rule, privatization agreements contain no provisions for past environmental liabilities. Currently, the Agency for Privatization in the Federation of Bosnia and Herzegovina and the Directorate for Privatization in Republika Srpska do not employ environmental specialists.

No coordination exists between the privatization bodies and the respective Environment Ministries.

On the positive side, some newly privatized companies have voluntarily taken effective pollution preventing measures. The case studies of such companies may be instrumental in developing policies to encourage new owners to invest in pollution prevention and resource-saving technologies. The largest energy, water, forestry, mining and telecommunications enterprises are about to be put up for privatization. Because of their importance for the national economy and the impact many of them have on the environment, environmental considerations must be taken into account during this phase of the privatization process.

EPR I - Recommendation 2.5:

(a) The Federation's Agency for Privatization and Republika Srpska's Directorate for Privatization should strengthen their cooperation respectively with the Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil

Engineering. In particular, they should involve them in the decision-making in the privatization process to promote environmental investments by the new owners by:

- *Developing and introducing clauses on past environmental liabilities into the privatization agreements;*
- *Requiring enterprises and industries put up for privatization to carry out environmental audits; and*
- *Including compliance plans, prepared by the new owner, in the privatization agreement. These plans should specify the measures that enterprises and industries have to take to comply with environmental standards and regulations.*

(b) The Agency and the Directorate should have one or more environmental specialists on their staff.

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

Chapter 6

CLIMATE CHANGE AND ENVIRONMENT

6.1 Introduction

Bosnia and Herzegovina (BiH) ratified the United Nations Framework Convention on Climate Change (UNFCCC) in December 2000 and the Kyoto Protocol in April 2008. As a non-Annex I country, BiH has only general obligations. In accordance with Article 4 of UNFCCC, BiH should fulfil those general obligations to be eligible for technical and economic assistance.

In October 2009, the Initial National Communication (INC) was approved by the Federal Government and subsequently submitted to the UNFCCC secretariat. The INC represents not only the first official BiH document on climate change issues, but also the basic source of information which includes: a detailed emissions inventory for the base year 1990; assessment of the potential impact of climate change; the list of potential mitigation and adaptation measures; and recommendations for future action.

Recently, BiH has prepared all the necessary legislation and started to establish the administrative structures Designated National Authority (DNA) required to become a beneficiary of the Clean Development Mechanism (CDM). According to the agreement between the entities and Federal Government, the Ministry of Foreign Trade and Economic Relations (MoFTER) is responsible for the implementation of CDM in BiH.

6.2 Legal and institutional framework

Legal framework

There is no special legislation in force on climate change either at the State or entity levels, but certain relevant provisions are included in some legal acts, particularly in the field of energy.

At the State level, the following legal acts relevant to climate change are in force or are being drafted:

- Law on Environmental Protection (being drafted);
- Decree for Legalization of the DNA in BiH (being negotiated) - this decree relates directly to the ratification document of the Kyoto Protocol without any intervening law.

At the level of Republika Srpska (RS), the following major relevant legal acts related to climate change have been put in place or are being drafted:

- 2009 Energy Law, which sets priorities for RS energy policy (energy efficiency, support to cogeneration and renewable energy) and provides for the preparation of strategic and policy documents (strategy for the development of the energy sector up to 2030, action plan and programme for efficient use of energy);
- Statute for promotion of renewable energy (under preparation).

Table 6.1: Greenhouse gas emissions from the energy sector

Year	2000	2001	2002	2003	2004	2005
BiH Total	**13,275**	**13,661**	**13,996**	**13,913**	**14,642**	**15,192**
of which CO2	12,236	12,638	12,979	12,818	13,533	14,049
FBiH	8,469	9,154	9,701	9,044	9,794	10,134
of which CO2	7,634	8,344	8,882	8,177	8,902	9,225
RS	4,705	4,405	4,194	4,733	4,750	4,956
of which CO2	4,511	4,204	4,007	4,556	4,545	4,734
District Brčko	101	102	101	96	97	102
of which CO2	91	90	91	84	86	89

Source: World Bank energy sector study, 2008.

Table 6.2: Breakdown of greenhouse gas emissions, including from the energy sector, in FBiH and RS

1,000 tons of CO2 eq

	2000		2001		2002		2003		2004		2005	
	FBiH	RS	FBiH	RS	FBiH	RS	FBiH	RS	FBiH	RS	FBiH	RS
Total	8,469	4,705	9,154	4,405	9,701	4,194	9,044	4,773	9,794	4,750	10,134	4,956
Electricity production	4,058	2,760	4,686	2,805	5,136	2,600	4,831	3,159	5,178	2,791	4,979	3,022
Energy transformation	196	299	217	206	210	233	217	180	396	264	528	157
Non-industrial production of energy	1,401	239	1,419	240	1,495	259	1,305	270	1,389	282	1,597	278
Industry and agriculture	715	482	781	231	782	188	562	228	636	477	841	562
Coal mining	549	55	505	53	521	48	550	61	577	54	561	60
Transport	1,283	745	1,301	743	1,319	742	1,338	740	1,357	738	1,376	737
Other mobile sources	267	125	245	127	238	124	240	135	262	144	253	141

Source: World Bank energy sector study, 2008.

At the level of the Federation of Bosnia and Herzegovina (FBiH), no major legal acts relevant to climate change have been adopted since the first EPR.

Institutional framework and institutional capacity

In accordance with the agreement between the entities, the RS Ministry of Physical Planning, Civil Engineering and Ecology is the contact institution (focal point) for UNFCCC and the Kyoto Protocol, while responsibility for CDM projects lies at the State level with MoFTER.

For implementation of its obligations, BiH has established the Climate Change Committee at the State level, (with 32 members) and, subsequently, in 2007, the Sub-committee for Climate Change (with 10 members). The latter comes under the National Steering Committee for Environment and Sustainable Development. These two bodies include representatives of the State, two entities and Brčko District, and are responsible for reaching common positions on relevant proposals before their submission for official adoption/endorsement. In addition, the GEF Political and Operational Focal Point and the Administrative Committee for Sustainable Development play important roles in the field of climate change. The Designated National Authority for CDM was established in October 2010.

During the preparation of the Initial National Communication, a group of about 50 experts from all entities was established, which is expected to continue with preparation of the second National Communication.

6.3 National situation regarding climate change

Present situation

Detailed and complex official data on greenhouse gas (GHG) emissions for the period from 1990 to 2010 are not available at the State level. The INC only includes the detailed emission inventory for 1990,[5] which is the base year for UNFCCC and the Kyoto Protocol. This inventory has been compiled using the European CORINAIR methodology. From the total of gross national GHG emissions of 34.04 Mt of CO2 eq. (without land use change and forestry - LUCF), 73 per cent originates from the energy sector, followed by agriculture (13.5 per cent) and industry (10.4 per cent). The impact of LUCF represents almost 22 per cent of gross national emissions, which could be explained by the high level of forestation in BiH (43 per cent of the country is covered by public forests). However,

[5] In the case of BiH, it must be taken into account that the situation between 1990 and now has changed dramatically in many important factors and the value of this emission inventory is rather in the introduction of international methodology than in numerical assessment of GHG emissions.

according to the data collected for the INC, forests in BiH represent a significant CO_2 sink.

The energy sector of BiH is mostly based on coal, which represented around 45 per cent of total primary energy sources in 2005, followed by liquid fuels (21 per cent), renewable energy (20 per cent) and hydropower (10 per cent). Special studies have indicated great potential for hydropower (e.g. in RS only 30-40 per cent of the potential is being used) and other renewable sources (mainly biomass) as well as for increase in energy efficiency. It should, however, be mentioned that further introduction of certain renewable sources might be in conflict with some environmental issues (air pollution in the case of biomass, problems for water ecosystems in the case of hydropower, and problems with noise and nature protection in the case of wind farms). In addition, it should be taken into account that carbon dioxide and the main air pollutants have the same dominant source – combustion of fossil fuels. This means that certain measures aimed at reducing consumption of fossil fuels have two effects: reduction of emissions of certain air pollutants (such as dust, nitrogen oxides, sulphur dioxide etc) and reduction of emissions of carbon dioxide. On the other hand, certain other measures to reduce GHG emissions may have a negative effect on air quality (e.g. combustion of biomass or fuel switch from petrol to diesel). Since it is necessary to reduce both air pollution and GHG emissions, it is recommended that those measures which reduce both (energy efficiency, energy saving, non-combustion renewable sources) be applied and that trade-offs between air quality and climate change mitigation be avoided.

National GHG emission inventories for the years after 1990, prepared in accordance with international standards, are not available for BiH. As presented in the 2008 World Bank study "The Energy Sector in BiH" (module 13 – environment), the estimate of national emissions of GHGs (CO2 eq.) and carbon dioxide (CO2) from the energy sector[6] and their breakdown between the entities for 2000 to 2005 are described in tables 6.1 and 6.2 below.
These estimates are lower than the value for the energy sector, as presented in the INC for 1990 (24.9 million tons), which could be explained by the impact of the war. From 2000 to 2005 an increasing trend can be observed at the State level (growth of almost 15 per cent), mostly driven by FBiH, which represents around two thirds of total national emissions. The breakdown of total national emissions between entities correlates roughly with the breakdown of the population.

Emissions of carbon dioxide represent the huge majority of total GHG emissions from the energy sector (more than 90 per cent) and the trend in carbon dioxide emissions therefore follows the trends for GHGs: a bigger increase for FBiH, a moderate increase for RS and stabilization for the District of Brčko.

GHG emissions from the energy sector increased in FBiH by almost 20 per cent, and in RS by around 5 per cent, between 2000 and 2005, mostly driven by electricity production.

Comparing the structure of GHG emissions from the energy sector for FBiH and RS, the proportion of emissions related to electricity production in RS (61 per cent) is much higher than in FBiH (49 per cent) while in the case of "non-industrial" production of energy, the situation is the opposite (16 per cent in FBiH and 6 per cent in RS).

Future trends in emissions

Official national GHG emissions projections are not available in BiH. As an example of potential developments, the emissions projection for BiH, generated by the internationally recognized International Institute for Applied System Analysis (IIASA) GAINS[7] Europe model (scenario PRIMES 2009), is presented in table 6.3.

GHG emissions in BiH are estimated to grow by almost 30 per cent between 2005 and 2030, driven by the increase in CO2 emissions.

For the energy sector, certain CO2 emission projections are available in the World Bank study, which were calculated for four different scenarios. The results for the reference scenario (S2) and scenario "with measures" (S3) are presented in table 6.4.

This projection also predicts a considerable increase in emissions (growth between 2005 and 2020 of about 80 per cent in S2 and 70 per cent in S3), while the difference between the two scenarios is rather low (measures would decrease reference emissions by only some 5 per cent in 2020).

[6] According to the International Energy Agency, total national emissions of carbon dioxide originating in combustion of fuels represented 17.99 Mt in 2007, which represents 4.77 t/capita.

[7] Greenhouse Gases – Air Pollutants Interactions and Synergies.

Table 6.3: Greenhouse gas emissions projection

Year	2005	2010	2015	2020	2025	2030
Total GHGs (Mt CO2eq)	**24.14**	**25.24**	**25.75**	**26.87**	**28.32**	**31.27**
CO2 (Mt)	19.51	20.32	21.14	22.00	23.51	26.41
CH4 (Mt)	0.11	0.12	0.10	0.11	0.11	0.10

Source: IIASA, model GAINS Europe.

Table 6.4: Carbon dioxide emissions projection for the energy sector

1,000 tons

Year	1990	2000	2005	2010	2015	2020
Reference scenario (S2)	24,464	12,236	14,049	16,252	22,972	25,413
Scenario with measures (S3)	24,464	12,236	14,049	15,939	22,271	24,130

Source: World Bank energy sector study, 2008.

Although data on GHG emissions (both inventories and projections) is not yet complete, emissions of GHGs from the energy sector, which represents about three quarters of total national emissions, have most likely been growing since 2000 at the State level. This growth is mainly driven by FBiH while only very moderate growth can be seen in RS and emissions in the Brčko District are stable. For the coming years, a considerable increase is predicted, both for total national GHG emissions and for carbon dioxide emissions from the energy sector.

International comparison

Taking into account the values of national GHG emissions, as presented in table 6.3, and the estimated BiH population of 3.85 million, the per capita values of emissions are estimated using the GAINS model, at levels from 6.36 tons of CO2 eq. per capita in 2005 to 8.14 CO2 eq. in 2030. Both these values are below the EU 27 average (10.2 CO2 eq in 2007).

6.4 Foreseeable impacts in the country

Climate change is expected to seriously impact BiH, with the temperature projected to increase from 0.7 to 1.6°C per 1°C of global increase during the period 2031-2060. The climate will be noticeably drier during the summer months (June-August). The increase in dry days is likely to be lower along the coast but higher inland. It is expected that the duration of dry periods, the incidence of torrential flooding and the intensity of land erosion will increase over the next decades. Finally, an increase is expected in the occurrence of hail, storms, lightening and maximum wind velocity, which can represent threats to all forms of human activity. In general, exposure to threats from climate change is expected to be considerable. In addition, BiH is highly sensitive to these threats because of the economic role of climate-sensitive sectors, such as agriculture and forestry (and, to a lesser extent, the role of hydropower in the energy sector), with significant secondary impacts. Finally, BiH has very limited adaptive capacity to address climate risks. The vulnerability of BiH to climate change in key sectors is summarized in box 6.1 below.

6.5 Strategies and sectoral policies

At present, there is no official strategic or policy document in BiH dealing explicitly with climate change issues. The only document available is the INC, which includes detailed descriptions of potential mitigation and adaptation measures and related recommendations, and provides for the development of a climate change mitigation strategy and related action plan. Certain sector-specific strategies and policies relevant to climate change are in place, mostly for the energy sector.

Initial National Communication

Mitigation

In the INC, two scenarios were used to assess the potential effects of reducing greenhouse gas emissions (mitigation): a baseline (business as usual) scenario and a scenario with measures that assumes organized measures to reduce greenhouse gas emissions in line with actual in-country potential and realistic stimulus measures from abroad. Measures are proposed for the energy sector (increase in energy efficiency, introduction of renewables, reduction of methane emissions), district heating sector (improvement

Photo 6.1: Risk management

in infrastructure and regulation, support for cogeneration), building sector (new standards, recovery of existing buildings, new technologies), industrial processes (energy efficiency, introduction of renewables), transport (better inspection of vehicles, support for public transport, railways and water transport), agriculture (biogas production, better agricultural practice), forestry (better forest management) and waste management (reduction of waste generation, support for recycling and re-use, an emphasis on collection and usage of methane from regional landfills). Specific attention is paid to renewable energy sources for which the following key measures are proposed:

Box 6.1: Vulnerability of BiH to climate change in key sectors

Land: Inability of some ecosystems and species to adapt to rapid climate changes. Soil degradation due to decrease in water supply.
Coastal area: Erosion risk and soil deficiency due to sea level rise. Increase in water temperature.
Water management: Changes in seasonal river flows, decrease in the quantity of water flow in rivers and difficulties in water supply for households and industry.
Agriculture and cattle breeding: Change in the precipitation regime and in seasonal air temperatures. Decrease in arable land area. Lack of snow cover for protection of winter crops.
Forestry: Loss of biodiversity due to climate change. Increased vector activity and occurrence of plant diseases.
Mining and energy: A long-term decrease in coal demand. Changes in the pattern of seasonal demand for electric power. Inadequate water supplies in the accumulation reservoirs of hydroelectric power plants due to changes in precipitation.
Tourism: Decrease in the potential for winter tourism.
Economy and trade: Changes in supply and demand. Risk of losing raw materials for production. Decrease in the export capacity of goods and services. Increase in the import of equipment and goods.
Infrastructure: System of settlements and buildings is inadequate for anticipated behavioural changes resulting from climate change. Increased risk of traffic accidents during summer. Increased risk of self-ignition of landfills, landslides, flooding and water shortages.
Health and social status: Chronic and acute health impacts and higher occurrence of airborne allergens. Changes in working conditions and risk of job losses. Intensified migration to urban areas.
Education: Lack of knowledge and skills to cope with climate change and its related impacts.
Socio-economic development: Pressures from endangered industrial branches and endangered social groups.

Source: Initial National Communication (2009)

Photo 6.2: Jaice

Create a legislative framework for renewable energy;

- Develop a functional system of incentives, taking into account the capability of the current environmental funds;
- Develop a strategy for renewable energy in close cooperation with competent institutions for water management, agriculture and forestry;
- Address grid connection issues;
- Substitute renewables for liquid fuels, especially in public buildings;
- Assess biomass-fuelled remote heating systems in places with a developed timber and wood industry.

Obviously, these mitigation measures are presented in a general way (with some exceptions, such as the energy or transport sectors, for which some quantitative assessment of potential emissions reduction is presented). The highest emission reduction potential has been assessed for hydropower (560,000 – 2.5 million tons of CO2 per year), energy efficiency measures (180,000 – 240,000 tons of CO2 per year) and co-combustion of biomass in power stations (more than 150,000 tons of CO2 per year).

To date, little consideration appears to have been given to the formal recognition and management of forests as carbon sinks. According to the data collected for the INC, forests in BiH represent a significant CO_2 sink. Using the IPCC values of carbon proportion and calculations of the annual release/ emission of carbon, the annual sink of carbon dioxide by forest ecosystems in BiH, for baseline year 1990, is estimated at 7,423.53 Gg CO_2. In view of the importance given to the BiH reforestation strategy and of the importance of forestry to GDP and, additionally, to local livelihoods, this sector would gain increasing importance. The established reforestation methods, by natural regeneration, add to the efficiency of forests as carbon sinks.

The development of a climate change mitigation strategy and action plan is one of the main recommendations in the INC. The strategy should:

- Define the national policy in the field of mitigation and its relationship to national economic and development plans;
- Define priorities;
- Define short-term, mid-term and long-term objectives with regard to the implementation of UNFCCC and the Kyoto Protocol;
- Define policies, measures and activities, as well as implementation arrangements;
- Create a framework for the action plan.

The action plan should identify the necessary policy tools, economic, technical and organizational measures, key actors, responsibilities, costs, funding options and the implementation framework.

Adaptation

The vulnerability of BiH to climate change is high and adaptation measures should therefore become the core of any future BiH climate change strategy. The detailed list of potential primary and secondary adaptation measures is proposed in the INC for particular sectors (land, coastal areas, water management, agriculture and cattle breeding, forestry, mining and energy, tourism, economy and trade,

infrastructure, health and social status, education and socio-economic development). These measures, which include legislation, capacity-building, organizational and technical measures, and economic instruments, are presented at a rather general level without setting priorities or a time frame. In addition, it is recommended that research into vulnerability and adaptation based upon the results presented in the INC, especially in the areas defined by the South-East Europe Multi-Country Adaptation Framework, be continued. Taking into account country-specific issues, BiH should focus on the development and implementation of adaptation measures in agriculture, forestry and the energy sector.

Relevant strategies, policies and action plans

Besides the INC, which is the most important background document for future climate change mitigation and adaptation strategies, there are certain other sector-specific documents relevant to climate change in place for the energy sector.

At the State level, the detailed energy sector study (2008) was prepared with support from the World Bank, which provides a context both for future legislation and for strategies, policies and action plans. In FBiH, the Development Plan for the Energy Sector was adopted in 2008 and the Strategy for Environmental Protection and the related Action Plan for the period 2008 – 2018 in 2009. In RS, the Energy Strategy for 2010 – 2030 and related Action Plan were adopted in 2010, based on the energy sector study, with hydropower and gasification as priorities.

All these strategic documents give high priority to increase in energy efficiency, as well as to support for renewable energy sources (mainly hydropower and biomass). In addition, future adoption and implementation of EU energy legislation and relevant environmental legislation (mainly in the field of air quality management) is expected.

Mitigation and adaptation projects

Recently, several projects relevant to climate change have been, or are being, undertaken with the support of international donors, namely:

- 2007: Enabling activity for the preparation of the BiH INC to UNFCCC, supported by GEF and UNDP, US$ 405,000; as a result, the INC has been drafted and submitted.
- 2008: Assessment of institutional and legal readiness for implementation of measures eligible under the Kyoto Protocol in BiH (development of institutional framework for the Clean Development Mechanism including establishment of the Designated National Authority), supported by the European Commission; as a result, the draft legislation has been prepared and submitted for approval by official authorities.
- 2010 – 2013: Biomass energy for employment and energy security in BiH, supported by UNDP and GEF, US$ 966,850; focus on removal of market barriers to the adoption of biomass energy services in rural areas.
- 2010: Climate change facility for BiH cities, supported by UNDP, US$ 220,500; focus on support to the development of town/city level sustainable climate change action plans.
- 2009 – 2013: Mainstreaming environmental governance – linking local and national action in BiH, supported by UNDP, UNEP, FAO, UNESCO and UNV, US$ 5.5 million; focus on institutional support to the implementation of CDM projects.
- Under preparation: reconstruction o**f** power plants Kakanj, Gacko, Tuzla and Ugljevik, partially supported by the World Bank, over US$ 18 million; complex reconstruction project supported by several donors.

Regional initiatives

At the regional level, the 2008 South-East European Climate Change Framework Action Plan for Adaptation may play an important role in the following key areas: climate change observation, monitoring and forecasting; climate modelling and scenarios; risk reduction related to particular climate-related threats; socio-economic information on climate impacts in the SEE region; and information exchange and research in key sectors, including energy, agriculture, forestry, ecosystems, land use, transportation, coastal zones, water resources and health. BiH has expressed its interest in coordinating the subregional activities of the Framework countries in the area of adaptation in energy and agriculture.

In addition, certain important regional initiatives have been launched, such as the Energy Community of the SEE Region (which aims to improve the environmental situation via support for energy efficiency and renewable energy), the Regional Cooperation Council (which supports regional cooperation in six key areas, including energy, and is based in Sarajevo) or the Belgrade Climate Change Initiative (which supports the implementation of the South-East European Climate Change Framework

Action Plan for Adaptation and has established the Subregional Virtual Climate Change Centre).

Monitoring and reporting mechanisms

Monitoring and reporting mechanisms, including GHG emission inventories, are not well-developed in BiH. At present, no official national emission data is available, with the exception of a detailed emission inventory for the UNFCCC base year of 1990, using recognized international methodology. Nevertheless, certain information on recent GHG emissions exists in particular studies, especially for the energy sector. There is no institution at State level responsible for the collection of activity data needed for the development of GHG emission inventories. At the entity level, such information could be collected by the hydro-meteorological institutes. GHG emission projections exist at the international level (e.g. the IIASA GAINS model) and, for the energy sector, at national level.

Participation in the global Clean Development Mechanism

As BiH is eligible for the Clean Development Mechanism (CDM), the State Government has taken the first steps towards both legislation (drafting by-laws) and the establishment of administrative structures (DNA). According to the agreement between the entities, MoFTER is responsible for the implementation of CDM activities in BiH.

6.6 Conclusions and recommendations

For BiH, exposure to damaging climate change is expected to be high. The country is highly sensitive to climate change because of the economic role of climate-sensitive sectors, such as agriculture and forestry. However, at the time of the review, data on GHG emissions (both inventories and projections) and for monitoring, was not readily available. This is largely due to the war and the interruption to established monitoring systems.

Recommendation 6.1:
The State Government of BiH, in cooperation with the Governments of entities and Brčko District, should:
(a) Establish mechanisms and administrative structures for regular development of emissions inventories and emissions projection,s in accordance with international methodologies and for reporting;
(b) Speed up preparation of the second National Communication under UNFCCC;
(c) Finalize legal and institutional preparations for implementation of CDM projects.

No strategy, policy or action plan specific to climate change issues exists at the State or entity levels. According to available data, national emissions of GHGs in per capita terms are below the EU 27 average; nevertheless a considerable increase is indicated by available emission projections. Due to its geographic and natural conditions, BiH is very vulnerable to the impact of climate change, especially in agriculture, forestry and the energy sector.

Recommendation 6.2:
The State Government of BiH, in cooperation with the Governments of the entities and Brčko District, should:
(a) Develop a national climate change mitigation strategy and related action plan;
(b) Develop, within the framework of subregional activities, a national climate change adaptation strategy and related action plan.

The energy sector (with about 45 per cent of coal in total primary energy supply) is the dominant source of GHG emissions in BiH. On the other hand, the use of renewable energy (hydropower) is higher than in the majority of other countries. BiH has certain potential in energy efficiency and energy savings and high potential in renewable energy sources (mainly hydropower and biomass). Nevertheless, it should be taken into account that further introduction of certain renewable sources might be in conflict with some environmental media (air in the case of biomass, water in the case of hydropower and nature in the case of wind). Available projections indicate an increase in GHG emissions from the energy sector.

Recommendation 6.3:
The State Government of BiH, as well as the Governments of the entities, should continue in their efforts to develop and/or update and implement energy strategies and strategic plans with the aim of:
(a) Improving energy efficiency in both production and consumption;
(b) Supporting energy saving in the public sector;
(c) Supporting the wider introduction of renewable energy, while respecting air and water protection and nature conservation;
(d) Encouraging the development of carbon off-set forestry projects;
(e) Coordinating activities relating to climate change mitigation with those for reduction of air pollutant emission,s to make use of the "one measure, two effects approach" as per recommendation 5.4 from the first EPR (ratification of CLRTAP protocols).

Chapter 7

SUSTAINABLE MANAGEMENT OF WATER RESOURCES

7.1 Introduction

Natural conditions and hydrographic network

The hydro-geographical position of Bosnia and Herzegovina (BiH) extends across two sub-catchment areas: the Adriatic Sea basin covering 24.3 per cent of the country and the Black Sea river basin covering 75.7 per cent of the country. The main water courses of the Black Sea basin are the Una, Vrbas, Ukrina, Bosna and Drina rivers. In the Adriatic Sea catchment area, the main rivers are the Neretva, Trebisnjica and Cetina rivers. One of the basic characteristics of the hydrographic network in BiH is that a high proportion of the water courses form part of international water courses.

Located on the borderline of two climate zones of the western Balkan peninsula, the climate is mostly moderate continental (Sava river basin), while southern parts of the country have a Mediterranean-type climate. With a mean annual precipitation of 1,250 l/m², BiH is rich in water resources compared to the European average of 1,000 l/m². The average inland run-off is 1,155 m³/s with 722 m³/s being discharged into the Danube river basin and 433 m³/s into the Adriatic Sea basin.

As a result of the geologic past, the complex geomorphologic and hydro-geological structure of both the Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS) significantly influences their hydrological properties as follows:

- The barrier effect of the Dinarides Mountains intersecting the moist air masses from the Mediterranean basin causes air lifts, rapid air cooling and precipitation, and precipitation is therefore most intense at the foot of the Dinarides.
- The huge karst zones, especially in the Adriatic Sea basin, have large underground hydrological retention potential.

Main problems in water resources management

Despite the fact that the country is rich in water resources and self-purification capacities (20 l of freshwater for 1 l of polluted water), the water management sector has some serious problems, which can be attributed mainly to the following:

- Available water resources and the need for water
- The water infrastructure in water supply, wastewater management and flood protection
- The regulatory and financial framework in the water sector.

The discrepancy between the available quantities of water and the dynamics of need cause quantity and quality problems. Such problems are obvious in some parts of the country, where inland waters are scarcest and which are at the same time the most densely populated, with correspondingly high requirements for water for domestic, agricultural and ecological purposes.

The lack of suitable infrastructure and damage to the existing infrastructure during the war, combined with insufficient maintenance, have resulted in the pollution of water resources and a corresponding deterioration in the quality of drinking water.

Despite the fact that since the first EPR good legislation has been implemented at the entity level, in line with EU directives, there are some key barriers to compliance. Besides the lack of a national regulatory and legislative framework, the existing administrative system is complex and heterogenic, in part without clearly defined responsibilities and not always politically independent. In combination with the lack of a comprehensive and consistent monitoring system, and inefficient instruments in compliance, enforcement and water pricing (based on real costs), this results in inefficient and weak management of water resources.

7.2 Current water situation

Monitoring and water quality of surface water and groundwater

Monitoring of hydrological parameters and quantity of water

After the breakdown of the former Hydrometeorology Service in the early 1990s, State-level services have never been restored and no hydrological study has been prepared for the last two decades for BiH as a whole. Consequently, there is no collection and processing of hydrological data at the national level, so decision makers and managers in the water sector are obliged to use historical climate data (i.e. data generated before 1990) to design water infrastructure and guide their management decisions. At the same time, conditions are constantly changing, due in part to climate change and changes in land use, and extreme hydrological situations are becoming more frequent. Those areas where there is a lack of hydrological information include the following:

- The water balances and water regimes of small and medium-sized catchments
- Extreme flows and distribution of water quantity over longer periods
- The water regimes, definition of underground bodies and underground communicating water zones in certain areas of karst
- A more detailed study of spatial variations of the underground Adriatic - Black Sea watershed
- A comparative analysis of potential coincidence of hydrological phenomena in the main water courses of the Adriatic Sea basin and the Black Sea basin in the country.

The existing hydrological network for collecting data on quantity is based on automatic hydrological stations and water gauges. In RS there are 43 such hydrologic stations and 10 gauges and in FBiH the number of hydrologic stations is estimated at 112. The collection of data is done by the River Basin Agencies in cooperation with the hydrometeorological institutes. This data is published in the hydrological year book, which was recently finished for the year 2006. The yearbooks for 2007 and 2008 are currently in progress. In RS, processing of collected hydrological data is ongoing within a study entitled "Balance of waters of RS" under the supervision of the Institute for Water Management.

However, the lack of hydrological information especially at the national level is significant. Unless BiH starts to thoroughly rebuild its basic systems for providing information about water resources across the entire territory, it faces the danger that new water management systems will not fulfil their anticipated functions.

Monitoring of the quality of surface water and groundwater

Since the first EPR, monitoring systems have been re-established and regular monitoring of physical, chemical and biological water quality parameters at about 70 automatic measuring stations has been conducted in line with the EU Water Framework Directive (WFD). However, there is no data for some water bodies and some of the data is not yet robust. Besides infrastructural gaps in the monitoring network, other barriers are the lack of a comprehensive and nationwide framework in terms of compliance for monitoring, management of data and documentation of results. Another obstacle is the lack of sophisticated laboratories for analysis of some parameters, although since 2004 some certificated and accredited laboratories have been established. This especially concerns the list of priority substances in water policy, in line with directive 2008/105/EC of the European Parliament on environmental quality standards in the field of water policy.

In FBiH, sampling is conducted 3-4 times a year in 79 locations. Among these, there are 64 automatic monitoring stations. Water quality monitoring in RS has been systematically carried out since 2000, including analysis of biological, physical-chemical, chemical and microbiological parameters and specific pollution substances, as well as of parameters from the list of priority substances since 2007. Quality assessment is carried out in accordance with the Decree on Water Classification and Categorization of Water Courses (RS Official Gazette, No. 42/01). The development of the environmental monitoring network and the results of parameter analysis in RS between 2004 and 2010 are shown in table 7.1 below.

Quality of surface water and groundwater

Urban and industrial wastewater and agriculture have the biggest impact on surface water and groundwater. In BiH those areas with the scarcest quantities of water available also happen to be the most densely populated areas and therefore the biggest polluters without adequate quality protection systems, resulting in a situation where water quality is often very poor. This concerns especially the Sava river basin, where these sources of pollution are often upstream and therefore impact adversely on downstream users.

Table 7.1: Development of the environmental monitoring network and results of parameter analysis according to the European Union Water Framework Directive in RS, 2004 – 2010

Network	2004	2005	2006	2007	2008	2009	2010
Number of surface water monitoring points (automatic and background)	55	55	55	55	55	55	55
Number of water bodies with regular chemical and biological measurements	23	23	16	32	32	64	64
Number of groundwater monitoring points	49	33	33	..	..	..	..
Class according to EU Water Framework directive:							in per cent
1	68	72	65	68	60	66	..
2	16	17	20	20	26	22	..
3	8	6	8	6	6	7	..
4	3	2	4	3	3	3	..
5	5	3	3	3	3	2	..

Source: Water Agency for Sava River District, Banja Luka, Republika Srpska, 2010.

According to estimates, about 57 per cent of the total population of FBiH live in the area of the Bosna River sub-basin, which accounts for only 19.8 per cent of the inland flow in FBiH.

The situation in the Adriatic Sea basin is slightly more favourable: it covers 33.3 per cent of the total area of FBiH, with an estimated population of 16 per cent and 47 per cent of inland water flows of considerably better quality than in other regions.

A recent analysis of the results of 47 permanent measurement spots in cities and settlements in FBiH, which monitor the physical, chemical and microbiological parameters covered by the EU WFD in the basins of the Spreča and Bosna rivers, show the following results:

- Seven (around 15 per cent) completely met the quality requirements, achieving "good status"
- Nineteen (around 40 per cent) achieved "moderate status" with a few individual measurements not meeting quality requirements
- Twelve (around 26 per cent) were categorized as having "poor status"
- Nine (around 19 per cent) were categorized as having "bad status".

Photo 7.1: Vrbas River

Both the analysis of the results of the permanent measurement spots in FBiH and the development of results in RS show that surface water is still, in general, of poor quality. Given that industrial productivity has been very low since the war, the population has not increased and no significant measures for the protection of water quality have been implemented since the first EPR, it is not surprising that no significant changes are visible in table 7.1.

The quality of groundwater is monitored only in areas where water is abstracted for the public water supply. These groundwater bodies are mainly of good quality, although in some areas the water has to be treated (chlorinated). The implementation of a comprehensive groundwater quality monitoring network is one of the future challenges in both RS and FBiH.

Data on results of water quality monitoring (hydrological, biological, physical-chemical, chemical, microbiological) of all water bodies in RS are presented in the "Report on follow-up of surface water quality in Republika Srpska" for the period 2000-2009. The monitoring results from FBiH are consolidated in the annual reports of the water agencies[8]. The water agencies in FBiH and RS submit data to the Federal Hydrometeorology Institute in Sarajevo, which is the focal point for BiH to the European Environment Information and Observation Network (EIONET). The Federal Hydrometeorology Institute submits the results of monitoring surface water quality to EIONET...

Hydrological natural hazards: handling potential dangers

Flood protection infrastructure

Against a background of a total area of 250,000 ha threatened by flooding (i.e. about 60 per cent of the lowlands), especially settlements and agricultural land along the Sava river, flood protection is an essential issue in sustainable water management.

