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Second Review

Synopsis



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# *Preface*

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The second Environmental Performance Review (EPR) of Croatia began in October 2012 with a preparatory mission. During this mission, the structure of the review report was discussed and the time-schedule established. A review mission took place on 12-19 March 2013. The team of international experts taking part included experts from Austria, Czech Republic, Germany, the Republic of Moldova, Slovakia and as well as from the EEA and the secretariats of the United Nations Environment Programme (UNEP) and ECE.

The draft EPR report was submitted to Croatia for comment and to the Expert Group on Environmental Performance Reviews in August 2013 for consideration. During its meeting on 1-2 October 2013, the Expert Group discussed the report in detail with representatives of the Government of Croatia, focusing in particular on the conclusions and recommendations made by the international experts.

The EPR recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the nineteenth session of the ECE Committee on Environmental Policy on 24 October 2013. A high-level delegation from Croatia participated in the peer review. The Committee adopted the recommendations as set out in this report.

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

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



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## *Executive summary*

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*The first Environmental Performance Review (EPR) of Croatia was carried out in 1999. This second review intends to measure the progress made by Croatia in managing its environment since the first EPR, especially from 2005, and the potential for addressing upcoming environmental challenges.*

*Croatia's GDP achieved an average 4.1 per cent growth rate during 2005-2008.* However, the international financial crisis led to a contraction of GDP by 6.9 per cent in 2009 and 2.3 per cent in 2010. Year 2011 saw zero growth but the contraction continues, as the latest available figures show a 2 per cent decrease for 2012. Croatia's ranking in the UNDP's *Global Human Development Report* remained constant: with a Human Development Index (HDI) score in 2012 of 0.805, it came 47<sup>th</sup> out of a total 186 countries, the same ranking as in 2005. Progress was made in Croatia's gender parity, with women occupying 24 per cent of Parliament seats and several high political offices. The 2012 Gender Inequality Index was 0.179, placing Croatia in 47<sup>th</sup> place out of 186 countries.

*Key environmental indicators showed a positive trend.* Air pollution emissions were reduced, with the exception of the share of mobile source emissions from total NO<sub>x</sub> emissions, which increased from 62.6 per cent in 2005 to 65.3 per cent in 2011. Total greenhouse gas emissions decreased by 7.2 per cent, while CO<sub>2</sub> emissions alone during the same period decreased by 11.1 per cent. Total waste generation stayed steady over the review period: 3.39 million tons in 2005 and 3.38 million tons in 2011. Designated protected areas expanded from 7.23 per cent of the national territory in 2005 to 8.45 per cent in 2013.

### **Polymaking framework for environmental protection and sustainable development**

*Since 1999, Croatia has made significant progress in adopting and strengthening environmental legislation, with progress on laws in various sectors, such as air quality and waste management.* However, implementation of some of these laws is less encouraging and several strategic documents are out of date. With regard to the policy framework, some strategic documents need to be updated, such as the National Environmental Strategy of 1999, which expired in 2012. Croatia, moreover, is still in the process of adopting river basin management plans.

*Green Economy Initiatives signify a step forward for Croatia. The 2001 Strategic Guidelines for Green Economic Development include a set of action plans and strategic documents for developing a green economy.* However, the Guidelines do not set concrete goals, activities or deadlines and there are no institutional mechanisms for coordination and monitoring. Despite this deficiency, several green economy initiatives have started since 1999. A total of €3.2 million financed 78 projects in the sustainable building sector related to energy efficiency in lighting and heating, the substitution of primary energy sources in boiler plants and the optimization of combustion plants.

*Public institutions such as the Croatian Environment Agency, the Environmental Protection and Energy Efficiency Fund and the State Institute for Nature Protection, under the competence of the Ministry of Environmental Protection, provide additional oversight of environmental policy and information and are largely independent.* The Agency was established in 2002 to analyze and interpret environmental data and provide information necessary for environmental policymaking. The Fund was established in 2003 as an extra-budgetary legal entity for ensuring the implementation of environmental protection programmes on waste management, nature conservation, sustainable consumption, energy efficiency and renewable energies. The State Institute was established in 2002 and provides expertise on nature protection.

*While significant progress is lauded, Croatia has room for improvement in strengthening its institutional mechanisms.* In particular, there is a need for greater promotion of strategic environmental assessments (SEA) and the establishment of quality assurance mechanisms for implementing SEAs. SEA implementation remains deficient, due in part to the weak role that the Ministry of Environmental and Nature Protection plays in the SEA screening process and procedures. The Ministry of Environmental and Nature Protection lacks, moreover, a dedicated unit for coordinating subnational environmental protection.

## Compliance and enforcement mechanisms

*Since 1999, Croatia has established an environmental regulation and compliance assurance system that responds to the needs arising from the country's international obligations.* Environmental impact assessment (EIA) is well developed in Croatia, with a number of cases of application in many areas. Both permitting and EIA procedures have been amended to make them more transparent. Public participation has improved, as well as coordination with administrative procedures such as integrated permitting. Croatia has transposed the EU Directive on integrated pollution prevention and control (IPCC), although there is insufficient capacity for implementation and a backlog of IPCC permits are awaiting issue.

*While Croatia has made significant progress in compliance and enforcement, better use of compliance promotion instruments and procedures would strengthen its effectiveness and capacity for administrative and judicial enforcement.* Compliance promotion and voluntary schemes are relatively limited, although environmental labelling has been gradually put in place: as of early July 2013, 13 manufacturing companies and 15 hotel/campsite operators have been awarded the national environmental label. The system for carrying out environmental inspections largely follows internationally recognized practices and its capacity has proved efficient. Training of industrial operators is taking place.

## Environmental monitoring, information, public participation and education

*Croatia has made significant improvements in environmental monitoring, in particular for air quality, bathing and drinking water, and radioactivity.* Monitoring, which has improved since 2002, is largely the purview of the Croatian Environment Information System, comprising over 40 different databases. The CEA is charged with establishing, maintaining and coordinating a single national environmental information system consisting of several environmental databases. Gaps remain in monitoring bio-diversity, soil, noise, vibrations and land use (except for forestry), although educational workshops aim to improve these areas.

*Preparation of state of the environment reports is on track under the responsibility of the CEA.* However, an inordinately long approval process threatens the credibility of these reports, since figures are often outdated by the time they are published. In order to reduce the time lag of available data, the CEA has started to publish *Selected Indicators of the Environment in Croatia*.

*Croatia is active in environmental education, from kindergarten level, for which around 40 environmental experts have been trained in eco-programmes, to university level, where ecology is part of natural and social science courses.* The country has adopted the Strategy on Education for Sustainable Development. Two hundred eco-schools and 130 regular schools in Croatia follow the Global Learning and Observations to Benefit the Environment programme.

## Implementation of international environmental agreements and commitments

*Since 1999, Croatia has ratified 22 Multilateral Environmental Agreements (MEAs).* Since 2005, Croatia has taken on a broad range of measures to ensure participation in and implementation of MEAs. Implementation is low at regional and local levels due to a lack of awareness and knowledge about MEAs.

*In terms of technical assistance on the environment, Croatia has benefited from EU programmes for transposing the *acquis communautaire* into Croatian legislation, as well as from cooperation with major international financial institutions, UNEP and the Global Environmental Fund (GEF).* Cooperation with GEF has included 30 projects, 14 on national level and 16 on regional level. The majority of national projects focus on biodiversity and climate change; regional projects focus mostly on international waters. Cooperation with UNEP has centred mainly on sustainable consumption and production, and implementing the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution.

*Croatia adopted the National Sustainable Development Strategy (NSDS) in 2009* and submitted its first progress report on the Millennium Development Goals (MDGs) in 2006. In 2010, it also submitted its second national report on MDG Implementation for 2006-2010, which showed a positive trend in achieving MDG-7 ("Ensuring Environmental Sustainability"). However, the link between the NSDS and the MDGs is weak, with a lack of coherent indicators to track progress.

## Economic instruments for environmental protection

*The majority of State subsidies are directed towards sectoral support and not horizontal expenditure in favour of environmental protection and green initiatives.* However, some taxation schemes can be seen to support greening the economy, such as the exclusion of electric cars from the special tax on road vehicles.

*The country has a diversified charge system for the main pollution and emission sources* – these economic instruments consist of air pollution, water and waste charges. In addition to standard municipal and industrial waste levies, Croatia also taxes packaging waste, used tyres, end-of-life vehicles, used batteries, accumulators and oils.

*Although the country adheres to an air pollution charge system for CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>2</sub>, and around 1,200 polluters are obliged to pay levies,* the system is not sufficiently effective as the charges do not reflect regional differences; levies have not been raised since 2008 and the unit charges are not inflation adjusted.

*Energy-related economic instruments are inversely related to consumption, rewarding higher energy consumption.* The price structure does not motivate consumers to conserve energy nor does it give incentives for energy-saving innovations and investment in energy efficiency.

*A greenhouses gas emission trading system was established in 2008.* Installations participating in the trading system have been obliged to obtain emission permits since 2009 and have monitored emissions from installations and submitted annually verified reports since 2010. Croatia joined the EU's Emission Trading Scheme phase III in 2013 – ahead of its accession to the EU.

*Funding for environmental protection changed significantly during the review period.* In nominal terms, local Government expenditure stayed almost the same, but a doubling of central Government expenditure increased inflation-adjusted total expenditure levels by almost 50 per cent from 2005 to 2011. The Croatian Environmental Protection and Energy Efficiency Fund provided loans, grants and subsidies to promote and stimulate green initiatives totalling €148.6 million from 2005-2011.

## Waste management

*Croatia has made significant progress in waste management, with political commitment to the importance of setting up waste management plans and providing reliable data and information on waste.* It exports hazardous waste to countries with more developed facilities. Considerable work has been done within the legislative framework for waste management, including the transposition of EU directives on solid waste and management of special waste streams, including batteries, packaging and vehicle waste. However, information on the environmental impact of waste management in Croatia is limited.

*Positive trends in waste management include investment in the recycling infrastructure and development of regional waste management centres (WMC).* WMCs ensure basic safe management of municipal solid waste. However, the current system lacks consolidation and therefore faces the challenge of redirecting waste from more than 146 disposal sites to 20 WMCs. Groundwater and air pollution caused by landfill is insufficiently controlled, and a significant amount of biodegradable waste is landfilled.

## Sustainable management of water resources

*Around 50 per cent of the public water supply in Croatia comes from groundwater.* From 2005 to 2012, the volume of water abstracted increased from 511 million m<sup>3</sup> to almost 570 million m<sup>3</sup> per year. In addition to domestic demand on water resources, tourism brings increased pressure, especially during the touristic period.

*Flooding is also a problem, causing considerable environmental damage.* Investments in the maintenance of flood protection systems were insufficient until 2005. Since then, revenues from water protection charges have grown significantly, but are still insufficient to develop a protection system. Flood prevention measures are in place and early warning systems and alarms are used, but the safety of inhabitants and assets in many potential flood areas is not yet ensured.

***Household wastewater has increased significantly due to a greater connection ratio.*** In 2005, around 126 million m<sup>3</sup> of wastewater originated from households, rising to about 184 million m<sup>3</sup> in 2012. Approximately one third of the wastewater collected is discharged into the environment, for example untreated wastewater discharge into the sea. However, a clear improvement has been visible since 2007. Sewage sludge poses a persistent problem.

### **Biodiversity and protected areas**

***Since 2005, protected areas have increased by 18.2 per cent and now cover 8.45 per cent of the total national territory.*** Almost all national and nature parks have management plans, sometimes including visitor management. No national monitoring system exists and capacity and equipment are deficient, although some species are monitored, e.g. large carnivores and some bird species.

***The greatest threat to native wild taxa in Croatia is the destruction and loss of habitat.*** This occurs in particular when natural habitats are converted into urbanized areas or agricultural land, or following the construction of roads and other transport, which lead to the fragmentation of habitats. Wild taxa are also threatened by the introduction of non-native species, overexploitation in the fishing sector and the pollution of water, soil and air.

### **Tourism and the environment**

***In 2012, the travel and tourism sector directly accounted for approximately 12 per cent of GDP.*** In 2012, the sector's total contribution to employment, including jobs indirectly supported by the industry, was 30.2 per cent of total employment (319,000 jobs). Croatia has some of the best quality bathing waters in Europe. Of the 919 coastal bathing sites in Croatia, 876 have excellent bathing water, 27 good quality and 3 have poor quality water.

***Total waste generation from tourism is not particularly significant in terms of quantity, but may be relatively high for tourist locations taken in isolation.*** Data on municipal waste generated by the tourism sector are hidden in the total municipal waste data. Disposal of waste on the islands is prohibited. The country makes efforts to relocate existing waste and unregulated landfills away from coastal areas in WMCs.

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# **CONCLUSIONS AND RECOMMENDATIONS**

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## **Chapter 1: Policymaking framework for environmental protection and sustainable development**

Croatia has significantly strengthened its environmental legislation and policy framework for environmental protection and sustainable development since 1999. This has particularly been the case for air quality, nature protection, climate change, water management and waste management. Public participation and information on environmental matters have significantly improved in legal terms.

However, the environmental legislative and policy framework is highly fragmented and insufficiently consistent with sectoral legislation and policies. The mainstreaming of environmental concerns into sectoral legislation and policies has been largely conceptual, with no such integration in terms of implementation. The implementation gap continues to represent a major challenge. This is inter alia linked to three factors: i) insufficient formal institutional mechanisms for horizontal and vertical regulatory and policy coordination, in particular at high administrative and governmental level, combined with high fragmentation of responsibilities for environmental protection and sustainable development, ii) insufficient allocations from the State budget and investments in areas such as waste and water management, air quality, Adriatic and biodiversity protection and iii) insufficient administrative capacity, in particular at regional and local levels due to the decentralization of public administration and growing EU requirements.

