

4 Environment and EU Accession*

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Abstract

Accession to the EU is a strategic goal for Croatia. To achieve it, Croatia has to comply with many conditions, whereas environmental issues gain in importance. As a result of the overall process of harmonizing national legislation with the *environmental acquis communautaire*, better environmental quality is expected. This paper presents environmental issues in formal EU documents, as well as the Environment Action Program. After reviewing the state of environment in Croatia, the paper elaborates the main tasks in the association process, describes institutions and legislation, and financial requirements necessary for complying with the EU standards. The paper also briefly discusses the issue of subsidiarity, which is now very relevant on the EU level.

Key words: EU, environmental policy, environmental *acquis communautaire*, subsidiarity, EU standards

JEL classification: Q58

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1 Introduction

Accession to the European Union (EU) is a strategic priority for Croatia. The accession process involves numerous conditions to be fulfilled by the candidate countries, with environmental issues gaining in importance. This is explained by the growing difference in the level of environmental protection in the candidate countries and member countries. The framework and guidelines for harmonization are presented by the so-called *environmental acquis communautaire*. The national legislation harmonization process, which assumes an appropriate institutional capacity for conducting changes in keeping with EU standards, is also likely to exert a positive effect on the quality of the environment. This paper shows what Croatia is expected to do during the accession process and what has already been done in this direction.

The following chapter discusses the issue of environmental protection in EU documents and provides a short review of European environmental action programs. Chapter Three, after showing the state of the environment, attempts to answer the question of what Croatia should do, i.e. which institutions and regulations deal with environmental protection and what changes are needed. What costs are involved is shown in Chapter Four. Chapter Five briefly deals with subsidiarity - an increasingly important issue in the EU. Chapter Six, the final chapter, presents some fundamental findings of the paper.

2 Environmental Protection in EU Documents

Since the foundation of the EU till the present day, there have been some changes in the EU approach to environmental issues, as evidenced by official EU documents. The question of whether a single European environmental policy is possible has been on the agenda for quite some time. We think such policy is possible, because some essential common guidelines exist. Firstly, there is a common objective, which is to preserve, protect and improve environmental quality in the member states. The policy tries to promote measures at international level for solving regional or local environmental issues. Secondly, there are some common environmental policy principles. The environmental policy is based

The development of the European environmental policy was primarily influenced by issues that have to do with cross-country pollution, but also with the need for defining terms and conditions of free trade. Environmental issues on EU level were attempted to be solved by adopting and implementing a large number of environmental action programs, which today cover many areas ranging from climate changes to genetically modified organisms.

Thirty years of environmental policy in EU has created a complex system of environmental monitoring.⁴ The Fifth Action Program 1992-1999⁵ has introduced new measures and accentuated the need for integration of environmental policy with other sector policies. This new program is different in nature, because it represents the environmental dimension of a wider EU strategy for achieving sustainability. Also, this program attempts to recognize key environmental issues and their causes. It sees integration of environment in other sector policies as a mechanism for ensuring that other policies efficiently respond to environmental issues.

The new Sixth Action Program⁶ defines the goals for the period 2000-2010.⁷ Even though this Program is focused on activities that should be carried out at EU level, it also recognizes the activities required at national, regional and local levels as well as in individual economic sectors. In selecting these activities, the greatest possible account is taken of the level of harmonization and ensuring of a functional EU internal market. This includes a limited number of thematic strategies in areas in which only a «package of measures» can produce results. These thematic strategies define the basic goal and encompass measures for attaining this goal in a cost-effective manner.

⁴ For details on the first four EU Environmental Action Programmes see Črnjar (2002).

⁵ Fifth Environmental Action Programme of the European Community (Towards Sustainability), *Official Journal of the European Communities*, 17.5.1993.

⁶ Sixth Environmental Action Programme of the European Community (*Environment 2010: Our Future, Our Choice* (COM 2001; p. 31).

⁷ The Programme covers a ten-year period, which is considered a minimum time for development and implementation of new measures and measurement of results, and a minimum time for evaluation of efficiency of such measures. In order to monitor improvements, regular publication of implementation indicators and evaluation is planned, and, if required, revision 2005.

Following evaluation of the Fifth EU Action Program, four priority areas have been recognized: climate changes, protection of nature and biodiversity, environment and health, and sustainable management of natural resources and waste. In order to efficiently resolve problems observed in these areas, the Sixth Action Program has emphasized, i.e. proposed the following «strategic approaches»: improvement of implementation, integration of environment in other sector policies, strengthening of public influence and participation.

It is important to note here that this program will also apply to the «extended» EU. The new member states and candidate states⁸ will increase the EU population by around 170 million citizens, and the EU surface area by around 58 percent, and they shall also bring their local environmental problems with them. According to estimates, EU has one of the most advanced environmental legislations in the world and the candidate states will enjoy long-term advantages from adopting this legislation.⁹ Full implementation of laws and processes is a priority for both candidate states and accession states. Priority should be given to implementation of framework directives and the so-called «horizontal legislation». The greatest challenges for candidate states and accession states are expected to lie in realization of «sustainable development», preservation of public transport,¹⁰ in physical planning,¹¹ and raise public awareness for environmental issues.¹²

3 What Needs to be Done?

Harmonization of national legislation with EU legislation is carried out in accordance with the Plan for Implementation of the Stabilization and Association

⁸ Meant here are the ten new member states as well as Bulgaria, Romania and Turkey.