In general, some efforts have been made since the first EPR, in terms of legal documents, strategies and programmes. However, no significant investment in new flood control facilities such as dykes, flood-control retention basins, tower gates, channels and pumping stations, has been made in the last 15 years. The combination of war damage, many years without maintenance and minefields laid around some facilities make it doubtful that existing flood control facilities are capable of withstanding the pressures of emergency situations. This is particularly true for towns along the Sava and not much better in other parts of the country. As it happens, during the last 15 years, no major floods have taken place, such as those that happened in May and June 2010 in Poland and Slovenia, so the awareness of resulting hydrological hazards, especially among policy and decision makers, is low. Even without taking the effects of climate change into account, major floods that cause enormous damage are to be expected in future, unless adequate measures are implemented.

In FBiH, some measures have been implemented based on the "Main Flood Prevention Plan in FBiH". At the strategic level, high waters occurring every 20, 100 and 500 years in flood-prone areas are calculated and listed in the plan. In line with the 2007 EU Flood Directive on the assessment and management of flood risks, maps of flood risks for all endangered areas were introduced. In order to estimate flood risks, potential damages and the investment provided for construction of flood control structures were compared. Any strategy for flood protection measures, as well as future investment, should be in line with these maps.

For flood protection in RS, a remote control system for pumping stations has been implemented as a pilot project within the last four years and an overhaul of all generators in pumping stations carried out. At present, the plans for funding the general overhaul of pumping stations (hydro-mechanical equipment and civil engineering), as well as the reconstruction of defensive dykes and a network of canals, are underway. Further, the creation of an information system for follow-up of all hydro-technical objects in the flood protection system is ongoing, in order to improve the control and maintenance of these flood protection installations. These measures are an integral part of the flood protection programme for the Sava river basin in RS, which focuses on reconstruction of the main channels (which bring water to the 21 pumping stations), reconstruction of pumping stations, and repair of river banks (erosion) and 300 km of dykes.

Monitoring and forecasting of hydro-meteorological phenomena

There is still no flood-forecasting system in either FBiH or RS. To provide operational flood control, automatic water-gauging stations submit data to the Federal Hydrometeorological Institute, which reports to the river basin district agencies. At times when floods are expected, data is submitted on a daily basis from each station. When water levels reach the

[8] http://www.jadran.ba/ and http://www.voda.ba/.

designated value at which measures for flood defence have to be announced, data is submitted every four hours until the measures are no longer necessary. In RS, the same activities are also performed by the RS Hydrometeorological Institute.

The implementation of a flood-forecasting system will be one of the main challenges in future, especially in RS where most of the vulnerable areas and settlements in BiH can be found along the Sava River. This, however, demands the implementation of a comprehensive hydrological and hydro-meteorological monitoring system.

Protection from soil erosion

The status of soil erosion and torrential watercourses has a crucial role to play in protection against the detrimental effects of water in the low-lying reaches of watercourses.

At the beginning of 2005, the creation of "erosion maps" of areas in RS started. This project is financed by the Sava River District Basin Agency with €2 million and implemented by the Institute for Water Management in Bijeljina (Zavod za Vodoprivredu). So far, 60 per cent of the work foreseen has been carried out. By the time this project is finalized, RS will have an entire picture of the erosive processes in river basins, as well as the possibility of gauging the quantities of deposits in water courses.

According to the register of torrents and erosion-prone areas in BiH, there are 935 torrential watercourses affected by erosion, covering an area of 12,969 km². Work on the regulation of torrential watercourses and soil protection from erosion has been carried out thus far with the aim of protecting certain structures, such as reservoirs and highways. Specialized agencies have been established for regulation of torrential watercourses and protection of soil from erosion. However, it should be emphasized that the problem of erosion must be approached in a more systematic and expert way, because the consequences of not doing so are immeasurable. It is difficult to provide adequate stability and functioning of regulated low-lying watercourses without paying greater attention to complex regulation of river basins.

Impacts of climate change

Specific research regarding the impact of climate change on hydrology and water resources has not been undertaken in BiH as yet, however climate variability has already been observed as regards temperature and precipitation. Analysing extreme and average values of precipitation in Mostar shows that the average amount of precipitation in the period 1982-2007 was significantly lower than in the period 1956-1981 in all months except September. For the part of the country with a continental climate, conclusions cannot be drawn about significant changes in precipitation from the available data. In future, it will be necessary to research phenomena such as increases in the number of consecutive days without rain and changes in the intensity and frequency of heavy rainfall, floods and droughts, including phenomena that previously occurred once every 50 years and that now occur every 5 to 10 years.

Regarding the impact on coastal zones, the country will be subject to the same effects as the whole Mediterranean region. This is one of the areas of the world most vulnerable to climate change, where further warming is predicted, in combination with an increase in extreme events such as periods of drought, storms, floods and heat waves. A rise in the sea level will cause inundation, coastal flooding and erosion, saltwater intrusion and sediment influx in sensitive coastal habitats. In the near future, a detailed analysis of climate impacts on outflows in basins in RS is planned. As far as water management systems are concerned, climate change impacts can be expected mainly in the following forms:

- Extreme events such as droughts and floods due to heavier rainfall will occur more often and be more intense. This will increase the cost of flood protection works, as well as that of associated infrastructure.
- Due to the increase in temperature and evaporation, aridity will increase in many areas, which will have a direct impact on the irrigation of agricultural areas.
- Lower river flows will affect the variable and hard to predict water supply, electricity production and tourist activities, as well as resulting in lower water quality caused by flow variations.
- Lack of water will be especially significant in summer, during the tourist season and at a period of increased water consumption, especially in areas with a high population density.

Status of water supply services and pressure on resources

Drinking water supply

Water supply services in BiH come under the direct jurisdiction of local governments through the

municipalities, with the exception of the water utilities in Sarajevo, Mostar and Banja Luka, which are owned by these cities. The overall situation is that the public water utilities or other forms of water and wastewater management are owned and firmly controlled by approximately 140 municipalities. Consumers that are not covered by the central municipal water supply systems depend on their own local water supply systems, or on individual wells.

Compared to the situation before the war, where about 60 per cent of the total population was supplied by safe water supply systems,[9] it is safe to say that the present situation is much worse, although it is hard to establish the degree of deterioration, as there is no reliable data due to the damage to the water supply infrastructure. Reasons for this are damage caused during the war, very old infrastructure dating back more than 25 years and a lack of proper maintenance. A weak monitoring system, in combination with inadequate local authority capacity, including a weak financial situation (municipalities and water utilities), and the inappropriate pricing of water, has resulted in major losses in the network (see table 7.2 for FBiH) and a steady deterioration in drinking water quality, especially in the dry season.

In terms of water abstraction for drinking water supply, there have been no significant changes since the first EPR. Most of the country's water supply comes from groundwater aquifers (51 per cent from karst aquifers and 38 per cent from intergranular aquifers) and the rest from surface waters such as rivers (10.2 per cent), lakes and artificial reservoirs (0.8 per cent). Compared to the estimated required amount of 35 m³/s of drinking water for the year 2020, the possible abstraction from these resources of about 16 m³/s is alarmingly low. This situation appears even more serious when taking into account the gap between the medium- to long-term potential of the country's water resources and the current inadequate infrastructure, especially in urban zones during the dry season, when demand for water is at its highest.

Other general problems concern the protection of drinking water by preventing pollution of groundwater aquifers. This especially concerns the vulnerable karst areas in the central and southern parts of the country, which mostly fall within the Adriatic Sea basin. The protection of drinking water in these zones is, however, currently inadequate; in some areas preventative measures do not even exist. Despite the fact that about one third of the volume of freshwater requires treatment, there is little chlorination and the inadequate quality of freshwater constitutes a serious threat to human health.

A further problem results from insufficient communication between the different municipal water supply utilities. This results, for instance, in complex and very expensive short-term water supply solutions instead of upgrading quality and maintaining the long-term water supply.

According to an assessment carried out in 2007-2008, public water utilities in the RS supply only 46 per cent of the population. The remainder use smaller local systems, personal wells, springs or surface water. The huge number of such local water supply systems (approximately 9,800) is, therefore, not surprising. The objectives of rehabilitating 50 per cent of the existing water infrastructure and providing safe drinking water for all by the year 2010 have not been met and the aim of meeting EU standards by 2025[10] is extremely ambitious. Currently, the water supply system in several RS municipalities is under reconstruction, financed by the Development Fund of RS. Another project for reconstruction and improvement of the water supply and sewerage systems in 24 municipalities, financed by the European Investment Bank (EIB) and local resources is in the final stage of preparation.

The situation in FBiH is rather similar to that in RS, apart from the fact that about 56 per cent of the population have access to the public water supply system. Due to significant loss of water in the pipeline network, insufficient capacity of water sources and/or unsuitable facilities, for some water utilities (for instance in the river basins of the Krka and Cetina rivers and parts of the sub-basins of the Bosna and Drina rivers), there are long interruptions and reductions of at least eight hours per day in the supply system. Table 7.2 shows the development of volumes of abstraction and water loss in FBiH between 2005 and 2007.

The draft FBiH water management strategy offers a broad overview of the status of water use, together with general conclusions and goals but unfortunately without recommendations for concrete measures. For instance, one goal is to increase the public water supply from 60 to 80 per cent of all inhabitants and to reduce total losses in the public water supply system

[9] Engineering and Consulting Firms Association, Japan and others, Project formation study on Bijeljina water supply and sewerage (2009), available at http://www.ecfa.or.jp/japanese/act-pf_jka/H21/unico.pdf.

[10] These require that 100 per cent of the urban population and 80 per cent of the rural population should be covered.

Table 7.2: Public water supply system in FBiH, 2005-2006

million m^3

Description	2005	2006	2007
Total volume of water abstracted	**237.5**	**228.1**	**229.2**
Volume of water delivered to users – total	110.6	105.1	103.3
of which:			
Agriculture, forestry and fishing	..	1.3	1.5
Industrial and construction activities	24.0	21.0	20.4
Other business activities	4.6	5.4	5.9
Households	75.2	73.1	71.1
Other water supply systems	6.8	4.3	4.3
Total water losses	**126.9**	**123.1**	**125.9**
Total water losses (in %)	53.5	53.9	54.9

Source: UNDP, Country Sector Assessments, GoAL-WaSH Programme.

by at least 15 per cent, but there is no indication as to how this might be achieved.

Industrial and agricultural use

Due to the collapse of industrial production since the war, the annual amount of water abstracted has decreased six-fold compared to the pre-war level. According to the latest available data, the annual amount abstracted up to 1991 in FBiH was 352.8 million m³/year compared to 229.2 million m³/year in 2007, of which only 20.42 million m³/year were abstracted for industrial and construction activities (see table 7.2).

In terms of agricultural use of freshwater, there have been no significant changes in agricultural irrigation systems since the first EPR. They are still in poor condition and obsolete, and cover only 2 per cent of arable land. The estimated water demand in FBiH is 1.1 million m³ to 1.27 million m³ per year in the Sava River catchment area and 5 million m³ to 5.63 million m³ per year for the Adriatic Sea watershed. For RS, the estimated amount is about 6.8 million m³. In both entities, one main gap in the information available is that there is no monitoring of agricultural water use, which means that neither is there any reliable data available in relation to irrigated areas. One important document for the future development of irrigation systems in RS is the irrigation strategy, which was finished in 2006 and foresees the reconstruction between 2011 and 12 of two big irrigation systems for an area of 79,000 ha, in the framework of a World Bank project. Within this project, water balancing at all potential sources for irrigation has been recommended and appropriate technical solutions proposed to ensure sustainable use of water resources.

Hydropower use

Due to abundant water resources and the large contingent of medium-sized mountain ranges, BiH has an enormous hydro potential of about 6.8 GW. However, only some 35 per cent of capacity is used, or about 38 per cent (about 9,000 GWh) of maximum possible electric power generation. According to the Strategic Plan and Programme of Energy Sector Development in FBiH this is the lowest rate of potential hydropower tapping in Europe and has not increased significantly since the first EPR. The balance of coal reserves according to the Strategic Plan is close to 4 billion tons.

Electricity in FBiH is generated exclusively by hydropower and coal.[11] A recent analysis points out the low rate of potential hydropower tapping in FBiH mentioned above. In the Una river sub-basin, for instance, there are only 3 out of a possible 19 hydropower plants, which makes the Una the most under-used watercourse with its tapping potential for power generation utilized to only 1.7 per cent of possible capacity. The installed power of working hydro facilities in RS is about 1.17 GW. Based on the RS Framework Plan of Development of Water Management, new facilities with an installed power of 580 MW should be built, or construction at least started, by 2015.

Taking into account the low level of potential hydropower tapping, the rather poor status and therefore lack of efficiency of existing plants in the

[11] There are two electrical industry companies: JP Elektroprivreda B&H dd. Sarajevo and JP Elektroprivreda HZHB. Dd. Mostar.

country, and the future need for renewable energy, increasing use of hydropower potential should be seen as a significant ecological (lower emissions of greenhouse gases and fewer discharges of wastewater) and economic benefit. Additional benefits of an economic and non-economic nature could be derived if new hydropower projects were designed as multi-purpose water systems, i.e. in ways that benefit other areas of activity besides energy generation, such as flood protection, forestry, agriculture or tourism.

Against this background it is pleasing to note that revitalization activities, including an increase in the rated capacity of some (older) plants have been undertaken and some are already completed. Besides this, preparations are being made for investment in about 200 micro hydro plants (for instance in high dams or water pipes). In the past, JP Elektroprivreda Mostar prepared extensive technical documentation, which was to serve as a basis for planning and construction of hydropower plants with an emphasis on the investigation of possibilities for construction of micro hydro plants. These documents include the 2007 Water Management Conditions for Power Plant Construction: the Upper Cetina River Basin – Basic Data, and the 2007 Water Management Conditions for Construction of Micro Hydro Plants: Tihaljina-Mlada-Tihaljina River basin and the Lištica River basin – Basic Data.

Wastewater

In BiH, as with most countries in development or with economics in transition, the development of sewerage systems has been slow in comparison with that of water supply, which results in a very serious state of affairs. As with water supply, sewerage systems are under the direct jurisdiction of local governments through the municipalities, which operate centralized sewerage systems through local water utilities. More than 90 per cent of domestic human wastewater is released untreated directly into the local surface water and less than 3 per cent of domestic wastewater gets full biological treatment. These systems exist only in city centres, while the urban fringe is largely served by inadequate and inappropriate septic pits and injection wells. As the urban area has expanded, so ad hoc additions to the system have been made, which desperately require a fundamental overhaul. In karst environments, the disposal of wastewater using sink holes or surface streams leads to the pollution of the whole hydrographical systems and endangers drinking water sources. As a consequence of the low price of water (which is well below the level of the operating costs), sewerage systems are given a lower priority than water supply, and suffer from extremely poor maintenance.

As far as industrial wastewater is concerned, the situation is only slightly less alarming and this is mainly due to the fact that industrial production is at less than 30 per cent of the pre-war level. However, the industrial wastewater load is disproportionally high, as treatment barely exists. Taking into account the long-term effects of the high level of industrial pollution before the war and necessary future economic growth, the scale of the crisis is clear. In RS, the Ministry of Agriculture, Forestry and Water Resources and the Sava River District Basin Agency implemented a programme of characterization of industrial wastewater in 2007. For 12 big polluters (nine industrial plants and mines and three fish ponds), approximately 30 parameters were analysed, including toxic tests, measuring the quantity of wastewater, physical-chemical parameters, chemical parameters and specific pollution substances. Analysis and measuring were conducted according to the regulations on conditions for discharge of wastewater into surface water and in accordance with internationally accepted methodological standards.

Against this background it is regrettable that since the first EPR, implementation of draining and treatment of wastewater projects has not been started. However, based on the EU DABLAS Task Force project[12] and the national WQM I + II project (2005 to 2008), two priority lists of sanitation projects for BiH were developed. The WQM list (2008) covers the whole country and takes into account the pollution load. The recently finished DABLAS list (2010) for FBiH and RS additionally takes into account the vulnerability of the water body and covers the catchment area of the Black Sea (Sava River basin). According to these lists, the preparation of the following projects and programmes has started:

- GEF project: Water Quality Protection (wastewater treatment project (WWTP) Trnovo and Odžak, and phase I of WWTPs Živinice and Mostar)
- GEF project: Neretva and Trebišnjica Management (WWTP Konjic and Ljubuški)
- EIB project: Water and Sanitation FBiH
- World Bank/Instrument for Pre-Accession Assistance (IPA) 2010: reconstruction and improvement of WWTP Sarajevo

[12] The DABLAS (Danube Black Sea) Task Force, consisting of a coalition of representatives of countries of the region, international financial and other institutions, the EC and bilateral donors, assists in targeting existing challenges to wastewater management

- IPA 2007: water mains Živinice and WWTP Međugorje
- Grant project WWTP Bihać (KFW).

Economic instruments

Local authorities (municipalities) are responsible for drinking water and sanitation pricing policies. No decisions or policies are made at higher administrative levels, and consequently prices tend to differ slightly from one municipality to another.

There are cross-subsidies across different consumer categories. Water supply prices for the industrial sector are typically at least 2-3 times higher than household prices under the same water utility (e.g. in Sarajevo, €0.625 /m^3 for households, €1.58 /m^3 for industry). For wastewater, each type of pollution is calculated as a personal equivalent (PE), taking into account the level of pollution and the quantity. In both FBiH and RS, one resident counts as 1 burden unit for industrial and domestic sewerage, which is about €1 per month.

According to the current laws on water, all water companies must have the same price structure consisting of the following elements: price of water and price of sewerage (both including VAT, in KM/m^3 of used water) and special water management fees (water abstraction and water protection fees).

Despite the fact that the economic instruments for the water sector are better developed than for other sectors, there are some obstacles which have not been tackled since the first EPR. Not surprisingly, the prices for both freshwater and sewerage are far from being economically viable. In terms of use of freshwater, individual water meters have not been installed in the existing stock of apartments. Back-fitting is very complex and as a result the real cost of freshwater is not directly linked to consumption.

7.3 Policies, strategies, legislative framework and international cooperation

Relevant legal documents

There are presently no legally binding regulations relating to the environment at the national level. Apart from this failing, great efforts have been made since the first EPR concerning the water laws at entity level, which were adopted on 1 June 2006 and 1 January 2008 in RS and FBiH respectively.[13] Both water laws are very detailed and comprehensive, address the majority of water management issues and are 65 per cent compliant with EU regulations. However, in some areas there is a lack of clear responsibility for compliance and implementation.

Secondary legislation is also applied in the water sector and is 97 per cent compliant with EU regulations. For instance, all plans in the context of flood protection pursuant to the EU Flood Risk Management Directive (2007/60/EC) are covered by a regulation for each entity. In line with the water law in FBiH, 17 regulations have been adopted so far. In RS, 12 regulations have been passed and about 20 more are missing, while there are 4 regulations currently under development. The preparation of these by-laws in BiH is being done within the 2007 IPA project "Support to Water Policy in BiH" (December 2009 to December 2011) with the aim of strengthening the institutional and legal framework in the water sectors in the country. The results will be documents for framework water policy in terms of (a) strategies for implementation of EU directives in urban wastewater management; (b) drinking water directives; and (c) implementation of directives on assessment and management of flood risks.

The most important norms and standards on water resources management according to the laws and sub-laws cited are:

- Rulebook on Drinking Water Safety
- Rulebook on Sanitary Protection Zones of Drinking Water Sources
- Rulebook on Limiting Values of Dangerous and Harmful Substances in Waste Waters Discharged into Surface Waters after Treatment
- Regulation on Dangerous and Harmful Substances in Water
- Regulation on Types and Contents of Plans of Protection against Harmful Effects of Waters
- Regulation on Water Classification
- Regulation on Watercourse Categorization

These rulebooks define standards, monitoring mechanisms and guidelines for various spheres of activity, including water protection, protection of aquatic facilities and systems, protection of private and public water wells, water quality monitoring, water supply, and wastewater. They were developed according to EU standards, and are therefore mostly consistent with them.

[13] 2006 FBiH Law on Water Resources of FBiH, OG FBiH No. 70 and 2006 RS Law on Water Resources, OG RS No. 50

Relevant strategic documents, programmes and projects

Regarding State-level strategies in the water sector, the situation is similar to that of State-level legal documents; apart from the Mid-term Development Strategy for the period 2004-2007, there is only an assessment on sustainable development in BiH, which was adopted by the Council of Ministers in 2008. The most important water-related outcomes of the Mid-term Development Strategy were the transformation of the water management institutions from public companies at the municipal level to water management agencies, including local offices at the entity level; implementation of the new water laws including sub-laws; and harmonization of guidance, rulebooks and standards. Given that the previous strategy expired in 2007 and although preparation of a follow-up strategy is in progress, there is a policy discontinuity in this important area.

According to the new entity water laws, the entity ministries for water are responsible for producing 12-year water management strategies by 2009, a responsibility that was not fulfilled at the time of the second EPR review. In FBiH, a draft water management strategy is in the final stage of preparation and has the potential to act as a comprehensive, detailed and suitable basis for management of sustainable water resources in line with the EU WFD. However, it will be necessary to adopt and harmonize a large number of by-laws.

The main documents in the field of water management in RS are the Framework Plan of Development of Water Management of the RS and the implementation Action Plan. The Framework Plan defines the criteria, conditions and obstacles for further development of the water infrastructure and management of the entire water sector, covering the planning period 2007 - 2016. The preparation of the corresponding strategic documents for the development of the water sector until 2020 in RS has not yet started and it is therefore not yet possible to evaluate the effect of their implementation. These entity strategies must be coordinated and harmonized, in order to provide a single strategy for the whole territory of BiH.

In terms of flood protection, some steps have been taken in preparing strategic documents and plans. For FBiH, based on the ongoing 2007 IPA project "Support to Water Policy in BiH (Dec 2009 – Dec 2011)" and the old Main Flood Prevention Plan in FBiH, a programme of flood protection measures is currently underway. In addition, the Regulation on Preparing Plans for Flood Protection has been adopted (FBiH Official Gazette 26/09). With the aim of improving the flood situation downstream of Mostar, a study entitled "Hydrologic and Hydraulic Models of the Upper Neretva River" has been implemented in the context of the project on the creation of a sustainable management plan for the Neretva River, which is financed by the Government of Spain and will end in January 2011. For RS, the technical basis in this context is the Main Operation Plan on Protection from Floods, which is established by the Ministry of Agriculture, Forestry and Water Resources at the beginning of every year.

In order to implement these strategic papers and programmes, water management plans for river basins have to be adopted by the water agencies by 2012 for FBiH and 2015 for RS. Besides flood management, these plans deal with protection against the detrimental effects of water, protection from erosion, defence against ice, and drought control. They will be revised and updated every six years. The working plans for the preparation of a water management plan will be announced to the public at least three years before adoption of the plan.

Other important strategies and programmes at the entity level are:

- The draft water management strategy in FBiH 2009-2020, March 2010, in final phase of adoption by the FBiH Government and Parliament.
- The Plan of Regulation of Watercourses and Other Waters, which serves as the basis for maintenance of watercourses, water property and other protection structures.
- The Main Flood Prevention Plan in FBiH, 2008, OG FBiH, No. 23, in preparation.
- Main Operations Plan on Flood Protection of RS, in preparation.
- Plan of fulfilment of obligations towards the International Commission for the Protection of the. Danube River (ICPDR) in the Sava river basin with reference to the EU WFD. According to the new entity water laws, these plans have to be prepared by 2015.

Policy and institutional framework

Due to the lack of a State-level framework and the constitutional character of BiH and its entities, the current state of affairs is complex and heterogenic, especially as the competences over water management rest with the entities. An analysis of the BiH constitutional and legal framework indicates that it does not contain specific and clear principles that

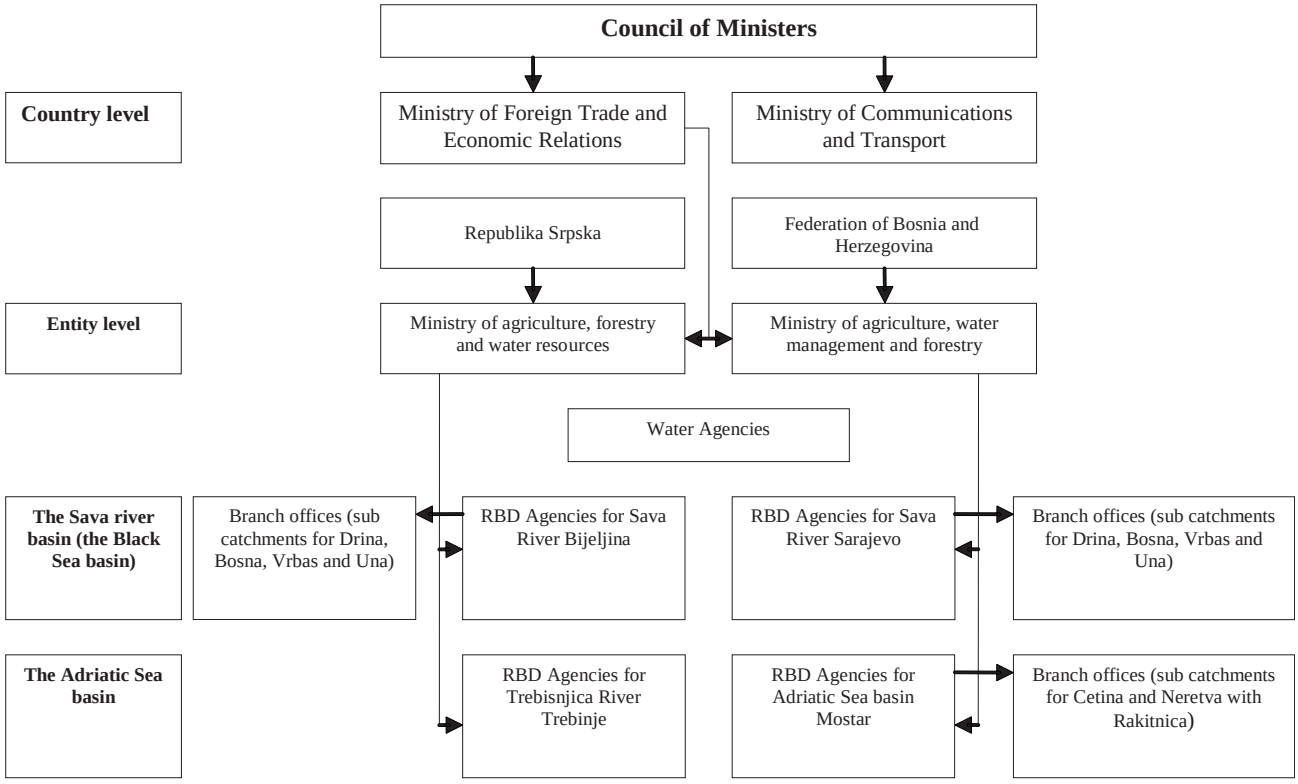
should guide the constitutive elements of the State in their management of shared water resources (i.e. those intersected by entity or district borders). The State-level authorities therefore have no competences for regulating these inter-entity relations.

At the same time, foreign policy falls under the competence of the State-level institutions, including competences in terms of international agreements, but the entities are responsible for execution of such agreements. This constitutional arrangement has enabled the establishment of the national Ministry of Foreign Trade and Economic Relations (MoFTER) which is responsible for national and international coordination of activities and harmonization of plans between the entities and their bodies. The Ministry of Communications and Transport, also at the State level, is in charge of navigation on rivers and seas.

As can be seen in figure 7.1, water management lies in the competence of the two entity ministries responsible for water management (excluding the quality of drinking water, which is under the responsibility of the entity Ministries of Health), and the four water agencies for the Black Sea basin and the Adriatic Sea basin (two in each entity, situated in Bijeljina for the Black Sea and Trebinje for the Adriatic Sea in RS and in Sarajevo for the Black Sea and Mostar for the Adriatic Sea in FBiH). As one result of the adoption of the new water laws and the law on administration, the former Republic Directorates for Water (in RS from 1996 to 2009) have turned into water agencies, which are responsible for water management, including the preparation of the water management plans and permits for water use, based on the regulations and rulebooks listed above.

FBiH, by contrast with RS, has a specific situation whereby each of the 10 cantons has its own cantonal ministries responsible for water protection and water supply services, protection from flooding and erosion, and water sector development planning. Municipalities are responsible for their own water supply and wastewater collection and treatment, and are the founders of the water utilities. In RS, municipalities have jurisdiction over local water protection and water supply, and are the financiers of the water utilities. Both in FBiH and RS, water utilities have the following responsibilities at the local level, according to the State-level laws on public companies: production and distribution of water, wastewater treatment and drainage, sanitary-technical activities, including water quality control and management of public water supply, and sewerage.

Figure 7.1: State-level institutional framework of water management



Source: UNDP, Country Sector Assessments, GoAL-WaSH Programme.

In both entities, there is an independent entity-level inspectorate with branch offices at the commune level (cantonal inspectors in FBiH or municipal inspectors in RS), which are responsible for verifying compliance with the water-related requirements on quality and quantity. With the adoption of the new water laws, the former inspectors were taken out of the entity ministries and concentrated in the present independent inspectorate. The creation of this inspectorate has been a big step towards an efficient, independent and integral management system for natural resources. However, there are considerable problems with implementation. In particular, there is no systematic management of the data being monitored, no uniform documentation, a lack of good practices and expert knowledge, and only partially defined or inappropriate division of responsibilities between the entity inspectors and the cantonal or municipal inspectors.

In FBiH, for instance, on the one hand, both an entity inspector and a cantonal inspector are responsible for the same facility (for instance a pumping station with less than 5 l/s, where the entity inspector is responsible for the industrial wastewater and the cantonal inspector for the technical aspects), on the other hand the same entity inspector is responsible for all industrial facilities, ranging from a simple car-wash station to a complex pharmaceutical industrial plant. In combination with the non-harmonized competences of the different ministries and cantons in the field of water resources, proper implementation is hardly possible.

NGOs in BiH play an active role as water user associations in advisory councils for the river basins, for example in a public campaign currently in progress on the adoption of water management strategies, in establishing water fees, or in certain public campaigns currently underway regarding the issuance of water licences/permits (for example to some toxic industrial polluters).

International cooperation

Due to the transboundary character of surface and groundwater on the territory of BiH, international cooperation with clearly defined criteria and responsibilities is essential for sustainable and integral water management. In addition, such cooperation enables financial and technical assistance to be provided for implementation and monitoring of international standards and procedures. Since the first EPR, when the country had not signed any major multilateral environment and water protection treaties, some steps have been implemented: there is international cooperation within the framework of ICPDR, the Sava Convention was signed in 2006, and there is bilateral cooperation with Croatia.

The establishment of similar cooperation with Serbia, as well as with Montenegro, is one of the ongoing processes. Other important agreements implemented or in preparation in terms of water resources management are:

- The Danube River Protection Convention (1994), ratified by BiH in January 2005.
- The Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (1998), accession in October 2008.[14]
- The GEF-UNDP-UNESCO project DIKTAS to protect and manage one of the biggest karst aquifer systems in the world, in the preparation stage.
- The Neretva and Trebišnjica Rivers Management Project funded by the World Bank, BiH and Croatia, contract and memorandum of understanding were signed in 2008.
- Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes, accession 2009.

7.4 Conclusions and recommendations

Due to the institutional character of BiH and its entities, the current institutional framework for water-related issues is decentralized, very fragmented and heterogenic, both at the entity and local levels. The national constitutional and legal framework contains neither specific and clear principles, nor clarified responsibilities for management of the shared water resources (both river basins are multinational and cover both entities). In addition, there is no reliable institutional and procedural system for resolving controversies and disputes. As a result, the management of the shared water resources and the regulation of corresponding inter-entity relations are insufficient and inefficient. Similar problems arising from a decentralized and highly fragmented institutional framework can be found at the entity and local levels. Again, this leads to inefficient and legally non-compliant water management, which is not in line with water laws and the secondary legislation.

[14] In terms of water management, some general provisions of this convention are linked to the water sector, such as access to information on water-related data and public participation in decisions concerning water-related projects.

The present institutional framework does not provide adequately identified responsibilities for all international and coordination work on shared water resources at the national level. At the entity level, while competences are concentrated and clearly assigned, this does not yet ensure more efficient water management, as more importance is given to administrative divisions than to catchment areas. Efforts in terms of water protection by operators or water users at the local level are not yet based on harmonization and compliance with standards and regulations.

The most important issues in need of streamlining are the creation of a comprehensive and reliable monitoring system for quantity and quality of surface water and quality of groundwater; management and documentation of monitoring data; harmonization of sub-laws, guidelines and standards; coordination of water-related issues (implementation of EU directives, shared water resources etc.); and, consulting the ministries and cantons on complex problems.

<u>Recommendation 7.1:</u>

(a) *The Government of Bosnia and Herzegovina should streamline existing State-level authority over water-related issues so that there is one water resources management department in MoFTER.*

(b) *The Federation's Government should streamline existing entity-level authority over water-related issues so that there is one water resources management department in the Federal Ministry of Agriculture, Water Management and Forestry.*

(c) *Republika Srpska's Government should streamline existing entity-level authority over water-related issues so that there is one water resources management department in the Republika Srpska's Ministry of Agriculture, Forestry, and Water Resources.*

(d) *At the commune level, concentrate all water-related issues in one ministry with clearly defined responsibilities. The institutional organization of the cantons for water-related issues should be harmonized. Public water management companies should be organized in line with technical principles and be totally politically independent (especially the management). In RS, the public water management companies for flood management should be reorganized: an administrative and coordinative body should be implemented in the water management agencies for execution of complex works (such as operating and maintaining pumping stations) and simpler practical works should be privatized. This was also foreseen in the draft of the new RS water law and has been successfully implemented in the Federation.*

As mentioned in section 7.3 above, the inspectorate at the entity and commune levels (cantonal or municipal) is responsible for verifying compliance with the water-related requirements on quality and quantity in terms of water resources management. One significant obstacle in this context is that the division of responsibilities between inspectors at the two levels is only partially or inappropriately defined.