### Recommendation 1.1

*The Government should strengthen institutional mechanisms for horizontal and vertical coordination of legislation and policies on environmental protection and sustainable development, in particular by:*

(a) *Activating the existing coordination bodies, such as the Environmental Protection and Sustainable Development Council, the National Committee for the Development and Implementation of the Strategy for Sustainable Development and the Environmental and Nature Protection Forum;*

(b) *Designating the Ministry of Environmental and Nature Protection as the coordinating body on environmental issues among the relevant sectoral ministries;*

### Recommendation 1.2

*The Ministry of Environmental and Nature Protection should designate a unit responsible for facilitating coordination and cooperation with and among the country's counties in developing and implementing subnational environmental legislation and policies, such as the environmental protection plans.*

### Recommendation 1.3

*The Government should strengthen the environmental protection and sustainable development capacities of public institutions at the national, regional and local levels, in particular by:*

(a) *Fulfilling the obligation to increase to an adequate level the number of employees in the Ministry of Environmental and Nature Protection to cover the increased responsibility of the Ministry;*

(b) *Continuing to strengthen the environmental training programme for civil servants, including the development of supporting tools, such as guidelines and handbooks, to ensure the systematic and high-quality fulfilment of the enhanced responsibilities of various public authorities for environmental protection.*

Although Croatia established a legal framework for exercising SEA in 2008, its implementation on the ground has been poor inter alia due to the weak role of the Ministry of Environmental and Nature Protection in the whole SEA procedure, in particular at regional level, the weak methodological framework of the SEA, insufficient capacity building measures for SEA, and the narrow scope of the SEA.

### Recommendation 1.4

*Based on the 2013 Act on Environmental Protection, the Government should promote strategic environmental assessment (SEA) implementation by:*

- (a) *Extending the scope of SEA to all strategic documents;*
- (b) *Increasing the role of the Ministry of Environmental and Nature Protection by making its approval of the whole SEA procedure and its membership in the regional SEA committees mandatory.*

#### Recommendation 1.5

*The Ministry of Environmental and Nature Protection, in cooperation with other competent authorities, should establish a quality assurance mechanism ensuring the effective implementation of SEA obligations at national and local levels and the provision of support for those carrying out SEAs.*

Although the private and public sectors in Croatia are increasingly committed to promoting a green economy, Croatia lacks a formal strategic policy framework that establishes strong governance mechanisms for intersectoral, multi-stakeholder, multilevel coordination of green initiatives and ensures a strong public-private partnership with a common agenda on the green economy.

#### Recommendation 1.6

*The Government should strengthen its development policy, investments and expenditures towards green economy by developing, coordinating and monitoring the implementation of a strategic action plan for green economy that:*

- (a) *Formalizes responsibilities for promoting green economy;*
- (b) *Establishes institutional mechanisms at the political and technical levels for intersectoral coordination of green initiatives;*
- (c) *Sets priorities and measures for the systematic and integrated use of European Union (EU) structural funds, national funds and earmarked financial sources, and for triggering domestic and foreign private investment;*
- (d) *Sets deadlines, timelines and concrete goals for implementation and monitoring mechanisms.*

## **Chapter 2: Compliance and enforcement mechanisms**

Regarding environmental compliance assurance, developments since 1999 have been generally positive. Most of these developments stem from aligning the country's legal basis and management practices with EU requirements, and strengthening administrative capacity to support environmental policy implementation through international cooperation, exchange and training programmes. Croatia has introduced most of the modern instruments and procedures at all phases of regulatory management. Significant efforts have been made to ensure in practice that the system is result-oriented, risk-based, transparent, and participative. For example, the EIA procedure has been gradually enhanced with new phases such as screening and scoping. Its openness to public participation has been enlarged, and coordination with follow-up administrative procedures, such as integrated permitting, has been improved. The EIA procedure is systematically applied, and competent authorities are sufficiently critical to decline some 15 per cent of applications due to their poor quality.

Powers granted to inspectors are extensive and enable them to act swiftly on non-compliance cases. The scope of compliance monitoring is wide, with several agencies having inspection programmes, which are regularly coordinated. Coordinated site visits are conducted by various inspection authorities to reduce the administrative burden on the regulated community. Unfortunately, the interaction between different authorities is more procedural than substantive, and therefore lacks cross-cutting integration. To make enforcement more effective, the Criminal Code has been updated and extends the number of situations when criminal proceeding can be applied. Standard Operating Procedures (SOPs) have been developed and introduced to guide the enforcement procedure in areas such as environmental liability and criminal environmental law.

Some of the existing institutional arrangements pose problems. Different departments of the Ministry of Environmental and Nature Protection conduct policy-making, law development, permitting, inspection, and administrative enforcement. Performance measurement overlooks important aspects of compliance assurance, such as the stepwise use of enforcement instruments in an enforcement pyramid. Disclosure of institutional performance information through annual activity reports is irregular and sometimes lacking. Although enforcement authorities cooperate, coordination efforts still need to be strengthened. Feedback between policy-making and compliance assurance is weak, and no unit has a mandate to advise sub-national authorities and follow up on environmental policy implementation in the counties.

Recommendation 2.1:

*Aiming to address the remaining governance gaps that hinder compliance assurance in Croatia, the Government should:*

- (a) Improve the set of compliance and enforcement indicators and request environmentally related inspection and enforcement agencies to publicly disclose their performance in a systematic manner;*
- (b) Continue to strengthen coordination mechanisms between various inspectorates;*
- (c) Analyze the effectiveness of environmental inspection bodies and ensure the adequate development of their administrative capacity.*

Croatia has transposed the IPPC Directive without renouncing its own regulatory approaches, although the implementation of this directive has suffered from insufficient capacity within both the public and private sectors. There is an important backlog of IPPC decisions to be issued, and the actual identification of IPPC installations is still ongoing. General binding rules are used to regulate smaller facilities. This is a well-adapted regulatory regime that, at the same time, is not sufficiently backed by compliance assistance and promotion measures.

Integrated permitting remains an area where further efforts would be beneficial. To start with, the final list of existing IPPC installations has not yet been established and made publicly available. Exact knowledge of the number of such installations is also a matter of resource allocation within the competent authorities, which seem to be understaffed. The current backlog of integrated permitting cases also reveals a technical capacity problem. The IPPC procedure is lengthy and suffers from complex application and lack of clarity for stakeholders. There are no guidance documents on preparing IPPC permit applications or determining permit conditions, or for statutory consultants to deal with IPPC applications.

Recommendation 2.2:

*In order to reduce the backlog in the Integrated Pollution Prevention and Control (IPPC) permitting procedure, the Ministry of Environmental and Nature Protection should:*

- (a) Complete the inventory of the IPPC installations and keep it up to date and publicly available;*
- (b) Develop guidance documents for stakeholders in the IPPC permitting procedure;*
- (c) Provide training to industrial operators and Authorized Consultancy Organizations concerning the way applications should be made and the information they should contain.*

Compliance assistance activities by the competent authorities are sporadic and limited to on-the-spot advice during inspection. There is no unique platform for offering regulatory information to enterprises. Only a couple of guidance papers target the regulated community. No regular communication is carried out with industry associations. More generally, consultations with the regulated community are very limited, including at the law-making phase, where such an approach would ensure that regulatory goals are understood and supported. The latter is an important drawback in a situation where significant private resources will be required to comply with EU law. The value of EMAS is not adequately promoted, and there are no information-based compliance assurance tools, such as enterprise rating.

Recommendation 2.3:

*The Ministry of Environmental and Nature Protection should make a better use of instruments to promote compliance, through:*

- (a) Conducting consultations with the stakeholders when drafting laws or amendments;*
- (b) Providing small and medium-sized enterprises with easier access to information on how compliance could be ensured;*
- (c) Promoting the use of environmental management systems;*
- (d) Assessing the costs and benefits of a system of public disclosure and rating of the environmental performance of enterprises and adopting such a system, if feasible.*

The majority of the regulated community does not spontaneously comply with environmental law. The available data indicate an enforcement system that tends to apply fines with little recourse to other enforcement instruments. The calculation of fines does not integrate any assessment of the unlawful economic benefits of

non-compliance. Many cases are transmitted to courts, where lengthy procedures are highly inappropriate for environment cases that require an urgent response. The general backlog in courts and the lack of technical capacity to understand environmental cases also diminish the effectiveness of judicial enforcement. Finally, although the legal basis for criminal enforcement has made progress, its application remains limited.

Recommendations 2.4:

*The Government should strengthen the effectiveness of instruments and procedures, as well as capacity, for administrative and judicial enforcement by:*

- (a) Annually assessing compliance with relevant standard operating procedures, updating them as necessary and conducting training and exchange of experience on their application;*
- (b) Providing guidance to inspectors on the use of specific enforcement instruments and requesting that the entire toolbox of administrative enforcement instruments be applied stepwise;*
- (c) Improving the calculation of administrative fines and informing the regulated community of the basis for such calculations;*
- (d) Providing environment-focused training to judicial authorities and considering whether a specialized corps of environmental judges could be established.*

### **Chapter 3: Environmental monitoring, information and education**

The establishment of the Croatian Environment Agency (CEA) has led to progress in the organization of environmental information and reporting systems in Croatia. The period since the establishment of CEA has been marked by the transition and accession period to the EU, which required adapting the national legislative framework. At the same time, efforts were focused on customizing data (e.g., collection, methodology approach, quality assurance and quality control). Data flow functionality is an on-going process within the CEIS, following SEIS principles. Some pieces of legislation (ordinances and regulations) related to environmental information and institutional responsibilities are still being revised and adapted to meet with EU requirements. The process has resulted in new structures in the country as well as new reporting obligations.

Despite the progress, outstanding issues include: problems with incoming data that are sometimes not validated, processed, harmonized or available on a timely basis; difficulties connecting to other institutions' IT platforms (e.g. databases); not all requirements for building a shared CEIS have been covered by legislation; funding for information systems databases development is decreasing; and some capacity gaps by CEA experts.

Existing environmental data subsystems are compilations of numerous databases that are often not connected. If protocols continue to be established for small areas of information, there is a risk that an opaque and unmanageable mechanism will result.

Recommendation 3.1

*The Ministry of Environmental and Nature Protection, in cooperation with other relevant public authorities and other stakeholders, should continue working towards the establishment of an integrated environmental information system that should provide relevant, comprehensive, accurate and publicly accessible data and information on the state of the environment. Future steps should include:*

- (a) Strengthening the coordinating role of the Croatian Environment Agency (CEA), with the means for enhancing database development and ensuring adequate knowledge coverage across all issues;*
- (b) Establishing further National Reference Centres to collect data and report to CEA and other responsible bodies;*
- (c) Continuing the establishment of protocols for data flow, including workflow definitions (precisely defining who reports what, when and to whom), protocols on higher levels of information subsystems to avoid segregation of the whole system and the definition of standards to regulate methodologies and procedures in the creation, access, protection and uniformity of environmental data and information in the related institutions.*

The review of monitoring activities in Croatia reveals that biodiversity, soil, noise and vibration are not monitored regularly. The timely preparation of project documentation, issuing of permits (i.e. IPPC), and preparation and use of assessments in policymaking are jeopardized by information gaps, inadequate coverage

and frequency of monitoring in some areas, and too general and highly aggregated information. Methods and measurements used in some cases are not compatible with international standards, so that delivered data need further interpretation (e.g. GHG emission data are different for E-PRTR and the Emission Trading System; emission data on water from CEA and Croatian Waters are also different).

Some laboratories and measuring stations need to improve data quality assurance/ control. Existing monitoring networks need constant upgrading and maintenance to keep them operational. Responsibilities are unclear and overlap in some areas. Water-related monitoring (including health) should be more fully integrated into the overall environmental information system.

#### Recommendation 3.2

*The Ministry of Environmental and Nature Protection, in cooperation with other relevant public authorities, should prepare a scoping and evaluation study of existing environmental monitoring (including monitoring on national borders), its links to environment reporting (state-of-the-environment (SoE) reports and reporting according to international obligations) and mechanisms for its continuous updating and regular implementation across all areas (air, water, soil, land use, biodiversity, waste, noise and vibration, and radioactivity).*

The procedure for adopting state of environment reports (SoER) is too complicated and lengthy. Adopting a national SoER takes over two years. As reports include an assessment of the relevance to implementing environment-related strategies and programmes, this duration needs to be significantly reduced.

#### Recommendation 3.3

*The Government should speed up the procedure for the approval of the SoE report, in order to produce more timely outputs for policy and information purposes.*

The Croatian environmental information system is based on the principle of a shared environmental information system, which brings many advantages for its further application and use. The reporting system and accessibility to data and indicators relevant for state-of-environment reporting need further development (e.g. digital data flows and workflows, web accessibility, updating frequency).

#### Recommendation 3.4

*The Ministry of Environmental and Nature Protection, through CEA, should:*

- (a) *Establish an indicators database and make it available via the Internet;*
- (b) *Prioritize environmental data flows and develop e-based data exchange protocols, and web portals for stakeholders (e.g., regions and business);*
- (c) *Work towards making most of the data available at the sources and usable for established e-reporting.*

Solid improvements and results have been recorded in education on sustainable development, including environmental education at all levels of the education system, especially for young children. However, whole life education has not been implemented much, and more possibilities could be established for older people.

Currently, education is mostly focused on science and technology. However, the environment is a very local issue and highly diverse. Curricula do not currently take sufficient account of regional differences regarding the issues and needs of environmental education.

#### Recommendation 3.5

*The Ministry of Science, Education and Sports should strengthen education for environment protection and sustainable development in the national education curriculum.*

## **Chapter 4: Implementation of international environmental agreements and commitments**

Since 2005, Croatia has taken a broad range of measures to ensure participation in and implementation of the majority of MEAs. The ratification process of the most important MEAs has significantly benefited from the transposition of *acquis communautaire* into national legislation. Thus, in legislation terms, implementation of the

vast majority of MEAs is almost complete. However, challenges still remain in their practical implementation, mainly on subnational level, which is subject to a lack of awareness and knowledge of the various implementing instruments.

The Ministry of Environmental and Nature Protection is the main governmental institution, with responsibilities to implement the country's international environmental obligations. However, in its efforts to implement these responsibilities, the Ministry needs to cooperate with other key stakeholders. So far, the level of cooperation between the Ministry and other State authorities is unsatisfactory, thus contributing to the ad-hoc implementation of MEA obligation.

**Recommendation 4.1**

*The Government should ensure that:*

- (a) *MEA-related administrative capacities are strengthened;*
- (b) *Coordinating bodies are in place in order to facilitate the implementation of MEA activities;*
- (c) *Cooperation with other State authorities and stakeholders is improved on a regular basis.*

Croatia has followed its obligations stemming from the UNFCCC and Kyoto Protocol, especially in the energy sector, which features specific national targets and potentials for reduction. However, in other areas, such as industry, agriculture and waste management, no country-specific targets have been established.

**Recommendation 4.2**

*The Ministry of Environmental and Nature Protection should further focus on establishing national emission-reduction goals in the area of industrial processes, agriculture and waste management.*

## **Chapter 5: Economic instruments and financing of environmental protection expenditure**

Croatia has taken some useful measures in the application of its taxation policy (e.g. electric cars are excluded from special tax on road vehicles) that make a useful move towards green initiatives. The Government has established the Environmental Protection and Energy Efficiency Fund (EPEEF) to provide extrabudgetary sources for financing green initiatives and environmental protection projects. However, the share of green horizontal subsidies in these funds is relatively low.

**Recommendation 5.1:**

*The Government should increase the share of green horizontal subsidies in the extrabudgetary Environmental Protection and Energy Efficiency Fund.*

At the time of the EPR review, Croatia's air pollution charges were limited to only CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>2</sub>. CO<sub>2</sub> charges have ceased for installations included in EU ETS system, in force since 1 January 2013. At the same time, the level of remaining charges has been stable since 2008 in order to reduce the burden on enterprises following the economic and financial crisis. Pollution charges are not adjusted to inflation and do not reflect regional particularities (e.g. air quality levels for SO<sub>2</sub> and NO<sub>2</sub>).

**Recommendation 5.2:**

*The Government should review its air pollution charges policy to encourage companies to make environmental improvements, in particular by:*

- (a) *Introducing an automatic indexation mechanism for rates;*
- (b) *Adapting charge levels for regional particularities.*

Electricity prices in Croatia decrease progressively as consumption increases for both households and industry. This price structure has the effect of rewarding higher consumption and therefore does little to change the behaviour of economic agents and households. Overall, the price structure discourages energy efficiency innovations and energy savings.

**Recommendation 5.3:**

*The Government should review and adjust the electricity price structure in order to encourage energy saving and energy-efficiency improvements.*

Vehicle-related charges in general increase with the horsepower of engines; however they decrease with the age of vehicles (cars and motorcycles). Similarly, sales taxes are based on the value of vehicles with no regard to environmental performance, thus penalizing environmentally friendly vehicles (such as hybrid vehicles). As a result, some of the currently applicable tax bases weaken demand for less polluting vehicles.

Recommendation 5.4:

*The Government should review and adjust the current system of transport-related taxes, in order to encourage transition to less environmentally polluting practices and choices.*

## **Chapter 6: Waste management**

Waste management in Croatia is going through a period of transformation. The implementation of the waste management policy has led to positive changes, but several drawbacks need to be addressed in the future. Positive changes include the wide use of waste management plans on regional and local levels, the efficient system of financing investments in the waste recycling infrastructure through the Environmental Protection and Energy Efficiency Fund, the integration of waste exports into the national system of waste management, and the development of systems for regional waste management centres. In addition, hotspots, cleanup and management of hazardous waste accumulated in the past do not constitute a critical issue for the country. The most significant drawback in the current municipal waste management setup is the fragmented collection and disposal system. The plan to redirect waste from more than 146 landfills to 20 waste management centres is challenging. Successful implementation of this plan requires not only initiative from the Government to raise the funds required and organize tendering for works and equipment, but also support from individual cities and municipalities, i.e. their willingness to give up current local collection and landfill practices.

Recommendation 6.1

*The Ministry of Environmental and Nature Protection, in cooperation with the Croatian County Association, the Association of Cities and the Association of Municipalities, should assess the socioeconomic impact of the transformation towards regional/county waste management-based collection and disposal sites systems on individual cities and municipalities, and consider devising incentives for the successful implementation of this transformation.*

Additionally, the high number of small landfills is not effective and the Government should explore possibilities for phasing them out. Other countries with similar problems have successfully applied time-limited permits, which expire if a landfill's operating conditions are not met, or have opted to only provide financial support to large landfills.

Recommendation 6.2

*The Ministry of Environmental and Nature Protection, in cooperation with the Environmental Protection and Energy Efficiency Fund, should continue implementing options for reducing the number of local landfills.*

Information is limited in Croatia on the impact of waste management on the environment. Considering the value of Croatia as a tourist destination and the potentially easy infiltration of pollution through the karst bedrock, increased awareness of the environmental impacts of waste management is needed.

Recommendation 6.3

*The Ministry of Environmental and Nature Protection, in cooperation with other relevant ministries, should strengthen controls of groundwater and air pollution caused by landfills, in accordance with the requirements set out in EIA decisions and environmental permits.*

Material recovery systems have been implemented in Croatia and they are able to capture about half of waste suitable for material recovery. On the other hand, composting is not widely used and requires expansion to meet targets set in the legislation.

Recommendation 6.4

*The Ministry of Environmental and Nature Protection, in cooperation with the Croatian County Association, the Association of Cities and the Association of Municipalities, should prepare a regulatory framework (ordinance) on biodegradable waste, and, in cooperation with the Environmental Protection and Energy*

*Efficiency Fund, should promote development of biodegradable waste management facilities, with the aim to reduce landfilling of biodegradable waste*

## **Chapter 7: Sustainable management of water resources**

With the implementation of the Water Act and related regulations, the methods for assessing water quality have changed completely. The numbers of monitoring points have increased and other ways of measuring are now implemented. The result is a huge amount of different data collected, used and required by different institutions. A range of water management stakeholders deal with inland water, seawater, bathing water and drinking water. Responsibilities are also split at different levels.

### Recommendation 7.1

*The Ministry of Agriculture, the Ministry of Environmental and Nature Protection, the Ministry of Health, Croatian Waters and CEA and other relevant institutions should improve information exchange by ensuring that:*

- (a) *Communication channels and contact persons are clearly defined on the horizontal and vertical levels;*
- (b) *All institutions in the water management sector regularly provide water-relevant data in an agreed format to a designated institution in charge of gathering water-related data.*

Water losses are very high and represent 40 per cent of abstracted water. The reasons are varied, such as poor maintenance, illegal tapping and a leaky distribution system. In order to reduce negative influences on water quality and system efficiency (intrusion and extrusion), efficient measures such as modern techniques, better maintenance and new construction would minimize losses.

### Recommendation 7.2

*The Ministry of Agriculture, in cooperation with Croatian Waters and public water suppliers, should reduce water losses in the water supply network and ensure effective maintenance of the water supply systems.*

The connection ratio to wastewater treatment plants is very low at 28 per cent of the population. Additionally, significant amounts of untreated wastewater are still discharged into water bodies. Unsatisfactory sludge management, including usage in agriculture and landfills, affects the quality of water bodies.

### Recommendation 7.3

*The Ministry of Agriculture should:*

- (a) *Increase the proportion of the population connected to the wastewater treatment plants to use full capacity of the plants;*
- (b) *Continue ensuring that untreated wastewater is not discharged into water bodies;*
- (c) *Improve management of sludge produced by wastewater treatment plants by the development of a coherent policy on sludge use.*

Measures have been taken through legislation on vulnerable zones and protection measures against erosion on agricultural land. Nevertheless, the amount of nutrients from point sources and diffuse sources is still significant and has an impact on surface waters.

### Recommendation 7.4

*The Ministry of Agriculture should further promote sustainable farming practices.*

## **Chapter 8: Biodiversity and protected areas**

Croatia has made significant efforts to strengthen relevant legislation related to nature conservation and subordinate regulations and ordinances, establish required compliance mechanisms, and strengthen the institutional framework for biodiversity conservation.

The Ministry of Environmental and Nature Protection and the Ministry of Agriculture have increased their cooperation in the area of agri-environment schemes under the Common Agricultural Policy (CAP) in support of nature protection, including Natura 2000 habitats and species. However, the record for cooperation and enforcement of nature protection measures is weaker in the area of water management, which poses high risks to biodiversity, especially threatened species, and for forests. In addition, in the field of hunting, with the change in the status of the bear in Croatia as an EU member State, there is an opportunity for a more coordinated approach to develop a new bear management plan.

Recommendation 8.1:

*The Ministry of Environmental and Nature Protection should:*

- (a) *Together with relevant institutions, enforce nature protection measures and address the major threats to biodiversity caused by the introduction of invasive species;*
- (b) *Work with the Croatian Forests to put in place mechanisms to raise awareness on the need to protect biodiversity in forests;*
- (c) *Together with the hunting authorities at the Ministry of Agriculture, revise the bear-management plan following the new status of “strictly protected species” granted to bears.*

The objectives of improving economic development and increasing hydropower energy sources seem to be in conflict with the Government’s objectives and obligations of ensuring the conservation and sustainable use of biodiversity, and especially protecting habitats and species against unsustainable development threats.

Recommendation 8.2:

*The Ministry of Environmental and Nature Protection, together with the Ministry of Agriculture and Croatian Waters and the energy sector, should ensure implementation of nature protection measures in order to reduce the pressures on biodiversity caused by hydroelectricity generation.*

Some small projects address the economics of ecosystems and biodiversity and the value of natural assets. The Government has not yet achieved sustainable financing for biodiversity conservation and managing protected areas and for ensuring that biodiversity values are mainstreamed in decision-making processes. Given that Croatia depends greatly on the tourist industry, especially tourists attracted to the coast, the costs of not investing in nature, or of the loss of biodiversity due to unsustainable development and economic pressures on natural resources, should be made evident to policy-makers.

Recommendation 8.3:

*The Ministry of Environmental and Nature Protection should:*

- (a) *Carry out studies related to the valuation of biodiversity and ecosystems;*
- (b) *Promote public and private investments in nature conservation.*

Natura 2000 is considered as one of the most important tools to ensure the favourable conservation status of threatened species and habitat types. Some good progress has been made in implementation. Croatia proposes a network of over one thousand sites that are key to the long-term conservation of endangered species and habitats. The great number of sites and the surface areas they cover illustrate Croatia's exceptionally rich biodiversity.

However, the management of these sites is a challenge. Some sites are very small, just a few hectares (e.g. bogs), others are huge and already protected as nature parks, like the Velebit Mountain, others still are underground (bat caves) or far out at sea (underwater reefs). Adequate monitoring is not yet in place. The development of the nature protection information system is not finalized and long-term maintenance of such a system requires financial and human investments.

Recommendation 8.4

*The Ministry of Environmental and Nature Protection should strengthen efforts to:*

- (a) *Continue ensuring adequate management of the Natura 2000 network;*
- (b) *Ensure adequate monitoring of biodiversity;*

(c) *Complete the development of a functional nature protection information system and ensure its long-term maintenance and updating.*

## **Chapter 9: Tourism and environment**

No comprehensive information is available on the pressures that tourism puts on the environment in Croatia. Only some sporadic data and indicators are scattered over different institutions and publications. No estimates are available of the pressures that tourism puts on water resources and air in Croatia, nor of the volume of greenhouse gas emissions from the Croatian tourism sector.

The 2010 Fifth National Communication of the Republic of Croatia under the United Nations Framework Convention on Climate Change does not contain any specific data on the tourism sector. Data on municipal waste generated by the tourism sector are hidden within the total data on municipal waste generated in the country.

### Recommendation 9.1:

*The Ministry of Tourism, together with the Institute of Tourism and in cooperation with the Ministry of Environmental and Nature Protection and the Croatian Bureau of Statistics, should undertake a continuous assessment of the impact from the tourism sector on the environment.*

Croatia has a great natural potential for developing nautical tourism. The country possesses approximately 12.2 per cent of the coastline and 33 per cent of the island coastline in the Mediterranean. With regard to coastline length, Croatia has 25 times fewer nautical moorings per kilometre than France and eight times fewer than Spain. County physical plans envisage expanding existing facilities and constructing new capacities to receive vessels in about 300 potential locations, which is one and a half times more than at present.

However, the unsustainable development of nautical tourism could pose threats to naturally formed areas and natural resources and could be one of the biggest threats to the environment in the long-term.

### Recommendation 9.2:

*The Government should ensure that the necessary environmental protection measures are implemented during the expansion of the existing and construction of new nautical moorings.*

Over 90 per cent of tourists come to Croatia for sun and sea. Few tourists come to the country for other types of tourism, such as ecotourism, cultural tourism, thematic tourism and adventure tourism. This confirms the necessity to define, shape and adequately promote these forms of tourism. Continental Croatia, from a tourism point of view, still remains insufficiently and/or inefficiently exploited, despite multiple potential tourist attractions. To provide for a more dynamic development of tourism in continental areas, an adequate tourism infrastructure needs to be put into place that takes into account environmental considerations.

### Recommendation 9.3:

*The Government should further promote the development of continental tourism in the country, paying special attention to ecotourism and applying the principles of sustainability.*

# ***IMPLEMENTATION OF THE RECOMMENDATIONS IN THE FIRST REVIEW\****

## **Chapter 1: Legal instruments and institutional arrangements for environmental protection**

### *Recommendation 1.1:*

*The organization of environmental protection, physical planning, tourism and water protection, hunting, fisheries and forest protection in a combined ministry should be considered. This ministry should also include an organizational unit to coordinate environmental education projects and raise environmental awareness among the public.*

Recommendation was partially implemented. The Ministry of Environmental Protection and Physical Planning was established in 2000 on the basis of the State Directorate for Environment Protection. Currently, responsibilities on environmental management are spread among several ministries: the Ministry of Environmental and Nature Protection for air, waste, nature, soil, sea and coastal areas, the Ministry of Agriculture for water, hunting, fisheries and forestry and the Ministry of Health for genetically modified organisms (GMO), chemicals and noise. Tourism and environment is under competence of the Ministry of Tourism, and the Ministry of Construction and Physical Planning is competent for physical planning.

The Ministry of Environmental and Nature Protection has established the Department for General Environmental Policy, which is coordinating the implementation of the National Action Plan for Education for Sustainable Development. The Intersectoral Coordination for Implementation of the Action Plan for Education for Sustainable Development has been established.