<u>Recommendation 7.2:</u>

The entity Governments should clearly define the responsibilities of water inspectorates to avoid overlapping duties.The competent authorities for inspection should be determined on the basis of the complexity of the inspection. Simple inspections should be performed at the cantonal (Federation) or municipal (Republika Srpska) level, whereas complex inspections should be performed at the entity level. The criteria for determining the complexity of inspections should be simple and transparent.

Due to the lack of a national legal framework, there are currently some problems in terms of inconsistent compliance with laws and sub-laws. On the one hand there is a lack of compliance due to unclear responsibilities and/or lack of sub-laws, on the other hand there are transitional old by-laws referring to the former water laws, which are not consistent with the new water laws. As water resources management should be based on catchment areas and not on administrative divisions, consistent and integrated water resources management is almost impossible without corresponding laws and strategies at the national and entity level.

The situation is even more complex at the communal level, given that the cantons in FBiH and the municipalities in RS can adopt their own water laws, regulating the organizational issues falling within their competence. There are still a lot of cantons and municipalities where the communal water laws are based on the old State water laws and/or old sub-laws. This creates a situation which undermines the consistency and uniformity of water management. For example, water laws have been adopted in 2 out of 10 cantons in FBiH (Zenica-Doboj and Central Bosnia), while the process of adoption of water laws is under way in only 2 other cantons (Sarajevo and Bosnian Podrinje).

Recommendation 7.3:

(a) The Government of Bosnia and Herzegovina should develop a State-level water law, taking into account the existing entity water laws and clearly identifying and allocating responsibilities in terms of shared water resources and countrywide water management issues. The Federal Government should also develop a national water management strategy and action plans which concretize the corresponding work at the national level.

(b) The Governments of the Federation and the Republika Srpska should accelerate the implementation of existing sub-laws and standards and harmonize the existing secondary legislation, including guidelines and standards. The Government of Republika Srpska should develop and adopt a water management strategy with corresponding action plans, as prescribed in the entity law on water protection.

(c) Where the existing water laws are not in line with the new entity water laws, the cantonal authorities in the Federation and municipal authorities in the Republika Srpska should accelerate the adoption and implementation of new communal water laws that are in line with the entity-level legislation. In terms of corresponding sub-laws in the different cantons and/or municipalities, special attention should be paid to uniform compliance, especially in the fields of water supply and wastewater management.

Construction and maintenance of infrastructure is financed by the water utilities and local communities through subsidies, grants etc, and partially by contributions from the public water management companies. However, water utilities are largely dissatisfied with the prices set as they do not cover full service costs, but rather a fraction of operating and maintenance costs. Prices are far from being economically viable and are indeed one of the main reasons for the poor state of the water supply infrastructure and especially that of wastewater management.

Recommendation 7.4:

The entity Governments should establish a sustainable, efficient and transparent water funding system with uniform and comparable financial conditions and compliance. The following two goals should be considered:

(a) A comprehensive and reliable sector finance study should be carried out, taking into account urban and rural areas.

(b) The pricing of water supply services should be adjusted to ensure that the cost of services, reinvestment and maintenance is covered, while adequate provisions for vulnerable social groups are made.

The water management infrastructure, especially in the field of wastewater management, is either non-existent or, with very few exceptions, outdated and poorly maintained. There is no area-wide hydrological monitoring network and flood protection installations are not reliable and often not functional, due to poor maintenance and war damage. The first EPR clearly recommended that this situation be improved, however the implementation of concrete measures has only got underway slowly over the last five years, due to lack of funding and the need to prepare a legal and policy framework. This situation could be improved with the support of the international community, including the EU and other bodies of international cooperation. For this purpose, enhancing the ability of relavant institutions to prepare high quality project proposals to secure such support, either in the form of aid or concessionary loans, would be highly valuable.

Recommendation 7.5:

The entity Governments should renovate existing, or build new, water infrastructure with an emphasis on water and groundwater protection according to a priority list of relevant water projects.

Recommendation 7.6

The entity Governments, should also take into consideration the following additional recommendations, while implementing recommendations 7.3, 7.4 and 7.5 of the first EPR:

(a) Emphasize the significance of drinking water quality control and treatment of drinking water, wastewater collection and treatment.

(b) For wastewater treatment and water supply systems in small cities, focus on alternative low-cost facilities that are easy to maintain, extend and upgrade and have low energy consumption. Conventional facilities and outdated technology are often expensive to maintain as, due to the lack of local production, no spare parts are available on the local market.

(c) Speed up the process of rebuilding the treatment plant in Sarajevo (for 600,000 inhabitants), which used to be an efficient plant before the war. Located on the upper part of the Bosna River, it would significantly improve the water quality situation in the densely populated area along the river.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

The water infrastructure was severely damaged during the war, and even before the war the water-supply systems suffered from a lack of investment and maintenance. So although it is estimated that 90% of the water-supply sector has been rehabilitated to its pre-war level, it still does not reach international standards. The quality of drinking water is on the whole mediocre, and for the nearly 50% of the population who do not have access to public water-supply systems the water quality is probably even more questionable.

EPR I - Recommendation 7.2:

(a) The Government of the State of Bosnia and Herzegovina, in cooperation with the Government of the Federation of Bosnia and Herzegovina and the Government of Republika Srpska, should develop a new water policy pursuant to the memorandum of understanding with the European Communities and taking into account the Millennium Development Goal to halve by 2015 the proportion of people without access to safe drinking water.

(b) The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with their Ministries of Agriculture, Forestry and Water Management, should start now to:

(i) Ensure that drinking water is safe by properly treating abstracted water;

(ii) Develop water protection strategies consistent with the new State policy and the Millennium Development Goals;

(iii) Establish standards and norms for water quality which are consistent with international ones; and

(iv) Reduce the leaks from the distribution systems by repairing and replacing old and damaged pipelines. The number of households with access to public water-supply systems should be substantially increased.

(c) As soon as they are established, the river authorities should develop plans for river basin management.

Discharges of untreated municipal waste water have a major impact on the quality of surface water in most of Bosnia and Herzegovina, and they are also potential threats to the quality of groundwater, which are the main source of drinking water. However, the most serious impact is on public health and the environment.

EPR I - Recommendation 7.3:

The entities' Ministries of Agriculture, Forestry and Water Management in cooperation with the entities' Ministries of environment and with the help of the public enterprises for water management, should assist and require the municipalities to reduce the negative impact of waste-water discharges by:

(a) Reducing the leaks from public sewerage systems and by building new sewerage systems to substantially increase the number of household connections;

(b) Building municipal waste-water treatment plants of environmentally high standards and with sufficient treatment capacity in all the big cities; and

(c) Ensuring that sewage sludge from municipal treatment plants and septic tanks is sufficiently treated for use as fertilizer in agriculture or disposal in sanitary landfills.

Waste water from industrial plants containing organic and hazardous substances are, with very few exceptions, discharged into the nearest watercourse with little or no treatment. This is also true for seepage water containing hazardous substances from mining and ore-processing. The negative impact on water quality is considerable, and there is no doubt that these discharges could represent a threat to public health and the environment. Moreover, this situation must be expected to get much worse when industry recovers from the devastating effects of the war, unless proper action is taken.

EPR I - Recommendation 7.4:

The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with the other ministries involved, should take appropriate action to reduce the negative environmental impact of waste-water discharges from industry and seepage water from mining and manufacturing by:

(a) Ensuring that water treatment plants are reconstructed and brought on stream again;

(b) Drawing up a survey of the most polluting mining, manufacturing and other industries;

and

(c) Instructing mining, manufacturing and other industries to take immediate and appropriate action to stop or reduce the discharges where drinking-water resources are seriously threatened.

Flood protection installations have been poorly maintained, and dikes, channels and pumping stations were damaged or destroyed during the war. Some large areas that are exposed to flooding do not have flood protection installations at all. Since the end of the war Bosnia and Herzegovina has not experienced extremely high water levels, even if a flood in the Tuzla region caused large-scale damage in 2001. However, extremely high water levels must be expected in the future. If there is no proper flood protection in place, they could cause many casualties and much material damage.

EPR I - Recommendation 7.5:

The proposed environment agency, with the Federation's Ministry of Agriculture, Water Management and Forestry and Republika Srpska's Ministry of Agriculture, Forestry and Water Management, should work in close cooperation with the new river authorities on an urgent basis to reduce the impacts of floods. Steps to be taken include:

(a) Improving and repairing, in cooperation with the regional and local authorities, existing flood protection systems and building new ones in exposed areas that do not have them, and taking non-structural measures for flood protection, in particular the conservation or rehabilitation of natural wetlands and retention areas; and

(b) Drawing up a comprehensive national flood disaster strategy, which includes preparedness, mitigation, recovery and reconstruction.

Chapter 8

WASTE MANAGEMENT

8.1 Introduction

Bosnia and Herzegovina (BiH) has made progress in the area of waste management since the last EPR in 2003. The construction of regional sanitary landfills has started, 10-15 per cent of illegal dumpsites have been closed, and efforts have been made to remove the accumulated hazardous/chemical waste. An effort to collect data on waste is underway, whilst framework laws have been established, as has complementary secondary legislation for implementation, although a lot still needs to be done in this area.

Waste management, however, remains a significant challenge for the country. Inappropriately placed and unprotected waste dumpsites pose a serious threat to the environment and public health in BiH and, possibly, also to neighbouring States. Treatment facilities for medical and hazardous waste are still lacking. There are also only limited attempts to reduce and recycle industrial and municipal waste.

Improving the treatment of industrial and medical waste, municipal waste management, and reduction and recycling of waste still remains a challenge, although there are signs of progress in the development of policies and laws, and modest investments in appropriate infrastructure have been made.

8.2 Generation and collection of waste

In BiH, data collection, monitoring and reporting in the waste sector largely lags behind other environmental sectors, such as water and air. It is, for instance, the only country in the Western Balkans, which is not able to provide national data on waste. Nationwide data on waste, its quantity and contents last became available in 1999, covering the years up to 1998, although some data collection efforts have been made since then, but not in a systematic manner. For example, Sarajevo Canton has been collecting various kinds of waste data since 1998 and sanitary landfill operators have also started to collect data. The most recent attempt to collect data on municipal and industrial waste was undertaken in 2009 by the Agency for Statistics, in line with the Law on Statistics.

Photo 8.1: Pollution in Vrbas River

Municipal waste

In 2009, the Agency for Statistics published the following data on municipal waste (see table 8.1) based on statistical surveys on collected municipal waste, submitted by the communal services, and on the amount of waste brought to landfill sites by enterprises which run landfill sites. The response rate was 77 per cent.

The Agency announced that estimated nationwide average municipal waste amounted to 365 kg per capita per year or 1 kg per capita per day in 2008. Other available indicative information on municipal waste generation in the country for specific locations provides different figures. For example, the 2010 State of the Environment report for FBiH estimated the average generation of municipal waste at 269 kg per capita per year. This calculation was based on the figures of 211 kg per capita per year of municipal waste generated in West Bosnia and Herzegovina (rural area), and 386 kg in Sarajevo (urban area). Considering that average municipal waste generation per capita in the Western Balkans (Albania, Croatia, Montenegro, Serbia and the former Yugoslav Republic of Macedonia) as of 2005 was 250 kg (ranging from 200 to 350 kg), annual generation of municipal waste in BiH may be less than 365 kg per capita.

According to these statistics, 8 per cent of municipal waste was collected separately at source, and 80 per cent of the separated waste collected was recycled. The data also illustrates that municipal landfills are accepting non-municipal waste, such as old tyres, waste from demolition and construction, and livestock.

A lot of scope remains for improving the accuracy of municipal waste data. The waste utility companies are not yet applying a uniform methodology or definitions of waste and only a limited number of landfills have weighing equipment. If such equipment is more widely installed and uniform practices are implemented, municipal waste data is expected to improve.

Charges for waste collection depend on the surface area of the dwelling unit of a household. The average charge for waste collection for a household is KM 7.0-7.2 (€3.58 - €3.68) per month for a family living in a flat of 60m^2. Individual invoices are sent to households and about 60-75 per cent of households pay their bills (see chapter 5).

Collection of municipal waste

According to the figures in table 8.1, it can be estimated that the collection rate for waste is more than 80 per cent. However, other sources, i.e. government presentations and press releases, estimate the average collection rate at between 45 per cent and 70 per cent. According to the Environmental Protection Strategy for FBiH, 64 per cent of municipal waste is managed by utility companies. As the collection rate of municipal waste in BiH varies, the collection rate in rural areas can be estimated to be as low as 20 per cent.

Table 8.1: Generation of municipal waste in Bosnia and Herzegovina, 2008

tons

	Generated municipal waste	Amount of waste collected by communal services	Amount of disposed waste
Total	**1,367,097**	**1,181,887**	**1,220,083**
Separately collected waste types (i.e. paper, carton, glass, textile)	n.a.	94,209	19,280
Garden and park waste (i.e. biodegradable waste, soil and stones)	n.a.	33,179	29,160
Other municipal waste (i.e. from markets, clearing streets, and sewage clearing)	n.a.	1,046,718	1,141,892
Packaging Waste	n.a.	7,781	8,814
Other waste (i.e. construction waste, old tyres, animal tissues waste)	n.a.	n.a.	20,937

Source: Table created by the author based on information from the Agency for Statistics, BiH, 2009, Waste Statistics, No. 01, Sarajevo, 20.12.2009.

Photo 8.2: Plastic bottle recycling

The municipal waste collection services are provided by utility companies, which may be private or public entities, mostly founded by the municipalities, but in some cases by the cantons (for instance in Sarajevo Canton).

The quality of such services, for example frequency of waste collection, handling, and final disposal of the collected waste, also varies. Waste management in municipalities in Sarajevo Canton, with a total population of 450,000 has significantly improved. Garbage containers measuring 1.1 m^3 have been placed in 6,700 locations and are collected 2-3 times a week by RAD, a utility company founded by the canton. The collected waste is transported to the sanitary regional landfill. In the municipality of Žepče, with 6,200 households, only 1,200 households (19 per cent), located in urban centres or nearby areas, have regular waste collection services provided by the municipality utility company. This service is provided 2-3 times a week for central communities and once a week for other communities. This collection rate is partly due to the fact that the utility company of the municipality has only one functioning, large (12t) vehicle, which is 25 years old; it is too big to go into the rural areas and only limited transportation capacity is available to take the collected waste from the municipality to the regional landfill. As a result, only a limited amount of the collected waste is transported to the regional landfill at Moscanica, Zenica, which is approximately 60 km from the urban centre. Households in rural areas with no available waste collection service organize their own collection and transport, and dispose of the collected waste in illegal dumpsites.

In BiH, there is no separate collection system for hazardous materials, i.e. batteries, mercury, etc. and everything ends up in landfills or dumpsites.

Industrial waste

The Agency for Statistics has published data on quantities, types and flows of waste generated in "production process in industry, crafts and other processes" for 2008. The consolidated data was based on reporting from companies with 10 or more employees, engaged in the following activities: (a) mining and quarrying, (b) manufacturing, and (c) electricity, gas and hot water supply.

Again, the data for industrial waste is inconsistent. Compared with the EU PHARE data for 1998 of 863,632 tons of industrial and hazardous waste, the figure for 2009 is more than 10 times higher.

Business entities report on waste to the FBiH and RS ministries, as well as to cantonal ministries depending on amounts and contents, as they are obliged to under the Laws on Waste Management. Such data seems not to be systematically compiled at entity or national level, as industry waste data in FBiH and cantonal reports were collected through surveys. Once again, it is not clear whether or how this reporting system and the data set compiled by the Agency for Statistics are compatible, related, or shared between the relevant bodies.

The FBiH State of the Environment report indicates that non-hazardous industrial waste generation for

Table 8.2: Generation of waste from production activities, 2008

tons

Sectors	Total	of which hazardous waste
Total	9,533,786	91,788
Mining and quarrying	5,612,627	39,905
Manufacturing	3,563,358	51,324
Electricity, gas, water supply	357,801	560

Source: Agency for Statistics of BiH, First Releases, Environment and Energy, No. 1, Sarajevo, 15.3.2010.

2007 was between 1.85 and 2.35 million tons (slag, ash, CaCle, NaCI from thermal power plants, and steel and soda production process), and mining waste was 250,000 - 300,000 tons.

In FBiH, 225,000 - 337,000 tons of unusable old vehicles are left at temporary dump yards or open spaces throughout the entity. Old tyres are also burned or simply piled up for long-term storage.

There are very limited treatment facilities, i.e. safe incinerators or landfills for hazardous waste in BiH. Significant amounts of hazardous waste are exported to other European countries for treatment and disposal, i.e. Austria, Germany and Slovenia. As industry/firms are responsible for the treatment and disposal of the hazardous waste created through the production process, they either export it themselves or through the licensed companies which deal with such waste. However, in practice, the problem of improper handling of industrial waste is widely reported.

The cantons have also cleared their accumulated hazardous waste. For example, since 2000, Sarajevo Canton has provided €500,000 from the cantonal budget for the export costs of hazardous waste, where owners of the waste do not exist or cannot be identified, such as military waste located in river basins and obsolete pharmaceutical waste.

Medical waste

No statistical information on the generation of medical waste or obsolete medicines is available, as neither entity has a registry system for the medical waste generated. The FBiH State of the Environment report estimates the waste from medical institutions in FBiH at 5,000 tons per year. The entity Decrees on Health-Care Waste (FBiH OG No. 77/08, and RS No. 9/06) obliged medical facilities to appoint a responsible body to process medical waste, develop waste management plans, segregate waste, treat infectious waste by chemical or heat sterilization on site, and contract specialist companies to transport it to treatment facilities.

The implementation of this law is still in progress, as current practices for medical waste treatment require further improvement to minimize health and environmental risks. The FBiH State of the Environment report estimates, however, that only 39 per cent of the waste generated in medical institutions in Sarajevo Canton and 0.5 per cent of the waste generated in FBiH is handled properly. This means that 88 per cent of this type of waste is handled improperly in FBiH. It is also noted here that in order to prevent further generation of pharmaceutical waste, the above-mentioned law obliges medical institutions to have a contract with suppliers for returning expired pharmaceutical waste.

In BiH, a number of large medical institutions are using one-chamber furnaces for burning waste in an uncontrolled manner. Although both the main clinics in Banja Luka and Sarajevo have made progress towards safer medical waste treatment, considerable risks to public health still exist. The Clinic Centre in Banja Luka burns highly infectious waste, such as needles and pathological waste (i.e. body parts and placenta) at the clinic site using an old incinerator with a capacity of 1,000 kg a day at 800º C. Microbiological waste is sterilized and disposed of in landfills. Radioactive and chemical wastes from the Clinic Centre are collected by a company located in Doboj and sent to Austria for disposal. The old clinic incinerator is unlikely to meet modern standards and furthermore, residents in the area have been complaining about the odour and smoke from the facility. There is no procedure for issuing permits or monitoring the incineration process. As a result, due to the lack of measurement, it is not possible to establish with certainty whether improper incineration takes place. Experience, however, 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.

In Sarajevo Canton, the Ministry of Health has prepared a medical waste management plan and recently purchased three pieces of equipment to disinfect and neutralize infectious medical waste and to grind down sharp objects, which are currently used in the Clinical Centre of Sarajevo and two general hospitals. On completion of the process, some of the waste thus generated is deposited in a sanitary landfill, and some exported for further treatment.

Efforts were made to dispose of the piles of obsolete medical waste, which were a legacy of the war. However, it is difficult to assess progress with this, as there is no updated inventory of this waste. There is a plan to create such an inventory as part of the second phase of the World Bank project on waste.

8.3 Waste recycling and reuse

Recycling of municipal waste

A limited number of initiatives for the separation of waste have been initiated in BiH. In Sarajevo Canton, for example, under the EU CARDS project, starting in 2007 the Ministry of Spatial Planning and Environmental Protection and the cantonal public utility company RAD have distributed cartons for the collection of paper and cardboard, and PET and cans, in selected areas of three municipalities. So far, approximately 85,000 residents and 30,000 students have participated in this collection. RAD has procured and is operating a hydraulic waste-baling press in the Sarajevo landfill site, with a capacity of 10 tons of bales of waste per day. The cost of the collection and compressing of the separated waste is more or less covered by selling it on to companies for further processing.

Other pioneering recycling projects include a small-scale paper collection in Maglaj and paper and metal collection in public places in the town of Doboj, where the former state-owned utility has plans to develop a newly set up sorting centre into a profitable business. The positive results of these programmes remain uncertain as they were neither tailor-made, nor followed by extensive and targeted campaigning, nor did they attempt to integrate and engage all local stakeholders. Such initiatives are small-scale trials for recycling and need to be further developed with a view to sustainability. Such schemes need to be designed to be profitable, and ensure economies of scale.

There is growing pressure on cantonal/municipal authorities to reduce the final disposal of waste in landfills, due to a steep rise in access fees for newly built sanitary landfills. Landfill management companies with sanitary/improved landfills have already been putting construction and demolition waste into specific sites or using it to cover old dumpsites, as such waste accounts for up to 25 per cent of total municipal waste ending up in landfills. The authorities are also keen to introduce recycling systems to reduce the waste to be treated.

Recycling of industrial waste

Limited amounts of industrial and hazardous waste are recovered or reused. FBiH estimates that only 10 per cent or less of the total volume of industrial waste is used as secondary raw material, e.g. using part of the slag and ash from thermal power plants for construction materials. Currently, between 150,000 and 200,000 tons of slag and ash are used in the cement industry. In general, the potential for reuse and recycle is large - for example in Ukraine more than 30 per cent of hazardous waste was reported as having been recovered for other productive uses.

Business opportunities

Businesses dealing with recycling and recovery of waste are emerging in BiH. For example, C.I.B.O.S., a private company which has seven branches in the country, collects and purchases around 250,000 tons per year of metals and other materials, mainly from industry, for processing and export to Austria and Slovenia. Car batteries are sealed and sold to a company in Brčko.

There are other, smaller examples: in Johovcu, near Doboj, a company is processing 500 tons per month of polyethylene terephthalate (PET) bottles, which come from utility companies, the public and enterprises in several cities in the country. The plant also produces beverage bottles from recycled materials.

Interviews in the waste business sector demonstrated that there are enterprises eager to pursue business opportunities if the necessary policies and laws are introduced. For example, oil reuse/recycling businesses can be operated only if the permit system is established for the transfer and processing of materials. For recycling packaging materials, a countrywide collection of packaging waste needs to be established, as economies of scale are required for such a business.

8.4 Waste disposal

Landfills and dumpsites

Uncontrolled and inappropriately located landfills cause serious health and environmental problem through polluted fresh- and groundwater, destruction of vegetation cover, and proliferation of disease vectors (insects and rodents). The development of sanitary regional landfills and the closing down of open dumpsites/landfills, including registered municipal landfills and illegal dumpsites, were defined as priorities in the Strategy for Solid Waste Management (2000). Financial support was provided to implement these priorities in the form of a loan from the World Bank and the European Bank for Reconstruction and Development, and grants from bilateral donors.

There are 25 registered municipal landfills in RS and 50 in FBiH. Only a few landfills, i.e. in FBiH, Uborak in Mostar, Tešanj, Smiljeviči in Sarajevo, and Mošćanica in Zenica, and in RS, Bosanska Lupa, Bijeljina and Banja Luka, are categorized as sanitary or, at least, controlled landfills. According to the Law on Waste Management, it was decided that municipal landfills should all be closed by 2008, and only sanitary regional landfills would be used. However, according to government sources, the time limit proposed has been postponed until 2012.

Countrywide in BiH, 10-15 per cent of illegal dumpsites have recently been closed, although there are estimates of 1,100 dumpsites still in use. These figures are often indicated in government documents. There is no inventory of illegal dumpsites, but according to the FBiH State of the Environment report, there are almost 2,000 "inventoried illegal" landfills in the entity. It is forbidden to dispose of hazardous industrial materials in landfills (Law on Waste Management), however in practice this is not strictly followed. Furthermore, hazardous waste from households, such as mercury and batteries, is not separately collected and treated and thus ends up in dumpsites. A number of such dumpsites are located close to riverbanks. This, combined with recent small-scale flooding in mountainous areas, caused the blossoming of the so-called "Balkan flowers" - used plastic bags and PET bottles hanging from trees and floating down rivers in beautiful mountain regions.

Under the 2000 Strategy for Waste Management in BiH, it was decided to construct 16 regional landfills. It was also decided that open municipal landfills would be closed by 1 January 2008, which has now been extended to 2010, as all waste would have to be transported to the new regional sanitary landfills. Some of the regional landfills are cross-entity ones, i.e. the Moscanica landfill in Zenica in FBiH is used by both FBiH and RS municipalities.

With the World Bank loan, the rehabilitation and construction of six regional landfills started (phase 1, June 2002 – June 2010, US$ 26 million) in Sarajevo, Zenica, Tuzla, Bihać, Banja Luka, and Bijeljina. However, no consensus on selecting the locations of the Tuzla and Bihać landfills was reached during the period, so these two projects are on hold.

The Law on Waste Management specifies that the landfill permit shall state the type of landfill concerned (municipal or hazardous) and a list of the types and quantity of waste to be accepted. As the examples below will illustrate, the majority of existing dumpsites, as well as newly constructed regional landfills, are receiving a variety of types of waste, not limited to municipal waste, including hazardous household waste, medical, animal, and industrial waste.

The Sarajevo landfill, located in a suburb of Sarajevo, with a current surface area of 65 ha, but with the possibility of expansion into the surrounding area, was rehabilitated and reconstructed with a World Bank loan (phase 1) as a regional landfill. It serves nine municipalities (spread over an area of 12,733 km^2) with a total population of 450,000, and it will be operational until after 2030. The old part of the landfill (upper plane) was closed, equipped with methane gas collection pipes, and planted with approximately 2,500 trees. The new landfill meets EU standards and the site was fitted with new disposal technology (i.e. a waste layer of 0.5 m and an inert layer of 10 cm. of polyethylene high-density (PEHD) foils). The methane gas collected through the old and new dumpsites provides enough electricity for the operation of the landfill site (235 kW/h). Modern wastewater treatment and monitoring systems have been newly installed and are currently in the final stage of commissioning. The landfill site has also installed a monitoring system for gas concentration and radioactive activity and for ground- and wastewater levels. Sarajevo Canton public enterprise RAD operates the landfill and waste collection service and has obtained ISO 9001 and 14001 certificates.

For 2008 and 2009, an average of 161,815 tons per year of waste were disposed of at the site. An effort to reduce the amount of waste that goes into the sanitary landfill has started: all construction waste is used to

cover some of the waste site, including rubble from construction of access roads to the landfill. The site has a sorting and pressing facility for separated waste, paper, PET and cans, which are collected through special trash bins (see details on recycling above).

The Banja Luka landfill, with a capacity of 109,500 tons per year (300 t/day), is a sanitary regional landfill, which is expected to be used for at least the next 20 years. The landfill is located about 10 km from the city, and serves eight municipalities, with a total population of 440,000 across an area of 4,718 km^2. With the loan from the World Bank (phase 1) and the European Bank for Reconstruction and Development, the old dumpsite, which had been used since 1978, was rehabilitated and since 2003 a linear extension new dumpsite has been built to fulfil the criteria of the RS Law on Waste Treatment and European Union standards. The eight municipalities who use the site founded the utility company DEP-OT for waste management and landfill operation. The landfill is equipped with a monitoring system for air (SO2, NO2, and methane gas), groundwater levels, seepage water, and well water.

The sampling analysis of leachate from landfill that is collected in a catchment pit under the landfill dam largely fulfils the standards set in the RS Law on Waste Treatment, except for cadmium, KMhO4 (dissolved organic solution) and iron. Currently there is no wastewater treatment system and wastewater flows into the river. A wastewater treatment system is planned as part of the second phase of the World Bank project.

In 2009, about 120,000 tons of waste were dumped in landfill. Of this, 77 per cent by weight is household waste. Non-household waste, such as demolition and construction waste, excavation of soils and concrete, animal waste, non-hazardous waste, old tyres and medical waste are accepted on payment of a small fee. Trucks are weighed at the gate and the contents of the waste declared, as fees vary according to the types of waste. Although there is no sorting station for waste separation, a company is paying small fees to DEP-OT and collecting valuable materials, i.e. metals, from the landfill site.

Not all the newly constructed regional landfills are working as well as was expected. Some municipalities are not using regional sanitary landfills, mainly due to increased costs, landfill fees and transport costs. The Bijeljina regional sanitary landfill was designed to serve five municipalities, Bijeljina, Ugljevik, Lopare, Teočak and Čelić, with a capacity of 150 t/day for 20 years. However, three municipalities (Ugljevik, Teočak and Čelić) have not transported their waste to the landfill, and have instead deposited the collected waste at illegal dumpsites. One of these three municipalities, Čelić, is 50 km away from the landfill, which increases transport costs for the public utility company. For the other two municipalities, Ugljevik and Teočak, where waste is collected by a small company, it can fairly be said that they did not wish to pay the landfill fees which were KM 8/t (€4.1/t) in 2008 and are about to increase to KM 20/t (€10.22/t). One municipality (Lopare), which is 45 km away from the landfill and used to deliver 7 t/day, stopped delivery for several months.

The second phase of the World Bank project (Nov 2008 – Feb 2014) will provide US$ 40 million as a loan to BiH to further improve the country's waste management services and infrastructure. BiH will co-finance the project in an amount of US$ 3.5 million. The candidate sites are: in FBiH, Mostar, Goražde, Zenica and Livno; and in RS Prijedor, Zvornik, Derventa, Doboj-Tešanj and Trebinje. The World Bank loan will be used for rehabilitating existing disposal sites, closing illegal dumps, improving collection infrastructure, supporting equipment purchases, and to a limited extent, converting existing small dumpsites into transfer stations where collected waste can be temporarily stored for further transfer to the regional landfills. At more advanced regional landfills, the World Bank will also support upgrading processes such as sorting, recycling and gas capturing, and prior treatment of waste.

Parallel to the World Bank Project, the Swedish International Development Cooperation Agency (SIDA) started a 4.5-year, €10 million, project to assist BiH to improve solid waste services in municipalities, including 13 municipalities surrounding two regional landfills in Zenica and Bijeljina. The project includes capacity-building at entity and municipal levels and investment in equipment for municipal waste services.

Although it is necessary to close down open dumpsites and increase the number of sanitary landfills, there are still two issues to be considered for selection of regional landfill sites and waste management services around them: cost and location. For many municipalities, the transfer of waste to a regional landfill will mean increased costs. In order to reduce costs, reduction in the volume of waste that needs to be transferred to the various collection sites, and/or setting up or improving waste transfer stations may be well worth considering. The selection of the regional landfill sites and obtaining a consensus from the local

population still appears to be a challenge, and further efforts may be needed to address the issue.

8.5 Policy, legal, and institutional framework

Policies and strategies

In 2000, the Solid Waste Management Strategy was developed with support from the EU (EU/EC PHARE Project) and adopted by RS. Although the Strategy has not been formally adopted in FBiH, many of its provisions are respected. The Strategy recognizes an improvement in waste management as a priority for the country and "gradual incremental change" as the only cost-effective way forward. It highlights the need for reduction and recovery/recycling of waste as a cost-effective way forward, as well as waste treatment with minimum environmental impact. The Strategy sets out the responsibility of the government authorities for the development of policy, legislation, standards, guidelines, system of payments for services, taxation and incentives for industry, and the establishment of an independent body responsible for enforcement. It was backed up by 12 detailed technical papers, e.g. on waste data analysis, cost evaluation and review of the institutional and legal framework.

The specific recommendations made in the Strategy concern (a) data management (establishment of a data collection system), (b) institutional structures (responsibilities of entity Governments, cantonal and municipal authorities), (c) legislative control (development of a law on solid waste and a series of supporting laws), (d) domestic waste management (establishment of 16 regional landfills, closure of uncontrolled dumpsites, extension of waste collection coverage), (e) clinical waste management (establishment of segregation and handling procedures for infectious waste for safe storage at health-care facilities and disposal of expired drugs), (f) industrial waste management (segregation of waste, proper treatment and safe disposal), (g) recycling (introducing cost-efficient recycling systems in a gradual way), and (h) education, professional training and public awareness. The Strategy sets out those actions to be undertaken in the short term (3-7 years) and longer term (10-15years).

A key part of the Strategy centres on the management of municipal waste, in particular establishing multi-municipal/cross-entity landfills. Waste collected from both urban and rural areas would be transferred to larger containers via transfer stations for transportation to a regional landfill site, which will eventually meet EU standards.

No official assessment and evaluation of the implementation of the Strategy has been undertaken in BiH, but good progress has been made on the development of regional landfills. In addition, regulations on medical waste management have been enacted. However, no major progress has been made on the establishment of regulations for the recovery of priority waste streams, such as packaging, motor oil and tyres.

In FBiH, a new Strategy for Environment Protection for the period 2008-2018, which addresses waste issues, was adopted in 2009. The new strategy includes targets covering a wide area of waste management, with clear goals and action plans. RS continues to implement its existing Solid Waste Management Strategy, and is currently developing a new strategy for waste.

Although the importance of public awareness-raising and education on waste issues was highlighted in the Solid Waste Management Strategy (2000), governments, cantonal authorities, landfill managers and NGOs pointed out that much work on this will be needed. Thus far, limited activities have taken place, i.e. a one-month commercial TV campaign organized by RAD (the Sarajevo landfill management company).

Legal framework

Both FBiH and RS have a law on waste management (OG FBiH No. 33/03, OG RS No. 53/2 and amendment No. 65/08 respectively) and the two laws are harmonized.

These are framework laws and include general provisions for the overall concept of waste management, while specific issues are dealt with in by-laws that have been or are currently in the process of being adopted. The objectives of the laws are to encourage and provide the basic conditions for reducing waste production, reusing and recycling, the extraction of secondary materials and the possibility of energy recovery, and safe disposal. The law also sets up a control mechanism and fines for non-compliance.

A small number of by-laws were established following adoption of the Law on Waste Management. The Decrees on Health-Care Waste (OG FBiH No. 77/08, OG RS No. 9/06) obliged health-care facilities to develop waste management plans for segregation of infectious waste and safe storage in containers, and for transporting it for final treatment and disposal by the licensed institutions. Highly infectious waste needs to be treated by heat or chemical sterilization

on site before transportation elsewhere. The decrees also require health-care facilities to have a contract with providers to accept returns of expired medicines. However, the overall development of the by-laws is not sufficient to implement the Law on Waste Management.