### *Recommendation 1.2:*

*The Environmental Protection Law should be revised to meet, inter alia, the requirements of the Aarhus Convention. Improvements in public access to information, public participation and access to justice in accordance with the Convention will also strengthen enforcement mechanisms for environmental protection.*

The Aarhus Convention as well as EU directives related to the same topics have been transposed into Croatian legislation by the EPA and by several implementing regulations, such as the Regulation on information and participation of the public and public concerned in environmental matters (OG 64/08), the Regulation on environmental impact assessment (EIA) (OG 64/08), the Regulation on strategic environmental impact assessment (SEA) of the plans and Programmes (OG 64/08), the Regulation on the establishment of the Croatian Environment Agency (OG 75/02) and the Regulation on environmental information system (OG 68/08).

### *Recommendation 1.3:*

*The public should receive further information on the EIA procedure, encouraging it as well as NGOs to make use of the public participation procedure. Information about planned developments should be published at an early planning stage to facilitate public participation.*

Recommendation was partially implemented. The legal provisions to inform and ensure the participation of the public concerned in the EIA procedure are in place: the 2007 EPA, the Regulation on environmental impact assessment (OG 64/08, 67/09), the Regulation on strategic environmental assessment of plans and programmes (OG 64/08), the Regulation on information and participation of the public and public concerned in environmental matters (OG 64/08). However, there is no evidence that these provisions have been implemented.

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\* The first review of Croatia was carried out in 1999. During the second review, progress in the implementation of the recommendations in the first review was assessed by the EPR Team based on information provided by the country.

**Recommendation 1.4:**

*Inspections should be systematically combined as much as possible. This is particularly true for environment and water protection inspections. An environmental inspector should also be appointed in the county of Zagreb.*

In 2008, the agreement on cooperation between environment inspection services was signed by the Ministry of Environmental Protection, Physical Planning and Construction, the Ministry of Culture, the Ministry of the Sea, Transport and Infrastructure, the Ministry of Regional Development, Forestry and Water Management, the Ministry of Agriculture, Fisheries and Rural Development, the Ministry of the Interior, the Ministry of Health and Social Welfare, and the State Inspectorate. Based on this agreement, a manual was developed on the implementation of coordinated inspection control in line with recommendations from EU acts on setting minimum criteria for environmental inspections.

Inspection services cooperate by exchanging data which have an impact on environmental protection, and particularly on the preparation and performance of coordinated inspection controls, and by using the services of authorized persons (professional institutions, laboratories, agencies, etc.) for inspections, remediating the consequences of major accidents, and other activities within the scope of international cooperation of inspection services.

Coordinated inspection controls are carried out on the basis of a mutually coordinated annual work plan for the following year, published on the website of the Ministry of Environmental and Nature Protection, as well as a work programme. Joint reports are prepared each year on the coordinated inspection controls performed and on other activities within the framework of joint cooperation.

The Department for Environmental Inspection for the City of Zagreb and Zagreb County with headquarters in Zagreb is established as a branch unit within the Ministry of Environmental and Nature Protection.

**Recommendation 1.5:**

*The level of the fines legally prescribed should be examined and adapted, taking into account the economic situation. The fining procedure should be simplified.*

The level of fines stipulated in the current environmental legislation that has applied since 1999 has been increased. The legislation has been changed in the part dealing with penalty provisions. These changes have been made so that penalties can be imposed on natural persons. Now it is possible to impose penalties on individuals and craftsman in an adequate way. Furthermore, judges are allowed to issue minimum penalties and reprimand, and judges may take into account any mitigating circumstances during sentencing, including the financial situation of the accused.

**Recommendation 1.6:**

*Legal provisions should be developed to exempt NGOs from paying taxes and allow donors to deduct their financial contributions to NGOs from their taxable revenues. The SDEP should clearly define its funding policy towards NGOs and improve its transparency.*

The 2001 Income Tax Act introduced the possibility for donations for cultural, scientific, educational, health, humanitarian, sports, religious, environmental and other public benefit purposes made to associations and other persons that conduct listed activities in accordance with special regulations, to be deducted from their taxable revenues, if the donations are less than two per cent of donor's income for the previous year (Article 7. paragraph 7, OG 177/04, 90/05, 57/06, 146/08, 80/10, 22/12). This possibility is made both for natural and legal persons. According to the same law, non-profit organizations are not subject to paying profit taxes and the majority of non-profit organizations are not liable to pay value added tax (VAT). Non-profit organizations become subject to value added tax if the value of the sales of goods and services provided, which are not exempt from VAT, exceeds the sum of HRK 85,000 per year.

The Ministry of Environmental and Nature Protection financially supports NGOs working in the environment and nature protection through inviting tenders to finance their projects. The number of programmes and projects financed by the Ministry has increased significantly over recent years (in 1999 - 11, in 2009 - 51).

The Environmental Protection and Energy Efficiency Fund also finances NGO programmes, projects and similar activities determined in accordance with the National Environmental Strategy and the National Environmental Action Plan.

Recommendation 1.7

*Periodic and "state-of-the-art" representative opinion polls should be carried out on questions regarding environmental protection, including the general relative ranking of environmental protection among the priorities of the population (nationally, regionally, by age group and socio-economic category of the respondents), and the most pressing specific environmental problems.*

There is no information on the implementation of this recommendation.

**Chapter 2: Economic and regulatory instruments**

Recommendation 2.1:

*A time schedule for the full enforcement of all environmental payments should be set and published, including the social conditions that have to be met for the implementation of its steps. Creating an environmental fund with a clear and transparent management is recommended as a measure for improving the funding and efficiency of environmental payments and expenditures during the transition period.*

Recommendation was implemented. The Environmental Protection and Energy Efficiency Fund (EPEEF) was established in 2004 in order to secure additional resources for financing programmes and projects on conservation, sustainable use, protection and improvement of the environment and on energy efficiency and use of renewable energy sources. The resources of the Fund are primarily used to finance programmes and projects determined in accordance with the National Environmental Protection Strategy, the Implementation Programme for the Energy Development Strategy and other acts and regulations on environmental protection and energy efficiency.

EPEEF is established as an extra-budgetary fund. The management structure of the Fund consists of the Director and the Management Board. The Director manages operations of the Fund and performs duties as prescribed by the Act on the Environmental Protection and Energy Efficiency Fund and its Statute. The Director is appointed by the Management Board, which comprises two representatives from the Ministry responsible for environmental and nature protection; one representative from the Ministry responsible for energy; one representative from the Ministry responsible for finance; one representative from the Croatian Parliament; one representative from the Croatian Chamber of Economy; and one representative expert on environmental protection. The Management Board adopts the work programme and financial plan for each fiscal year. The Fund also adopts the long-term work programme.

Recommendation 2.2:

*The necessary and sufficient economic instruments and their levels should be identified with regard to those measures that are already envisaged in existing legislation.*

Resources for financing activities of the Fund are specific-purpose revenues of the Fund from:

- Charges on polluters of the environment are charges for emissions of carbon dioxide (CO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>) and nitric dioxide (NO<sub>2</sub>). The parties subject to payment of these charges for emissions into the environment are owners and/or users of individual sources of emissions of CO<sub>2</sub>, SO<sub>2</sub> or NO<sub>2</sub>.
- Charges on environmental users are charges for owners of buildings subject to procedures for assessment of their environmental impact.

Charges for burdening the environment with waste are charges for municipal waste and/or non-hazardous technological (industrial) waste and for hazardous waste. The parties subject to payment of these charges are owners/users of landfills for disposal of municipal and/or non-hazardous technological (industrial) waste. The charge is calculated and paid according to the volume of waste disposed of at the landfill. The charge for hazardous waste is calculated and paid according to the volume of produced and untreated or non-exported hazardous waste, as well as according to the characteristics of such waste. The charges for burdening the environment with waste are paid for one calendar year.

- Special environmental charges for motor vehicles (special charge) are charges for owners/authorized holders of rights on motor vehicles. The special charge is paid at the time of the registration of the vehicle, i.e. at the time when the vehicle is certified to be roadworthy. The special charge is calculated and paid according to the type of vehicle, type of engine and motor fuel, piston displacement or power-rating of the engine and age of the vehicle.

**Recommendation 2.3:**

*A special mechanism should be designed to help create a market for secondary products. The charges related to industrial waste collection, transport and disposal could be increased, if refunds are introduced at the same time for recycling and reuse.*

The Ministry of Environmental and Nature Protection has adopted a number of ordinances which regulate measures and economic instruments used to encourage recycling and reuse of waste for economic purposes. These are:

- Ordinance on Packaging and Packaging Waste;
- Ordinance on Waste Tyre Management;
- Ordinance on the Management of End-of-life Vehicles;
- Ordinance on the Management of Waste Electrical and Electronic Appliances and Equipment;
- Ordinance on Waste Batteries and Accumulators Management;
- Ordinance on Waste Oil Management.

Within its core activities, EPEEF also supports the organization and financing of a system for the management of specific waste streams. Revenues generated by Fund from charges by users of the environment, importers and producers of packaging waste, waste tyres, vehicles, oil, batteries and accumulators and electrical and electronic waste and equipment are used to pay the expenses of collection and recycling of these waste streams to licensed collectors and recovery operators.

**Recommendation 2.4:**

*The statistics on environmental expenditures as well as their sources of funding should be improved as a matter of priority.*

Statistics on environmental expenditure has improved and is annually reported in a dedicated section of Croatia's National Statistical Yearbook.

### **Chapter 3: Environmental consequences of armed conflict**

**Recommendation 3.1:**

*The effects of the armed conflict on the environment should be quantified to the maximum possible extent, to become the basis for a comprehensive remediation strategy. Monitoring practices should be widely extended to prepare the strategy.*

Recommendation was partially implemented. Cartographic maps have been produced showing suspected hazardous areas by county on the territory of Croatia. Thanks to demining operations conducted by demining companies and general and technical survey operations, the suspected hazardous area has been reduced from an initially estimated 13,000 m<sup>2</sup> to the now precisely defined 695 km<sup>2</sup> (on 30 October 2012). The National Mine Action Strategy for the period 2009-2019 defines the prerequisites for solving the mine problem including the capacities and funds needed.

**Recommendation 3.2:**

*Local capabilities should be strengthened to cope with the environmental consequences of the armed conflict on a medium- to long-term basis. Strengthening should involve making finances available as required, including possibly from international assistance.*

Recommendation was partially implemented. The central Government and local authorities cooperate in defining the goals of scientific research projects focusing on remediation. Many local and national documents set out how to secure innovative financial resources to address the issue of lands affected by the armed conflict,

including land contaminated by mines. There is no evidence that local capabilities to cope with the environmental consequences of the armed conflict have been strengthened.

**Recommendation 3.3:**

*Scientists should evaluate xenobiotic and metabolic processes occurring in underground strata used for the extraction of drinking water, in order to ascertain the microbiological processes that may be causing degradation of chemicals polluting such water. These metabolic processes are of particular importance when such metabolites increase the toxicity of the pollutants. Expertise in anaerobic metabolism will have to be developed.*

The network of institutes in Croatia, as part of its regular activities, controls and analyzes drinking water. Over the years, Croatia has developed expertise on analysis of xenobiotics in an aquatic environment by working on scientific research projects co-financed by State funds and international funding. Institutes and universities have also worked on projects concerning anaerobic metabolism.

**Recommendation 3.4:**

*Training in environmental health risk assessment, ecotoxicology and related topics should take place, specifically at regional and local levels. It should be extended to both industrialists and academics.*

Courses related to environmental health risk assessment and ecotoxicology are part of the university curriculum. In the meantime, a pollutant release and transfer register (PRTR) has been developed with an interactive application available to the public.

**Recommendation 3.5:**

*Ground contaminated with incompletely burnt pesticides or related products (including PCBs) should be examined and, as necessary, remediation measures proposed, and no new warehouses, production units nor, in particular, any dwellings should be built in those areas.*

There is no information on the implementation of this recommendation.

**Recommendation 3.6:**

*Croatia should be invited to actively contribute to the regional assessment of environmental impacts of armed conflicts, in the context of the Stability Pact for South Eastern Europe.*

Croatia has actively participated in the activities of the Stability Pact since its establishment in 1999 and, as president of the South-East European Cooperation Process (SEEC) in 2006/2007, played a leading role in the transformation of the Stability Pact into the Regional Cooperation Council. One of the initiatives launched by the Stability Pact in Zagreb was the International Sava River Basin Commission. The International Sava River Basin Commission (ISRBC), headquartered in Zagreb, Croatia, was established to implement the Framework Agreement on the Sava River Basin (signed at Kranjska Gora, Slovenia on 3 December 2002), and implement the mutually agreed goals: establish the international navigation regime on the Sava River and its navigable tributaries; establish sustainable water management and undertake measures to prevent or limit hazards, such as floods, ice hazards, droughts and accidents involving substances hazardous to water; and reduce or eliminate their adverse consequences.

## **Chapter 4: International cooperation**

**Recommendation 4.1:**

*Implementation, compliance and enforcement of environmental norms and action plans following existing international commitments should be a priority for all actors in Croatia's environmental policy. National priorities should be defined for international environmental cooperation, preferably as part of the National Environmental Strategy and the National Environmental Action Plan, which are currently being developed.*

National priorities for international environmental cooperation were defined and incorporated in the NES and the NEAP, which were adopted in 2002. The NEAP is currently under revision.

**Recommendation 4.2:**

*An analysis of all existing international cooperation for environmental protection should be undertaken. A strategy for attracting funds involving all governmental bodies related to environmental protection should be developed. The creation of a unit for project management in the State Directorate for Environment should be considered.*

Recommendation was partially implemented. For that purpose, the Ministry of Environmental and Nature Protection has established an independent sector for the EU which is, among other things, in charge of coordination of all activities related to the results of the negotiation process for Chapter 27 on the Environment, as well as part of Chapter 22 relating to the Operational Environment Programme for the period 2007-2013. The Sector performs expert and administrative work in coordinating the preparation and implementation of strategic documents and operational programmes for the use of EU funds related to infrastructure projects and technical assistance projects. It is in charge of tasks related to preparing and proposing projects and providing information to final recipients. It performs tasks related to providing financial resources for the implementation of projects, preparing and analyzing the implementation of bilateral agreements for individual projects, and supervises the implementation of strategies, operational programmes and projects. It is responsible for updating the manual for the implementation of operational programmes, and coordinates the programme of all the environmental components of the Operational Programme Environment. There are three units within the Independent Sector: Department for European Integration, Department for Coordination of Operational Programmes, and Department for Project Development and Implementation. However, a strategy for attracting funds involving all Government bodies related to environmental protection has not been developed yet.

**Recommendation 4.3:**

*The State Directorate for the Protection of Nature and the Environment should consider creating a national coordination body which can serve as a forum for information exchange, coordination and cooperation on sustainable development.*

The Government has established permanent working bodies that provide it with opinions, suggestions and expert clarifications. All issues related to environmental protection are discussed within the Coordination for Economy working group. This working group includes representatives from all ministries. There are plans to establish an inter-ministerial coordination group to deal with specific issues, consisting of experts nominated on behalf of their ministries.

**Recommendation 4.4:**

*The ratification procedures for the Bern Convention on the Conservation of European Wildlife and Natural Habitats and the Bonn Convention on the Conservation of Migratory Species of Wild Animals should be initiated.*

Croatia has been party to the Bern Convention on the Conservation of European Wildlife and Natural Habitats and the Convention on the Conservation of Migratory Species of Wild Animals (CMS) since 2000.

**Recommendation 4.5:**

*Awareness about international environmental conventions and policies and their importance for social and economic issues at the national and regional levels should be raised, with special programmes targeting decision makers as well as the public.*

The Ministry of Environmental and Nature Protection regularly publishes information regarding international treaties and projects on its official website.

**Recommendation 4.6:**

*The forthcoming action plan on climate change should include suitable economic instruments in order to support the respective objectives.*

Recommendation was partially implemented. The National Strategy for the Implementation of the United Nations Framework Convention on Climate Change and Kyoto Protocol in the Republic of Croatia with the Action Plan was prepared in 2007. Objectives and measures listed in the action plan are an integral part of the

2008 Air Quality Protection and Improvement Plan for the period 2008-2011, OG 61/08. However, there is no evidence that the respective objectives are adequately supported by suitable economic instruments.

## **Chapter 5: Air management**

### Recommendation 5.1:

*The National Environmental Strategy, the National Environmental Action Plan and the Industry Development Strategy should be drafted in broad collaboration with all those concerned. An implementation strategy taking into account the generally accepted priorities and a realistic assessment of the available resources should be included in the strategic documents. Whenever possible, economic and legislative instruments should support the strategies' implementation.*

The 2002 NES and the NEAP were the basis for the development of supporting implementation documents, such as the Strategy for Sustainable Development, the Air Quality Protection and Improvement Plan for 2008-2011, the Plan on reduction of emissions of sulphur dioxide, nitrogen oxides and particulate matter from major combustion plants and gas turbines in the territory of Croatia, the Plan on allocation of greenhouse gas emission quotas in Croatia (National Allocation Plan), and the Programme for gradual emission reduction of certain pollutants up to the end of 2010, with emission projections for the period 2010-2020.

### Recommendation 5.2:

*Sufficient funds for the county offices and inspectorates should be secured from the county budgets. Priorities should be set on the national level, and their implementation on the local level coordinated systematically. The staff of the offices and inspectorates should be strengthened at least in counties with a high concentration of industry.*

Recommendation was partially implemented. County environment inspectorates no longer exist as such. They now come under the competence on the Ministry of Environmental and Nature Protection. The inspection comprises two levels of competence: one central division for the whole country with 20 inspectors, and 5 local branches with 15 offices and 60 inspectors. However, there is no evidence that sufficient funds for inspectorates are secured from the national budget.

### Recommendation 5.3:

*A detailed concept for a national air quality monitoring network should be established. If appropriate, automatic continuous measuring devices could be used for monitoring traffic-related pollution. The introduction of benzene measurement is essential.*

The national network for continuous air quality monitoring consists of 21 monitoring stations, 20 of which were established pursuant to the regulation on siting of national network stations for continuous air quality monitoring, and one station in Slavonski Brod in line with the Air Quality Protection and Improvement Plan for 2008-2011. Air monitoring stations for traffic pollution are located in several cities across the country. Some air monitoring stations also monitor benzene (six monitoring stations at State level).

### Recommendation 5.4:

*The by-law on the methodology of measuring pollutant emissions from stationary sources into the air should be prepared in collaboration with expert institutions as well as industry, and, prior to its adoption, the cost of applying it should be assessed. For sulphur dioxide, also mass balance estimation should be possible.*

Recommendation was implemented. Legislation regarding measurement of pollutant emissions into the air from stationary sources has been constantly harmonized with EU legislation. All stakeholders were included in the drafting of these regulations. Each installation is obliged to measure emissions from stationary sources. The ordinance on monitoring pollutant emissions into the air from stationary sources prescribed, among others, how to measure emissions into the air from stationary sources, the extent and measurement types, reference measuring methods and sampling. The manual for pollutant emissions into the air, which is based on the Environmental Pollutant Register, sets out the procedure for calculating emissions from stationary sources that do not perform measurements, and for reporting the total annual emissions of pollutants in Croatia.

Recommendation 5.5:

*Remedial programmes for particular non-compliance sources should be set up in accordance with local environmental protection documents, with which the local physical plans should comply.*

The Air Protection Act (OG 178/04, 60/08) lays down a number of obligations and assigns a significant role to local self-Government units in the implementation of air protection policy. Local self-Government units adopted an action plan for the reduction of air pollution, in order to gradually reach the limit value (LV). They also decided to develop a rehabilitation programme for stationary sources and defined the deadlines for achieving it.

Based on these obligations, rehabilitation programmes and plans of measures were implemented for Sisak - INA Refinery Sisak (H<sub>2</sub>S and SO<sub>2</sub>), Rijeka - INA Refinery Hearted (H<sub>2</sub>S and SO<sub>2</sub>), Rijeka - Kostrena (PM<sub>10</sub>), Kutina-factory soot (H<sub>2</sub>S) and Zagreb - the western part of the city (PM<sub>10</sub>). The implementation of the measures prescribed in plans and programmes to protect and improve air quality and reduce emissions of certain pollutants has resulted in significant improvements in air quality (for example, the town of Sisak and Rijeka - SO<sub>2</sub>).

Based on the pollution levels set out in the new Air Protection Act (OG 130/11) and given the prescribed limit values (LV), target values and long-term objectives, the following categories of air quality have been determined:

- First category of air quality – clean or negligibly polluted air: the limit values (LV), target values and long-term objectives for ground level ozone have not been exceeded,
- Second category of air quality – polluted air: the limit values (LV), target values and long-term objectives for ground level ozone have been exceeded.

The responsibilities of local self-Government units include implementing specific measures for the protection of human health; establishing air quality monitoring stations if they consider that pollution levels are higher than the prescribed limit; adopting an air quality action plan for the zone and agglomeration in question in order to achieve the limit values or target values as soon as possible; and adopting a short-term action plan in a given zone or agglomeration where there is a risk that the levels of pollutants will exceed the alert thresholds, indicating the measures to be taken in the short term in order to reduce the risk or duration of such an exceedance.

In order to achieve the prescribed obligations, the project "Support to the preparation of a national action plan to reduce particulate matter (PM) and nitrogen oxides (NO<sub>x</sub>) in Croatia (Directive 2008/50/EC)" was completed in 2012 as part of the programme between Flanders and Croatia. Under this programme, short-term action plans were drafted for the cities of Sisak, Kutina and Split. The city of Sisak, in accordance with the draft, has started drawing up its own Action Plan.

Recommendation 5.6:

*Economic incentives encouraging the purchase of cleaner technologies, abatement techniques, monitoring devices, techniques for the development and use of renewable energy sources, waste recycling, rational energy production/use etc. should be introduced in the taxation and custom system.*

Various economic instruments have been adopted to provide economic incentives for environmental improvements. These instruments include charging industrial and energy installations for emissions of SO<sub>2</sub>, NO<sub>x</sub> and CO<sub>2</sub> into the air, and a special environmental charge for motor vehicles. The Environmental Protection and Energy Efficiency Fund uses these financial resources to finance projects and programmes in environmental protection, renewable sources and energy efficiency.

Recommendation 5.7

*Croatia should ratify the VOC Protocol to the Convention of Long-range Transboundary Air Pollution. Croatia should actively prepare for the possible implementation of the new Protocol to Abate Acidification, Eutrophication and Ground-level Ozone. Its first national communication should be drawn up in broad collaboration with the economic sectors concerned, and realistic baseline emissions negotiated with the responsible international body.*

Croatia ratified the VOC Protocol in 2007 and the Gothenburg Protocol in 2008.

## **Chapter 6: Management of freshwater resources and quality**

### Recommendation 6.1:

*The National Water Council should be revived. It should be representative of Parliament, and involve water management experts and scientists as well as NGOs. It should coordinate its decisions with the Committee of Environmental Protection and Physical Planning in matters regarding waters and environmental protection.*

The recommendation was implemented. According to the provisions of the Water Act (OG 153/09, 63/11, 130/11 and 56/13), the National Water Council has been established for the purpose of discussing systematic issues of water management, coordinating needs and interests, and proposing measures for the development and improvement of the water system in Croatia. The National Water Council has a chairperson and 10 members appointed by the Croatian Parliament for a term of four years from among representatives of the Croatian Parliament and distinguished scientists and experts on water management and similar fields. The country followed EU directives, and the structure of the water sector was adapted to apply an integrated water management approach that is suited to Croatia and ensures appropriate participation of all stakeholders at different levels. For the purpose of water management, Croatian Waters established water management departments and branch offices. The water management departments are in charge of implementing the Water Management Plan in their respective river basin district by, among other things, communicating and cooperating with local and regional self-Government, users of water and the water estate, payers of water fees, and users of funds provided by Croatian Waters.

The general public and NGOs were involved in the process of information and public consultation on preparation and adoption of the first RBMP.

The Water Services Council was established to ensure the legality of determining the price of water services. Members of the Council are appointed and suspended by the Parliament upon the proposal of the Government, and are appointed for a term of five years. The Council comprises nine members who are experts on water supply and wastewater sewerage, water management, economy, public finance or other fields.

### Recommendation 6.2

*Basin water management plans should be urgently completed. Basin agencies should obtain greater autonomy, in particular regarding the spending of the financial resources collected in their basin. Basin committees should be created or their role strengthened in decision-making. These committees should be equally made up of representatives of local territorial authorities, users (or their associations) and the State.*

The recommendation has for the most part already been implemented in practice with regard to the development and adoption of the River Basin Management Plan and the Water Management Strategy. The public was involved in both processes. The Decision on the River Basin Management Plan was adopted on 26 June 2013. The integration of environmental and nature protection elements into water management is ensured through performing strategic environmental impact assessments of the river basin management plans, and producing a basic planning document for water management, and other development planning documents (e.g. multiannual construction programs), before the adoption and during the implementation of such documents.

The Danube River and the Adriatic River basin districts were established. Characterization reports have been prepared for both river basin districts, including an analysis of their characteristics, i.e. identification of the natural characteristics of all water bodies, a review of the impact of human activities on the status of waters, and an economic analysis of water use. Based on these, water bodies have been identified as the main units for which the objectives and measures for water management are defined, in accordance with the Water Framework Directive (WFD).

A river basin management plan with a programme of measures makes it possible to coordinate the management of measures to reduce impacts on the aquatic environment and to monitor the way in which human activities impact water through an integrated and comprehensive approach. The objectives of the river basin management plan reflect the objectives of the WFD.

Recommendation 6.3:

*The efficient protection of complete river catchments in the karstic area deserves a special protection regime.*

Recommendation was implemented. Due to the importance of karst aquifers for the wider region, Croatia implemented the project DIKTAS with its neighbouring countries. The DIKTAS Project (2010-2014) was initiated by the aquifer-sharing states and is a full-size GEF regional project, implemented by UNDP and executed by UNESCO. The project's activities focus on Albania, Bosnia and Herzegovina, Croatia and Montenegro.

The objective of the Project is to introduce sustainable integrated management principles into a transboundary karst freshwater aquifer of the size of the Dinaric Karst System. It is a collective effort to facilitate the equitable and sustainable utilization of the transboundary water resources of the Dinaric Karst Aquifer Systems shared by several countries. Its goal is to protect the unique groundwater dependent ecosystems that characterize the Dinaric Karst region of the Balkan Peninsula. However, the areas intended for the abstraction of water for human consumption (drinking water) are protected by designating sanitary water source protection zones. This is within the competence of appropriate bodies on local or regional level. Decisions to protect such sources pursuant to the Water Act have been reached for most active sources.

The registered sanitary protection zones cover a total of 11,468 km<sup>2</sup> or 20 per cent of Croatia's territory. Water protection zones cover a larger area in the Adriatic River basin district (5.899 km<sup>2</sup> or 28% of the RBD area, including 172 km<sup>2</sup> on the islands) than in the Danube River basin district (5.569 km<sup>2</sup> or 16% of the RBD area).

Most of the water protection zones are restriction and control zones, accounting for 83 per cent of the total area of the designated water protection zones in the Danube River basin district, and 51 per cent of the total area of the designated water protection zones in the Adriatic River basin district. The procedure for identifying sanitary protection zones is laid down by the Ordinance on defining sanitary water source protection zones (OG 66/11, 47/13). The Ordinance also includes the preparation of reports on the basis of water research works performed, and reserves the area for sanitary protection zones in a physical planning document pursuant to the legislation on physical planning and construction. Once the required conditions are met, the relevant bodies at local or regional level reach a decision identifying a sanitary water source protection zone, under the prescribed procedure and with participation of all interested stakeholders.

In addition, other protected areas have been designated according to the Water Act, *inter alia*, sensitive areas, vulnerable areas, ecological network.

Recommendation 6.4:

*Funds collected from charges, or obtained from other sources, and earmarked for water protection at the basin level should be allocated case by case depending on the results of a cost-effectiveness analysis.*

The revenue collected from the water protection fee is used for:

- Preparing water protection plans and making arrangements for their implementation;
- Monitoring and identifying water quality and taking measures for its protection;
- Financing the construction of main public sewerage facilities: main sewers, pumping stations, wastewater treatment plants, discharges into a recipient, plants to treat sludge generated in the process of wastewater treatment, and sewerage network facilities.