Specific by-laws and regulations on the handling of hazardous waste, except those for the transboundary movement of hazardous waste, do not yet exist, and there are no regulations or by-laws on handling and treatment of E-waste. According to the sanitary landfill operators, such waste is not accepted, and only a certain number of computer parts are recycled by the industrial waste recycling companies.

Furthermore, there are cases of lack of enforcement of the established by-laws. As yet, there is no reliable data on waste generation in BiH. For example, in FBiH, waste management operators, as well as industry, are responsible for reporting their detailed data to the entity and cantonal authorities which issue licences according to the Decree on reporting obligations for operators and manufacturers of waste with regard to supervision, monitoring and evidence of conditions stated in waste management permits (FBiH OG, No. 9/05). Landfill operators are obliged to report, at least annually, to the competent authorities on the types and quantities of disposed waste and the results of monitoring.

Institutional framework

At entity level, the RS Ministry of Physical Planning, Civil Engineering and Ecology is in charge of waste management issues. In FBiH the Ministry of Environment and Tourism is in charge. These ministries regularly collaborate with other ministries, such as the FBiH Ministry of Agriculture, Water Management and Forestry or the RS Ministry of Agriculture, Forestry and Water Resources for management of animal waste, the entity Ministries of Health for medical and radioactive waste management and the Ministry for Energy, Mining and Industry for industrial waste management in FBiH.

In FBiH all responsibility for waste issues was transferred to the cantonal level, in line with article 11 of the Law on Waste Management. The respective cantonal ministries responsible for physical planning and the environment are also responsible for the development of cantonal waste management strategies, laws and regulations, issuing permits to business entities for handling waste (up to a certain size), and monitoring. Sarajevo Canton, for example, has developed a waste management strategy, which determines the basic goals for different types of waste prevention and minimization, introduction of quality waste management systems, supervision of waste storage and disposal, and disposal of medical and pharmaceutical waste, waste oils, PCBs, construction waste and asbestos, in particular. A set of laws, a database and pilot projects have been developed and implemented.

Municipalities are responsible for the development of waste management plans and the organization of waste collection through the establishment of municipal enterprises, which can be public, private, or private-public, which collect and dispose of waste. Such utility companies are also financially responsible for their operations i.e. collection of fees from households and paying access fees to the landfill operators if they are part of a regional landfill scheme. The municipalities in Sarajevo Canton are exceptions, as the canton utility company collects waste as well as managing landfill operations. Only a few municipalities in BiH have worked out a local plan for waste management.

There is also an Inter-Entity Environmental Steering Committee that was established in 1998, consisting of government officials, professionals and academics, to coordinate environmental policy on harmonizing waste laws and joint project implementation between the entities. Entity government officials commented that various laws and regulations have been successfully harmonized between the two entities and also that they have been in dialogue over the implementation of regional landfill developments, as some of them will serve municipalities from both entities.

8.6 Conclusions and recommendations

In 2009, after 10 years of not collecting information, the BiH Agency for Statistics started consolidation of a nationwide municipal, industrial and hazardous waste database from the reports and responses to questionnaire surveys. It is not clear how the information and data, which have been collected by the authorities issuing the relevant licences at cantonal and entity levels, are shared with the Agency for Statistics. There is much room and need for improvement in the quality and content of the information produced through close collaboration between the State-level Agency for Statistics, the RS Ministry of Physical Planning, Civil Engineering and Ecology, the FBiH Ministry of Environment and Tourism, the Brčko District Government, and the cantonal authorities, all of which are receiving data and information on waste

from waste management service utilities, enterprises and others.

Recommendation 8.1
The Agency for Statistics, the Federal Ministry of Environment and Tourism, Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, the Brčko District Government and the cantonal authorities should improve their data and information collection on all types of waste, in order to provide the basic information needed for the development of sound waste management mechanisms, ensuring the efficiency of waste data collection and consolidation, as well as consistency [and correspondance to actual waste flows].

The RS Ministry of Physical Planning, Civil Engineering and Ecology, the FBiH Ministry of Environment and Tourism, the Brčko District Government, municipalities and waste management companies should accelerate construction of the regional sanitary landfills by selection of sites which will be accepted by the public and municipalities, and establish waste management services which are financially and socially sustainable. Consideration should be given to the municipalities which are distant from the planned sanitary landfill sites to find the best option for them from the point of view of minimizing transport costs by either upgrading current municipal dumpsites, or constructing transfer stations and introducing separation of waste.

Another major challenge that still remains at large for the RS Ministry of Physical Planning, Civil Engineering and Ecology, the FBiH Ministry of Environment and Tourism, the Brčko District Government, and the cantonal authorities is to clear and/or close a number of illegal dumpsites which still exist.

Recommendation 8.2
(a) The entity Governments and municipalities should accelerate the construction of regional sanitary landfills and the establishment of financially, socially and environmentally sound municipal waste management systems, and close open dumpsites which are currently being used;
(b) The entity and cantonal governments should make further efforts to close illegal/uncontrolled dumpsites whose locations are threatening health and the environment.

Recommendation 8.3:
The FBiH and RS Ministries of Health, in cooperation with the other relevant ministries - the Federal Ministry of the Environment and Tourism, Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, and the Brčko District Government - should adopt international best practices in order to improve their hazardous medical waste management.

Recommendation 8.4:
The Federal Ministry of the Environment and Tourism, Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, the Brčko District Government and the cantonal authorities, in collaboration with various partners, should:
(a) Raise public understanding and awareness of sustainable waste management to facilitate further progress on the development of regional landfills, prohibition of illegal dumping of waste, separation of waste, and minimizing the generation of waste in households;
(b) Make efforts to distribute information widely on waste generation and management, relevant policy documents, and the development and establishment of legislation.

Industrial and municipal waste is often a source of valuable raw materials with a measurable economic value. Increasing awareness among industries about recycling opportunities, technical options, and the development of policy and the legal framework to encourage business development is required.

Recommendation 8.5:
The Federal Ministry of the Environment and Tourism, the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and the Brčko District Government should scale up and promote materials and energy recovery from waste through separate collections, reuse and recycling, and foster business development based on waste.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

Waste management is one of the environmental protection priorities in Bosnia and Herzegovina, as evidenced in the NEAP, the Mid-term Development Strategy and the Solid Waste Management Strategy and the entities' new Laws on Waste Management.

The focus now should be on implementing the Strategy and the legislation. It is necessary to develop and implement an overall environmentally sound waste management system to reduce the negative environmental impact of municipal waste disposal.

Some of the measures to improve the system are: separating municipal waste (paper, plastic and hazardous waste) and, to the extent possible, recycling municipal waste, such as paper, glass, aluminium and organic waste, and industrial waste; separating and incinerating medical waste; ensuring the environmentally sound disposal of radioactive waste; composting organic waste; ensuring the biological treatment of municipal waste; introducing stricter standards for municipal waste disposal; and introducing economic instruments and improving existing financial mechanisms for the overall waste management system. (See also Chapter 2 on economic instruments and privatization.) Energy production from waste should be considered as a longer-term measure. Attention also needs to be given to reducing waste generation at the source and to introducing life-cycle analysis of goods, with particular reference to those that could be recycled (for example, beverage containers, cars, tyres, and batteries).

At present there is no regular reporting system for municipal and industrial waste, although work has begun to introduce such a system under a project financed by the EU. This information is needed to define methods of waste treatment and disposal, allocating the resources and developing concrete measures to improve the overall waste management system.

EPR I - Recommendation 6.1:
The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with municipalities, should implement the Solid Waste Strategy. To strengthen its implementation, they should:

(a) Raise awareness and organize training in separation, recycling and reuse; and
(b) Undertake feasibility studies for organizing the separate collection of municipal waste and constructing facilities for its recycling and reuse. The studies should also examine economic aspects including the potential market for such recycled or reused goods.

At present there is no industrial waste recycling or reuse as secondary raw material. However, such industrial waste as electrofilter ash from thermoelectric plants, red mud from aluminium plants, steel slag and mining waste are valuable sources of secondary raw material that could be used in other industries. Mining waste (overburden), for example, could be used to rehabilitate municipal landfills and repair roads, restore contaminated land for building; spent oil and solvents could be processed to produce low-grade solvents and oil.

EPR I - Recommendation 6.5:
The Federation's Ministry of Physical Planning and Environment in cooperation with its Ministry of Energy, Mining and Industry and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology in cooperation with its Ministry of Economy, Energy and Development should:

(a) Conduct feasibility studies on the introduction of environmentally sound processes for the use of some categories of waste or its components as secondary raw material; and
(b) Prepare relevant legal acts on recycling and processing secondary raw material.

Chapter 9

FORESTRY, BIODIVERSITY AND PROTECTED AREAS

9.1. Forestry

Forests cover over half the territory of Bosnia and Herzegovina (BiH) and thus have an important role to play in maintaining the high level of biodiversity, protecting water resources, preventing erosion in the mountains, mitigating climate change effects and the provisioning of a number of ecosystem services and resources for local communities. During the last 10-15 years forests have provided substantial additional income for rural communities through jobs, firewood, non-timber forest products, hunting, and recreation. Although there are no reliable data or statistics on the benefits to society of these forests, in the post-war period they have significantly contributed to recovery and building social stability in the country. After the post-war years of poorly regulated forestry management, since early 2000 BiH has made notable progress in building a more effective forest regulatory and management system. This system has a lot of commonalities in both entities, which allows for rigorous and effective forest management in the country. At the same time the forestry sector is treated as an economic sector of secondary importance and suffers from under-budgeting and lack of political commitment.

Since 2003, both entities have succeeded in developing and adopting new forestry laws and in particular regulations, although some gaps still exist, mostly at the regulation level. At the same time legislation is subject to regular changes and amendments. Currently, both the Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS) are in the process of updating their forestry legislation.

The flow of information on forests has also improved significantly: both entities (the FBiH Ministry of Agriculture, Water Management and Forestry and the RS Ministry of Agriculture, Forestry and Water Resources) publish annual statistical information on the state of forests and forestry. These publications provide significant amounts of information related to the status of forests, key activities on forest protection and afforestation, forestry production, financial data, review of changes in regulations, key strategic directions for further developments, etc. These reports have similar structures, which makes for easier comparison and an overall picture for the forestry sector in the country. The FBiH report includes key statistics on forestry in each canton, and a substantial proportion of the key forestry information, including statistics and regulations in FBiH, is available online at the Ministry website. In RS, the official government site provides limited information on forestry.

Both entities actively participate in a number of international projects related to improvement of forest management and also provide funds for internal projects through the system of tenders for local scientific, private organizations and NGOs.

Forests and forest cover

Public forests cover 43.8 per cent of the entire territory of the country. Private forests cover a further 281,965 ha in RS (11.5 per cent of RS territory) and 227,000 ha in FBiH (8.7 per cent of FBiH territory). Thus, in total all types and categories of forests cover 2.75 million ha or 53.7 per cent of the territory of BiH. The overall size of the forested area is quite stable.

Mineral resources extraction, conversion for hydropower and unplanned timber felling are the main drivers for forest degradation. Key threats to forests identified in BIH include erosion, forest fires, disease and forest vermin, climate change with its warming trend (which results in displacement of the habitats of autochthonous species and the introduction of undesirable invasive species), litter and waste disposal in forests, and illegal usurpation of forests and forest land (up to 2 per cent of all public forests in RS).

The number of forest fires is directly linked to the condition of stands of trees and to climate, although the human factor continues to be the key reason behind forest fires in the country (see table 9.1 below).

Private forests (18 per cent of all forests in FBiH and 21.9 per cent in RS) are dispersed among hundreds

Table 9.1: Forest fires, 2008

	Number	Affected area, ha	Damage, million KM
FBiH	355	5,354	3.79
RS	158	4,903	0.50

Sources: Information on public forests in FBiH in 2009 and planning for forests for 2010 and Information on the State of Forestry in RS.

Table 9.2: Status of forest lands

Category	FBiH	%	RS	%	BiH	%
High forests with natural regeneration	519,141	44.26	462,704	47.08	981,845	45.54
High degraded forests	18,732	1.60	23,111	2.35	41,843	1.94
Total forest cultures	65,121	5.55	62,749	6.38	127,870	5.93
of which:						
Forest cultures with assessed timber volume	53,997	4.60	..	..	..	..
Forest cultures without assessed timber volume	11,124	0.95	..	..	..	..
High forests TOTAL	602,993	51.41	548,564	55.81	1,151,557	53.42
Coppice Forests	279,436	23.82	174,311	17.73	453,747	21.05
Overgrown forest land TOTAL	882,429	75.23	722,875	73.55	1,605,304	74.46
Bare forest land TOTAL	290,545	24.77	260,018	26.45	550,562	25.54
of which:						
Bare land capable of afforestation	188,503	16.07	208,152	21.18	396,655	18.40
Bare land incapable of afforestation	102,041	8.70	51,866	5.28	153,907	7.14
OVERALL TOTAL	**1,172,974**	**100.00**	**982,893**	**100.00**	**2,155,866**	**100.00**
Areas under land mines (in all categories above)	128,217	10.93				

Sources: FBiH Ministry of Agriculture, Water Management and Forestry and RS Ministry of Agriculture, Forestry and Water Resources, May 2010 (data for 2009).

of thousands of owners. Forest stands are fragmented, with the number of owners increasing as a result of continuous division owing to inheritance processes. In FBiH there have been attempts to buy forests from private owners to incorporate them into the public forest stock. The management of private forests is delegated to cantons and municipalities.

Estimates provided by both entities show that around 9.9 per cent of all forests (128,216.7 ha) in FBiH and a similar area in RS (6.5 per cent) still have land mines in them. A similar figure of 10 per cent was reported in the first EPR in 2003. This affects efforts to improve the effectiveness of forest management, including fire and disease control, proper forest taxation, and other activities in forests, such as the collection of non-timber forest products (NTFP), hunting and recreation.

According to the official publication Information on the State of Forestry in Republika Srpska (RS Ministry of Agriculture, Forestry and Water Resources, 2010) forest cover has significantly increased since 2003 – from 46 per cent to 54 per cent for the entire country and even more in RS – from 40 per cent to 51 per cent.

The first full-scale forest inventory in BiH was conducted between 1964 and 1968. The second State Forest Inventory covering the entire country[15] with around 250 different types of data is underway. This inventory covers all productive and non-productive forests and forest lands as well as other areas within the forest stock which serve or can serve for the purpose of forestry, or for other applications for forestry, or for the purpose of forest protection. All field work was carried out between 2006 and 2009 and the data is currently being processed. The final results will be available by the end of 2010 or in early 2011. The goal

[15] Based on a network of forest tracts that cover 4 km x 4 km in high forests and 2 km x 2 km in low and private forests.

Table 9.3: Dynamics of forest cover, 2003 and 2007

	Forest cover, per cent		Forest area per person, ha/ person	
Year	**2003**	**2007**	**2003**	**2007**
Europe *	34	44	0.34	0.34
BiH	46	54	0.57	0.54
RS	40	51	0.79	0.91

Source: Information on the State of Forestry in RS, 2010.
Note: * Excluding Russia.

of the State Forest Inventory is to collect data in both entities that will serve as the basis for:

(a) Preparation of a forestry strategy and development of long-term planning;
(b) Monitoring of the status of forests and forest land;
(c) Setting priorities for further forest research and development.

In RS the Law on Forests stipulates a full forest inventory every 20 years to establish the status of forests, identify changes and report on forest status at the entity level. Monitoring and control of forest stands are an ongoing process undertaken by the public enterprise JPS Šume RS, Sokolac.
In 2006, the CORINE project was completed in BiH, resulting in the production of a comprehensive map of land cover for the entire country, including forest cover.

Forest use and management

Recent forest data documents a significant increase in forest reserves in comparison with 2003. In 2009, total forest reserves in public forests increased to 350 million m^3 (see table 9.4), compared to 291 million m^3 in 2003 (based on the first EPR report). As for private forest reserves, for example in RS in 2009 these were estimated at 42.8 million m^3. In both entities deciduous forest is dominant.

In FBiH 79.2 per cent of conifer round wood is used for processing and pulp production and 20.8 per cent for firewood. This indicates that conifer forests have been properly managed. Round wood for industrial processing from deciduous forests accounts for only 30.24 per cent, while pulp and firewood account for 69.76 per cent. In the pre-war period there was no industrial capacity for deciduous pulp processing and no board factories that used deciduous wood. The major proportion of pulp wood is marketed as firewood, producing negative financial effects on the overall operation of forest management enterprises. Due to mismanagement of deciduous forests, uncontrolled logging and clear-cutting across a wide area, especially of beech forests in the pre-war period when trees of higher quality were logged and those of poorer quality were left behind, forests have been significantly degraded and will require over 50 years to regain stability and ensure sustainable production.

Table 9.4: Forest resources in public forests, 2009

thousand m^3

		FBiH	RS	BiH (total)
Timber volume	Coniferous	68,060	71,967	140,027
	Deciduous	93,698	116,239	209,937
	Total	161,758	188,206	349,964
Annual volume increment	Coniferous	1,968	2,250	4,218
	Deciduous	2,199	2,952	5,151
	Total	4,267	5,202	9,469
Annual timber cut	Coniferous	1,285	..	..
	Deciduous	1,634	..	..
	Total	2,919	3,415	6,334

Sources: FBiH Ministry of Agriculture, Water Management and Forestry and RS Ministry of Agriculture, Forestry and Water Resources, May 2010.

The FBiH Ministry of Agriculture, Water Management and Forestry is of the opinion that the timber industry should reorient and redirect itself towards processing of less valuable forest wood types, applying new technologies and more product finishing. This stems from the fact that the installed capacity for primary wood processing is 2.5 – 3 times higher than possible timber production (total permissible cut). In particular this includes the production of boards (particle boards, medium density fibreboards and hardboard) which account for a significant portion of overall FBiH imports.

Forest management and forest production in both entities are organized via specialized public enterprises:

- In FBiH, by public forest management enterprises (in each canton and belonging to the cantonal administration, which receives the profits for its budget). Enterprises work in accordance with cantonal regulations and under supervision of cantonal ministries based on 10-year plans as described below. These plans are approved by the government at cantonal level but also at entity level.
- In RS, by the joint stock company JPS Šume RS, Sokolac.

Forest lands in both entities are divided into forest management areas which are controlled and exploited by public forest enterprises. Only these enterprises are allowed to manage public forests based on 10-year plans and corresponding annual plans. Any use of forests by private companies whether for forestry or non-forestry purposes must be via a contract with the appropriate forest management enterprise (or enterprise division in the RS). In FBiH forest management enterprises have approved forest management plans in 8 out of 10 cantons (the canton of West Herzegovina has no forests), and the plans of all divisions of JPS Šume RS, Sokolac have also been approved.

According to the data provided by the RS Institute of Statistics, wood and cork processing and production accounted for only 3.9 per cent of overall industrial production in 2009 (and in FBiH, the relevant figure was of a similar size). In RS, the total income of JPS Šume RS, Sokolac for 2008 was KM 181.8 million, and the net profit was KM 5.1 million. A proportion of forestry income (5 per cent in FBiH and 10 per cent in RS) goes to the municipal budgets. A system of payments (60 per cent to the canton and 40 per cent to FBiH) for conversion of forest lands into mining areas was introduced in FBiH, with a requirement to pay for cutting and also for afforestation, including 20 years of maintenance for afforested areas. Both entities apply 0.07 per cent forest tax (required by forest law) on the profits of all legal entities operating in the country. This money goes to the budget and is supposed to be used for forestry development.

Various non-timber forest products (NTFP) are extensively used by the local population and private companies who hire local people in the rural areas to collect mushrooms, medicinal plants, berries etc. However neither entity has clear statistics on NTFP production and trade, nor any data on the NTFP resource base. The market for these products is also unregulated. However, the RS Forest Agency is attempting to develop a programme for NTFP. This

Photo 9.1: Vrelo Bosne

programme will define locations, total supplies, species, quantities, times and methods of NTFP collection and use, as well as the market value thereof, and the scope and type of works needed for site revitalization. The Ministry of Agriculture, Forestry and Water Resources has been involved in joint projects on NTFP with the United States Agency for International Development (USAID) and the Swedish International Development Agency (SIDA). In FBiH the Ministry of Agriculture, Water Management and Forestry is responsible for the preparation of regulations governing the cultivation and harvesting of NTFP. Following the repeal of the Forest Law, the Regulation on Cultivation, Utilization, Harvesting and Marketing of Secondary Forest Products (FBiH Official Gazette, No. 66/05), adopted on the basis of the said Law, also ceased to be valid. There is no formal institution responsible for carrying out training for those who harvest such products and collectors and processors do not have access to readily available information on potential markets for them.

During the EPR mission no statistics on illegal logging were presented. The inspectorates report 10-15 serious cases a year while small-scale illegal cutting by local people for personal needs (predominantly firewood) is common (an interview revealed a price of KM 30-40 per m^3 for illegally cut firewood in a rural area). Information on damage (in monetary form in KM) from illegal logging and on cases brought to court is incorporated into general reporting on violations (presented in reports on the state of the forests in both entities). Forestry bodies are aware of the processes and developments at the Ministerial Conference on the Protection of Forests in Europe (MCPFE), and of the Forest Law Enforcement and Governance (FLEG) process, and to a limited extent participate in their activities. RS has thus reported the adoption of an Action Plan on Prevention of Illegal Actions in the Area of Forestry and Wood Industry and in 2008, FBiH approved a control system for the custody chain for forest products.

Both entities have a similar ratio of criminal (36 per cent) and administrative (64 per cent) violations of forest law. Damage to forestry was estimated at over KM 1 million, but the level of payments of fines is very low: KM 31,168 in RS and KM 36,649 in FBiH in 2008. This corresponds to a very low level of successful court decisions in comparison with cases brought to court (e.g. in RS in 2008 decisions were adopted in only 288 out of 1,037 administrative cases submitted and in 42 out of 575 criminal cases).

Certification of forests is voluntary in BiH. Following the recommendations in the first EPR, significant progress has been made in both entities in certification under the Forest Stewardship Council (FSC). The process has also been driven by interest in export and better access to global markets. In FBiH the FSC certification as reported in 2009 was carried out in:

(a) Forest management enterprise Sarajevo šume Sarajevo, (forest management area Gornjebosansko, 14,554 ha);
(b) Forest management enterprise Unsko-sanske šume B. Krupa (forest management area Ključko, 14,759 ha);
(c) Forest management enterprise Hercegbosanske šume Kupres (forest management area Kupreško, 26,607 ha).

Certification of forests in RS started in 2005 and was completed by mid-2008. The public company JPS Šume RS, Sokolac is the bearer of a group certificate for its 23 organizational parts (the certificate number is SGS-FM/COC-004338, to be referred to by all wood processors who purchase raw material from the company). The certificate is valid from 10 February 2009 to 9 March 2013 and is subject to annual inspection.

Identification of high conservation value forests (HCVF) is an essential prerequisite for FSC certification. In March 2007 the State Government of BiH, together with ministries of both entities and the World Bank published a manual which provides a practical methodology for defining HCVF based on the toolkit adopted in 2006. This methodology made possible the provision of FSC certification. Following these, FBiH has started work on the identification of high conservation value forests (HCVF) and has

Table 9.5: Reported violations of forest law, 2008

	Number of reported violations	Criminal offences	Administrative offences	Damage, Million KM
FBiH	4,960	1,088	1,872	1.06
RS	1,612	575	1,037	1.79

Source: Information on public forests in the Federation of BiH in 2009 and planning for forests for 2010 and Information on the State of Forestry in Republika Srpska.

identified an initial 28,753 ha. Guidelines for HCVF have been completed for six cantons.

Policies, strategies and legislation

There is no national forestry strategy. Both entities are in the process of developing their forestry strategies and action plans. Completion of this work is expected after finalization of the forest inventory, currently ongoing in both entities with the support of the World Bank. In FBiH the strategy (provisionally for adoption by summer 2011) will consist of 22 components and will be supplemented by an FBiH forestry programme and forest policy for the coming 10 years.

In FBiH the Forest Law (OG FBiH No. 20/02, No. 20/03 and No. 37/04) was abolished by the Constitutional Court (verdict ref: U-26/08, OG FBiH No. 36/09) in 2009 (ceased in November 2009). This decision was based on a petition submitted by the mayor of the Konjic municipality and the Council of Municipalities and Cities of FBiH for the protection of the right to local self-governance. Thus, forest management in FBiH is currently governed by a temporary regulation on forests (with amendments) and a set of regulations adopted since 2003 as complementary regulations to the Forest Law. This temporary decree was extended from March 30, 2010 to June 30, 2010 and will be extended further until the new forest law is approved (expected by the end of 2010). Adoption of the new law will require revision of a significant number (26) of interim regulations. A draft forest law has been prepared and submitted to the Federal Government of FBiH. In line with the verdict of the Constitutional Court cited above, the draft is based on a thorough analysis of the Law on the Principles of Local Self-Governance in FBiH and the FBiH Constitution and with a view to harmonization with the European Charter of Local Self-Governance. The draft forest law provides for the delegation of competences to the cantonal forest management enterprises for the economic functions related to forest management, while administrative and regulatory functions will stay with the entity and cantonal ministries. The proposed text of the draft also provides for the preparation of secondary legislation within one year of the date of entry into force of the new law.

In RS, the Law on Forests (OG RS No. 75/08) is the key legal document in the area of forestry, with 32 subsequent regulations adopted during 2009-2010. This law requires development of a forestry strategy and a forestry development programme. Both documents are in preparation. Work on the forestry development strategy in RS was started in 2009 and it is expected to be adopted by the National Assembly by the end of 2010.

FBiH does not currently have a forestry programme, although one is currently under preparation, which will cover the next 50 years, based on five-year plans. Once adopted, the programme is expected to define general forestry policy in line with international arrangements and commitments, and to be directed towards protection and sustainable forest management, including maintenance and improvement of biodiversity in forests and forest land.

Elements of forest planning and principles of sustainable forest management are included in the 2008-2015 RS Spatial Plan. Forestry is considered an important sector which is to be reflected in the Spatial Plan (a chapter devoted to forestry in the plan and also references throughout the document). The Spatial Plan provides for the development of planning documentation, including the strategy for forestry development, which is to be prepared by 2011, as well as for revision of laws and regulations including the Law on Forests. The Spatial Plan for FBiH is in preparation (the draft was available and was under consideration by government authorities at the time of the EPR mission).

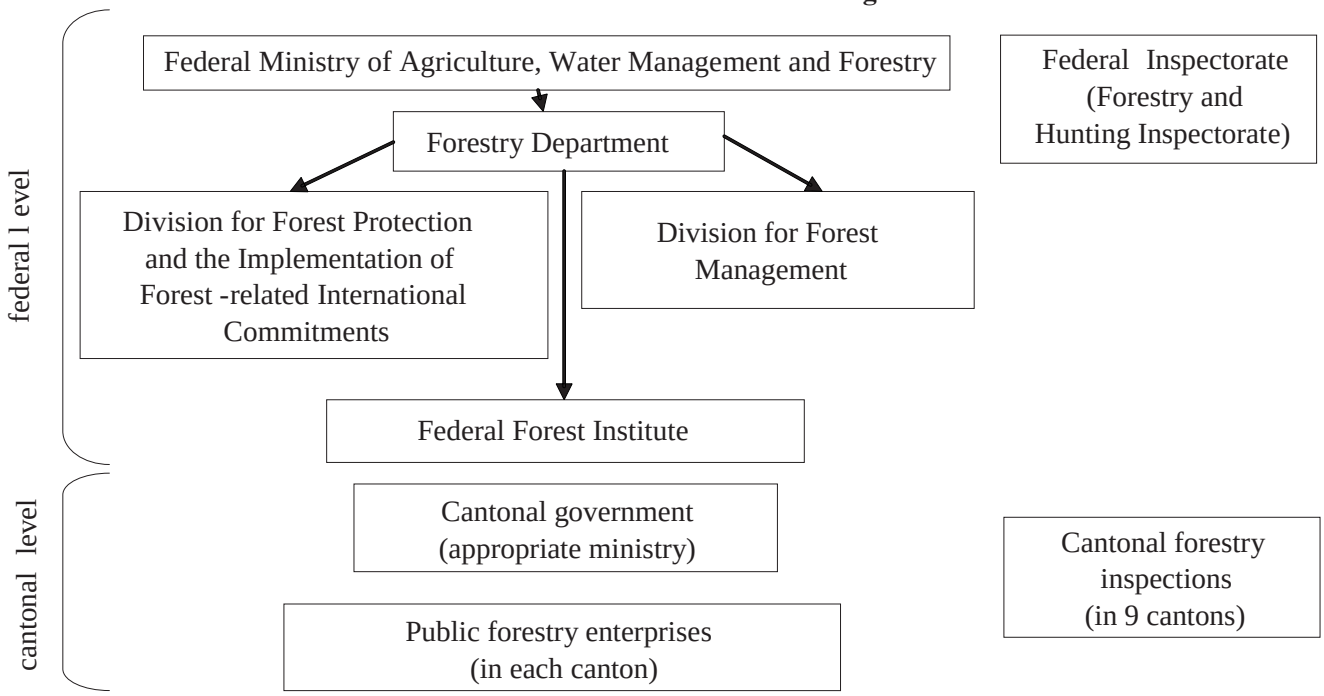
Institutional framework

According to the BiH Constitution, forests come under the mandate of the entities, as forming part of their natural resources and with regard to environmental issues. Overall supervision and some international relations on forestry issues at State level remain with MoFTER. The institutional framework in the forest sector is in general similar in both entities, with the main difference relating to the different administrative and territorial organization systems. Both entities suffer from a lack of capacity and capabilities in their forestry institutions, as well as inadequate coordination for international activities and obligations, and operations requiring the involvement of both entities.

Federation of Bosnia and Herzegovina

The FBiH Ministry of Agriculture, Water Management and Forestry is responsible for forests and forestry at entity level. The Ministry is also responsible for providing guidance to the cantonal forestry directorates and forest management enterprises. It also oversees the Federal Forest Institute, which provides capacity for producing documents (including strategies, programmes and plans), expert support, collection

Figure 9.1: Organization of the institutional framework for forestry in the Federation of Bosnia and Herzegovina



and processing of forestry data (including information provided by cantons) and a variety of forestry projects for the Ministry.

The cantons hold a number of responsibilities for forests: the cantonal governments (forestry directorates) are responsible for the observation, reporting and organization of firefighting and disease control, as well as for preparation and adoption of forest management plans for all private forests within their canton.

The Forest and Hunting Inspectorate within the Federal Inspectorate works in close coordination with the Ministry, including on implementation of existing forestry regulations and development of new ones, and on upgrade of forestry plans. The Inspectorate is working with the World Bank to establish a unified electronic database and system for all forestry control operations in FBiH, including data from cantons. The control system is based on acting regulations, such as the Law on Inspections, Administrative Law, and Criminal Law, which determine formats for inspections, checklists, the rights of inspectors and inspection procedures.

Expert, scientific and project support on forestry is provided by the Forestry Faculty of Sarajevo University.

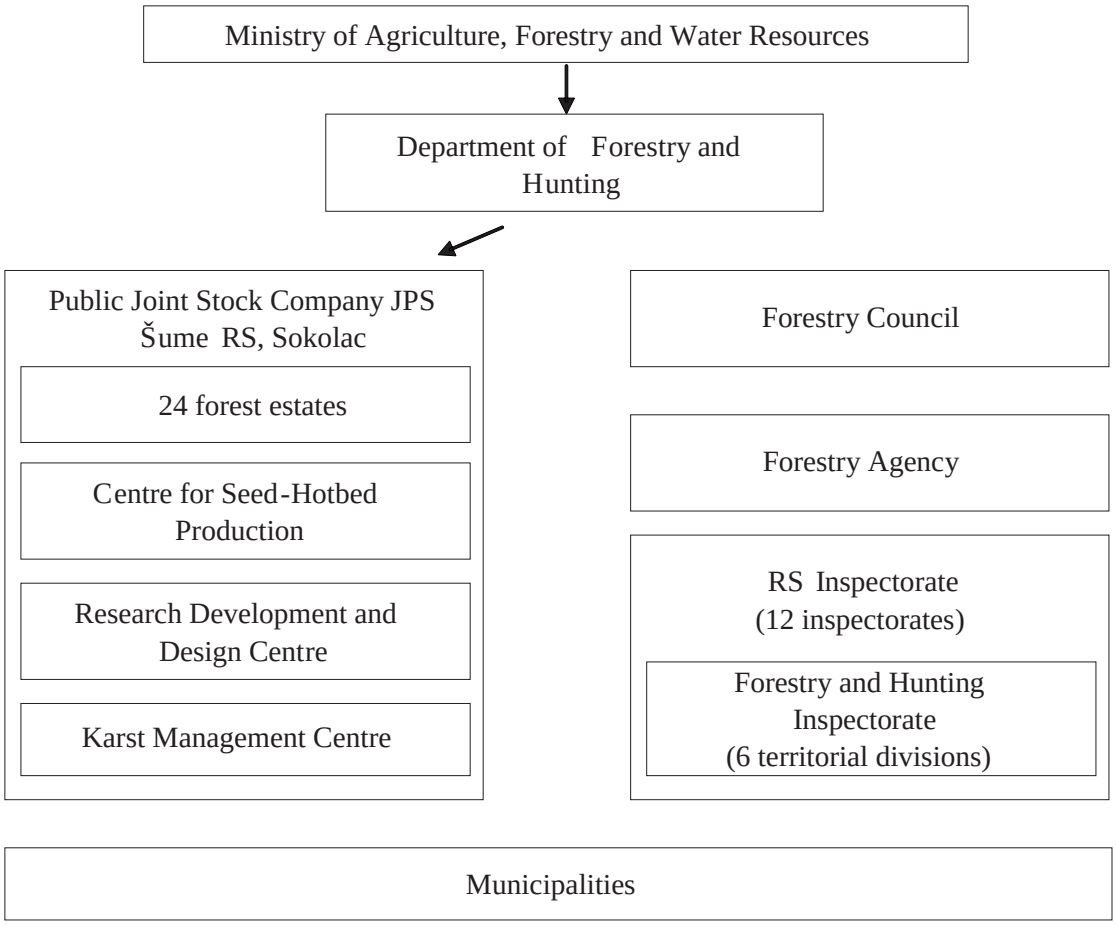
The Association of Forestry Engineers publishes a regular magazine "Our Forest" which provides material on forest management, forest regulations, scientific information on forests in FBiH and also practical articles on technical and engineering aspects of forestry.