A representative body of the local self-Government may introduce a development fee when higher investments in water utility facilities are needed for protecting water sources within the sanitary protection zones. The revenue from the development fee is used to construct water utility facilities or to finance their construction. The main criteria for financing individual projects are the following:

- Cost-effective;
- Affordable;
- Feasible;
- Appropriate for the environment;
- Appropriate for nature;
- Full cost recovery.

**Recommendation 6.5:**

*Economic incentives and a command-and-control approach toward industry should be strengthened to encourage (i) the introduction of cleaner technology, and (ii) industrial investments in waste-water treatment units.*

Industrials pay a water protection fee based on the polluter pays principle, which encourages polluters to introduce cleaner technologies and invest in their own WWTPs to pre-treat their wastewater.

**Recommendation 6.6:**

*Professional training programmes should be set up for operators of waste-water treatment units. Engineers and experts employed in such units should be trained in water management, including all technical and policy-making issues, or adequate measures should be taken to retain chartered or other well qualified staff in these units.*

Training for WWTP managers and employees has been significantly improved in recent years in order to achieve cost-efficient and effective plant operation e.g. training centre in Karlovac.

**Recommendation 6.7:**

*Once the Environmental Emission Cadastre will be reliable and complete, it should fully integrate the existing water emissions registers and should be used as a common decision-making tool, in particular in the introduction of an integrated permitting system.*

Croatia Waters keeps emission data in the water protection cadastre. This cadastre contains data on water emissions as part of the Water Information System, which is an integral part of the Croatian Environmental Information System hosted by CEA, which is in turn part of the Water Information System of Europe (WISE).

**Recommendation 6.8:**

*The existing monitoring system for waters should be harmonized and improved. The use of automatic monitoring should be increased. Integration and processing of data should be upgraded. The data should be processed and disclosed.*

Recommendation was partially implemented. Since 2009, the monitoring plan has been gradually harmonized with the requirements of the EU Water Framework Directive with the aim of: establishing systematic supervision of the status of water and ultimately achieving long-term changes (surveillance monitoring); monitoring the impacts of implementing water protection measures (operational monitoring); and identifying unknown phenomena in the water system (investigative monitoring). Appropriate monitoring of ecotoxicological, biological and hydromorphological indicators is still lacking.

**Recommendation 6.9:**

*Cooperation between Croatia and all countries in the region concerned by transboundary water management and protection should be improved. The status of cooperation with Bosnia and Herzegovina and Yugoslavia should be clarified from the legal point of view, and a technical programme of cooperation should be defined in order to prepare the ground for the necessary international support and investments.*

Recommendation was implemented. Multilateral and bilateral cooperation has been established, particularly with neighbouring countries (Hungary, Slovenia, Bosnia and Herzegovina, and Montenegro), and is being further developed with the aim of addressing controversial issues. Negotiations are currently underway on a water management agreement with Serbia.

**Chapter 7: Waste management****Recommendation 7.1:**

*The enforcement of the existing waste legislation should be considered the first priority for waste management. It should be facilitated by clearly committing sufficient resources to the task, including money to train inspectors and other public and private staff involved in waste management.*

Recommendation was partially implemented. There is no evidence that the existing waste legislation is properly enforced. Human resources for waste management within the State authorities are slowly but steadily growing. See also Recommendation 7.4

Recommendation 7.2:

*A national waste management policy plan –currently under preparation as part of the National Environmental Action Plan - should be implemented, including legal and economic priorities and instruments that actually achieve the intended goals. A subsequent national programme of action for the various sectors should be adopted, making budgetary and other financial commitments. Special attention should be given to financing hazardous waste management.*

The 2005 Waste Management Strategy, as a constituent part of the National Environmental Strategy (OG 46/02), includes an evaluation of the present state of waste management, strategic and quantitative goals and measures for achieving those goals, guidelines, investment estimates and sources of funding. The Waste Management Plan for 2007-2015 was adopted in 2007 with the basic task of organizing the implementation of the main goals of the Strategy.

The management of special categories of waste is regulated by ordinances. For six special categories of waste (packaging waste, waste tyres, end-of-life vehicles, waste oils, waste electrical and electronic appliances and equipment, waste batteries and accumulators) these ordinances regulate compensations for collectors and treatment operators. Producers/importers of special categories pay a fee to the Environmental Protection and Energy Efficiency Fund, which is then used to compensate collectors and treatment operators. Since the application of the aforementioned systems began, new treatment and recovery capacities have been put into action. An improvement has been noted in quantities of separately collected waste, thus reducing the pressure on the environment and allowing more rational use of space on landfills. The most significant progress has been noted in waste electrical and electronic systems and end-of-life vehicle systems.

According to the Waste Act, the State is responsible for hazardous waste management. The Ministry of Environmental and Nature Protection issues permits for hazardous waste management. Waste producers must hand over waste to authorized persons in possession of the appropriate permit. The costs of waste management are calculated according to the amount and properties of the waste in accordance with the “polluter pays” principle.

Recommendation 7.3:

*The SDEP should consider establishing a small administrative unit to (a) propose streamlining administrative practices in waste management, and (b) facilitate dialogue with and between local waste management authorities. This dialogue should include exchanges on such issues as socially acceptable fees for the collection and disposal of waste.*

There is no information on the implementation of this recommendation.

Recommendation 7.4:

*Both the Inspectorate and the Waste Register should give particular attention to the import, export and transit of wastes. It is recommended that detailed data on the permits and the actual import, export and transit of wastes, and in particular hazardous wastes, should be made accessible to the public. The permitting and control functions for the import, export and transit of waste should be separated and made transparent.*

The Directorate for Environmental Protection and Sustainable Development of the Ministry of Environmental and Nature Protection issues administrative decisions concerning waste imports, hazardous waste exports, non-hazardous waste exports of waste destined for disposal operations, hazardous waste transit, and non-hazardous waste transit of waste destined for disposal operations. The Directorate for Inspectional Affairs of the Ministry of Environmental and Nature Protection is responsible for inspecting the supervision of the enforcement of the Waste Act and its subordinate legislation. Although in the same Ministry, the two directorates are separate.

Exporters and importers of waste are required to submit yearly reports to the Ministry on the imported/exported amounts and types of waste. The Ministry coordinates data flow with the CEA, which provides data on waste in accordance with the Waste Act and subordinate legislation. The waste management permits register and the

transboundary waste movement database are available to the public on the web, as well as yearly reports on various waste management subjects, such as special categories of waste, municipal waste, and transboundary movements of waste.

Recommendation 7.5:

*The SDEP should consider assisting municipalities to develop their waste management master plans, by launching a pilot programme in one county for capacity building in municipal waste management and inspection.*

Municipalities and towns are responsible for municipal waste management. A few pilot projects on separate waste collection have been launched by municipal companies in their designated areas, and the results of these projects will help identify and improve weak spots in the system. Some towns in Croatia (Krk, Čakovec) already have a successful separate waste collection system in place and should be looked upon as positive examples for other towns/municipalities.

Recommendation 7.6:

*A sufficiently complete and reliable waste information system should be developed between all institutions concerned, starting from the completion of the waste cadastre. The public should be informed of possibilities for waste reduction, recycling and similar issues through suitable campaigns.*

CEA collects, integrates and provides data on waste. It maintains the Waste Management Information System, develops and sets up indicators used to monitor the state of the waste sector, creates reports on different waste topics, participates in EIONET (European Environment Information and Observation Network), participates in preparing and implementing projects in the waste sector, and provides and facilitates access to information on waste. CEA also informs the public on how to minimize their waste generation and on responsible waste management. In recent years, several campaigns have been launched with the aim of promoting responsible waste management and educating the public (e.g. campaign on the hazards of waste containing asbestos; end-of-life vehicle campaign; electric and electronic waste equipment campaign) but a lot more effort is needed in this area.

Recommendation 7.7:

*The adequate elimination of obsolete pharmaceuticals, hazardous industrial chemicals, as well as medical wastes should be seen as the most urgent problem in hazardous waste management, which should be considered the most important part of waste management in general.*

The 2007 ordinance on medical waste management establishes methods and procedures for managing medical waste generated by healthcare of people and animals, and in research pertaining thereto. Medical waste must be separately collected, registered and temporarily stored in a special separate area until treatment or delivery to an authorized person possessing the appropriate permit for managing medical waste. Healthcare institutions mostly dispose of their infectious waste by handing it over to authorized persons with treatment/sterilizing appliances or by sterilizing it themselves using their own appliances. After treatment, the remaining waste is deposited on municipal waste landfills. The recovery and disposal of pharmaceutical, cytotoxic, chemical or similar hazardous medical waste is conducted in facilities authorized for the recovery and/or disposal of hazardous waste by incineration.

In 2010, 73.6 per cent of medical waste was sterilized in autoclaves and then sent to landfill. Additionally, 7.89 per cent of non-hazardous medical waste was sent to landfill without prior treatment. A total of 2.93 per cent of medical waste was treated by incineration (waste incineration on land and use of waste principally as a fuel or other means to generate energy). About 5.87 per cent remained stored at the treatment facility, while the rest (9.73%) was exported, mostly for incineration in Austria and Germany. As far as waste hazardous industrial chemicals are concerned, the producer/holder of the chemicals must hand them over to a person authorized for their collection, recovery and/or disposal.

**Chapter 8: Nature conservation, forest and biodiversity management****Recommendation 8.1:**

*The State Directorate for the Protection of Nature and the Environment should put a higher priority on nature protection, starting with increasing the expert staff in its relevant departments.*

The current institutional framework in the nature protection sector is defined by the Nature Protection Act (NPA) (OG 80/13). The Government has recognized a need to strengthen institutional capacity to perform expert tasks of nature protection. In this regard, the State Institute for Nature Protection (SINP) was established in 2002, pursuant to the first National Strategy and Action Plan for the Protection of Biological and Landscape Diversity (OG 81/99). The Institute carries out expert tasks pertaining to: inventory; monitoring; establishment and coordination of the nature protection information system; assessing the state of nature; preparing expert base proposals for the protection of natural values and for inclusion of nature conservation measures into natural resource management plans and physical plans; preparing opinions regarding protected area management plans; developing expert base proposals for the assessment of acceptability of interventions in nature; reporting on the state of nature; participation in the implementation of international agreements on nature protection and organizing and implementing educational and promotional activities in nature protection.

**Recommendation 8.2:**

*An academic advisory committee under the responsibility of the Director of the SDEP should be set up to assist in the decision-making and evaluation processes regarding biodiversity conservation.*

Recommendation was partially implemented. With the establishment of the SINP, collaboration with the scientific community improved, at the same time giving momentum to the research and development of scientific data on biodiversity. The SINP actively cooperates with State administration institutions, and also with scientists at universities and institutes, natural history museums, non-governmental organizations, schools and other interest groups.

During first ten years of operation, the SINP has, among other things, carried out tasks such as: establishment of an inventory of species and habitat types for many previously unstudied and poorly known parts of Croatia; development of a system for monitoring individual strictly protected species; development of management plans for the wolf, lynx and endemic freshwater fish species; publication of 25 red books and red lists of threatened plant and animal species; development of the proposed Croatian Ecological network and proposal for the Natura 2000 ecological network; preparation of draft management plans for four potential Natura 2000 areas; development of proposals for the protection of 30 areas; development of expert base proposals for several important pieces of subordinate legislation on nature protection; development of the Report on the State of Nature Protection (2000-2007); active participation in the drafting of the National Strategy and Action Plan for the Protection of Biological and Landscape Diversity from 2008; development of more than 1,300 expert base proposals for including nature conservation measures into natural resource management plans and physical plans; preparation of 700 opinions regarding appropriate assessment; and production of 70 publications for raising public awareness of the need for conservation.

**Recommendation 8.3:**

*The responsibility of the Department for Protected Areas should be increased. In particular, it should oversee the implementation of the management plan more closely.*

Recommendation was partially implemented. In 2007, the National Ecological Network was promulgated by a Government regulation. This network consists of ecologically important zones that are divided into areas important for the conservation of wild bird species or wild taxa and habitats. The network of ecologically important areas covers 47 per cent of the land and 39 per cent of the marine part of Croatia (all national parks, nature parks, strict and special reserves, in addition to areas so far not designated under national classification). Since the National Ecological Network is a relatively young conservation mechanism for Croatia, a management framework has still not been established for the whole territory. The most extensive management system is established in national and nature parks, which have a very long tradition of conservation, specifically through developing management plans for each PA.

Management of protected areas in the categories special reserve, national park, park and regional parks, and protected landscape are established through management plans, which are prepared for a ten-year period. The spatial organization of the national and nature parks is established on the basis of spatial plans. All national parks and nature parks have developed management plans or have prepared an advanced draft plan. A management plan sets out development guidelines, the method of implementing protection, use and management of the protected area, as well as more detailed guidelines for protection and conservation of the natural assets of a protected area, taking into consideration the needs of the local population. MPs are implemented by an annual programme for the protection, conservation, use and promotion of the protected area.

Nature protection and land-use planning management are separated institutionally. The Law on Land-Use Management regulates physical planning and defines the obligation of making regulations on the protection and management of an area of special interest for the State. Nature protection requirements and measures are part of physical planning documents.

Recommendation 8.4:

*Biodiversity protection measures should be incorporated into all spheres of human activities, and not only limited to the protection regime provided to certain species and areas. Protection of natural habitats in economically exploited areas should be improved by implementing specific guidelines for nature protection in agriculture, forestry, water management, physical planning and other activities.*

The legislative framework for mainstreaming biodiversity into different policies and sectoral documents (e.g. spatial planning, forestry, hunting, agriculture, fishery) is in place and being implemented and will be further enhanced in other sectors.

Management plans for natural resources and physical planning documents (spatial plans) contain nature protection measures and requirements, which include reviews of protected and registered natural assets, ecologically important areas and particularly valuable landscapes, and guidelines for their protection and conservation. In this way, nature is protected in economically exploited areas (i.e. agriculture, forestry, fishing, hunting, construction, transport, energy, exploitation of mineral resources, etc.). With this concept, protection becomes an integral activity that is increasingly adjusted to the concept of sustainable development. Special nature protection requirements enter into the procedure for obtaining a location permit for construction and execution of works and projects in a national park, special nature reserve, natural monument or nature park.

Recommendation 8.5:

*Each ecosystem should be used according to its specificity in an ecologically sound manner. The use of the coast for fish farming and marinas should be regulated. Urban sprawl along the coastline should be prevented, new constructions close to existing urban zones streamlined, a coastal strip protected from building and public access to the sea secured.*

All projects and activities in ecological network areas that could have a negative impact on the area's conservation objectives are subject to an appropriate ecological network impact assessment, pursuant to the Ordinance on the appropriate assessment of the impact of plans, programmes and projects on the ecological network (OG 118/09). If an activity or a project is subject to an EIA, then this impact assessment is carried out within it.

Croatia has ratified the Barcelona Convention's Protocol on Integrated Coastal Zone Management in the Mediterranean (OG IT 8/12). The Protocol presents legal instruments aimed specifically at managing coastal zones by taking into account the interrelationship between uses of the sea, land and the environment. The EU Marine Strategy Framework Directive was transposed by the Regulation on establishing a framework for Croatia's action in the protection of a marine environment (OG 136/11). The requirements of MSFD call for the development of an integrated marine strategy that applies an ecosystem-based approach to the management of human activities.

Croatian law gives special attention to coastal biodiversity. The 2009 Strategy for Sustainable Development (SSD) focuses specifically on the protection of the Adriatic Sea, coastal area and islands, highlighting the need to reduce the loss of marine and coastal biodiversity. On a legislative level, this goal is reflected in the 2007

Physical Planning and Building Act (PPBA). According to the Act, the protected coastal area, which encompasses all of the islands, the continental belt extending 1,000 m inland from the coastline, and the sea belt extending 300 m out to sea from the coastline, benefits from a specific legal mechanism aimed at ensuring its preservation. PPBA gives special attention to the use of the coast for fish farming and marinas and includes a number of provisions for regional planning. The spatial plan of the county determines in particular the areas intended for hotel, catering and tourism purposes outside a settlement (location, type, maximum capacity and size), and the guidelines for determining detached building areas intended for such purposes. The spatial plan of the county determines in particular the areas intended for nautical tourism ports, golf courses, and areas for mariculture and fishing infrastructure.

New detached building areas outside a settlement that are intended for hotel, catering and tourism purposes may only be established in the spatial plan of a county if existing areas with the same purpose are built on 80 per cent or more of their surface area.

Recommendation 8.6:

*Physical planning and its implementation should be based more strongly on joint actions and coordination between the national, county and local administrative levels.*

The 2007 Physical Planning and Building Act introduced:

- Principle of Horizontal Integration in Spatial Protection – integrated approach to planning;
- Principle of Vertical Integration and Harmonization of Interests in adopting physical planning documents and other development documents (strategies, plans, programmes etc.). The State and local and regional self-governments are required to mutually cooperate in the spatial planning process, in spatial protection, building and urban regeneration, and in the performance of other activities related to fulfilling physical planning obligations, for the purpose of achieving the objectives of physical planning;
- Harmonized development of physical planning documents.

A physical planning document for the narrower area must be harmonized with the physical planning document for the wider area.

Recommendation 8.7:

*Coordination of actions regarding nature protection and biodiversity conservation between the SDEP and other ministries and directorates should be improved. A special unit in the SDEP should be entrusted with the responsibility for coordination.*

Recommendation was partially implemented. In 2006, when preparation began of the new strategy on nature protection and biodiversity conservation, ten working groups were established with the aim of analyzing the implementation of the former strategy and determining strategic objectives, guidelines and priority action plans.

These working groups comprised representatives of relevant State administration bodies, professional institutions, public institutions for management of protected areas, inspection services, scientific institutions, the economic sector, and non-governmental organizations. The intention behind involving a wide circle of participants in the preparation of the Strategy was to ensure an integrated approach to the issue of nature protection, thus creating the prerequisites for incorporating biodiversity determinants into all relevant sectors. The draft strategy was made public on the Internet, with the intention of collecting comments, proposals and opinions from the public concerned. A public presentation was made of the draft strategy and the draft Report on the State of Nature and Nature Protection in Croatia. Working groups took all comments into consideration before finalizing the text of individual chapters, objectives, guidelines and action plans. Subsequently, the Ministry submitted the strategy to the competent State administration bodies for comments prior to its submission to the parliamentary procedure.

Recommendation 8.8:

*The monitoring of nature should be improved in particular with regard to biodiversity, soil and surface water. An inventory of the state of soil degradation and of the state of natural habitats should be envisaged.*

Recommendation was partially implemented. Identification of areas important for the conservation of endangered and rare species and habitat types is underway, together with preparation of the inventory and mapping of the habitats and species relevant to the Natura 2000 network. Work to establish similar monitoring has started for all Natura 2000 species and habitats.

Recommendation 8.9:

*Cooperation with neighbouring States on physical planning, biodiversity and water management should be intensified, including data exchange. Croatia should implement the international conventions and agreements relating to nature protection and biodiversity conservation that it has ratified, and it should join the main international ecological and development programmes.*

Since 2000, Croatia has ratified 16 MEAs related to biodiversity and is implementing them. During the EU accession process, the NPA was constantly aligned with the provisions of EU nature protection legislation.

Through the EU programme on cross-border cooperation, Croatia obtained funding for joint projects with Bosnia and Herzegovina, Hungary, Italy, Montenegro, Serbia and Slovenia, respectively. Croatia has also received international financial/technical assistance through EU funds, GEF donations and financial assistance from various countries and the World Bank.

## **Chapter 9: Management of marine resources and pollution**

Recommendation 9.1:

*An integrated coastal zone management plan should be prepared and implemented.*

Recommendation has not been implemented.

Recommendation 9.2:

*Technopoles should be established where medium and small-sized industries can share basic supply and treatment facilities so as to benefit from economies of scale in investment and operating cost.*

There is no information on the implementation of this recommendation. Restructuring or consolidation of the water utility sector is planned. Service areas will also be defined, including small- and medium-sized industries that are connected to public sewerage systems.

Recommendation 9.3:

*Operation centres should be set up to deal with emergencies and protection of the coastal sea and shoreline, where this is not yet the case.*

Regional operational centres have been established in all seven coastal counties to implement the Contingency Plan for Accidental Marine Pollution.

Recommendation 9.4:

*A waste management plan should be developed for the islands and the coastal area.*

The Waste Management Plan for the period 2007-2015 was adopted in 2007. It covers the waste management system on islands and on the coast. As a result, a separate plan for islands and the coastal area has not been prepared.

Waste management in maritime ports is defined under the Ordinance on conditions and methods of maintaining order in ports and in other parts of the internal maritime waters and territorial sea (OG 90/05). The port authority is responsible for supervising order in ports and in other parts of the internal maritime waters and territorial sea, and especially for keeping the coast and sea clean from pollution emitted from maritime facilities.

**Recommendation 9.5:**

*It should be explored, whether navigation should be routed further away from the islands and the coast and to safer port approaches. Especially cargoes with hazardous substances, oil, etc., should follow special routes. Monitoring should take place in coordination with Italy, Croatia and Slovenia.*

In 2003, the International Maritime Organization (IMO) established a mandatory ship reporting system in the Adriatic Sea with the aim of constantly monitoring ships carrying dangerous or polluting substances. In 2004, IMO established a scheme of separate, directed navigation, "North Adriatic", in the entrance to the biggest Croatian, Slovenian and Italian ports in the North Adriatic to reduce the risk of ship collisions, and determined a recommendation to avoid sailing ships close to gas platforms in order to prevent damage.

The Vessel Service Traffic started in January 2011. It uses radar and automatic identification systems for ships to monitor maritime traffic in the Croatian part of the Adriatic in real time, and is constantly ready to react to the dangerous movement of a ship and send it a warning via VHF radio communication system.

**Recommendation 9.6:**

*Croatia's national monitoring programme "Systematic Research of the Adriatic Sea as a Basis for the Sustainable Development of Croatia" should be approved and implemented.*

The recommendation has not been implemented. Activities are currently underway to establish a monitoring and observation system for the assessment of the marine environment in the framework of the implementation of the EU Marine Strategy Framework Directive.

**Recommendation 9.7:**

*Any new installation should be allowed to operate only if it is monitored and found to comply with the appropriate pollution control. Old and highly polluting installations should be closed within a relatively short time unless they can be economically retrofitted to environmentally sound conditions.*

Recommendation was partially implemented. According to the regulations on spatial planning, construction and protection of the marine environment, all new plants planned for construction must obtain all permits prior to starting operation. Special attention is focused on integrated environmental protection requirements and prevention of sudden events from the treatment of hazardous substances. In the last decade, on the basis of a Government decision, highly contaminated areas of former pollution resulting from the termination of so-called dirty technologies have been cleaned up.

Particular attention is paid to infrastructural facilities on the coast and the coastal belt with the aim of recovery/disposal of wastewater from land, waste management and construction of traffic detours. As the law prohibits the disposal of waste on the islands, efforts have been made to relocate existing waste and unregulated landfills away from coastal areas to the so-called waste management centres.

**Recommendation 9.8:**

*All municipalities and major tourist resorts should have proper sewage treatment and effluent systems. An acceleration of investment in waste-water treatment is needed to counteract the deterioration of inland and coastal water quality. Effective conservation of the coastal water quality depends on success in the protection of complete river catchments in the karstic areas.*

According to the Plan of Implementation of Water Utility Directives in Croatia, by the end of 2023 investments in proper sewage treatment and effluent systems will total more than €3.2 billion. The Plan will cover all built-up areas in major tourist resorts on the Adriatic coast with a population of over 10,000 by the end of 2020.

**Recommendation 9.9:**

*Croatia should assess the tourist carrying capacity of its Adriatic region in coordination with the Ministry of Tourism, the Ministry of Physical Planning, Building and Housing, the State Directorate for the Protection of Nature and the Environment, the State Water Directorate and assistance from the Regional Activity Centre of the Priority Action Programme.*

The assessment of the tourist-carrying capacity of the Croatian part of the Adriatic Sea area planned by relevant ministries has not been conducted yet.

## **Chapter 10: Management of selected environmental issues in industry**

### Recommendation 10.1:

*A legal framework promoting the development and implementation of cleaner technologies should be developed in cooperation with the State Directorate for the Protection of Nature and the Environment, the future national cleaner production centre, and other appropriate public and industrial institutions.*

Recommendation was partially implemented. The Croatian Centre for Cleaner Production was established in 2000. There is no information on the development of a legal framework regarding cleaner technologies.

### Recommendation 10.2:

*The State Directorate for the Protection of Nature and the Environment should undertake a large-scale information campaign on available assistance for industrial enterprises in their introduction of cleaner technologies. The promotion of the ISO 9000 and ISO 14000 series in Croatian industry should be a second major objective for the campaign. The campaign should also provide information on relevant demonstration projects for the actual introduction of cleaner technologies and products.*

Recommendation was partially implemented. Since 2001, the Eco-Management and Audit Scheme (EMAS) system has been open to all economic sectors in Croatia, including public and private services, and implemented in cooperation with the Ministry of Environmental and Nature Protection. In addition, pursuant to the regulation on product quality control in order to reduce pressure on the environment from industrial activities, standards ISO 9000 and ISO 14000 are being introduced and implemented.

### Recommendation 10.3:

*The State Directorate for the Protection of Nature and the Environment, in cooperation with other governmental authorities represented in the Commission on the Safe Management of Chemicals, should develop a law for the safe management of chemicals, based on the relevant EU directives and practices. It should also strengthen its coordinating role in the safe management of chemicals.*

The Chemicals Act was adopted in 2005 and the National Strategy for Chemical Safety in 2008. Existing legislation in this area is mostly harmonized with EU legislation as well as the relevant MEAs. Particular attention is given to the safe management of chemicals. Control is assured by coordinated inspections and reporting on the safe management of chemicals.

### Recommendation 10.4:

*The Government, in cooperation with chemical companies, should define and apply economic measures that promote a wider introduction of environmental protection measures in the chemical and petrochemical industries, including both in-process and modern end-of-pipe technologies.*

There is no information on the implementation of this recommendation.

### Recommendation 10.5:

*The development of an information system on industrial pollution should be started in the near future, beginning in the chemical industry. It should primarily focus on monitoring soil and groundwater pollution in the vicinity of refineries and chemical industrial sites.*

The Ordinance on Environmental Pollution (OG 35/08) was adopted in 2008. The Pollutant Emission Register is a set of data on the sources, type, quantity, method and places of discharge, transfer and disposal of pollutants and waste into the environment. The main purpose of the Ordinance is to establish a unified register on discharge, transfer and disposal of pollutants and waste into the environment, in the form of publicly available databases on pollutants and discharges of pollutants and waste into the environment (air, soil and water) from a single source.

**Recommendation 10.6:**

*Restructuring and privatization in the energy sector to improve energy efficiency, taking into account national conditions and interests, should be seen as an urgent requirement for energy conservation.*

Recommendation was partially implemented. The regulatory framework for implementing the Act on Energy End-Use Efficiency has been terminated. In the Regulation on contracting and implementation of energy services in the public sector, the Government defined the methods for contracting energy services, more detailed obligations of energy service providers and customers, more detailed contents of energy efficiency contracts, and budgetary monitoring of energy services for public sector customers, which will endorse the development of the Energy Service Companies (ESCO) market. There is no information as to whether restructuring and privatization of the energy sector did take place, and if so, whether the result was improved energy efficiency in the energy sector.

**Recommendation 10.7:**

*Government and energy enterprises should undertake further research and development of cleaner coal processes, as well as environmentally sound processes using renewable energy resources.*

Coal is used only in one power plant and in a fairly modern facility that was granted all permits and approvals by the competent authorities, including in particular: integrated environmental protection requirements, measures to reduce pollution and risks to the environment, and the prevention of major accidents involving dangerous substances. The coal used is of satisfactory quality to guarantee meeting the combustion criteria to reduce pollution and limits below the limit values for emissions into the air. Regulations on the energy efficiency of plants that use coal are fully harmonized with EU legislation, and current inspectional and process control activities have been intensified in order to avoid any possible contamination. The systems are equipped with modern techniques and technologies for continuous monitoring of pollution parameters. Total investments in the programme of renewable energy sources are envisaged to total around €6.3 billion until 2030.