Republika Srpska

The Department of Forestry and Hunting at the Ministry of Agriculture, Forestry and Water Resources is responsible for forests (including forest biodiversity) and forestry. Forestry (production and management) has been organized through the public joint stock company JPS Šume RS, Sokolac, which consists of (a) 24 forest estates, (b) the Centre for Seed-Hotbed Production, (c) the Research Development and Design Centre, and (d) the Karst Management Centre. A public company Directorate has been established for carrying out day-to-day and expert activities in the public company, whereas forestry management task units and area management have been set up within individual forest estates to achieve better efficiency. This enterprise also provides funds for projects on sustainable forestry (up to 20 projects a year).

The Forestry Agency was formed in 2008 to increase capacity in forestry matters and provide for development and monitoring of the 10-year forestry

Figure 9.2: Organization of the institutional framework for forestry in Republika Srpska



plans, organize the work of forest rangers (they currently work for JPS Šume RS, Sokolac) and help the Ministry with expert support. The Law on Forests stipulates the designation of a reporting and forecasting service within the Forest Agency to monitor the health of forests. The Agency is supposed to have 30-40 staff but is currently significantly under-staffed and has no proper budget.

The Forest Council is the forum for high-level discussion on forestry issues and developments. This body brings together representatives of the Ministry

Box 9.1. Areas of control of the RS Forest Inspectorate

- Forest works, facilities, devices and equipment
- Felling
- Storing, processing, marketing and export of forest products
- Implementation of forestry plans, annual management plans and projects
- Prescribed business documents
- Application and implementation of forestry standards
- Marking of trees planned for felling
- Use of special purpose funds
- Use of beneficial functions of forests
- Protection of forests from biotic and abiotic factors
- Concessions
- Enforcing measures and acts proposed by forest managers
- Legality of forestry and timber at facilities for primary conversion of wood,
- Forestry cultivation, nursery production, seed-stands and plantations
- Production of and trade in forest seeds and seedlings
- Protection of the health of forest seeds and plants

(deputy minister), the Forest Inspectorate, the municipalities and JPS Šume RS, Sokolac.

Forest control at the entity level is provided by the independent RS Administration for Inspection Activities (separated from the Ministry in 2005), which includes forestry and hunting inspection among its 12 inspectorates. This inspectorate has six territorial divisions with a total of 17 inspectors. It carries out forest control measures for both public (24 estates based on the 10-year and annual forest plans) and private forests (based on municipal management plans). Up to 70 per cent of the most serious cases of forestry violations pursued by the inspectorate are based on external complaints. There is an established system for registering complaints, including an online service on the website of the RS Administration for Inspection Activities, telephone lines, and personal communications at the level of the territorial divisions. The number of calls from the public is growing, due to increased trust in the inspectorate and its operations. The activities of the inspectorate are based on a sophisticated electronic system which incorporates inspection planning, terms of reference for each inspector and their plans, all forms, checklists and formats, inspection reports, register of violations etc. All inspectors undertake appropriate training. Thus the current forest control system in RS (a) is standardized and follows clear rules and procedures, (b) has a clear legal basis for its work and (c) is improving in terms of performance quality.

Management of forest stands and production and operations control in public forests is provided by the rangers of JPS Šume RS, Sokolac.

Municipalities are responsible for the development and approval of management plans for all private forests on their territory.

Significant scientific and expert support for the authorities on a number of projects and activities is provided by the Forest Faculty of Banja Luka University. In addition to administrative bodies at the entity level, there are non-governmental professional associations including the Association of Forestry Engineers and Technicians, the Association of Private Forest Owners, the Association of Contractors in Forestry and the Association of Wood Processors.

Both entities are experiencing challenges with internal capacity, including establishing capable, specialized forest agencies, and will need additional programmes for capacity-building (and also support in establishing better contacts with other countries and experts on forestry issues). In RS the Forest Inspectorate requires additional equipment for field operations.

9.2. Biodiversity

Since the first EPR, BiH has made significant progress in compiling information on its national biodiversity status and on reporting to international institutions. By the time of the field mission for this EPR, three national reports on the state of biodiversity and implementation of the Convention on Biological Diversity (CBD) had been prepared and submitted to the CBD Secretariat.

These reports are available on the CBD website. The draft fourth national report was prepared in 2009 and by the time of the EPR mission was in the final stage of consideration and adoption before submission. All reports provide key information on diversity of species, ecosystems and landscape, and genetic diversity. In addition, the fourth report identifies key threats and trends in biodiversity, and reports on the institutional framework, progress towards CBD objectives and 2010 targets.

The first EPR provided key information on biodiversity in BiH and additional, updated information can be found in the CBD reports. The 2009 Second National Report listed the key problems that the country faces in the area of biodiversity conservation and sustainable use and which are fully in line with the observations and conclusions of the second EPR mission. They are:

- Lack of an integrated information system on biodiversity objectives
- Ineffective institutional framework which is a major obstacle to the decision-making process and implementation at the international level
- Lack of cooperation between the relevant institutions in RS and FBiH
- Uneven level of implementation of international agreements and EU directives in both entities.

For the last two points the second EPR mission would add: inadequacy of existing coordination mechanisms between entities and insufficient capacity at State level to provide appropriate guidance to the entities on implementation of international obligations relating to biodiversity.

Current status of information on biodiversity

The key challenge for the country in terms of providing reliable data on changes in its biodiversity status is the absence of a proper biodiversity monitoring system. Existing reports (all of which were prepared within the last four years) mostly provide information on the

Box 9.2. EU Biodiversity Standards Scientific Coordination Group

Within the framework of the project "Living Heart of Europe" (WWF with support from the Norwegian Ministry of Foreign Affairs) the EU Biodiversity Standards Scientific Coordination Group (HD WG) was established in 2008. The main goal was to identify existing information relevant for the identification and selection of the main biodiversity values and areas in BiH, in line with the EU Biodiversity Protection Standards (i.e. the Nature Directives).

HD WG compiled a report on all existing information relevant for a potential Natura 2000 sites identification and designation, including information on institutions, experts, publications, digital information, legislation, stakeholders, projects and financing mechanisms, with links and contact details to make it possible to obtain further information. This initial set of data, if updated and maintained, could provide a basis for a biodiversity information system.

Table 9.6: Assessment of vertebrate diversity

number

Group	Families	Genera	Species	Threatened species		Threatened species in Europe	Endemic species	
				1st Nat.Rep.	IBAT globally		1st Nat.Rep.	IBAT globally
Total	**125**	**319 (2?)**	**588 (2?)**	**135**	**40**	**256**	**39**	**1**
Fish	27	69	119	?	25	110	12	1
Amphibians	7	8	20	3	1	6	6	-
Reptiles	12	26	38	11	2	10	12	-
Birds	60	165	326	97	4	78	-	-
Mammals	19	51 (2?)	85 (+2?)	24	8	52	9	-

Source: "Bosnia and Herzegovina – land of diversity", First National Report of Bosnia and Herzegovina for the Convention on Biological Diversity; IBAT.

current state of affairs (some of the data goes back to early 2000 or even to the 1990s) and cannot show the dynamic aspects of biodiversity status in the country, as in most cases there is no data for comparison. In addition, there is no system or institution responsible for collation, aggregation and maintenance of reliable biodiversity information, either for the entire country or for the entities. This makes any analysis of or reporting on biodiversity very challenging. However the EPR mission demonstrated that there is a lot of information on many aspects of biodiversity spread around different institutions (governmental bodies, museums, research organizations, NGOs, projects and programmes etc.), but it is often neither accessible nor verified. Sometimes it appears in a form which requires additional work to make it usable, predominantly in local languages, very often only in hard copy. Furthermore, there is no system or institutional structure currently capable of taking responsibility for the collection, processing, integration and further maintenance of biodiversity data in a systematic way, or at least of providing information on where data can be found. The statistical services in both entities and the State-level agency do not collect this information either. Thus capacity needs to be strengthened in both entities and at the State level, with assistance from European and international organizations and experts.

Poor information management, lack of expert capacity and of funding for research (there is no reliable data on many endangered species) are the main obstacles preventing both entities from developing red data books (RDB) in line with the International Union for Conservation of Nature (IUCN) approach. This is despite the fact that there are relevant legal requirements to develop RDBs in both entities (articles 22-23 of the FBiH Law on the Protection of Nature and articles 20 and 23 of the RS Law on the Protection of Nature). General information on a number of endangered species (but without any evaluation of their status) is provided by the CBD National Reports and some international databases, such as the World Data Base on Protected Areas and Integrated Biodiversity Assessment Tool.[16] In the absence of RDBs in both entities, the following documents, which describe rare and endangered species, may provide the necessary foundation for further RDB development:

[16] https://www.ibatforbusiness.org/

- Bosnia and Herzegovina
  - 2009 List of freshwater fish with conservation status and distribution - no legal power
  - 2009 Overview of some threatened mosses - no legal power
  - 2009 List of stenoendemic plants, with proposed threat status - no legal power
- Federation of Bosnia and Herzegovina
  - List of rare and endangered species prohibited for hunting (Law on Hunting, 2006), covers only mammals and birds - legally binding
  - List of plant species having conservation status (forest legislation), - legally binding
- Republika Srpska
  - List of rare and endangered species prohibited for hunting (Law on Hunting, 2008), covers only mammals and birds - legally binding
  - Preliminary list of rare plants - no legal power.

Global databases provide information on 51 globally threatened species recorded in BiH including 1 critically endangered, 9 endangered, 41 vulnerable and 5 endemic to the country. There is no consistency between this information and data at the national level, for example on endemic species (see table 9.6). This illustrates once again the situation with regard to the availability, reporting and management of information in the country.

The unique diversity of refugial habitats, such as cliffs, canyons and mountain cirques, ensures a wide variety of paleo- and neoendemic flora species, and tertiary and glacial relicts. Most endemic forms are recognized within the flora of higher plants, which is currently estimated to include 450 endemic taxa.

No information is available on the provisioning of ecosystem services, although a few attempts were made in this field in the context of several projects related to work on protected areas.

Threats to biodiversity

Different sources in both entities all agree on the list of key threats to biodiversity:

- Conversion of habitats, followed by overexploitation of resources (a variety of processes including activities in violation of the physical plan, especially in the coastal area)
- Hydropower sector development (wide spectrum of impact)
- Pollution (especially of water courses and related to poor waste management)
- Invasive alien species
- Uncontrolled hunting and trade in wildlife.

The hydropower sector is most often mentioned as a significant current and a major future threat to biodiversity including:

- Destruction of pristine canyons with high levels of biodiversity and endemism
- Destruction of habitats due to changes in the hydrological regime
- Eutrophication
- Accumulation (siltation).

This list is drawn from the draft fourth national report to CBD, "2010 National Assessments of Biodiversity Targets"

The most intensive processes of habitat conversion affect ecosystems which belong to specific BiH landscapes, including: (a) ecosystems of subalpine grasslands on carbonate; (b) subalpine grasslands on acidic ground; (c) meadows on karst fields; (d) sub-Mediterranean rocky grasslands and karst; (e) marshes and wetlands; (f) fresh water habitats; (g) polydominant refugial communities; (h) endemic pine forests, etc.

Use of biodiversity

Besides forestry, other uses of resources include hunting (including for trophies), fishing, collection of medicinal plants, collection of NTFP, and the harvesting for trade of species that are not hunted.

Hunting has traditionally been a very important part of the local culture. Hunting management was largely destroyed during the war and in the postwar period. As a source of both food and income, uncontrolled hunting during that time has significantly affected the status of the populations of all major game species. Currently, neither entity has a full inventory of hunting species and only fragmentary data on species populations is available for a limited number of hunting areas. Hunting areas can be allocated to associations of hunters, forest enterprises or private registered companies, or national parks (in RS). Hunting law provides an exhaustive list of species which may be hunted following existing regulations and procedures and lists of species which may not be hunted at all or in limited numbers by special permits and for special occasions. All hunting areas (including special areas belonging to the central governments and usually established for purposes of sustainable management, rehabilitation, restoration of populations and protection) should have 10-year plans (not all

currently do). Poaching, including by foreign hunters, is an issue. Key problems in the hunting sector relate to:

- Poor infrastructure and the poor level of hunting management (facilities, feeding, amelioration of hunting areas)
- Small populations of many species
- Not all hunting areas are established and approved at cantonal level (in FBiH)
- Road kills
- Ineffective implementation of concessions
- Absence of incentives and payments for users.

Out of approximately 5,000 forms of higher plants and fungi, around 600 species are traditionally in use. Apart from the species used in agriculture, many species are consumed because of their medicinal, nutritional, vitamin and aromatic properties. Due to unsustainable harvesting, utilization of these resources has had a significant, negative impact on the structure and condition of the many natural ecosystems. At the same time sustainable and well-managed production could provide additional opportunities for development and new jobs. However, fragmented estates, poor incentives and an underdeveloped market all affect the potential organization of this industry.

There is no official and reliable data available on the trade in wildlife and wild products, other than official statistics on international trade in specimens from the database of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (mostly from countries trading with BiH). At the same time, a wide variety of specimens, especially of local origin, are being traded (domestically and internationally), in particular:

- Amphibians (newts, olms and salamanders)
- Reptiles (vipers and turtles)
- Birds (singing)
- Medicinal and other plants (official export of dry plants in 2008: arnica montana – 600 kg; gentiana lutea – 44,000 kg; cetraria islandica – 41,378 kg)
- Hunting trophies.

BiH joined CITES in 2008 but at the time of the second EPR mission, key obligations on CITES had not been implemented, namely:

- Management and scientific authorities not identified
- National permit system not in place
- National legislation on the minimum CITES requirements not adopted
- The authorities including customs, not trained in CITES implementation
- No guidelines, identification guides, or other methodological support in place for the implementation of CITES and the wildlife trade.

In the absence of CITES procedures and regulations, the country:

- Cannot continue legal trophy hunting and export activities
- Will suffer from significantly reduced economic activity related to international hunting operations and tourism
- Cannot adequately control the trade in medicinal plants.

Policies, strategies and legislation

Notable progress has been made in BiH in relation to the development of biodiversity-related strategic documents and regulations at different levels and with varying status.

In line with obligations under CBD, a draft national biodiversity strategy and action plan (NBSAP) was prepared in 2008 with support from UNDP/GEF. After consultations with the public and experts it is now under consideration by the entities. As of the date of the second EPR mission there was still no final decision or agreement between the entities on the text (basically there is disagreement over the financial part of the action plan). However, adoption is expected by the end of 2010. The expected outcomes are to be accomplished through implementation of the following strategic directions: (a) decrease biodiversity loss; (b) set up a conservation system and provide for sustainable use of biodiversity; and (c) reduce the pressures on biodiversity.

Different aspects of conservation and sustainable use of biodiversity were reflected in the National Environmental Action Plan (NEAP) for the period 2003 - 2008, the Strategy for Protection of the Environment in the Federation of Bosnia and Herzegovina for the period 2008-2018 and the Spatial Plan of Republika Srpska to 2015. Issues related to forests will be addressed in the forest strategies and programmes, which are in preparation in both entities.

Key biodiversity-related regulations adopted since the first EPR include:

- Law on the Protection of Nature (of 2003 in FBiH and of 2009 in RS)
- Law on Hunting (of 2006 in FBiH and of 2008 in RS)
- Law on Fishery in Freshwater Bodies (of 2004 in FBiH and of 2002 in RS)
- Law on Animal Protection and Welfare (of

Box 9.3. Strategy for Protection of the Environment in the Federation of Bosnia and Herzegovina for the period 2008-2018

The Strategy is a comprehensive document covering the entire spectrum of environmental issues, including biodiversity. It incorporates strategic goals for FBiH, including modernization of legislation (with a focus on harmonization with the EU), institutional development and a system of economic instruments. Strategic goal 4.1. includes 12 operational targets in the area of conservation of biological and geological diversity including (i) establishment of an entity-level agency for conservation of biological and geological diversity, (ii) inventory and monitoring of biodiversity, (iii) further legal development, (iv) control of invasive species, (v) development of a clearing house mechanism for biodiversity information, (vi) creation of the FBiH RDB, etc. In addition, it sets out strategic goals for the sustainable use of biodiversity (4.2), equitable sharing of the benefits from biodiversity and geodiversity resources (4.3), decreasing threats to biodiversity (4.4), and development of financial mechanisms for sustainable management (4.5). In addition to the strategic goals this document provides a plan of action with a specific set of activities, timeline for implementation, accountable authority, budget and source of funding. Total allocations from all sources for the five components related to biodiversity are planned in the amount of KM 34.35 million.

Table 9.7: Institutions dealing with biodiversity protection

	FBiH	RS	BiH
Biodiversity monitoring	MoET	MoPPCEE	..
	Cantonal authorities		
Biodiversity strategy/plan	MoET	MoPPCEE	MoFTER
RDB	MoET	MoPPCEE	..
Protected areas	MoET	MoPPCEE	..
	MoPP	MoAFWR	
	MoAWMF		
	Cantonal authorities		
Hunting	MoAWMF	MoAFWR	..
	Inspectorate	Inspectorate	
	Statistical agency	Statistical agency	
	Cantonal authorities		
NTFP	MoAWMF	MoAFWR	..
	Inspectorate	Inspectorate	
	Cantonal authorities		
Wildlife trade	MoAWMF	MoAFWR	MoFTER
	Inspectorate	Inspectorate	Customs
Fish	MoAWMF	MoAFWR	..
	Cantonal authorities	Statistical agency	
	Statistical agency		
International agreements	MoET	MoPPCEE	MoFTER
Marine biodiversity	MoET	..	..
	MoAWMF		

Source: Author's compilation.

MoET - *Ministry of Environment and Tourism*
MoPPCEE - *Ministry of Physical Planning, Civil Engineering and Ecology*
MoFTER - *Ministry of Foreign Trade and Economic Relations*
MoPP - *Ministry of Physical Planning*
MoAWMF - *Ministry of Agriculture, Water Management and Forestry*
MoAFWR - *Ministry of Agriculture, Forestry and Water Resources*

2008 in RS)
- Law on Environmental Protection (of 2007 in RS)
- Regulations on hunting (in both entities)
- Regulations on protected areas (FBiH).

The FBiH cantons also adopted additional regulations.

Institutional framework

A considerable number of different authorities and other institutions are involved in the regulation of biodiversity-related issues. Key responsibilities stay with the Ministry of Environment and Tourism in FBiH and the Ministry of Physical Planning, Civil Engineering and Ecology in RS. Numerous agencies are lacking integration and information exchange. Some responsibilities need to be further clarified and clearly delineated between agencies. Effective biodiversity work requires strong coordination between agencies within the entity based on regular meetings of the inter-agency committee on biodiversity, as well as on cooperation between entities.

The Forestry and Hunting Inspectorates in both entities control the implementation of regulations relating to:

- Awarding contracts for management of hunting districts
- Contracts with users of hunting districts
- Implementation of plans relating to the hunting economy and annual management thereof
- Financial and other wildlife management records
- Conducting other controls (as prescribed by legislation) related to hunting.

With multiple bodies involved, all with weak capacity and significantly under-staffed, biodiversity conservation suffers from a lack of inter-agency cooperation and coordination, in particular between four departments: environment, tourism, physical planning and forestry/hunting. Biodiversity is not integrated into the policies and activities of other sectors either.

Many biodiversity conservation activities are related to the implementation of international obligations. There is a lack of guidance on MEA implementation and of capacity among staff, as well as a low level of understanding of international processes. Under these circumstances, reporting on and implementation of the large number of international instruments is difficult. To improve capacity in this area, it is suggested that

Table 9.8: Protected areas (officially designated)

IUCN category	FBiH			RS		
	PA category title and level	Number	area (ha)	PA title and level	Number	area (ha)
TOTAL		**4**	**22,201**		**4**	**20,530**
IUCN I	Strict nature reserve (federation)	-	-	Special strict nature reserve (republic)	2	580
IUCN II	National Park (federation)	1	19,800	National park (republic)	2	19,950
IUCN III	Natural monument (canton, municipality)	2	2,033	Natural monument (republic)	-	-
IUCN IV	-	-	-	Environment management areas (republic)	-	-
IUCN V	Protected landscape (canton, municipality)	1	368	Protected landscape (republic)	-	-
IUCN VI	-	-	-	Protected areas with managed resources (republic)	-	-

Source: FBiH Law on the Protection of Nature, RS Law on the Protection of Nature, Law on the Una National Park, Information on the State of Forestry in Republika Srpska 2010, RS Spatial Plan 2008-2015, Information on protected areas in Sarajevo Canton (2008), expert data.

modules of the TEMATEA project on synergies between biodiversity-related MEAs be used and that additional training on international instruments, including development of reports, be organized with the support of international organizations.

9.3. Protected areas

Categories

Through their legal provisions on the protection of nature (article 25 of the RS Law on the Protection of Nature and FBiH OG No.33/03), both entities have adapted their categorization of protected areas to the IUCN categories (see table 9.9 below). This was done without a proper process of re-designation or automatic prolongation of the status of pre-existing protected areas. This is very unusual process and should be possible to "rectify" through the use of policy/legal tools. As a result virtually all 154 protected areas previously established in the country by the law of 1965 (Službeni list SR BiH No. 4/65, of 5 February 1965) have become redundant. Both entities now need to re-designate their protected areas in accordance with the new law and classification system. In FBiH, the system of three levels of protected areas is accepted: entity, cantonal and municipal. In RS all protected areas fall under the exclusive jurisdiction of the entity.

Table 9.9 does not include three Ramsar sites which under the current law lost their status and were not designated as protected areas, but require relevant and adequate protection status. Two special strict nature reserves are included for RS, as these territories continue to be counted as protected virgin forests in accordance with the law on forests. Based on their regime categorization they correspond to IUCN Category I. In FBiH, regardless of the category, a protected area may fall under FBiH jurisdiction if it extends over the territory of two or more cantons.

Number and coverage

The 2004 Programme of Work on Protected Areas of the CBD requires all parties to the convention to support the establishment and maintenance of comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas - by 2010 for terrestrial areas and by 2012 for marine areas. Development of national systems of protected areas is a direct implementation of international obligations.

Despite one of the highest levels of biodiversity in Europe, BiH is still the country with the lowest expanse of protected areas among European countries. The majority of external and domestic sources give a figure of 0.55 per cent coverage of the total territory (although some sources give a figure of as much as 2.2 per cent). Based on the data collected from different sources (see table 9.9 above) during the second EPR mission, protected areas which are designated in line with current legislation (including virgin forests) cover 0.84 per cent of the national territory (FBiH, 0.85 per cent and RS, 0.83 per cent). Although this figure is higher than that provided by other sources, it still leaves the country at the very bottom of the European list and far below EU requirements (Habitat Directive). Existing significant variations in data stress the need to undertake a full national inventory and cadastre of protected areas.

There are no reliable government statistics at either State or entity level on existing protected areas, due to the absence of a specially designated competent authority with responsibility for collection, aggregation and integration of environmental and biodiversity

Box 9.4 International data on protected areas in Bosnia and Herzegovina

According to international databases (World Commission on Protected Areas, UNEP World Conservation Monitoring Centre, IBAT) there are currently 36 designated protected areas in BiH (2 have been recognised by Ramsar and 34 have been designated under national law). By IUCN category, these include IUCN Ib (1), IUCN II (1), IUCN IV (10), and IUCN V (1), plus 21 sites where the IUCN category is not known. In fact this and all other data from international sources are not up to date and correct because:

There are no inventories or maps of protected areas at any level (State or entity)

Protected areas created in Yugoslavia (before 1992) are not recognized, as they do not satisfy the current law in either entity, do not correspond to IUCN categories, and documents on their designation do not provide a description of clear boundaries, exact location and regime

The RS Physical Plan (2007) operates with categories which do not correspond to the current law (adopted in 2008) and the Physical Plan for FBiH is not yet adopted

There is no reporting process on protected areas at the national level, including to international organizations.

This situation requires action at the national level to compile reliable official information on the status of protected areas in the country and to transmit this information to the relevant international audience.

data. The only nationwide analysis of protected areas is presented in the draft fourth national report to the CBD. However even this rather comprehensive and full report provides controversial information on the number, area and status of protected areas. Based on the new laws on nature protection, each protected area needs to be designated by an individual law, which provides details of boundaries, conservation and use regime, functions, management, control and liability (for example the Law on the Una National Park, September 2009).

Since 2003 three new protected areas have been established:

- National park - Una (FBiH, entity)
- Protected landscape - Biambare (FBiH, Sarajevo Canton)
- Natural monument - Vrelo Bosne (FBiH, Sarajevo Canton).

In addition to Hutovo Blato (2001), two new Ramsar sites have been listed since the first EPR: the Bardača wetland (RS 2007, under the previous law it had the status of national park) and Livanjsko Polje (FBiH 2008). As mentioned above, they have no protected area status and preparation of the relevant documentation for designation of all three sites as protected areas is in process.

Further development of the system of protected areas

The National Environmental Action Plan (2003) stipulated the preparation of an adequate protection programme for 15-20 per cent of the territory of BiH, in accordance with IUCN standards and with the programme for sustainable management of endemic and refuge centres, but this request was not addressed. There is no gap analysis with an assessment of the representativeness of existing protected areas, as required by the CBD and the same is true for the Natura 2000 process. The only initiative in this area is that of WWF which is currently running a project for the identification of habitats and species in line with the Habitat Directive. Despite several workshops organized by the FBiH Ministry of Environment and Tourism, no steps have been taken to implement Nature 2000. The same situation exists for the Emerald Network: the Emerald project was completed in 2006 and identified a list of relevant species (covered by res. No. 6) and 17 areas with habitats (covered by res. No. 4), however no new areas were designated based on the results of the project.

Nevertheless, both entities have plans for significant expansion of the system of protected areas, based on new physical planning processes and other documents.

The RS Spatial Plan 2008-2015 is rather ambitious and envisages the establishment of 150 protected areas accounting for 15-20 per cent of the territory under protection including:

- 11 national parks
- 11 regional parks (natural parks)
- 107 recreational, cultural, scientific, landscape and other protected areas
- 8 nature reserves
- 13 memorial parks and monuments.

The plan is indeed ambitious, since only five years remain for its implementation. However, as the plan includes many small natural monuments, great progress could be made with adequate political will and resources in terms of finances and human capacity.

The Spatial Plan was adopted before changes in the Law on the Protection of Nature came into force and introduced a new categorization of protected areas, copying the IUCN classification. Adjustments to the list of proposed protected areas and revision of the categories are thus required, with appropriate amendments to the Spatial Plan. The RS Institute for Protection of Cultural, Historical and Nature Heritage did a great deal of work to provide 16 comprehensive feasibility studies for specific areas to be designated as protected. Unfortunately these studies have not been used by the responsible ministry and no single new protected area has been announced since 2003 and the adoption of the Spatial Plan, which is a legally binding document.

In FBiH, the entity-level physical plan (for the period 2008-2028) is in preparation (under the responsibility of the FBiH Ministry of Physical Planning). The draft plan includes a separate chapter on the development of protected areas, with a target to put over 15 per cent of FBiH territory under protection. Studies were done for a number of areas to provide the grounds for the establishment of new protected areas, including for existing Ramsar sites. The Strategy for Protection of the Environment in the Federation of Bosnia and Herzegovina for the period 2008-2018 provides for the expansion of the network of protected areas (strategic goal 4.1.4).

Requirements for the establishment of new protected areas are incorporated into all strategies and plans related to environmental protection, however none of these have been implemented.

Box 9.5 Effective management of protected areas in Sarajevo Canton

Legislation in FBiH provides for opportunities to develop the system of protected areas at cantonal level. Significant progress in the development of an effective management system for protected areas has been made since 2008 in Sarajevo Canton. The cantonal Ministry of Physical Planning and Environmental Protection has adopted a new system of management for three established protected areas: natural monuments Vrelo Bosne and Scacovac and protected landscape Biambare. All three protected areas were transferred for management purposes to the newly established Directorate for Protected Areas (a public institution under the control of the Ministry), currently with 22 staff, to be expanded to 29. The Directorate provides management for all three protected areas, based on an individual law for each one and corresponding management and business plans. Significant investment has been made in developing the infrastructure of these protected areas, including development of awareness and education programmes. Entrance fees were introduced in Biambare, which help to finance management activities. In Vrelo Bosne, new jobs have been created, as have additional sources of income for the local communities associated with this protected area (i.e. a special station for fiacre rides and an area for trade in souvenirs). An advanced charter for the Directorate has been developed, providing for effective management and for economic instruments to ensure additional financial resources. This is based on the regulations adopted at cantonal level, for example on the content of the management plan.

The experience of Sarajevo Canton can be recommended as best practice in management of protected areas, for further dissemination in other cantons of FBiH, and also as an example for RS.

Management

The management capacity and capability of the responsible organizations are very limited, especially at the entity level (three people in FBiH and one in RS) where programmatic decisions, including protected area designations, should be made. A similar situation exists at cantonal level. The management bodies of certain protected areas - directorates including rangers - are bigger but require additional training and investment. Budgetary funding provided for management purposes is usually very limited (predominantly to cover salary costs). A positive example in this area is that of Sarajevo Canton in relation to its three protected areas (see box 9.5 below).

There is no evidence of serious work being undertaken on economic instruments for support for protected areas. Funds for operations relating to protected areas come from the corresponding budgets. Funds for identification and designation of new territories and for research come mostly from international sources and NGOs, although during recent years some funding for these purposes has become available through project tenders from FBiH and RS ministries. In some areas, tourism activities provide some limited additional income but overall there is no appropriate coordination between protected areas and the tourism sector. Following the CBD recommendations, BiH should provide a full needs assessment and gap analysis, including consideration of such potential instruments for getting new and additional financial resources as payments for ecosystem services (PES). No PES analysis has been done, including on the role of protected areas (especially those in forests) in carbon storage, climate change mitigation and water supply. In addition the CBD Programme of Work on Protected Areas requires an assessment of the management effectiveness of existing national systems of protected areas. A project to provide a rapid effectiveness assessment was conducted by WWF in cooperation with the FBiH Ministry of Environment and Tourism in 2009 using international rapid assessment and prioritization of protected area management (RAPPAM) methodology.

RAPPAM analysis revealed key threats and pressures for protected areas (differing in level and intensity in different types of area), including fire, invasive alien species, hunting and fishing, plant succession, unsolved land property rights and land conversion, and water management (including small hydropower plants).

Policies, strategies and legislation

Protected areas are regulated by the following legal instruments:

- Laws on the Protection of Nature (in both entities) which determine the system of categories and key general provisions for designation of protected areas, development, protection regime and management
- Laws on individual protected areas (for each one in FBiH and for national parks in RS) which determine all elements of regime, management, finances and liability for that particular protected area.

A number of important regulations were adopted for protected areas in FBiH at the entity level including:

- Provisions for contents and procedure for development of management plans for protected areas;
- Decree on conditions for entry to protected areas
- Decree on contents and procedure for maintenance of the register of protected areas

Documents for strategic development of the system of protected areas are discussed above. There is, however, room for consideration and development of additional regulations on economic instruments for protected areas in both entities.

Institutional framework

There is no single body responsible for protected areas at State level. As a result of the existing level of decentralization, the entire system of information and reporting on protected areas in the country, including reporting on international obligations, is generally failing. Obligations for protected areas are dispersed throughout a number of agencies, according to the governance system in each entity. There is no strategy for development of the system of protected areas, other than elements of territorial expansion within physical plans, but economic instruments, management, capacity-building, training and staffing, and education and research are not fully reflected in strategic documents or regulations.

Management and designation of protected areas in FBiH lie within the responsibility of the following bodies:

- At entity level - the Ministry of Environment and Tourism
- At cantonal level - cantonal ministries (the exact ministry title may vary from canton to canton, e.g. Ministry of Physical Planning and Environmental Protection in Sarajevo Canton) and practical management could be delegated to the forest enterprises or specially designated bodies (e.g. the Directorate for Protected Areas in Sarajevo Canton)
- At municipal level – the relevant municipal ministry.

At the same time, the FBiH Ministry of Physical Planning and Ministry of Agriculture, Water Management and Forestry (in the case of protected areas on forested land) play their roles at the stage of area identification, setting boundaries and providing feasibility studies.

Protected areas in RS come under the responsibility of the Ministry of Physical Planning, Civil Engineering and Ecology. Expert support, especially for feasibility studies for new protected areas (according to the special plan), is provided by the RS Institute for the Protection of the Cultural, Historical and Natural Heritage (under the Ministry of Education)

9.4. Conclusions and recommendations

BiH has made significant progress in the areas of forest management and biodiversity since the first EPR, especially in terms of developing the necessary legal frameworks and strategic and programmatic documents. Many essential elements of the forest management system are in place - for example, the new inspectorate. However, a number of gaps still exist in terms of effective implementation of existing plans and capacity-building, and current capabilities and funding are dispersed. Although some positive movement can be seen in the area of information and data collection and utilization (particularly on forests), overall information on biodiversity continues to be insufficient, odd, of poor quality, irregular and outdated. There is an obvious lack of centralization of all environmental data collection and storage in accessible form, including the biodiversity component of monitoring activities.

Protected areas continue to be low priority and no visible progress has been made since 2003, despite several good projects completed over the last four to five years and new protected areas established. Unfortunately, there are no positive signs of political will to put the results of these projects into practice. This also applies to activities relating to protection of endangered species based on comprehensive RDBs with clear legal status. Another gap in this area relates to the non-implementation of CITES in the country.

Many new projects have been completed and/or started, not only with international support but also using funding provided by relevant ministries in a predominantly transparent way and engaging local experts and institutions. The challenge is full and effective practical implementation of project outcomes and results.

Effective realization of the National Biodiversity Strategy and Action Plan (NBSAP) depends totally on the level of its implementation in the entities, while ensuring pragmatic coordination and joint discussion on activities undertaken to improve the quality of biodiversity and living conditions for the population of the entire country. In so doing, the State can ensure

full incorporation of goals related to the integration of BiH into the European Community. Successful NBSAP implementation will require new approaches and new and additional resources. Incorporation of considerations relating to ecosystem services may strengthen efforts to provide the necessary resources for NBSAP activities to be undertaken and goals achieved. The Pan-European Biological and Landscape Diversity Strategy would provide a basis for training, capacity-building and the creation of materials to enhance awareness for key authorities in both entities of the Economics of Ecosystem and Biodiversity initiative to fully incorporate ecosystem services assessment into NBSAP implementation. MoFTER has a special role in facilitating this process in line with its mandate in the area of protection of the environment and use of natural resources.

Recommendation 9.1:

(a) The Ministry of Foreign Trade and Economic Relation of Bosnia and Herzegovina, the Federal Ministry of Environment and Tourism, Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and the Logistics Unit of Brčko District should promote the adoption of the draft national biodiversity strategy and action plan;

(b) Once adopted, the relevant governmental bodies at the State, entity and intra-entity levels should ensure that regulations and institutional mechanisms for implementation of the strategy are in place, including through the establishment of a formal process for intersectoral and inter-entity coordination, and the integration of relevant provisions in other sectoral strategies and planning documentation;

(c) The Council of Ministers should identify a body that will be responsible for coordination of data collection, data exchange, information flows, and monitoring, as they relate to full and effective implementation of the strategy.

Inadequate biodiversity information continues to be a significant issue which is hindering the transition to sustainable management and usage practices, and informed protection. The organization of biodiversity monitoring at different levels and for a broad range of objects is essential. These actions need to be facilitated and supported at State level to ensure that they correspond to international and European processes and standards. Good quality information and efforts to combine all existing data will allow RDBs to be developed to fulfil the obligations prescribed by the legislation of both entities and to develop a strong legal background for implementation of national and entity strategies for environmental and biodiversity conservation. Trade in wildlife continues to be a significant threat to biodiversity, so it is essential to ensure full implementation of CITES. For the success of all the above-mentioned activities cross-sectoral and inter-agency coordination and cooperation are essential.

Recommendation 9.2:

The Federal Ministry of Environment and Tourism and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in collaboration with their respective forestry departments, should:

(a) Develop and promote the adoption of RDB regulations at entity level or, if more appropriate, make the necessary amendments to existing RDB regulations;

(b) Establish entity working groups with relevant stakeholders on preparation of entity RDBs based on existing information;

(c) In cooperation with relevant stakeholders, develop educational and public awareness programmes and campaigns on RDB legal provisions and importance for conservation.

Recommendation 9.3:

To strengthen implementation of CITES, the Council of Ministers should:

(a) Nominate as the management authority for CITES the State's Ministry of Foreign Trade and Economic Relations and as additional management authorities the Federal Ministry of Environment and Tourism and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology. Once nominated, the additional management authorities should designate scientific authorities and strengthen capacity by applying to the CITES secretariat for training and capacity-building for CITES implementation, and by requesting expert support and capacity-building from the wildlife trade monitoring network TRAFFIC;

(b) Establish a joint group on CITES implementation consisting of management and scientific authorities, representatives of customs and of the inspectorates and border police;

(c) Initiate preparation and adoption of the necessary regulations for CITES implementation with expert support from the CITES secretariat.

Recommendation 9.4:

To improve the regulatory and implementation framework for hunting, the Federal Ministry of Environment and Tourism and Republika Srpska's Ministry of Physical Planning, Civil Engineering and

Ecology should:

(a) Conduct an inventory on the status of species that are hunted for all hunting areas and coordinate this work in order to produce a national inventory;

(b) Complete delineation of all hunting areas and ensure the development of appropriate management plans;

(c) Coordinate with the Ministry of Foreign Trade and Economic Relations activities related to CITES implementation in respect of species that are hunted and non-timber forest products;

(d) Introduce new economic instruments into the organization of hunting.

The entities are lacking a forest strategy, policy and long term programmes. Despite substantial progress in developing forest regulations, there are still a number of gaps, including adoption of the framework law in FBiH and a number of regulations in both entities. While a number of institutions are working on forest issues, there is no single strong and capable body fully responsible for forest issues, including forestry research. There is no strategy on human resources development for the forestry sector or comprehensive capacity-building programmes. Most of the forest management enterprises work on existing 10-year forest management plans, but these plans have no revision mechanisms so do not allow for timely incorporation of new developments, including the requirements of Forest Stewardship Council certification. Non-timber forest products are very important for local communities as an additional source of income, but there is no system of assessment, statistical accounting, monitoring of status and reserves, or control over use of these resources. Forest inspections require finalization of processes to transit to an "electronic inspector" system, including full provision of equipment and training for staff, as well as a unified geographic information system (GIS) for all data.

<u>Recommendation 9.5:</u>

(a) The Federal Government should adopt as a matter of priority the new law on forests and provide for timely and full revision of existing regulations and the development and adoption of new ones necessary for full and effective implementation of the new law;

(b) Republika Srpska's Ministry of Agriculture, Forestry and Water Resources should initiate the process of revision of the existing forest plans of JPS Šume RS, Sokolac to incorporate all the provisions of Forest Stewardship Council certification;

(c) The Federal Ministry of Agriculture, Water Management and Forestry, Republika Srpska's Ministry of Agriculture, Forestry and Water Resources, and the Brčko Department of Agriculture and Forestry, in cooperation with the respective entity ministries of environment, should:

(i) Develop forestry strategies for their respective entities, ensuring sustainable forest management and forest conservation, including use of non-timber forest products;

(ii) Provide for forestry education, training and capacity-building, incorporating the relevant provisions of the Ministerial Conference on the Protection of Forests in Europe (MCPFE) and forest law enforcement and governance (FLEG) processes;

(iii) Complete preparation of action plans and forest programmes on the basis of the forest inventory and subsequent strategies;

(iv) Establish coordination mechanisms to provide for inter-entity dialogue and, where appropriate, joint actions to achieve sustainable forest management and forest protection;

(d) The State's Ministry of Foreign Trade and Economic Relations should provide guidance on European and global forest processes to the Federal Ministry of Agriculture, Water Management and Forestry and the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources.

The key priority today for BiH is to significantly increase the area of its territory under protection via the establishment of new protected areas (or the re-designation of previously existing ones) with clear legal status, in accordance with current legislation. In doing so, the physical plans of the entities as they relate to protected areas need to be amended based on gap analysis and with an assessment of the representativeness of existing protected areas, including the results of the Natura 2000 assessment and the previous results of the Emerald project. Most of the issues, such as a very low level of efficiency and slow progress with protected areas, are due to extremely low capacity in this sector, significant underfunding of activities relating to protected areas, the absence of a designated responsible agency and a lack of political interest in the topic, all of which hinder rapid designation of new areas, due to conflicts of interest with economic sectors.

Recommendation 9.6:

(a) The Federal Ministry of Environment and Tourism and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should:

(i) Provide for an assessment of the representativeness of the system of protected areas in order to adjust physical plans, including incorporation of new legal provisions for categories of protected areas compatible with IUCN categories and in accordance entities laws;

(ii) Substantially enlarge the system of protected areas based on physical plans and using existing feasibility studies provided for a number of protected areas in both entities;

(iii) Provide official protection status to designated Ramsar sites with special urgency and attention regarding Hutovo Blato;

(iv) Develop an action plan for applying the EU Habitat Directive and the Natura 2000 network. In so doing, it is recommended that the results of the project "Europe's Living Heard" be fully utilized;

(b) The Federal Ministry of Environment and Tourism and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should establish entity cadastres of all protected areas and the State's Ministry of Foreign Trade and Economic Relations should collate this data and report to international organizations on the current status of protected areas.

* * * * *

Parts of the conclusions and recommendations from the first EPR of Bosnia and Herzegovina are still valid and are listed below.

At present, the new Laws on Forests define the action to be taken in forestry, including a reorganization of the forestry authorities, and the role of commercial companies. However, there is no overall forestry strategy either nationally or in the entities, and there are no official forestry development programmes. To facilitate the appropriate management of the forests and their sustainable development, it is important that a strategy should be drawn up and an action plan developed.

EPR I - Recommendation 8.2:

Republika Srpska's Ministry of Agriculture, Forestry and Water Management, the Federation's Ministry of Agriculture, Water Management and Forestry and Brčko District's Department of Agriculture and Forestry, in cooperation with the respective entities' ministries of environment, should:

(a) As soon as possible, develop a national forestry strategy (including forest use and timber industry) applying Strategic Environmental Assessment. The Strategy should ensure the gradual recovery of the forests and sustainable forest management, and include the development of a programme for forest certification as a first step toward sustainable forest use and management.

(b) Draw up action plans on the basis of the strategy.

The two entities have made significant progress by adopting and harmonizing their new Laws on Nature Protection. However, they cannot be implemented without by-laws. This requires, among other things, that the entities and Brčko District should prepare and adopt red lists and a red data book. Similar progress has been made by the entities through their new Laws on Forests, but these, too, need by-laws to facilitate their implementation. In the development of all these by-laws, it is essential to clearly define institutional responsibility for protected area management.

EPR I - Recommendation 8.3:

(a) The Federation's Ministry of Physical Planning and Environment and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should:

- *Finalize and adopt red data books for plant and animal species according to the IUCN classification; and*
- *Accelerate the development of the by-laws for the respective Laws on Nature Protection.*

(b) Republika Srpska's Ministry of Agriculture, Forestry and Water Management and the Federation's Ministry of Agriculture, Water Management and Forestry should similarly accelerate the development of by-laws for the respective new Laws on Forests.

(c) In developing these two sets of by-laws, it is essential for the Federation's Ministry of Physical Planning and Environment and Ministry of Agriculture, Water Management and Forestry and Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and Ministry of Agriculture, Forestry and Water Management to work together in order to define clearly the institutional responsibilities for nature reserves, protected areas and national parks.

ANNEXES

ANNEX I-A: VALID RECOMMENDATIONS FROM THE FIRST ENVIRONMENTAL PERFORMANCE REVIEW NOT COVERED IN SECOND EPR CHAPTERS

ANNEX I-B: IMPLEMENTATION OF THE RECOMMENDATIONS IN THE FIRST REVIEW

ANNEX II: SELECTED REGIONAL AND GLOBAL ENVIRONMENTAL AGREEMENTS

ANNEX III: LIST OF MAJOR ENVIRONMENT-RELATED LEGISLATION IN BOSNIA AND HERZEGOVINA

Annex I-A

VALID RECOMMENDATIONS FROM THE FIRST ENVIRONMENTAL PERFORMANCE REVIEW NOT COVERED IN SECOND EPR CHAPTERS*

Chapter 5: Air quality management

Road transport is the most important transport mode for passengers, and traffic is a major source of air pollution in the cities. The number of registered vehicles has significantly increased over the past years and will probably continue to do so in the coming years, aggravating the pressure on air quality.

Beside economic instruments, reducing traffic-related air emissions also requires a number of technical measures at all levels from the municipalities to the entities and the State.

Recommendation 5.3:
In close collaboration with the Environment Ministries and other authorities responsible for the environment, the State Ministry of Transport and Communications, the entities' Ministries of Transport and Communications and the Government of Brčko District should seek to reduce traffic emissions or at least mitigate their impact through a better integration of transport policy and traffic management. This should be achieved by strengthening collaboration between the State Ministry of Transport and Communications, the Ministries of Transport and Communications and the municipal authorities (cantonal authorities in the Federation) responsible for traffic management. Some of the measures to be envisaged are:

- *Effective enforcement of technical inspections (together with the Ministries of Internal Affairs);*
- *Improving road maintenance;*
- *Improving the management of traffic flows;*
- *Improving the quality of fuels in internal combustion engines; and*
- *Promoting and extending public transport.*

Bosnia and Herzegovina is a Party to the Convention on Long-range Transboundary Air Pollution. However, it is a Party to only one of the Convention's eight protocols: the Protocol on the Financing of EMEP. The country does not currently report emission data to EMEP due to the destruction of the EMEP station during the war.

Support from the Convention and its Parties may be forthcoming if the barriers to accession to the other protocols can be identified. Stronger links with the Convention would aid the development of a monitoring strategy, the creation of emission inventories and the development of an air quality strategy in general. While implementation of these protocols may not be a priority for the country, it should be used as a tool for promoting air quality locally, regionally and nationally.

Recommendation 5.4:

(a) The Federation's Ministry of Physical Planning and Environment, Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and the environmental authorities of Brčko District under the coordination and supervision of the State Ministry of Foreign Trade and Economic Relations and in cooperation with the State Ministry of Transport and Communications should develop appropriate and realistic strategies for the ratification and implementation of the protocols to the Convention on Long-range Transboundary Air pollution.

(b) The responsible body should ensure reconstruction of the EMEP station and recommencing Bosnia and Herzegovina emissions data reporting to the EMEP bureau.

Chapter 9: Tourism and Environment

At the State level

Tourism is not dealt with at State level. However, an effort is being made to establish a State tourist association to coordinate the development of the tourist industry in both entities. The tourism strategy that is being finalized as a contribution to the State's development strategy is also an effort at State level to which the two competent ministries in the entities are contributing. Neither the State nor the entities have a policy or legislation on sustainable tourism.

EPR I - Recommendation 9.1:
The State Ministry of Foreign Trade and Economic Relations in cooperation with the relevant entities' ministries and supported by international experts should:

(a) Coordinate the development of a State strategy for sustainable tourism. It should be made an integral part of the development strategy for tourism. This policy could provide a cohesive framework and ensure that sustainability criteria are consistently applied in all laws and regulations affecting tourism development.
(b) Develop adequate legislative tools for the sustainable development and management of the tourism sector. These tools should address the problem of unreliable statistics and the introduction of sustainable tourism indicators

At the entity level

Once a framework policy has been established, it is important to develop a general master plan for sustainable tourism and a series of individual master plans for specific sites. To provide baseline data for the master plan, it is important to make an inventory of all sites of interest (including sites with a potential for cultural heritage, rural tourism, river tourism, industrial heritage, nature tourism and spas). This can be done by the entities.

EPR I - Recommendation 9.2:

(a) On the basis of the State strategy for sustainable tourism, the Ministry of Trade and Tourism in Republika Srpska and the Ministry of Trade in the Federation should develop local guidelines and regulations for tourism development and introduce eco-standards for tourist premises.
(b) A tourism master plan, also based on the overall policy for sustainable tourism, should be developed for both entities, to allow for appropriate economic, environmental, spatial and resource planning and the development of the necessary infrastructure in tourist areas.
(c) The competent bodies for tourism, in cooperation with the Ministries of Culture and the Environment Ministries, should make an inventory of all sites of tourist interest. As the sites are identified, individual management plans for their sustainable development should be prepared.

Although mentioned as one of the objectives of the tourism development strategy of Bosnia and Herzegovina, the development of local production related to the tourist sector such as locally grown and possibly organic food and crafts does not seem to be the object of any specific development effort.

EPR I - Recommendation 9.3:
The competent authorities for tourism, in cooperation with local authorities, should undertake a survey of local products that could be supported and included in a sustainable tourism development plan.

There are no economic instruments for natural resources management or supporting the development of sustainable tourism.

EPR I - Recommendation 9.4:
The responsible authorities should establish the following economic instruments to support sustainable tourism:

- *Entrance fees at national parks;*
- *An eco-tax on tourist infrastructure putting environmental pressure on nearby protected areas, to be paid by the owners (e.g. hotel owners); and*
- *Fiscal incentives for tourist premises that implement eco-standards, such as "green hotels" that save and*

protect resources such as water and energy. These could take the form of tax breaks or reduced licensing fees.

There are no programmes to train people in the tourist sector. No training is given to workers of the tourist sector in environmental awareness and sustainable tourism, and there seem to be no specific environmental awareness programmes in primary and secondary school curricula.

EPR I - Recommendation 9.5:

(a) The responsible authorities for tourism, in cooperation with the Ministries of Education, should introduce training programmes in tourism and sustainable tourism in the curricula of higher education institutions.

(b) The Environment Ministries in cooperation with the Ministries of Education should develop and introduce environmental awareness programmes in primary and secondary schools.

(c) The responsible authorities for tourism, in cooperation with the Environment Ministries, should carry out widespread campaigns to raise awareness of sustainable tourism particularly among hotel managers, tourist agencies, tourists and municipal authorities. The campaign should make use of workshops, community meetings, brochures and posters, and other media.

Chapter 10: Agriculture and environment

Organic farming is definitely a market niche for traditional farmers and can also have a positive impact on the environment. To develop this type of farming, it is necessary to have a strong legislative framework that ensures inspection and certification and protects plants that could be overexploited (e.g. wild medicinal plants and wild mushrooms).

EPR I - Recommendation 10.5:

The State ministry responsible for Agriculture, in coordination with the Federation's Ministry of Agriculture, Water Management and Forestry, Republika Srpska's Ministry of Agriculture, Forestry and Water Management and the Government of Brčko District, should develop and adopt the necessary legislation to support and promote organic farming. In drafting this legislation, the relevant directives of the European Union should be taken into account.

Chapter 11: Environmental concerns in the energy sector

Once the overall framework is established, stable and flexible rules for energy activities have to be set. These should:

- Encourage the co-generation of heat and power (CHP) where economically justified and create incentives for its development. Such incentives may include: that the power companies have to take power produced by CHP at a preferential rate; the introduction of green certificates for power and heat produced by CHP combined with a demand that power companies should include a certain percentage of "green electricity" in their production mix; and support to the development or rehabilitation of district heating schemes allowing for the introduction of CHP instead of individual heating.
- Encourage energy production from renewable energy sources, such as biomass, wind energy, solar energy, geothermal energy and small-scale hydropower, **w**here economically justified and environmentally acceptable and create incentives for its development. The incentive can largely be similarly structured as for encouraging CHP.
- Encourage end-use energy efficiency by setting standards for efficiency, e.g. by energy labelling schemes.
- Set rules for the technical performance of energy installations, including emission standards.

EPR I - Recommendation 11.2:

The State Ministry of Foreign Trade and Economic Relations, in coordination with the Federation's Ministry of Energy, Mining and Industry and Republika Srpska's Ministry of Economy, Energy and Development, should develop an energy policy and common energy legislation that encourages a more sustainable and economical energy system based on renewable energy sources, co-generation of heat and power and end-use energy efficiency, and that sets a well defined framework for the performance of energy activities.

Chapter 12: Human health and environment

According to general health indices, the health of Bosnia and Herzegovina's population is worse than that of the population of the EU countries, but comparable to that of the population of Central and East European countries. However, the health statistics system has difficulties in defining the size of the population and other basic demographic indicators. Underreporting and under diagnosis of diseases and incomplete registration of demographic indicators influence the quality of health statistics. These problems are also the result of the recent war. Health statistics are reported separately for the two entities. Only basic health indicators are reported State-wide to WHO. Most of the currently available health data are estimates; they therefore do not fully reflect the real situation. There is a lack of studies investigating the influence of environmental conditions on the health of the population.

The prerequisite for adequate environmental health policy, i.e. rational monitoring and evaluation, is the creation of an accurate database. Currently, there are no quality data on environmental pollution. This makes it impossible to estimate individual and population-wide exposure and subsequently leads to difficulties in linking health data to environmental exposure data and establishing a causal relationship between exposure and disease. The identification and registration of sources of contamination could contribute to assessing their risks for environmental health. A comprehensive monitoring system is needed, with regular and consistent collection of relevant indicators. In most cases the quality of air, drinking water and food is assessed on request. Such sampling coverage and monitoring are insufficient. The capacities and abilities for regular microbiological and physico-chemical analyses of food and water are inadequate.

EPR I - Recommendation 12.1:
The Federation's Ministry of Health and its Public Health Institute, Republika Srpska's Ministry of Health and Social Welfare and its Public Health Institute, and the Government of Brčko District should work closely with the Ministries responsible for developing comprehensive monitoring systems for air quality, drinking water quality, waste and hazardous waste disposal, ionizing radiation sources, food production and distribution chain from primary producer to consumer, in order to:
(a) Develop an environmental health information system;
(b) Collect health statistics data;
(c) Promote epidemiological studies on environmental health-related issues; and
(d) Create a register of all ionizing radiation sources.

The National Environmental Action Plan (NEAP) was prepared jointly by the two entities and adopted by their Governments and Assemblies in 2003. This plan provides detailed analyses of the country's environmental problems, and sets environmental protection and institutional development goals. The National Environmental Health Action Plan (NEHAP) of Republika Srpska was adopted in December 2002; that of the Federation has been drawn up, but not yet adopted.

EPR I - Recommendation 12.2:
(a) The Government of the Federation should speed up the adoption of its NEHAP.
(b) Both Governments have to develop an operational plan for the implementation of NEHAP.

The development of an integrated approach to environmental health management requires close cooperation between both entities, and within entities, close cooperation between ministries, professional and public institutions dealing with environmental health. Cooperation is needed in particular in environmental health monitoring, the sharing of information, environmental health assessment, and planning of activities. The development of the NEAP and NEHAPs represents an opportunity for looking at environmental health from a cross-sectoral perspective. They identify priorities and areas for action on the basis of a broad consensus of the different sectors and agencies involved. However, there is much potential for more cooperation among the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District and for joint implementation of activities.

EPR I - Recommendation 12.4:
The Federation's Ministry of Health and its Ministry of Physical Planning and Environment, Republika Srpska's Ministry of Health and Social Welfare and its Ministry of Physical Planning, Civil Engineering and Ecology,

and Brčko District's Department of Health, Public Safety and Community Services should together establish mechanisms for closer collaboration in the development of an integrated approach to environmental health management and the development of effective procedures to carry out environmental health impact assessment.

Annex I-B

IMPLEMENTATION OF THE RECOMMENDATIONS IN THE FIRST REVIEW[*]

PART I: THE FRAMEWORK FOR ENVIRONMENTAL POLICY AND MANAGEMENT

Chapter 1: Policy, legal and institutional framework

Recommendation 1.1:
The Council of Ministers should establish an environment agency, which should:
(a) Provide advisory services to the authorities and institutions on both State and entity level in creation of strategy of sustainable development, environmental policy and management and protection of environment, natural resources and natural heritage;
(b) Collect environmental monitoring data and report, as appropriate, to international bodies, convention-governing bodies and the European Environment Agency;
(c) Manage, supervise and coordinate the implementation of the entities' plans for management and protection of waters, air, land, forests, as well as management of waste and chemicals (POPs, ODS, transboundary pollutants and dangerous pesticides);
(d) Develop methodologies to facilitate a common approach to environmental management; and
(e) Provide training, capacity building and awareness rising.

The environment agency should rely on and assist the inter-entity bodies.

The recommendation has not been implemented. The State-level environment agency has not been established. This is largely due to some resistance to agreeing to an enlarged role for the State on environmental matters. Environmental management at the State level remains the purview of the Ministry of Foreign Trade and Economic Relations (MoFTER) and there are still no plans to establish an environment agency at the State level. It is also important to stress that only the Inter-Entity Steering Committee for the Environment is currently operational. Neither the National Steering Committee for the Environment and Sustainable Development nor the Inter-Entity Commission for Water is operational.

Recommendation 1.2:
Pursuant to the decision of the Council of Ministers, the Ministry of Foreign Trade and Economic Relations should begin as soon as possible to draft:
(a) A new State law on environmental protection and all relevant secondary legislation; and
(b) A strategy for environmental protection and sustainable development, in cooperation with the relevant Environment Ministries in the Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS), and with broad participation from all stakeholders.
The strategy should aim at:
- *Strengthening the institutional capacity for designing and implementing environmental policy at all levels;*
- *Developing and institutionalizing communication among sectors and ministries within and among the State, the entities and Brčko District;*
- *Establishing procedures for communication between officials and stakeholders in decision-making for sustainable development; and*

[*] Following the decision of the EPR Expert Group, this annex contains parts of the recommendations, that are still valid, and their preceding conclusions from the first Environmental Performance Review of Bosnia and Herzegovina that have not been covered in the preceding chapters of this EPR.

- *Improving the knowledge of the general public about the significance of environmental protection and encouraging the preparation of awareness-raising programmes.*

The State has not drafted a strategy for environmental protection and sustainable development and the draft State law on environmental protection has been pending since 2006. The lack of a State law continues to exacerbate a number of problems. For example, the competencies for legislation and administration remain scattered across all administrative levels. Because of weak inter-entity coordination mechanisms, legislative and administrative procedures are slow and redundant. Law-making activities at the State level are not based on clear and coordinated policies and priorities. Poor coordination with other sectors in turn leads to limited attention being paid to environmental considerations in those domains.

It is important to stress that because of the delays in the adoption of the State law on environmental protection, the European Commission has had to cancel €2 million from the Community Assistance for Reconstruction, Development, and Stabilisation (CARDS 2006) programme. Another €2 million from the Instrument for Pre-Accession Assistance (IPA) 2008 is available to assist MoFTER in fulfilling its obligations with regards to EU integration. However, these funds will not be accessible until the State law on environmental protection is adopted.

Recommendation 1.3:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should be strengthened, as a matter of priority, so that they are able to:
(a) Prepare all secondary legislation required by the new Laws on Environmental Protection, Air Protection, Water Protection, Waste Management, Nature Protection and the Environmental Fund;
(b) Organize and implement effectively environmental permitting, inspection and control; and
(c) Implement all the tasks incumbent upon them as ministries.

Both Ministries may be strengthened either by increasing the number of permanent staff or by hiring external experts ad hoc.

The structure of the RS Ministry is largely unchanged since 2003. Within the Ministry, the Department for the Protection of the Environment has eight staff members, up from seven in 2003, whose responsibilities range from dealing with environmental protection issues, to solid and hazardous waste management, legal affairs, and biodiversity issues. RS employs only one lawyer in the ecology department.

The number of staff working on environmental issues in FBiH has not increased since 2003. FBiH does not have a single environmental legislation specialist within its government administration. There remains a distinct lack of human resources.

Recommendation 1.4:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should develop the necessary secondary legislation for the implementation of the new framework Law on Environmental Protection and other specialized environmental laws as soon as possible. The most urgent issues are:
(a) Establishment of a detailed environmental impact assessment (EIA) procedure with all the necessary steps: preparation of the list of activities that are subject to EIA, early notification, screening and scoping, public participation at all levels, access to information and decision-making;
(b) Establishment of a detailed SEA procedure for plans and programmes;
(c) Development of a permitting system under the Law on Environmental Protection, including integrated (IPPC) permits; and
(d) Updating of their industrial plant inventories and establishment of new registers of polluters.

At present, about 300 secondary legislative acts are missing on a countrywide basis. In FBiH, out of the 23 by-laws called for under the Law on Environmental Protection, only 6 have been adopted. In RS, while a large number of regulations and secondary legislation have been adopted in accordance with the framework laws, it is estimated that approximately one third of all secondary legislation remains to be drafted and adopted. The Brčko District Government has adopted 18 by-laws related to environmental protection and air and water management.

RS has implemented a system of environment permits under the Law on Environmental Protection. The Ministry now has the tools in place to hold industry accountable. Since 2006, permits from the ecology department must be received prior to applying for a construction permit in RS. So far 189 permits have been issued, and 32 risk assessments have been conducted in these facilities.

No such system has been implemented in FBiH.

Chapter 2: Economic instruments and privatization

Recommendation 2.1:

(a) The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with the State Ministry of Foreign Trade and Economic Relations, should draw up by-laws and regulations to introduce the economic instruments stipulated in the environmental laws and ensure consistency with the State environmental policy.

(b) When developing the secondary legislation, they need to propose adequate levels of charges, fees, taxes and penalties. If it is not feasible to introduce instruments at the desired levels (for example, user fees at the level of full cost recovery for the service provided), the charges may be reduced at first, but should increase incrementally with a clear time frame until they reach the desired levels.

Environmental legislation, with the exception of the water and waste sectors, still lacks adequately developed secondary legislation, thus hindering the effective application of environmental economic instruments. A case in point is the Law on Air Protection, which would become operational immediately upon approval of the required secondary legislation.

In cases where charges, fees and penalties are applied in practice, the rates chosen are often set administratively and it is not always clear whether the intention is to collect revenue or to attain full cost recovery or, finally, to encourage a change in the use of natural resources aimed at decreasing the amount of pollution and/or emissions.

Recommendation 2.2:

The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should establish a regularly updated and readily accessible database of economic instruments for the environment. This would enable all levels of government, businesses and the general public to have a clear understanding of the instruments that exist, their main purpose, the recipients of the revenues (and the amounts) and whether the revenues are used for environmental purposes. The changes in rates, when necessary, and the reasons for such changes would also become transparent. These databases should be made available to the State for policy-making.

Currently no database of environmental economic instruments is available.

Recommendation 2.3:

The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with environmental NGOs, the media and other stakeholders, should organize a public awareness campaign with the aim of increasing collection rates for services related to the use of natural resources, as well as for waste management. Such a campaign should inform the public of the importance and the positive impact of economic instruments on the environment.

The use of public awareness campaigns has been limited, however the collection rates for the services related to the use of natural resources and waste management have increased since the last EPR. It is not clear whether this is as a result of awareness campaigns or more efficient collection efforts, or both.

Recommendation 2.4:

(a) The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should draw up by-laws and regulations to make the environmental funds operational.

(b) The Ministries and the environmental funds of the entities and the cantons should coordinate their activities based on the priorities included in the National Environmental Action Plan for spending on environmental protection and to ensure the most efficient use of environmental expenditures.

The environmental funds in both entities are operational. The FBiH fund is still in the process of collecting funds to fund projects, while the RS fund is already actively funding projects.

Political entities are working mainly within their political boundaries. However entities, ministries, cantons and municipalities have successfully coordinated their activities in creating regional refuse dumps. Environmental funds are coordinating their support for the creation of the secondary legislation necessary for recycling in their respective entities. Regarding the efficient use of environmental expenditure, the current lack of information on the general level of environmental expenditure and the spread of the "ownership" of those funds to national, entity, cantonal and municipal level prevents efficient coordination of the use of the available funds.

Recommendation 2.5:

(a) The Federal Agency for Privatization and the Republika Srpska's Directorate for Privatization should strengthen their cooperation respectively with the Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology. In particular, they should involve them in the decision-making in the privatization process to promote environmental investments by the new owners by:

- *Developing and introducing clauses on past environmental liabilities into the privatization agreements;*
- *Requiring enterprises and industries put up for privatization to carry out environmental audits; and*
- *Including compliance plans, prepared by the new owner, in the privatization agreement. These plans should specify the measures that enterprises and industries have to take to comply with environmental standards and regulations.*

(b) The Agency and the Directorate should have one or more environmental specialists on their staff.

It is not clear if clauses on past environmental liabilities are included in privatization agreements or if the enterprises to be privatized have to have an environmental audit.

Chapter 3: Information, public participation and education

Recommendation 3.1:

The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should issue, without delay, regulations to specify, in particular:

- *New procedures for setting or revising environmental quality standards harmonized with European standards;*
- *Measurements, monitoring and reporting requirements for operators;*
- *Criteria for the qualification of experts for self-monitoring by polluting enterprises; and*
- *Modalities for the registers of installations and of pollution taking into account the requirements of the UNECE Protocol on PRTRs.*

Progress has been made in improving environmental self-monitoring and reporting by large polluters. The establishment of entity Pollution Release and Transfer Registers (PRTRs) is underway. In 2007, Rulebooks on Registration of Installations and Pollutants were adopted by both entities. Enterprises have been obliged to report data since 2008 and entity environmental inspectors have the right to fine the companies and their management for non-compliance. Reporting obligations cover air emissions, waste water discharges, solid waste disposal, installation characteristics and details on permits. Both entities have developed questionnaires in order to collect emission, discharge and waste data from point sources. Criteria for the qualification of experts for self-monitoring by polluting enterprises have so far not been elaborated. No progress has been made in setting or revising environmental quality standards harmonized with European standards.

Recommendation 3.2:
The Inter-entity Steering Committee for the Environment and the Inter-entity Commission for Water, together with the State's Ministry of Foreign Trade and Economic Relations, should jointly prepare recommendations leading to the creation of an integrated monitoring system.

These recommendations should be addressed to the Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, the Federal Ministry of Agriculture, Water Management and Forestry and the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources, the Federal Ministry of Health and the Republika Srpska's Ministry of Health and Social Welfare, the institutes of statistics of both entities and the Agency for Statistics of Bosnia and Herzegovina (BiH), other relevant ministries and the Brčko District Government. The following steps should be included:

- To set up an inventory of air emissions including information on transboundary fluxes of harmful substances;
- To set up air pollution monitoring in major urban centres;
- To strengthen the system for monitoring water quality;
- To make an inventory of degraded land and assess the current situation and potential of soil erosion;
- To monitor biodiversity and forest health;
- To collect systematically data on (a) origins, quantities and types of waste; (b) facilities for handling waste; and (c) waste recycling and final disposal; and
- To create a network of authorized laboratories and certification centres.

Bosnia and Herzegovina has made progress in improving its environmental observations, especially air and water-quality monitoring. For soil and biodiversity, monitoring remains weak. The country continues to lack a comprehensive environmental monitoring system. Most environmental laboratories in the country have not applied to the BiH Accreditation Institute and its regional branches in Banja Luka and Mostar. Thus far, only the Bjelaina Institute of Waters Laboratory has been accredited to analyze water samples in the Sava River Basin. No private laboratory in the country has been accredited for environmental testing.

In 2009, the BiH Agency for Statistics published the data for 2008 on quantities, types and flow of waste generated in 'production process in industry, crafts and other processes'. Data were consolidated based on reporting from companies with 10 or more employees engaging in the following activities: i) mining and quarrying; ii) manufacturing; and iii) electricity, gas and hot water supply.

Recommendation 3.3:
When the State's Ministry of Foreign Trade and Economic Relations prepares the environmental law for BiH it should cover, among other things, the specific modalities for setting up, financing and operating a national environmental information system. The law should specify the responsibilities of the entities and the State's institutions (including the national agency to be established) regarding:

(a) The collection of environmental data and information, their storage, evaluation and dissemination;
(b) The development, on the basis of international experience, of environmental indicators for data collection in the entities and the State and reporting to them;
(c) The publication of state-of-the-environment reports for consideration by the Parliamentary Assembly and the BiH Council of Ministers, their circulation among interested institutions at various levels and uploading on the Internet to make them available to the general public;
(d) Transmission of environmental data and reports, on behalf of BiH, to governing bodies of applicable international conventions;
(e) Participation in EIONET, including the designation of a national focal point, national reference centres and expert institutions, and in other international programmes on environmental monitoring and assessment; and
(f) Training of experts in monitoring and information management.