**Chapter 11: Environmental concerns in agriculture and forestry****Recommendation 11.1:**

*The draft law on soils should be finalized, and a land protection policy should be formulated, adopted and implemented. The management of soil erosion risks should be entrusted to a special administrative entity under the supervision of the State Directorate for the Protection of Nature and the Environment, which is currently responsible for soil protection.*

Recommendation was partially implemented. The protection and maintenance of soil are implemented through different legislative instruments, depending on land use, i.e. whether it is agricultural land, forest or construction land. Requirements for the protection of soil for agricultural use are prescribed in the Agricultural Land Act (OG 39/13) and related ordinances. Protection of agricultural land from erosion is prescribed through the Ordinance on agricultural measures (OG 43/10) and the Ordinance on good agricultural and environmental conditions (OG 65/13).

**Recommendation 11.2:**

*Permanent monitoring of soil quality should be established – preferably on the basis of the law on soils proposed above - together with a land information system.*

Recommendation has not been implemented. However, the new Act on Agricultural Land (OG 39/13) defines that the Agricultural Land Agency will establish, develop, manage and maintain the information system on agricultural land in Croatia.

**Recommendation 11.3:**

*The existing legislation – Law on Heritage, Law on Cadastre, Law on Agricultural Land – should be harmonized in the framework of general environmental policy, and a new land register should be prepared, so as to improve the economic efficiency in agriculture and encourage privatization.*

Recommendation not implemented yet.

**Recommendation 11.4:**

*The finalization of the law on organic farming and its adoption by Parliament should be seen as a priority.*

The Act on organic production and labelling of organic products (OG 139/10) was adopted in 2010. Several ordinances for each area of production were adopted, i.e. processing of organic product storage and transport, plant and animal production, control system, labelling of food and feed, aquaculture.

**Recommendation 11.5:**

*Economic incentives and other means should be applied to encourage family farms to turn to various forms of sustainable agriculture and agro- and ecotourism.*

Recommendation was partially implemented. According to the Act on State Support in Agriculture and Rural Development (OG 80/13), agricultural producers must take specific measures in order to receive direct payments and rural development support (which includes support for ecological and integrated agricultural production). These measures include protection of the environment, human health, animals and plants, animal welfare and good agricultural and environmental conditions (soil erosion, soil organic matter, soil structure, minimum level of maintenance, water management and protection).

No evidence exists as to whether economic incentives and other means have been applied to encourage family farms to take up various forms of sustainable agriculture and agro- and ecotourism.

**Recommendation 11.6:**

*Developing national guidelines for good agricultural practices should be considered. Farmers should pay particular attention to preventing ground and surface water pollution by nitrates, heavy metals and pesticides and permanent monitoring should be established. The role of extension services should be strengthened in regard to the use of fertilizers and plant protection agents. The use of biological and other environmentally friendly pesticides should be encouraged.*

The Ministry for Agriculture together with extension services published a booklet on good agricultural practice in 2009. It contains chapters on measures to protect soil, water, air and animal welfare. The booklet is available to all farmers in Croatia in printed and electronic versions. The Croatian extension service provides farmers with information on their obligations concerning environmental protection and better usage of agro-chemicals on their holdings.

**Recommendation 11.7:**

*Methods should be implemented to reduce water pollution by farm effluents, and to reduce the excessive water use in livestock facilities and the high water content of liquid manure. Systems for the collection of liquid manure and other effluents from major farms need to be built.*

Croatia has adopted an action programme for protection of waters against pollution caused by nitrates from agriculture (OG 15/13). The provisions of this programme are obligatory in zones designated as vulnerable according to the Government Decision on designation of vulnerable zones in Croatia (OG 130/12), and recommended to farmers outside vulnerable zones.

The action programme includes measures on good agricultural practice in using fertilisers, information on the periods where using fertilisers is prohibited, obligations on chemical analysis of agricultural soil, obligations on keeping records on fertilization, the maximum amounts of manure allowed per hectare, the ban on fertiliser usage on buffer strips, water-saturated, frozen or snow-covered ground, storage capacities for all forms of manure, and other ways to dispose of manure from farms.

**Chapter 12: Environmental concerns in tourism****Recommendation 12.1:**

*Guidelines for sustainable tourism addressed to local communities, containing notably a checklist of important elements to take into account in tourism development and practical advice on how to resolve environmental problems in tourism, should be drawn up at the national level according to the principles of local Agenda 21.*

Recommendation was partially implemented. Some guidelines for sustainable tourism have been proposed at local and regional level. Some are still in development.

Recommendation 12.2:

*The national authorities should adopt legal instruments on protected tourist resources, defining a list of tourist resources and protecting them against other economic activities. The legal instruments should mention environmental requirements that protected tourist resources have to preserve, including the quality of bathing water in accordance with international practice.*

Recommendation was partially implemented. The Sustainable Development Strategy defines tourism development in accordance with the criteria of construction, physical planning, carrying capacity and efficient adjustment to the limits and possibilities of protected areas, with the aim of preserving biodiversity, natural and cultural heritage. The Tourism Development Strategy aims, inter alia, to protect all tourism resources in accordance with sustainable development principles. The emphasis is on the touristic enhancement of forests, natural sites and cultural heritage.

Recommendation 12.3:

*A permanent committee on sustainable tourism composed of representatives of State, county and local levels, and NGOs should be established. The committee should have permanent scientific staff at its disposal and should take part in international networks on sustainable (tourist) development.*

Recommendation has not been implemented. A permanent committee on sustainable tourism composed of representatives from State, county and local levels as well as NGOs has not been set up.

Recommendation 12.4:

*The National Strategy of Tourism should include provisions for foreign and domestic investors in the tourism sector dedicating part of their investment to the building or renovation of public environmental protection facilities.*

The Tourism Development Strategy includes measures aimed at accelerating investments in the tourism sector, in accordance with sustainable development, touristic enhancement of forests, natural sites and cultural property in accordance with environmental protection and sustainable development principles.

Recommendation 12.5:

*At primary and secondary levels of education, courses should be introduced concerning tourism in general and the importance of developing an environmental friendly tourism in Croatia in particular.*

Tourism in general has been introduced into the curriculums at primary and secondary schools.

### **Chapter 13: Human health and the environment**

Recommendation 13.1:

*An operational plan to implement the National Environmental Health Action Plan should be prepared in close coordination with the National Environmental Action Plan and accepted by the Government. The plan should set priorities, define methods of implementation, and assign responsibilities and resources.*

Recommendation was partially implemented. The National Environmental Health Action Plan (NEHAP) was prepared in 1999 and adopted by the Ministry of Health. As no responsibilities and resources were assigned within the NEHAP goals, implementation of the activities in the Plan was linked to strategies and plans other than NEHAP (NEAP, sustainable development, etc.). Many activities were performed, but not directly linked with NEHAP.

Recommendation 13.2:

*Collaboration should be clearly improved between the sectors and institutions involved in assessing and managing the health risks due to environmental exposure (administration, public health agencies, research and education).*

Recommendation was partially implemented. Some attempts were made to establish interdisciplinary committees at different levels to facilitate interdisciplinary collaboration, but these were inconsistent and not action oriented. Many examples exist of good interdisciplinary cooperation, but these tend to be linked to individuals rather than institutions. Recently, the Ministry of Health has established an interdisciplinary committee on the environment and health whose main goal is to coordinate activities under the responsibility of different institutions and ministries.

Recommendation 13.3:

*Existing data on health status should be analysed to gain insight into the geographical differentiation in health and its links with the environment. Geographical, region-specific analysis should be routinely used in health surveillance. The National Institute of Public Health may need additional capacity for this activity.*

There is no information on the implementation of this recommendation.

Recommendation 13.4:

*Time trends of several health indicators deserve closer scrutiny (e.g. drop in life expectancy at age 65, high mortality due to lung cancer, injuries). It is also necessary to assess to what extent the patterns can be related to environmental factors.*

Recommendation was partially implemented. Health indicators are monitored, assessed and investigated continuously, according to financial and workforce capacities. They are also interpreted according to environmental factors.

Recommendation 13.5:

*Efforts should be made to reduce the share of deaths with causes classified as “ill-defined conditions”. Especially in a region-specific analysis, the large proportion of such deaths may obscure the spatial and temporal patterns of mortality.*

Significant efforts were taken to improve the system of mortality statistics, including employment of medical staff as coroners and their further training. Recently, the share of “ill-defined conditions” was around one per cent.

Recommendation 13.6:

*The number of medical consultations caused by intestinal infectious diseases registered by the primary health care system is five times the number of digestive system infectious diseases registered by the communicable disease registry. It should be verified to what extent this difference is caused by the definition of diagnostic criterion applied by each system, or by systematic errors. If the quality of the data collected by the primary health care service is verified, this information can be considered for use in the surveillance of water-related health risks. As with the mortality data, the analysis must include a spatial component.*

Although reporting infectious diseases to the epidemiological service is obligatory for first-contact medical doctors, not all of them do so, which explains the underreporting, particularly of mild diseases. Cases reported by primary health care doctors in their work reports can be interpreted only for the use of medical services since cases cannot be distinguished from visits. Recently, the computerization of primary health care has been put in place, although it is not yet terminated in terms of predicted functions, which will significantly improve the situation.

Recommendation 13.7:

*National air quality standards for thoracic particles ( $PM_{10}$ ) should be re-considered and the recommended values may have to be markedly reduced.  $PM_{10}$  and  $PM_{2.5}$  should be monitored to verify compliance with the standards and to assess the results of actions to reduce pollution and its health impacts.*

The national network for continuous air quality monitoring has been established. Every year, CEA publishes an air quality report and a categorization of the air quality for the whole territory of Croatia. Based on these evaluations, action plans and measures for the improvement of air quality are being drafted.

**Recommendation 13.8:**

*The level of population exposure to heavy metals, and in particular the blood lead level in children, should be assessed to verify if the high concentration of some metals in sedimented dust is also a health risk. The assessment should focus, in the first place, on people living in the vicinity of the larger waste sites and in areas with heavy traffic.*

Recommendation has not been implemented. There are some studies on population exposure to heavy metals, but none at national level. The NIPH has not yet conducted a survey of blood lead levels in children.

**Recommendation 13.9:**

*A programme should be established to reduce population exposure to radon, if further measurements show that there is a genuine health risk.*

Recommendation has not been implemented. No programme is in place to reduce population exposure to radon. Settlements are not highly isolated, since Croatia is subject to a mild continental and Mediterranean climate. The Institute for Medical Research has made some measurements of radon in basement flats in Zagreb.

**Recommendation 13.10:**

*The national system of food contamination control should be improved to ensure more efficient actions on the part of the responsible services and to reduce the risk of food-borne disease.*

The food safety system is harmonized with EU *acquis*. The competent authority is the Ministry of Agriculture. The Ministry of Health has some limited jurisdiction in legislation and official control at market level. Risk assessment is in the competence of the Food Agency.

**Chapter 14: Environmental concerns in transport****Recommendation 14.1:**

*As a matter of priority, environmental factors should be considered in managerial decisions at State level on physical planning and related new transport policies. The State Directorate for the Protection of Nature and the Environment should have a role in the related decision-making process and the public should be involved earlier.*

**Recommendation 14.2:**

*Strategic environmental assessment should be established to provide a sound basis for a long-term transport strategy. It should cover all transport modes and include effects like shifts in traffic, changes in the choice of the means of transport and possible traffic-inducing conditions.*

Both recommendations were partially implemented. The implementation of recommendations 14.1 and 14.2 is as follows.

The Ministry of Maritime Affairs, Transport and Infrastructure is currently developing the Transport Operational Programme (TOP). The general strategic objective of the TOP is to stimulate rapid economic growth based on market integration and sustainable transport development.

An SEA was carried out for the TOP. The SEA results will be submitted to the Ministry of Environmental and Nature Protection in order to obtain its opinion on the strategic assessment carried out for the Programme, which is necessary for its adoption.

**Recommendation 14.3:**

*The environmental impact assessment of transport infrastructures should be improved.*

Recommendation has not been implemented. An environmental impact assessment was carried out for individual transport infrastructure projects. However, there is no proof that the quality of the transport infrastructure EIA has improved.

Recommendation 14.4:

*A long-term plan in the transport sector, based on the results of a strategic environmental assessment, should be drawn up. In particular, a strategic plan for the future development of the national transport system should favour electrification of railways and improvement of both public and waterway transport.*

Recommendation has not been implemented. However, a transport strategy is being drafted, in accordance with the directives given in the EU document Europe 2020.

Recommendation 14.5:

*Environmental pressure from the transport sector should be controlled in particular in urban areas. In this regard, resources should be made available, and available instruments be used, for the following priority tasks:*

- *promoting the use of less polluting vehicles and fuels, in particular the use of gaseous fuels in the transport sector both through incentives and by setting up a distribution network over the whole territory*
- *setting up inspection and maintenance programmes to enforce emission control standards*
- *monitoring benzene and particulate matter in urban areas.*
- *phasing out leaded petrol.*

See also recommendation 5.3.

Recommendation was partially implemented. The Regulation on the quality of liquid petroleum fuels (OG 33/11) provides, among other things, limit values for components and characteristics of quality of liquid petroleum fuels. It applies to groups of liquid petroleum fuels used for combustion in internal combustion engines in vessels for navigation on internal waters, territorial seas and seas over which Croatia has sovereign rights. The Regulation stipulates the limit values of sulphur content for marine fuel used in navigation on internal waters, territorial seas and seas over which of Croatia has sovereign rights. The Regulation also stipulates that ships at berth must use marine fuels with a maximum sulphur content of 0.1% m/m.

There are no measures so far to encourage the use of gas as a fuel, but gas taproom coverage in Croatia is satisfactory.

The use of lead as an additive was banned in 2006.

With the entry into force of the Ordinance on the technical inspection of vehicles, ECO testing of exhaust on vehicles driven by gasoline engines started in 2001 and on vehicles driven by a diesel engine in 2002.