Few formal mechanisms exist for the transfer of data and information between institutions dealing with the environment in the two entities. Much exchange is voluntary. The only bodies ensuring some form of homogeneity in data collection and presentation are the institutes of statistics of both entities and the BiH Agency for Statistics. There is no centralized database on the environment at the State level.

BiH is a collaborating non-member country of the European Environment Agency (EEA)/ European Environment Information and Observation Network (EIONET). It has not formally designated its national focal point yet. It has improved data reporting to EEA, presently submitting some 65 per cent of required data.

Discussion has been continuing in the country since 2002 on the establishment of a State environmental protection agency to be responsible for an integrated environmental information system including multimedia and an electronic system. The agency would also be responsible for the preparation of country-wide environment assessment reports based on indicators; cooperation with EEA/EIONET; and data and information reporting to the international community. No progress has been made to this end so far.

FBiH has recently introduced a system of producing regular environmental assessment report based on indicators. It published the first such report in 2009. There are no similar environmental assessments in RS and at the State level.

Recommendation 3.4:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should establish, without any further delay, environmental advisory councils. The councils' membership and methods of work should be defined in consultation with stakeholders and in accordance with the entities' Laws on Environmental Protection. As a priority, the environmental advisory councils should assist the two above-mentioned Ministries and the Federal Ministry of Education and Science and the Republika Srpska's Ministry of Education and Culture to develop, in close cooperation with media representatives and other stakeholders, environmental communication strategies and education plans.

Environmental authorities at the State, entity and cantonal levels take actions to raise public awareness of environmental problems and citizens' rights on environmental protection. For instance, to implement the BiH Council of Ministers conclusion of 20 April 2010 (05-07-01-1279-31/10) on the adoption of a programme on celebrating important dates related to human rights in BiH. For 2010, they published a number of promotional materials with regard to the World Water Day, Earth Day, Environment Day and the Ozone Layer Protection Day.

Some progress has been made in creating a public system of environmental education in Bosnia and Herzegovina. Several initiatives, like the education reform programme, led to visible improvements. Environmental issues have been included in pre-school and school curricula. In higher educational institutions a number of environmental subjects have been included in curricula.

In neither entity has any progress been made to establish environmental advisory councils to assist the Environment Ministers and the entities' Governments.

Chapter 4: International cooperation

Recommendation 4.1:
The State's Ministry of Foreign Trade and Economic Relations, working closely with the Federal Ministries of Physical Planning and Environment and of Agriculture, Water Management and Forestry, the Republika Srpska's Ministries of Physical Planning, Civil Engineering and Ecology and of Agriculture, Forestry and Water Resources and the appropriate authorities in Brčko District, should develop a national strategy and action plan for international environmental cooperation consistent with the Strategy for environmental protection and sustainable development proposed in recommendation 1.2. The strategy should address the role in international cooperation of all relevant actors, including non-governmental.

A national strategy and action plan for international environmental cooperation have not been developed.

Recommendation 4.2:
(a) BiH should speed up its accession to:
- *The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters;*

- *The Convention on Environmental Impact Assessment in a Transboundary Context;*
- *The Convention on Persistent Organic Pollutants;*
- *The Convention on Trade in Hazardous Chemicals and Pesticides Enters into Force;*
- *The Convention on Cooperation for the Protection and Sustainable Use of the Danube River;*
- *The Convention on International Trade in Endangered Species of Wild Fauna and Flora; and*
- *The Kyoto Protocol to the United Nations Framework Convention on Climate Change.*

(b) BiH should also begin the process of accession to:
- *The Convention on the Conservation of Migratory Species of Wild Animals;*
- *The Convention on the Protection and Use of Transboundary Watercourses and International Lakes; and*
- *The Convention on the Transboundary Effects of Industrial Accidents.*

BiH has acceded to 8 out of the 10 multilateral environmental agreements (MEAs) listed above, but is not yet a party to the Convention on the Conservation of Migratory Species of Wild Animals or the Convention on the Transboundary Effects of Industrial Accidents.

Recommendation 4.3:
The State's Ministry of Foreign Trade and Economic Relations, working together with the national focal points, should assess the requirements for implementation of all the conventions and protocols to which BiH is a Party. The results of this assessment should be reflected in the national strategy for international environmental cooperation, recommended in 4.1.

MoFTER, together with the national focal points, has assessed the requirements for implementation of some MEAs to which BiH is a party on an ad hoc basis. The conclusions of the assessment are not reflected in any State policy document, including a national strategy for international environmental cooperation.

PART II: MANAGEMENT OF POLLUTION AND OF NATURAL RESOURCES

Chapter 5: Air quality management

Recommendation 5.1:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should develop the secondary legislation necessary for the practical implementation of their Laws on Air Protection as soon as possible. However, considering the number of bylaws to be developed as well as the scarcity of resources available, the Ministries should prioritize their common needs and the issues to be tackled. A realistic approach taking into consideration the existing and future capacity to ensure effective implementation of the legislation should be adopted in this process.

Both entities adopted seven compatible by-laws related to air quality management in 2005.

Recommendation 5.2:
The State's Ministry of Transport and Communications, the Federal Ministry of Physical Planning and Environment, the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and the environmental authorities of Brčko District should develop a common air monitoring strategy to, inter alia:
(a) Identify the responsibilities of the institutions involved in air monitoring necessary to achieve a cost-effective monitoring approach;
(b) Address the requirements of EIONET and the Convention on Long-range Transboundary Air Pollution; and
(c) Streamline the existing monitoring system. In this regard, the following should be taken into account:
- *Delegating operating responsibilities for running stations;*
- *Transferring and concentrating monitoring activities within a limited geographical zone or region; and*
- *Discontinuing marginal, unrepresentative or inefficient air monitoring.*

Should the proposed Environment Agency be created at the State level, it should take the lead in implementing recommendation 5.2.

Implementation is in progress. In the case of FBiH, the number of air quality monitoring stations has been increased to 10 automated stationary stations covering 4 cities, and 5 mobile stations. One mobile station is being operated in RS and one in Brčko District.

Recommendation 5.3:
In close collaboration with the Environment Ministries and other authorities responsible for the environment, the State's Ministry of Transport and Communications, the entity Ministries of Transport and Communications and the Brčko District Government should seek to reduce traffic emissions or at least mitigate their impact through a better integration of transport policy and traffic management. This should be achieved by strengthening collaboration between the State's Ministry of Transport and Communications, the Ministries of Transport and Communications and the municipal authorities (cantonal authorities in FBiH) responsible for traffic management. Some of the measures to be envisaged are:

- *Effective enforcement of technical inspections (together with the Ministries of Internal Affairs);*
- *Improving road maintenance;*
- *Improving the management of traffic flows;*
- *Improving the quality of fuels in internal combustion engines;*
- *Promoting and extending public transport.*

This has been partially implemented, but only the inspection of fuel quality is being carried out in all entities.

Recommendation 5.4:

(a) The Federal Ministry of Physical Planning and Environment, the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and the environmental authorities of Brčko District under the coordination and supervision of the State Ministry of Foreign Trade and Economic Relations and in cooperation with the State's Ministry of Transport and Communications should develop appropriate and realistic strategies for the ratification and implementation of the protocols to the Convention on Long-range Transboundary Air Pollution.

(b) The responsible body should ensure reconstruction of the EMEP station and recommencing BiH emissions data reporting to the EMEP bureau.

This recommendation has not been implemented. Preparations for ratification are only just starting.

Chapter 6: Management of waste and contaminated sites

Recommendation 6.1:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with municipalities, should implement the Solid Waste Strategy. To strengthen its implementation, they should:

(a) Raise awareness and organize training in separation, recycling and reuse; and

(b) Undertake feasibility studies for organizing the separate collection of municipal waste and constructing facilities for its recycling and reuse. The studies should also examine economic aspects including the potential market for such recycled or reused goods.

Part (a) of the recommendation has been implemented to a limited extent, through pilot projects in municipalities in Sarajevo Canton, and in Maja and Doboj municipalities.
Part (b) of the recommendation has not been implemented, although a very limited number of feasibility studies may have been undertaken. However, the results of any such studies are not available.

Recommendation 6.2:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with the municipalities and municipal enterprises, should:

(a) Draw up an inventory of legal landfills and elaborate plans to close dumping sites;

(b) Continue the rehabilitation of non-sanitary legal landfills;

(c) Speed up the implementation of the projects for the construction of regional sanitary landfills meeting European Union standards, including the introduction of a monitoring and maintenance system;
(d) Enforce the law against fly-tipping of both municipal and demolition waste along rivers and other unauthorized sites; and
(e) Increase municipal waste services to cover the entire population in the cities and towns and begin to provide such services in rural areas.

(a) The inventory of legal landfills for municipal waste has been drawn up.

(b) The rehabilitation and construction of non-sanitary landfills to be used as regional landfills started with Phase 1 of the World Bank Solid Waste Management Project (2002-2010) and continues with Phase 2 (2008–2014). The rehabilitation of non-sanitary legal landfills, which could be used as transfer stations, has not been carried out.

(c) Regional sanitary landfills were constructed under Phase I of the World Bank Solid Waste Management Project (2002–2010), but with difficulties for some landfills.

(d) Enforcement of such a law remains a challenge and the problem persists.

(e) It is difficult to judge whether this recommendation has been implemented, as there is no reliable data available to compare the waste collection rate in BiH. Efforts to expand the coverage of waste collection have been made but face financial difficulties. The Swedish International Development Cooperation Agency (SIDA) is assisting in a project to improve waste collection by providing investment support and capacity-building for more than 30 municipalities. The project is expected to start 2010.

<u>Recommendation 6.3:</u>
(a) The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should take the initiative to set up a single intra- and inter-entity working group on waste with representatives of the following ministries:
- *Federation : Ministry of Physical Planning and Environment, Ministry of Health and Ministry of Energy, Mining and Industry; and*
- *Republika Srpska: Ministry of Physical Planning, Civil Engineering and Ecology, Ministry of Health and Social Welfare, and Ministry of Economy, Energy and Development;*

(b) The intra/inter-entity working group on waste should, inter alia:
- *Agree on the respective responsibilities of the ministries with particular regard to hazardous and medical waste management; and*
- *Set a timetable for preparing all implementing by-laws for the Laws on Waste Management, including regulations, norms and standards consistent with EU practices. Urgent attention should be given in particular to preparing by-laws dealing with the management of hazardous and medical waste.*

(a) Although such a working group on waste does not exist, in the past, cooperation on environmental issues, including waste, between the two entity Governments has been carried out by the Environmental Steering Committee (ESC), which was established in 1998. The two entities are de facto sharing information on waste management, and laws are, in general, harmonized between them. In addition, the above-mentioned Ministries have been working together on the management of medical and hazardous waste in both entities.

(b) Limited progress has been made, but further efforts are needed to prepare the necessary by-laws to implement the Law on Waste Management. A by-law for medical waste has been prepared, but not for hazardous waste.

<u>Recommendation 6.4:</u>
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with relevant ministries, should:
(a) Draw up an inventory of storage facilities for industrial hazardous waste, medical waste and obsolete pharmaceuticals;

(b) Organize the separate collection and environmentally sound incineration of medical waste;
(c) Continue the encapsulation and cementation of obsolete pharmaceuticals;
(d) Conduct environmental audits of industrial "hot spots" and prepare time-bound work plans for their rehabilitation; and
(e) Introduce a system for the separate collection of oil waste and reuse.

(a) This has not been done. However, preparation of the inventory is planned under Phase 2 of the World Bank Solid Waste Project.

(b) The entity laws on medical waste obliged health-care facilities to carry out separate collection of medical waste. Very infectious medical waste is incinerated/chemically sterilized before transfer for final treatment.

(c) Efforts have been made on this, although obsolete pharmaceuticals still remain in the country.

(d) To a certain extent efforts have been made, especially in the Tuzla region.

(e) Not yet done.

Recommendation 6.5:
The Federal Ministry of Physical Planning and Environment in cooperation with its Ministry of Energy, Mining and Industry and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology in cooperation with its Ministry of Economy, Energy and Development should:
(a) Conduct feasibility studies on the introduction of environmentally sound processes for the use of some categories of waste or its components as secondary raw material; and
(b) Prepare relevant legal acts on recycling and processing secondary raw material.

The recommendation has not been implemented.

Chapter 7: Water management

Recommendation 7.1:
(a) The BiH State Government, in cooperation with the FBiH Government and the RS Government, should develop and adopt a new State water law based on the EU Directive that would, inter alia, establish autonomous river authorities.
(b) The FBiH Government and the RS Government should adopt the new water law, which will include institutional responsibilities for both water protection and water management.

At the State level, no law relating to the water sector has been adopted. On the other hand, new laws on water have been adopted by the entities, in January 2008 for FBiH and June 2006 for RS. The two laws are broadly in line with the EU Water Framework Directive 2000/60/EC.

Recommendation 7.2:
(a) The BiH State Government, in cooperation with the FBiH Government and the RS Government, should develop a new water policy pursuant to the memorandum of understanding with the European Communities and taking into account the Millennium Development Goal to halve by 2015 the proportion of people without access to safe drinking water.
(b) The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with their Ministries of Agriculture, Forestry and Water Management, should start now to:
  (i) Ensure that drinking water is safe by properly treating abstracted water;
  (ii) Develop water protection strategies consistent with the new State policy and the Millennium Development Goals;
  (iii) Establish standards and norms for water quality which are consistent with international ones; and
  (iv) Reduce the leaks from the distribution systems by repairing and replacing old and damaged pipelines. The number of households with access to public water-supply systems should be substantially increased.

(c) As soon as they are established, the river authorities should develop plans for river basin management.

(a) At the State level, there is no water management strategy at present. In FBIH, this will be covered by the project on water policy in BiH financed by the European Commission, which is underway and is expected to end in 2011. The RS Law on Water calls for the development of a strategy for integrated water resources management. The strategy will provide a basic planning document for directing the development of the water sector in RS. The framework plan for water management development in RS was adopted in September 2006 at mid-phase in the process of development of this strategic planning document. The framework plan defines criteria, conditions and limits for further development of the water infrastructure and management of the entire water sector.

(b) At the entity level, the FBiH draft water management strategy has been prepared. This draft law is awaiting adoption by the FBiH Parliament. The draft is available on the websites of the FBiH Ministry of Agriculture, Water Management and Forestry and the water agencies. The main document on water management in RS is the Action Plan for Implementation of the Framework Plan for the Development of Water Management. The preparation of corresponding strategic documents for the development of the water sector until 2020 in RS has not yet started.
As described in chapter 7 above, no significant progress has been made on reducing the leaks in the water distribution system.

(c) Due to the fact that until now the underlying strategy has not yet been adopted in FBIH, and not yet drafted in RS, these plans do not exist at present. However, water management plans for river basins have to be adopted by the water agencies, by 2012 for FBIH and by 2015 for RS. According to the limited information available, these plans will put more emphasis on flood management and protection against the detrimental effects of water, such as defence from ice, protection from erosion and drought control.

Recommendation 7.3:
The entity Ministries of Agriculture, Forestry and Water Management in cooperation with the entity Ministries of environment and with the help of the public enterprises for water management, should assist and require the municipalities to reduce the negative impact of waste-water discharges by:

(a) Reducing the leaks from public sewerage systems and by building new sewerage systems to substantially increase the number of household connections;
(b) Building municipal waste-water treatment plants of environmentally high standards and with sufficient treatment capacity in all the big cities; and
(c) Ensuring that sewage sludge from municipal treatment plants and septic tanks is sufficiently treated for use as fertilizer in agriculture or disposal in sanitary landfills.

Implementation of projects on draining and treatment of wastewater has not been started. However, based on the European Union DABLAS[17] project and the national WQM I + II (2005-2008) project, two priority lists of sanitation projects for BiH have been developed. According to them, the preparation of the following projects and programmes has started:

- GEF project: Water Quality Protection (wastewater treatment plant (WWTP) Trnovo and Odžak, and phase I of WWTPs Živinice and Mostar)
- GEF project: Neretva and Trebišnjica Management (WWTP Konjic and Ljubuški)
- EIB project: Water and Sanitation in FBiH
- World Bank/IPA 2010: reconstruction and improvement of WWTP Sarajevo
- IPA 2007: water mains Živinice and WWTP Međugorje
- Grant project WWTP Bihać (KfW[18])

See chapter 7 above.

[17] The DABLAS (Danube Black Sea) Task Force, consisting of a coalition of representatives of countries of the region, international financial and other institutions, the EC and bilateral donors, assists in targeting existing challenges in wastewater management.
[18] Kreditanstalt für Wiederaufbau (German Development Bank)

Recommendation 7.4:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology, in cooperation with the other ministries involved, should take appropriate action to reduce the negative environmental impact of waste-water discharges from industry and seepage water from mining and manufacturing by:

(a) Ensuring that water treatment plants are reconstructed and brought on stream again;
(b) Drawing up a survey of the most polluting mining, manufacturing and other industries; and
(c) Instructing mining, manufacturing and other industries to take immediate and appropriate action to stop or reduce the discharges where drinking-water resources are seriously threatened.

As with the management of domestic wastewater, no significant measures to reduce the pollution of water by industry have been implemented since the first EPR, due to lack of funds. For FBIH, there is a regular survey on the biggest industrial polluters, which is followed up by analysis of wastewater discharges carried out by authorized laboratories in FBiH. These analyses are updated every two years.

Recommendation 7.5:
The proposed environment agency, with the Federal Ministry of Agriculture, Water Management and Forestry and the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources, should work in close cooperation with the new river authorities on an urgent basis to reduce the impacts of floods. Steps to be taken include:

(a) Improving and repairing, in cooperation with the regional and local authorities, existing flood protection systems and building new ones in exposed areas that do not have them, and taking non-structural measures for flood protection, in particular the conservation or rehabilitation of natural wetlands and retention areas; and
(b) Drawing up a comprehensive national flood disaster strategy, which includes preparedness, mitigation, recovery and reconstruction.

There is no flood defence strategy at State level, but there are strategic documents at the entity level. In FBIH, besides the above-mentioned draft water management strategy, the Main Flood Prevention Plan was adopted in 2008 (FBiH OG No. 23/08). In RS, the Action Plan for Sustainable Control of Flooding Risk in the Danube River Basin was adopted and implemented in the territory of the Sava River sub-basin. This plan covers the period from 2010 until 2021.

Chapter 8: Biodiversity and forest management

Recommendation 8.1:
The Federal Ministry of Physical Planning and Environment, the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and the Logistics Unit of Brčko District should accelerate the drafting and adoption of a national biodiversity strategy and action plan. The national strategy should be in line with the Pan-European Biological and Landscape Diversity Strategy. It should be drawn up in close cooperation between the two entities and Brčko District.

As required by the Convention on Biological Diversity (CBD), the draft national biodiversity strategy and action plan (NBSAP)[19] was prepared in 2008 with support from UNDP/GEF, underwent a process of external consultation and since that time has been under consideration by the entities. There is still no final decision or agreement between the entities on the text. Disagreements are over the financial aspects and the specifics of the related action plan. However, adoption is expected by the end of 2010. The NBSAP is in general in line with the Pan-European Biological and Landscape Diversity Strategy (PEBLDS) as a European instrument for CBD implementation.

Recommendation 8.2:
The Federal Ministry of Agriculture, Water Management and Forestry, the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources, and the Brčko District Department of Agriculture and Forestry, in cooperation with the respective entity ministries of environment, should:

[19] The text in the local language is available at http://www.fmoit.gov.ba/ba/page/63/bh-chm

(a) As soon as possible, develop a national forestry strategy (including forest use and timber industry) applying Strategic Environmental Assessment. The Strategy should ensure the gradual recovery of the forests and sustainable forest management, and include the development of a programme for forest certification as a first step toward sustainable forest use and management.
(b) Draw up action plans on the basis of the strategy.

There is no national forestry strategy. Based on the constitutional and political realities, both entities are currently developing their own forest strategies and respective action plans and forest programmes. The completion of this work is expected after finalization of the full forest inventory, which is ongoing in both entities with the support of the World Bank. The strategies state that forest recovery and sustainable forestry are the key principles. Since 2003, both entities have made significant progress in voluntary FSC certification. Thus in RS all public forests have been certified and in FBIH a number of forest management enterprises have also received their certificates. It will still be a challenge to incorporate FSC requirements into existing and provisional 10-year forest management plans. However, the key challenge for the country today is not the need for new strategies but full and effective implementation of existing instruments and documents.

Recommendation 8.3:
(a) The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should:
- *Finalize and adopt red data books for plant and animal species according to the IUCN classification; and*
- *Accelerate the development of the by-laws for the respective Laws on Nature Protection.*

(b) The Federal Ministry of Agriculture, Water Management and Forestry and the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources should similarly accelerate the development of by-laws for the respective new Laws on Forests.
(c) In developing these two sets of by-laws, it is essential for the Federal Ministry of Physical Planning and Environment and Ministry of Agriculture, Forestry and Water Management and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology and Ministry of Agriculture, Forestry and Water Resources to work together in order to define clearly the institutional responsibilities for nature reserves, protected areas and national parks.

Neither entity yet has a red data book. Nevertheless, some work has been done during the period since the first EPR to draw up lists of rare and endangered species of fauna and flora. These lists were prepared within a number of different projects. There is a need to integrate all existing data and provide for completion of inventories and status reports.

In both entities some by-laws were adopted, both for nature protection, for example on hunting and protected areas, and for forestry. However some gaps still exist, in particular in relation to red data books, Natura 2000, the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the utilization of non-timber forest products, as well as on biodiversity monitoring, data collection and processing.

Both entities have adopted a great number of forestry-related by-laws. FBiH is in the process of adopting a new forest law, which may require revision of existing regulations, as well as preparation of new ones. This needs to be done as a matter of priority, to enable a smooth transition to implementation of the new law.

In FBiH, clear institutional responsibility for protected areas has been achieved: the Ministry of Environment and Tourism is responsible for designation and management of federal protected areas and the Ministry of Physical Planning plays a role in planning and identification of areas to be designated as protected. At the canton level, designation of the responsible body is up to the canton governments. In RS the Ministry of Physical Planning, Civil Engineering and Ecology is institutionally responsible for all protected areas. In both entities, the respective Forestry Departments play a role in the designation of new forest protected areas and provide forestry control of them. However, coordination of activities between different authorities, including the tourism sector, is still a significant gap.

Recommendation 8.4:
The Federal Ministry of Physical Planning and Environment and the Republika Srpska's Ministry of Physical Planning, Civil Engineering and Ecology should:

- Substantially enlarge the system of protected areas;
- Apply the IUCN classification system for protected areas; and
- In developing these activities, apply to Natura 2000 network.

According to the first EPR, protected areas covered 0.55 per cent of the national territory. In the 2009 First National Report to CBD, protected areas cover 0.67 per cent of the country and in 2010 they cover 0.84 per cent. Since 2003, only three new protected areas have been announced. Thus, some progress has been made since 2003, but the overall situation with the system of protected areas is still at the same level as in 2003. There is no cadastre of protected areas in either entity or at State level, so there is still no reliable data on numbers, area, boundaries and status of protected areas in the country. Although there is new legislation for protected areas, effective implementation would require it to be tailored to specific designated categories and types of protected areas.

Both entities have applied the International Union for Conservation of Nature (IUCN) categorization to their system of protected areas through their legislation (laws on nature protection).

Research on implementation of the EU Habitat Directive in BiH and on identification of annexed species and habitats, and Natura 2000 sites, is an ongoing process under a WWF project expected to be completed by 2012. There are no activities on Natura 2000 at government level, other than a few workshops organized by the FBiH Ministry of Environment and Tourism. It is very important that practical steps are taken for implementation of the results and proposals from existing projects, including the Emerald network. At institutional level, the main obstacle is the capacity of the responsible bodies.

PART III: ECONOMIC AND SECTORAL INTEGRATION

Chapter 9: Tourism and environment

At the State level

Recommendation 9.1:
The State's Ministry of Foreign Trade and Economic Relations in cooperation with the relevant entity ministries and supported by international experts should:

(a) Coordinate the development of a State strategy for sustainable tourism. It should be made an integral part of the development strategy for tourism. This policy could provide a cohesive framework and ensure that sustainability criteria are consistently applied in all laws and regulations affecting tourism development.

(b) Develop adequate legislative tools for the sustainable development and management of the tourism sector. These tools should address the problem of unreliable statistics and the introduction of sustainable tourism indicators

This recommendation was not implemented as no agreement was reached on this issue. However, a working group on tourism has been set up consisting of representatives of MoFTER, the FBiH Ministry of Environment and Tourism, the RS Ministry of Physical Planning, Civil Engineering and Ecology, Brčko District, trade chambers, NGOs dealing with tourism activities, and associations from both entities. With the support of international organizations, the working group is drafting a State strategy and a law on tourism.

At the entity level
Recommendation 9.2:

(a) On the basis of the State strategy for sustainable tourism, the Federal Ministry of Trade and the Republika Srpska's Ministry of Trade and Tourism should develop local guidelines and regulations for tourism development and introduce eco-standards for tourist premises.

(b) A tourism master plan, also based on the overall policy for sustainable tourism, should be developed for both entities, to allow for appropriate economic, environmental, spatial and resource planning and the development of the necessary infrastructure in tourist areas.

The competent bodies for tourism, in cooperation with the Ministries of Culture and the Environment Ministries, should make an inventory of all sites of tourist interest. As the sites are identified, individual management plans for their sustainable development should be prepared.

Since the strategy has not yet been adopted, no further work has been carried out. There have been some attempts to make progress, but so far nothing concrete has been achieved. Tourism plans have not been developed, although some lists of tourist attractions exist, mostly developed by the tourist associations.

Recommendation 9.3:
The competent authorities for tourism, in cooperation with local authorities, should undertake a survey of local products that could be supported and included in a sustainable tourism development plan.

Some initiatives have started in some municipalities, but without a law to refer to. No product-labelling mechanism exists in the country or at the entity level.

Recommendation 9.4:
The responsible authorities should establish the following economic instruments to support sustainable tourism:

- *Entrance fees at national parks;*
- *An eco-tax on tourist infrastructure putting environmental pressure on nearby protected areas, to be paid by the owners (e.g. hotel owners); and*
- *Fiscal incentives for tourist premises that implement eco-standards, such as "green hotels" that save and protect resources such as water and energy. These could take the form of tax breaks or reduced licensing fees.*

There are entrance fees at one national park (see chapter 9 above). The last two parts of the recommendation have not been not implemented.

Recommendation 9.5:
(a) The responsible authorities for tourism, in cooperation with the Ministries of Education, should introduce training programmes in tourism and sustainable tourism in the curricula of higher education institutions.
(b) The Environment Ministries in cooperation with the Ministries of Education should develop and introduce environmental awareness programmes in primary and secondary schools.
(c) The responsible authorities for tourism, in cooperation with the Environment Ministries, should carry out widespread campaigns to raise awareness of sustainable tourism particularly among hotel managers, tourist agencies, tourists and municipal authorities. The campaign should make use of workshops, community meetings, brochures and posters, and other media.

(a) Some training for civil servants took place when funds were available. Training at the local level is organized by international organizations.
(b) See implementation of recommendation 3.4
(c) No such campaign has taken place so far.

Chapter 10: Agriculture and environment

Recommendation 10.1:
(a) A State ministry for agriculture should be established and should be responsible, inter alia, for preparing the State's agricultural policy, facilitating inter-sectoral coordination, developing certification and promoting exports, standardizing the inspectorates, protecting agricultural biodiversity and cooperating with international partners. If no new ministry is established, these functions should be delegated to the State's Ministry of Foreign Trade and Economic Relations.

(b) As a matter of priority, the State ministry responsible for agriculture should prepare a strategy and action plan for sustainable agricultural development to clearly set targets for agricultural development, provide the means to achieve these targets, address the links between agriculture and other sectors, and identify measures to promote sustainable rural development.

(c) From this strategy and action plan, the State ministry responsible for agriculture should derive a law on agriculture and sustainable development.

(a) No State ministry for agriculture has been established. However, the Sector for Agriculture, Food, Forestry and Rural Development (SAFFRD) within MoFTER became operational in mid 2007. Amongst its tasks, SAFFRD is responsible for:

(i) Defining the framework for agro-economic policies in cooperation with the relevant bodies of the entities and Brčko District;
(ii) Adopting strategies which precisely define sector-wide and specific objectives;
(iii) Regular (at least once a year) monitoring and evaluation of the implementation of the strategies and assessment of individual agro-economic policies, their effectiveness and efficiency and their contribution to overall sector objectives in both financial and economic terms, and providing guidance on adjustment of measures to be taken, in line with the findings from such assessment;
(iv) Coordinating the implementation of all policy instruments to ensure that they are in line with sector strategies and relevant international agreements;
(v) Regularly revising and updating strategies and action plans in full consultation and agreement with the relevant bodies of the entities and Brčko District and other institutions;
(vi) Ensuring the harmonization and coordination of sector programmes, laws, regulations and measures necessary for the negotiation and fulfilment of relevant international commitments, including all necessary conditions linked with European integration at all levels of government;
(vii) Ensuring the establishment and coordination of all necessary institutions and other bodies, coordinating the development of necessary measures and procedures for the fulfilment of international requirements and trading standards as they relate to SAFFRD, and their harmonization and integration within the EU;
(viii) Ensuring the establishment and development of the necessary mechanisms of consultation, communication, coordination and cooperation with the authorities at all levels relevant to the effective management of the agriculture, food and rural development sector;
(ix) Ensuring the promotion and dissemination of scientific knowledge and innovative practices for the agriculture, food and rural development sector, in coordination with other relevant authorities;
(x) Producing annual reports on the state of the sector;
(xi) Ensuring the effective coordination of all inspection services within SAFFRD;
(xii) Guidance and supervision of the Veterinary Office, the Plant Health Protection Administration and the Administration for Harmonization of Payment Systems, and which further rights and duties shall be regulated by other laws and regulations;
(xiii) Ensuring coordination with the Food Safety Agency.

(b) SAFFRD, in cooperation with all stakeholders from the State, the entities and Brčko District has drafted the Strategic Plan on Agriculture, Food and Rural Development Harmonization for the period 2008-2010.

(c) Framework Law on Agriculture, Food and Rural Development, No. 50 was adopted in 2008. The law includes sections on all key priorities identified in the functional review of the agriculture sector and regulates the definitions of terms to be used in legislation on the agriculture, food and rural development sector; the objectives, principles and mechanisms for development of strategies and policies; the structures and competencies at all levels of authority; institutional support structures and services, their functions and linkages; monitoring and evaluation mechanisms; and administrative and inspection supervision. The law includes sustainable development provisions as well as associated regulations

Recommendation 10.2:

The Federal Ministry of Agriculture, Water Management and Forestry, the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources and the Government of Brčko District should prepare multi-year sustainable rural development programmes.

RS has already adopted a multi-year programme, Brčko District has developed one, which has not yet been adopted, and FBiH is in the process of developing one. RS is more advanced in this field due to its more agricultural structure compared to FBiH. However, sustainable rural development activities are ongoing throughout the country.

Recommendation 10.3:
The Federal Ministry of Agriculture, Water Management and Forestry, the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources and the Brčko District Government should establish, strengthen and support public advisory services and promote their activities in order to improve the transfer of knowledge in agriculture and to raise the rural population's awareness of environmental issues.

RS has developed public advisory services and established an agency for public advisory services, which has five offices in the entity. In FBiH, the authorities have mandated institutes working on agricultural issues to carry out this task. The two entities are developing parallel strategies on public advisory services and the two strategies will be harmonized. The legislative framework has yet to be developed on the strategies that have been adopted by the entities.

Recommendation 10.4:
(a) The State's Ministry of Foreign Trade and Economic Relations, or another appropriate State body, should establish clear guidelines for the preservation of agricultural biodiversity.
(b) The Federal Ministry of Agriculture, Water Management and Forestry, the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources and the, Brčko District Government with the entity' ministries for environment, in consultation with cantonal governments and local authorities, should jointly prepare actions plans for agro-biodiversity preservation and provide funds for the preservation of indigenous and traditional animal breeds and plant species within the framework of the Convention on Biological Diversity (see recommendation 8.1).

The recommendation has not been not implemented. An agro-biodiversity strategy will be drafted in the medium term.

Recommendation 10.5:
The State ministry responsible for agriculture, in coordination with the Federal Ministry of Agriculture, Water Management and Forestry, the Republika Srpska's Ministry of Agriculture, Forestry and Water Resources and the, Brčko District Government should develop and adopt the necessary legislation to support and promote organic farming. In drafting this legislation, the relevant directives of the European Union should be taken into account.

There is no organic farming promotion or the necessary legislation to support it. However, there are some initiatives being undertaken, through the organic farming association. The country still lacks certified laboratories in this field.

Chapter 11: Environmental concerns in the energy sector

Recommendation 11.1:
The State's Ministry of Foreign Trade and Economic Relations, in coordination with the Federal Ministry of Energy, Mining and Industry and the Republika Srpska's Ministry of Economy, Energy and Development, should extend the restructuring and liberalization of the electricity sector initiated for the power sector to other parts of the energy sector.

The recommendation has been in large part implemented. The electricity sector has been liberalized, a regulatory commission at the State level has been established, together with two new State companies and one transmission company at the State level. At the entity level, in RS a regulatory commission responsible for the energy sector, including electricity, has been created. In FBiH, only electricity is regulated by the regulatory commission. As regards the gas sector, there is no gas law at the State level. Relevant laws and regulations are being developed at the entity level.

Recommendation 11.2:
The State's Ministry of Foreign Trade and Economic Relations, in coordination with the Federal Ministry of Energy, Mining and Industry and the Republika Srpska's Ministry of Economy, Energy and Development, should develop an energy policy and common energy legislation that encourages a more sustainable and economical energy system based on renewable energy sources, co-generation of heat and power and end-use energy efficiency, and that sets a well defined framework for the performance of energy activities.

The recommendation has been partially implemented. At the State level there is no energy strategy, although it is possible that an energy policy for BiH as a whole will soon be developed. However energy strategies exist at the entity level. Since 2002 there has been an electricity law at the State level. At the entity level, RS adopted a new energy law in 2009 but FBiH has not done so yet.

Although the potential for further development of renewable sources of energy is significant, there is no strategy for renewable energy at the State level. However international obligations exist, through the participation of BiH in the Energy Community Treaty and the Energy Charter Treaty and its protocol on energy efficiency. These provide guidelines for future policy in this field.

Still to be done: an energy strategy document for BiH is lacking and still needed. The EU directive on renewable energy and energy efficiency is under discussion in BiH. but no laws on energy efficiency exist at any level. Cogeneration exists in FBiH to a limited extent but not in RS.

Recommendation 11.3:
The State's Ministry of Foreign Trade and Economic Relations should coordinate the activities of the entity ministries of energy and other relevant environmental authorities in implementing the environmental management instruments such as environmental impact assessments for proposed energy developments and integrated permits (IPPC) for industrial installation.

The recommendation has been partially implemented. All new investments need an environmental impact assessment (EIA). Without an EIA no project can start. Integrated permits are issued for new but not for existing industrial installations.

Recommendation 11.4:
The State's Ministry of Foreign Trade and Economic Relations, in coordination with the Federal Ministry of Energy, Mining and Industry and the Republika Srpska's Ministry of Economy, Energy and Development, should:

(a) Adjust energy prices gradually to reflect the real cost of production, including environmental impact, taking into account the UNECE Guidelines on Reforming Energy Pricing; and
(b) At the same time protect vulnerable consumer groups through needs-based social assistance programmes instead of through subsidized energy prices.

(a) This part of the recommendation has been partially implemented. Liberalization is progressing, but in general tariff levels remain low and do not yet reflect costs, primarily for social reasons
(b) RS has adopted a social assistance programme and FBiH is expected to do so in the near future.

Recommendation 11.5:
The State's Ministry of Foreign Trade and Economic Relations, in coordination with the Federal Ministry of Energy, Mining and Industry and the Republika Srpska's Ministry of Economy, Energy and Development, should:

(a) Encourage the further rehabilitation of the thermal power, industrial and heating sector to increase energy efficiency and seek to meet EU emission levels and climate change requirements; and
(b) Develop new green production capacity of heat and electricity.

(a) Many activities have taken place in the thermal power, industrial and heating sector aimed at rehabilitation of thermal power plants and enhancing energy efficiency. Efforts are being made to increase the level of heat and power from renewable sources and, in big cities, to restore district heating systems which were destroyed during the war.

(b) Efforts to strengthen hydropower, in many cases extensive, have been made (see chapter 6) and some limited examples of solar power generation exist, especially in the south of the country. Wind power plants and small hydropower plants are also on the Government policy list.

Chapter 12: Human health and environment

Recommendation 12.1:
The Federal Ministry of Health and its Public Health Institute, the Republika Srpska's Ministry of Health and Social Welfare and its Public Health Institute, and the Brčko District Government should work closely with the ministries responsible for developing comprehensive monitoring systems for air quality, drinking water quality, waste and hazardous waste disposal, ionizing radiation sources, food production and distribution chain from primary producer to consumer, in order to:
(a) Develop an environmental health information system;
(b) Collect health statistics data;
(c) Promote epidemiological studies on environmental health-related issues; and
(d) Create a register of all ionizing radiation sources.

(a) Not implemented. According to the legislation, data is collected from ministries in their areas of competence. RS and FBiH have not developed indicator systems.
(b) Partially implemented. Progress has been made, for example with the establishment of the food safety agency in 2006. Food safety again scores much better in terms of statistics (see 12.3 below).
(c) Partially implemented. Such studies exist but remain at the level of faculties and academia. The State Food Safety Agency is also a research institute and as such cooperates with all research institutes in BiH that conduct studies. The FBiH Public Health Institute also participated in studies on environmental health in 2002 and 2006. Such studies were also undertaken by the RS Public Health Institute.
(d) Partially implemented. Since 2009, there is a new agency at the State level, the State Agency for Nuclear Radiation. This agency is in charge of creating the register.

Recommendation 12.2:
(a) The FBiH Government should speed up the adoption of its NEHAP.
(b) Both Governments have to develop an operational plan for the implementation of NEHAP.

(a) Not implemented. FBiH has developed and drafted a National Environmental Health Action Plan (NEHAP) but never adopted it.
(b) Not implemented. Operational plans for implementation of the NEHAPs have not been developed.

Recommendation 12.3:
All Ministries which currently have responsibilities for food safety, i.e. the Federal Ministry of Health, Ministry of Agriculture, Water Management and Forestry, Ministry of Energy, Mining and Industry, and Ministry of Trade, and the Republika Srpska's Ministry of Health and Social Welfare, Ministry of Agriculture, Forestry and Water Resources, Ministry of Economy, Energy and Development, and Ministry of Trade and Tourism, should:
(a) Develop a common national food safety strategy within the framework of the organization of the Ministerial Conference on Food and Nutrition in 2006;
(b) Establish a State-level body responsible for food safety;
(c) Prepare a new State food safety law that meets the requirements of the European Union;
(d) Develop secondary legislation in the area of veterinary, phyto-sanitary and food quality control;
(e) Implement hazard analysis and critical control point (HACCP) systems in the food industry;
(f) Establish a State register of food manufacturers; and
(g) Identify an organization to participate in the Codex Alimentarius Commission.

(a) Not implemented.
(b) Fully implemented. The State Food Safety Agency was established in 2006 pursuant to the Law on Food Safety.
(c) Fully implemented. The Law on Food Safety was adopted in 2006.

(d) Thirty-two by-laws or other documents of secondary legislation have been developed. Another 30 documents have been developed and await approval. At the time of the review in 2010, 25 more by-laws were being developed. The food safety agency is in charge of initiating and drafting pieces of legislation in cooperation with other relevant stakeholders, based on high quality cooperation with ministries at the state level and entity-level ministries, chambers of commerce, consumer associations, and academic and research institutes. The regulations are adopted by the Council of Ministers.

(e) Partially implemented. The State Food Agency is preparing a package of regulatory documents that would enable these systems to be implemented.

(f) Fully implemented. The State register falls within the mandate of the State Food Agency, which is constantly compiling data for the register.

(g) Fully implemented. Since 2007, the Food Agency has been a permanent member of this Commission and also participates in the European Food Safety Agency.

Recommendation 12.4:

The Federal Ministry of Health and Ministry of Physical Planning and Environment, the Republika Srpska's Ministry of Health and Social Welfare and Ministry of Physical Planning, Civil Engineering and Ecology, and the Brčko District Department of Health, Public Safety and Community Services should together establish mechanisms for closer collaboration in the development of an integrated approach to environmental health management and the development of effective procedures to carry out environmental health impact assessments.

Recommendation not implemented. An essential prerequisite for developing an integrated approach to environmental health management, as well as effective procedures to carry out environmental health impact assessments, is the use of IT systems, which currently do not exist.

Annex II

SELECTED REGIONAL AND GLOBAL ENVIRONMENTAL AGREEMENTS

Worldwide agreements			
Year		**Year**	**Status**
1949	(GENEVA) Convention on Road Traffic		
1951	International Plant Convention	30.7.2003	Ad
1971	(RAMSAR) Convention on Wetlands of International Importance Especially as Waterfowl Habitat 1977	1.3.1992	Ra
	1982 (PARIS) Amendment		
	1987 (REGINA) Amendments		
1973	(WASHINGTON) Convention on International Trade in Endangered Species of Wild Fauna and Flora	21.4.2009	Ac
	1983 (GABORONE) Amendment		
1982	(MONTEGO BAY) Convention on the Law of the Sea	12.1.1994	Su
	1994 (NEW YORK) Agreement Related to the Implementation of Part XI of the Convention		
	1994 (NEW YORK) Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks		
1985	(VIENNA) Convention for the Protection of the Ozone Layer	6.3.1992	Su
	1987 (MONTREAL) Protocol on Substances that Deplete the Ozone Layer	6.3.1992	Su
	1990 (LONDON) Amendment to Protocol	11.8.2003	Ac
	1992 (COPENHAGEN) Amendment to Protocol	11.8.2003	Ac
	1997 (MONTREAL) Amendment to Protocol	11.8.2003	Ac
	1999 (BEIJING) Amendment to Protocol		
1989	(BASEL) Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	16.3.2001	Ac
	1995 Ban Amendment		
	1999 (BASEL) Protocol on Liability and Compensation		
1992	(RIO) Convention on Biological Diversity	26.8.2002	Ac
	2000 (CARTAGENA) Protocol on Biosafety		
1992	(NEW YORK) Framework Convention on Climate Change	7.9.2000	Ac
	1997 (KYOTO) Protocol	15.7.2007	Ac
1994	(PARIS) Convention to Combat Desertification	26.8.2002	Ac
1998	(ROTTERDAM) Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	19.3.2007	Ac
2001	(STOCKHOLM) Convention on Persistent Organic Pollutants	30.3.2010	Ra

Ac = Accession; Ad = Adherence; De = denounced; Si = Signed; Su = Succession; Ra = Ratified.

Regional and sub regional agreements			
Year		**Year**	**Status**
1976	Convention for the Protection of the Mediterranean Sea against Pollution	1.3.1992	Su
	1976 (BARCELONA) Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (amended in 1995)	1.3.1992	Su
	1976 (BARCELONA) Protocol concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in cases of Emergency	1.3.1992	Su
	1980 (ATHENS) Protocol for the protection of the Mediterranean Sea against Pollution from Land-based Sources (amended in 1996)	22.10.1994	Su
	1982 (GENEVA) Protocol concerning Mediterranean Specially Protected Areas is replaced by	22.10.1994	Su
	1994 (MADRID) Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation (Offshore Protocol) of the Continental Shelf and the Seabed and its Subsoil		
	1995 (BARCELONA) Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean		
	1996 (IZMIR) Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal (Hazardous Wastes Protocol)		
	2002 (MALTA) Protocol concerning Co-operation in Preventing Pollution from Ships and, in cases of Emergency, Combating Pollution of the Mediterranean Sea		
1979	(BERN) Convention on the Conservation of European Wildlife and Natural Habitats	17.11.2008	Ra
1979	(GENEVA) Convention on Long-range Trans-boundary Air Pollution	6.3.1992	Su
	1984 (GENEVA) Protocol - Financing of Co-operative Programme (EMEP)	6.3.1992	Su
	1985 (HELSINKI) Protocol - Reduction of Sulphur Emissions by 30%		
	1988 (SOFIA) Protocol - Control of Emissions of Nitrogen Oxides		
	1991 (GENEVA) Protocol - Volatile Organic Compounds		
	1994 (OSLO) Protocol - Further Reduction of Sulphur Emissions		
	1998 (AARHUS) Protocol on Heavy Metals		
	1998 (AARHUS) Protocol on Persistent Organic Pollutants		
	1999 (GOTHENBURG) Protocol to Abate Acidification, Eutrophication and Ground-level Ozone		
1991	(ESPOO) Convention on Environmental Impact Assessment in a Transboundary Context	14.12.2009	Ac
1992	(HELSINKI) Convention on the Protection and Use of Transboundary Watercourses and International Lakes	3.12.2009	Ac
	1999 (LONDON) Protocol on Water and Health		
1994	(SOFIA) The Convention on Co-operation for the Protection and Sustainable Use of the River Danube	11.7.2005	Ac
1998	(AARHUS) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	1.10.2008	Ac
	2003 (KIEV) Protocol on Pollutant Release and Transfer Register	21.5.2003	
2003	(KIEV) Protocol on Strategic Environmental Assessment	21.5.2003	Si
2003	(KIEV) Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters	21.5.2003	Si
2003	(KIEV) Protocol on Pollutant Release and Transfer Register	21.5.2003	Si

Ac = Accession; Ad = Adherence; De = denounced; Si = Signed; Su = Succession; Ra = Ratified.

Annex III

LIST OF MAJOR ENVIRONMENT-RELATED LEGISLATION IN BOSNIA AND HERZEGOVINA

Federation of Bosnia and Herzegovina

- Law on Physical Planning and Land Use on FBiH Territory, No. 02/06, 72/07
- Air Quality
- Rulebook on Air Quality Monitoring, No. 12/05
- Rule Book on Limit Values of Air Quality, No. 12/05
- Waste
- Regulation on issuing permit for small scale activities on waste management, No. 9/05
- Decree on reporting obligations for operators and manufacturers of waste, No. 38/06
- Decree on collective system packaging and designation of waste, No. 38/06
- Regulation on Conditions of Operations of Waste Incineration Plants, No. 12/05
- Regulation on the contents of conditioning plans for existing landfills, No. 09/05
- Regulation on Form, Contents, and Methodology for the provision of information on important characteristics of products and packaging by the producer (2008)

- Water Law, No. 70/06
- Government Regulation on Dangerous and hazardous Substances in Water, n.a.
- Rulebook on limit values of dangerous and hazardous substances for waters discharged from the public sewage system into the natural recipient after their sewage system treatment, n.a.
- Rulebook on limit values of dangerous and hazardous substances for industrial wastewaters before their discharge into public sewage systems and/or other recipients, n.a.

- Rulebook on conditions for requesting environmental licensing for polluters having permits issued before enforcing the Law on Environmental Protection, No. 68/05
- Rulebook on compilation of annual and half annual programs of environmental inspection, No. 68/05
- Rulebook on the Plants and installations for which the environmental impact assessment is obligatory and the plants and installations which may be constructed and put into operation only if entitled by the environmental permits, No. 19/04
- Rulebook on the conditions of the gradual elimination of the substances that have a negative effect on the ozone layer, No. 39/05
- Rulebook on Best Available Techniques for Attaining the Environmental Quality Standards, n.a.
- Rulebook on the content of safety reports, information on Safety measures and the content of Internal and external emergency plans, No. 68/05
- Rulebook on ELV of combustion Plants, No. 12/05

Republika Sprska

- Law on environmental protection, No. 53/02, amended 109/05, consolidated text 28/07
- Law on amendments to the law on nature protection, No. 34/08, consolidated text 113/08

- Law on Waters, No. 50/06
- Decree on Module of Public Participation in water management, No. 35/07
- Decision on determination of borders of river basin districts and basins in the area of RS, No. 98/06

- Law on Waste Management, No. 53/02, amended 65/08
- Categories of waste, characteristics of HW, activities of recovery components and disposal rulebook, No. 39/05
- Hazardous wastes shipments rulebook, No. 86/05
- Rulebook on the transfer of obligation of waste management from producer and dealer to responsible person of waste collecting system, No. 118/05
- Regulations on contents of plan of transposition (adaptation) for existing establishments and equipment for waste management activities and activities which take competent authority, No. 39/05
- Regulations on conditions for work of incineration plants, No. 39/05

- Decree on projects that require environmental impact assessment and on Environmental Impact Assessment screening and scoping criteria, No. 7/06
- Guidelines on the content of Environmental Impact Statement, No. 118/05
- Rulebook on Air Quality Monitoring, No. 39/05
- Rulebook on Limit values of air quality, No. 39/05
- Regulation of Emission Limit Values into Air from Combustion Plants, No. 39/05
- Rulebook on monitoring of Emissions of pollutants into the air, No. 39/05
- Decree on the installations that may be commenced only when the environmental permit is obtained, No. 7/06
- Rulebook on the conditions for applying for the environmental permit, No. 24/06
- Rulebook on the time-line for applying for the environmental permit, No. 24/06
- Rulebook on best available techniques for attaining the environmental quality standards, N. 22/08
- Rulebook on methodology and manner of keeping the register of installations and polluters, No. 19/07
- Regulation of limited emission into the air from combustion plants of biomass, No. 85/05

- Rulebook on the surveying system on intentional capture and killing of wild animals, No. 85/05
- Law on fertilizers and soil enriching means, No. 35/04
- Law on Reproductive material of Forest Trees, No. 60/09

SOURCES

Personal authors:

1. Cengic, S. 'Bosnia and Herzegovina', in Basel Convention Regional Centre ed. Assessment of the Electric and Electronic Waste in order to develop Regional Guideline under UNEP/MAP. 2009. Slovakia.
2. Chimiak, G., et al. Donor Mapping Report 2007. Donor Coordination Forum in Bosnia and Herzegovina. Sarajevo, 2008.
3. Dragnic, L. Preparation of the Program Municipal Infrastructure Program for Solid Waste Management in Bosnia and Herzegovina Municipal Pilot Investment Scheme Municipal Needs and Costs Assessment, (Report to the Swedish Embassy). 2009. (Unpublished)
4. Krzywkowska, G. and Gal, E. (2001, November). Government Directory. Retrieved June 2, 2010, from Regional Environmental Center: http://archive.rec.org/REC/Databases/GovDir/PDFs/Bosnia.pdf
5. Linder, G. 'Municipal Programme for Solid Waste Management in Bosnia and Herzegovina, 2010-2014'. (Presentation material)
6. Lytle, P. F. and Shepardson, K. J. Journey to a Cleaner Future. Washington, D.C.: The World Bank. 2007.
7. Oprašić, S. Policymaking Framework for Environmental Protection and Sustainable Development. Second EPR of Bosnia and Herzegovina. Sarajevo: Ministry of Foreign Trade and Economic Relations. 2010.
8. Porej, D. and Matić, S. Protected area management effectiveness in Bosnia and Herzegovina, Final report of the RAPPAM analysis. 2009.
9. Rudež, M. Environment in Bosnia and Herzegovina. WKO Austria. Graz: Environmental Steering Committee/ESC in B&H. 9 September 2004.
10. Skejovic-Huric, N. Ministry of Foreign Trade and Economic Relations, 'Bosnia and Herzegovina: Current situation of landfilling Bosnia and Herzegovina', Regional Workshop on criteria and procedures for acceptance of waste at landfills, INFRA 32253, Bratislava, 4th June, 2009. (Presentation material)
11. Stoett, P. Environmental Security in Post-Dayton Bosnia and Herzegovina. Annual Meeting of the Canadian Political Science Association. 2005.

Publications from Bosnia and Herzegovina:

12. Agency for Statistics of Bosnia and Herzegovina. Waste from production activities, 2008, BROJ/NUMBER 1. Sarajevo, 15.3.2010.
13. Agency for Statistics of Bosnia and Herzegovina. Waste Statistics, BROJ/NUMBER Number: 01. Sarajevo, 20.12.2009.
14. Bosnia and Herzegovina Human Development Report/Millennium Development Goals 2003.
15. Bosnia and Herzegovina. Land of Diversity, First national Report of Bosnia and Herzegovina for the Convention on Biodiversity. Sarajevo, 2008.
16. Canton Sarajevo. Cantonal Environmental Protection Action Plan. 2006.
17. Canton Sarajevo. Data on waste from production and business entities. Sarajevo, 2010.
18. Canton Sarajevo. Ministry of Physical Planning and Environmental Protection. Information on protected areas in Canton Sarajevo. Sarajevo, November 2008.
19. Country Programme for phasing-out of Ozone Depleting Substances (ODS) in Bosnia and Herzegovina. Sarajevo, September 2001.
20. DEPOT. Data on types and amounts of waste 2006-2009. Banja Luka, 2010.
21. DEPOT. Feel list for the Landfill. Banja Luka, 2005.
22. Federal Ministry of Agriculture, Water Management and Forestry of FBiH. Information on public forests in Federation BiH in 2009 and planning for forests for 2010. Sarajevo, May 2010.
23. Federal Ministry of Agriculture, Water Management and Forestry; The Sava River Basin District Agency, Sarajevo; The Adriatic Sea River Basin District, Mostar. Water Management Strategy of the Federation of Bosnia and Herzegovina. April 2010. (Draft)

24. Federal Ministry of Environment and Tourism. Bosnia and Herzegovina – Second National Report of Bosnia for the Convention on Biological Diversity. Available at: http://69.90.183.227/doc/world/ba/ba-nr-02-en.pdf
25. Federal Ministry of Environment and Tourism. Bosnia and Herzegovina – Third National Report of Bosnia for the Convention on Biological Diversity. Available at: http://69.90.183.227/doc/world/ba/ba-nr-03-en.pdf
26. Federal Ministry of Environment and Tourism. Bosnia and Herzegovina – Fourth Report to the United Nations Convention on Biological Diversity: 2010 Biodiversity Targets National Assessments. Draft, October 2009.
27. Federal Ministry of Environment and Tourism. Bosnia and Herzegovina – land of diversity. First National Report of Bosnia and Herzegovina for the Convention on Biological Diversity. Sarajevo, 2008.
28. Federal Ministry of Environment and Tourism. Environmental Protection Strategy 2008-2018. Sarajevo, 2007.
29. Federal Ministry of Environment and Tourism. State of the Environment 2010. Sarajevo, 2010.
30. Federal Ministry of Environment and Tourism. State of the Environment in the Federation of Bosnia and Herzegovina: 2010 report. Ed. Nevenko Herceg. Sarajevo, 2010.
31. Federal Ministry of Environment and Tourism. Strategy for Protection of the Environment in Federation Bosnia and Herzegovina for the period 2008-2018. (Draft)
32. Federal News Agency. fINFO 08 (Quarterly Magazine). Sarajevo, May 2010.
33. Initial National Communication of Bosnia and Herzegovina under the United Nations Framework Convention of Climate Change (UNFCCC). Banja Luka, October 2009.
34. Intercooperation. Municipal Development Project in Doboj region, Bosnia and Herzegovina (MDP): Municipal Solid Waste Management Assessment in 6 MDP partner municipalities Doboj, Istok, Maglaj,Usora, Jug, Petrovo. 2004. (Unpublished)
35. Johannesburg: World Summit on Sustainable Development. Assessment of Sustainable Development in Bosnia and Herzegovina. 2002.
36. Ministry of Agriculture, Forestry and Water Management of RS. Information on State of Forestry in Republica Srbska. Banja Luka, March 2010.
37. Ministry of Foreign Trade and Economic Relations (FBiH). Bosnia I Herzegovina Strategy for Solid Waste Management. August 2000.
38. National report of BiH 2004 (for the World Conference on Disaster Reduction of 2005)
39. NEAP - National Environment Action Plan Bosnia and Herzegovina. 2003.
40. Official Gazette of FB&H, No. 23/08. "Main Flood Prevention Plan in FB&H". 2008.
41. Ramsar COP10 National Report Format. BiH report 2008.
42. Ramsar COP9 National Planning Tool-National Report Format. BiH report 2005.
43. RANSMO. Technical report. Development of a National Environmental Monitoring System. Description and evaluation of the existing environmental monitoring situation. Work Package 1. Sarajevo, 07 May 2004.
44. Regional Environmental Center (REC). Country Office for Bosnia and Herzegovina. May 2010. (PowerPoint presentation)
45. Regional Environmental Center (REC). Country Office for Bosnia and Herzegovina. Reference document. 2009.
46. Report on Assessment of Institutional and Legal Readiness for Implementation of Measures Eligible under Kyoto Protocol in BiH. November 2008.
47. Report on the implementation of BiH Mid-term Development Strategy and Action Plan for period August 2003 – October 2005.
48. Support to Air Monitoring, Bosnia and Herzegovina. Air Monitoring Strategy for Bosnia and Herzegovina. (Annex 11-RJ to Final Report). 30 November 2006.
49. Support to Air Monitoring, Bosnia and Herzegovina. Final Progress Report (Quarterly Report #6). 30 November 2006.
50. Urban Directorate of RS. Spatial Plan of Republika Srpska till 2015. Banja Luka, April 2008.
51. Water Management Institute. Assessment of the Current Status of the Flood Protection Level in FBiH and the Preparation of Improvement Program. Sarajevo, 2002.

Regional and international institutions:

52. Agriconsulting S.p.A. Functional Review of the Environmental Sector in Bosnia and Herzegovina. 2005.
53. Commission of the European Communities. Bosnia and Herzegovina 2007 Progress Report. Brussels, 2008.
54. Commission of the European Communities. Bosnia and Herzegovina 2008 Progress Report. Brussels, 2009.
55. Commission of the European Communities. Bosnia and Herzegovina 2009 Progress Report. Brussels, 2010.
56. Council of Europe. Emerald Network Pilot Project in Bosnia and Herzegovina. 2006.
57. Council of the European Union. Stabilisation and Association Agreement between the European Communities and their Member States, of the one part, and Bosnia and Herzegovina, of the other part. 2008.
58. EBRD. Activities. Bosnia and Herzegovina. April 2009.
59. EBRD. Document of the European Bank for Reconstruction and Development. Strategy for Bosnia and Herzegovina. as approved by the Board of Directors on 4 September 2007.
60. EIU. Country Profile 2008 Bosnia and Herzegovina. 2008.
61. EIU. Country Report Bosnia and Herzegovina. December 2009.
62. Embassy of Switzerland and Green Visions, both in Sarajevo. Environmental Status Report for Bosnia and Herzegovina. March 2008.
63. EU Parliament and Council. RMCEI (2001/33/EC) Recommendation providing for Minimum Criteria for Environmental Inspections in the Member States
64. EU. Directive on the assessment and management of flood risks. adopted by the EU Parliament in April 2007.
65. European Commission External Relations Directorate General. Western Balkans Directorate. Bosnia and Herzegovina Country Strategy Paper 2002-2006. 2002.
66. European Environment Agency and UNEP. Sustainable Consumption and Production in South East Europe and Eastern Europe, Caucasus and Central Asia. Copenhagen, 2007.
67. European Environment Agency WRC, 2008. Material presented at Waste Balkan Workshop 6=7 November 2008.
68. European Environment Agency. CSI 016 Municipal Waste Generation (2008) Fact sheet – West Balkan Region. Copenhagen, 2008.
69. European Investment Bank. Environment Impact Study of Regional Landfill in Ramići. Final Version, Banja Luka, August 2007. available at: http://www.eib.org/attachments/pipeline/20060387_nts_en.pdf
70. IBRD. Doing Business in South East Europe 2008. 2008.
71. International Commission for the Protection of the Danube River. Shared waters – joint responsibilities. Annual report on the Activities of the ICPDR in 2009
72. International Commission for the Protection of the Danube River. Annual report on the Activities of the ICPDR in 2004.
73. International Commission for the Protection of the Danube River. Annual report on the Activities of the ICPDR in 2005.
74. International Commission for the Protection of the Danube River. Annual report on the Activities of the ICPDR in 2006.
75. International Commission for the Protection of the Danube River. Annual report on the Activities of the ICPDR in 2007.
76. International Commission for the Protection of the Danube River. Annual report on the Activities of the ICPDR in 2008.
77. Joint project of BirdLife International and Conservation International. World Biodiversity Database (WBDB) 2009. June 2009.
78. Joint project of UNEP and IUCN, managed by UNEP World Conservation Monitoring Centre (UNEP-WCMC) and IUCN WCPA. World Database on Protected Areas (WDPA) 2009. December 2009.
79. Office of the High Representative. 37th Report of the High Representative for Implementation of the Peace Agreement on Bosnia and Herzegovina to the Secretary-General of the United Nations. 2010.
80. Results from the EU Biodiversity Standards Scientific Coordination Group (HD WG) in Bosnia and Herzegovina. Sarajevo, 30th June 2008.

81. Scandiaconsult Natura AB and the Regional Environmental Center for Central and Eastern Europe. Strategic Environmental Assessment of Albania, Bosnia & Herzegovina, Kosovo and Macedonia. Stockholm, 2000.
82. The Staff Papers of the International Monetary Fund. Joint Staff Assessment of the Poverty Reduction Strategy Paper. Washington, D.C, 2005.
83. UNDP and Council of Ministers of Bosnia and Herzegovina. Action plan of Information Society Development in Bosnia and Herzegovina. 2004.
84. UNDP and Council of Ministers of Bosnia and Herzegovina. Policy of Information Society Development in Bosnia and Herzegovina. 2003.
85. UNDP and SDC. Integrated Local Development Planning Methodology miPRO - the first, theoretical part. September 2009.
86. UNDP and SDC. Methodology for Integrated Local Development Planning – miPRO - the second, practical part. September 2009.
87. UNDP and Sida. Federation of Bosnia and Herzegovina. Local Self-Government Training Needs Assessment Report. Prepared by the Municipal Training System Project. July 2009.
88. UNDP and Sida. Republika Srpska. Local Self-Government Training Needs Assessment Report. Prepared by the Municipal Training System Project. July 2009.
89. UNDP Bosnia and Herzegovina. Bosnia and Herzegovina Human Development Report / Millennium Development Goals 2003. June 2003.
90. UNDP Bosnia and Herzegovina. Early Warning System. Annual Report – 2008.
91. UNDP Report, GoAL-WaSH Programme. B&H Sector Assessment. June 2009.
92. UNDP. Development Times. No. 16. year VI. January 2008.
93. UNDP. Governance Perception Survey in Bosnia and Herzegovina. Citizens, business and civil servants perception of governance. Bosnia and Herzegovina CSSC Programme. May 2003.
94. UNDP. Human Development Report 2002. Bosnia and Herzegovina. 2001.
95. UNDP. Millennium Development Goals and the Information Society. Sarajevo, May 2003.
96. UNDP. National Human Development Report 2007. Social Inclusion in Bosnia and Herzegovina. 2007.
97. UNDP. National Human Development Report 2009. The Ties that Bind - Social Capital in Bosnia and Herzegovina. 2009.
98. UNECE. Environmental Performance Review - Bosnia and Herzegovina. 2004.
99. UNEP and Government of Austria. Bridging the Gaps: Enhancing MEA Implementation in the Balkans. 2006.
100. UNICO. Project formation study on Bijelijna water supply and sewerage. Study Report. 2009.
101. World Bank. Bosnia Herzegovina Solid Waste Management Project II, Environmental Framework and Management Plan E1839V1. 2009.
102. World Bank. Energy Sector Study: Module 13 – Environment. 2008. (in local language only)
103. World Bank. International Bank for Reconstruction and Development; International Development Association; International Finance Corporation; Multilateral Investment Guarantee Agency. Country Partnership Strategy for Bosnia and Herzegovina for the period FY08-FY11. Report No. 41330 – BA. For official use only. November 12, 2007.

Internet addresses:

104. Basel Convention
http://www.basel.int/
105. CITES
http://www.cites.org/
106. Climate Change website:
http://www.unfccc.ba
107. Convention on Biological Diversity
http://www.biodiv.org/
108. Convention on Biological Diversity. Reports and strategies
http://www.cbd.int/reports/list.shtml?type=all&alpha=K
109. EBRD. Country Strategy
http://www.ebrd.com/country/country/bosnherz/index.htm

110. Economist.com
http://www.economist.com/
111. EEA. European Environmental Agency
http://www.eea.europa.eu/
112. Energy Information Administration: Bosnia and Herzegovina
http://tonto.eia.doe.gov/country/country_energy_data.cfm?fips=BK
113. ENVSEC
http://www.envsec.org/index.php
114. ENVSEC publications
http://www.envsec.org/publications.php
115. European Bank for Reconstruction and Development (EBRD): Projects and Investments
http://www.ebrd.com
116. European Commission
http://ec.europa.eu/index_en.htm
117. European Commission. External relations. Bosnia and Herzegovina
http://ec.europa.eu/enlargement/potential-candidates/bosnia_and_herzegovina/index_en.htm
118. European Investment Bank (EIB). Loans
http://www.eib.org/products/loans/index.htm
119. FAO and Bosnia and Herzegovina
http://www.fao.org/countryprofiles/index.asp?lang=en&ISO3=BIH
120. FAO. Forest facts by country
http://www.fao.org/forestry/country/en/
121. GEF
http://www.gefweb.org/
122. GRIDA Arendal
http://www.grida.no
123. Grida. Environment and Natural Resources Information Network
http://www.grida.no/enrin/index.htm
124. Human Rights Watch
http://www.hrw.org/
125. IPCC reports
http://195.70.10.65/publications_and_data/publications_and_data.htm
126. IUCN World Conservation Union
http://www.iucn.org/
127. Lexadin. Laws
http://www.lexadin.nl/wlg/legis/nofr/oeur/lxwegeo.htm
128. OECD. Aid statistics
http://stats.oecd.org/qwids/#?x=2&y=6&f=3:51,4:1,1:2,5:3,7:1
&q=3:51+4:1+1:2,25,26+5:3+7:1+2:66+6:2003,2004,2005,2006,2007,2008
129. OECD. EAP Task Force. Progress Report on Partnerships in Eastern Europe, Caucasus and Central Asia. 2007.
http://www.oecd.org/dataoecd/50/40/39237009.pdf
130. OECD. EECCA Network of Environmental Finance
http://www.oecd.org/document/24/0,3343,en_2649_34291_2667992_1_1_1_1,00.html
131. OECD. Environment
http://www.oecd.org/env/
132. OECD. Environmental information Bosnia and Herzegovina
http://www.oecd.org/infobycountry/0,3380,en_2649_34291_1_70258_1_1_1,00.html
133. OECD. ODA statistics
http://stats.oecd.org/Index.aspx?DatasetCode=ODA_RECIPIENT
134. OSCE in Bosnia and Herzegovina
http://www.oscebih.org/oscebih_eng.asp
135. RAMSAR Convention
http://www.ramsar.org/

136. REC
http://www.rec.org
137. UN DESA. Division for Sustainable Development
http://www.un.org/esa/sustdev/natlinfo/nsds/nsds.htm
138. UNCCD
http://www.unccd.int/main.php
139. UNCCD. National Report on United Nations Convention to Combat Desertification implementation
http://www.unccd.int/php/countryinfo.php?country=BIH
140. UNDP. Human Development Report 2008
http://hdr.undp.org/en/reports/global/hdr2007-2008/
141. UNECE website
http://www.unece.org/
142. UNECE. Conventions
http://www.unece.org/env/environment-conventions.html
143. UNECE. Statistics on-line
http://w3.unece.org/pxweb/Dialog/
144. UNECE. Working Group for Environmental Monitoring and Assessment
http://unece.unog.ch/enhs/wgema/
145. UNEP
http://www.unep.org/
146. UNEP. Specially Protected Areas
http://www.unep-wcmc.org/protected_areas/UN_list/
147. UNFCCC
http://unfccc.int/2860.php
148. UNFCCC. National reports
http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php
149. USAID
http://www.usaid.gov/
150. World Bank
http://www.worldbank.org/

Printed at United Nations, Geneva
GE.11-20978 - March 2011 - 1,505

ECE/CEP/162

United Nations publication
Sales No. E.10.II.E.18
ISSN 1020-4563

USD 35
ISBN 978-92-1-117036-8