⁹ Recognition of these advantages is reflected in their decision to join the European Environmental Protection Agency prior to their membership in the EU.

¹⁰ The public and private transport are today better balanced in the acceding countries than in the EU despite the fact that these countries face the problem of insufficient investments in public transport. Currently there are numerous initiatives in the EU to encourage development of railway and river transport.

¹¹ Meant here is primarily urban planning and a better control over expansion of cities. In practice, this primarily means renewal of urban areas rather than construction of new quarters.

¹² This will require dialogue with government administration in the candidate countries and co-operation with NGOs and the business community.

Agreement (SAA), which Plan has been adopted on the basis of the Act on Ratification of the SAA.¹³ On the basis of this Act, the Croatian Government has enacted a National Association Program, which includes all goals and obligations of Croatia with regard to implementation of the SAA, from harmonization of legislation, economic reforms, functioning of law-enforcement institutions, and protection of civil rights through to regional policy. The environment sector will be included in the National EU Association Program 2004.¹⁴

Introduction (transposition) of EU environmental acquis into national legislature is one of the prerequisites for Croatia's membership of the EU. The environmental acquis communautaire consists of some 300 legal documents (directives, regulations and decisions¹⁵) classified in 9 different groups: horizontal legislation (integration of environmental protection in all economy sectors, environmental impact assessment, access to information, reporting on application of environmental directives), air quality, waste management, quality of waters, nature conservation, industrial pollution control and risk assessment, chemicals and genetically modified organisms, noise, nuclear safety and radiation protection.

Prior to accession, all candidate countries must formulate and enforce, in partnership with the Union, long-term national strategies aiming at gradual and efficient adjustment. These strategies must identify key priority areas and targets to be met before accession, as well as a full harmonization schedule. Association

¹³ *International Contract (Narodne novine No. 14/2001).*

¹⁴ *Based on the Plan for Implementation of SAA, the Ministry of Environmental Protection and Physical Planning has set up the following sections in 2002: EU Integration and International Projects Section, and Section for Normative-Legal Affairs, International Law Affairs and Harmonization of Legal Regulations with EU Legislation. At the Ministry level there are also co-ordinators for EU Integration who have proposed analysis of harmonization of legal regulations with EU legislation, which would serve as a basis for proposing changes in legislation. Here it is also important to mention projects regarding harmonization of legislature: CARDS 2001 Stage One of the National Waste Management Strategy with emphasis on municipal waste; CARDS 2002 Croatian Strategy for Harmonization with EU Environmental Legislation; REReP projects Development of Administrative Capability for Approximation to the EU, Assistance in Creating Environmental Legislation in Central and Eastern Europe, Development of Administrative Capability for Environmental Impact Assessment (ELA), etc. Activities Plan 2004 is included in Attachment I.*

¹⁵ *Regulations are binding in their entirety and directly applicable in all member states. Directives are binding on the member states as to the result to be achieved, they must be included in the national legal framework and leave the means to achieving this to the discretion of the member states. Decisions are binding in their entirety on those for whom they are meant, whereas recommendations and opinions are non-binding, declarative instruments.*

been taking place in the environment over time, and this fact should be taken into consideration when comparing the state of the environment in Croatia with that in other countries. Opinions on the environmental status in Croatia differ, however there is an agreement that «the overall state of the environment is slightly better than in EU countries».²⁰

The environment is exposed to pressure through different polluters, mostly traffic, the energy sector, industry, tourism, and agriculture. Pollution in Croatia has also been caused by military actions during the recent war. Apart from pollution, the war has caused changes in the distribution of population, which in turn resulted in a reduction of environmental pressures in rural areas and an increase of pollution in urban areas affecting the quality of soil, air and water. As shown in Figure 1, the quality of air has improved over the last ten years²¹ due to a reduction in air emissions as a result of decreased industrial production.

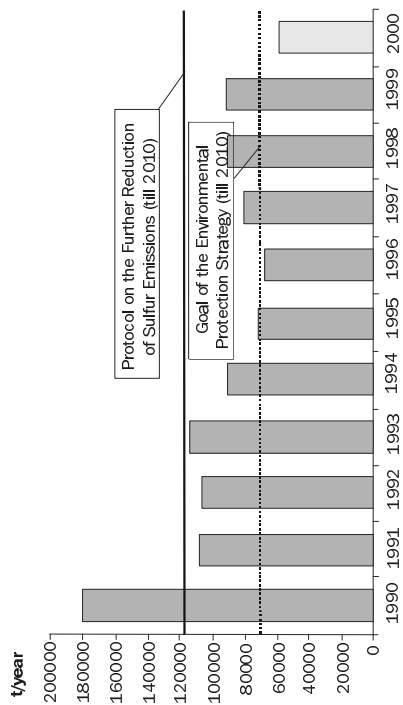
In 1998, the level of emissions was significantly lower than in 1990. SO₂ emissions were reduced by 50 percent, NO_x emissions by 13 percent, NMVOC by 25 percent, CO by 47 percent, NH₃ by 37 percent, CH₄ by 27 percent, and CO₂ by 16 percent.²² Compared to other European countries, Croatia has relatively low NO_x emissions, as shown in Figure 2. Emissions of SO₂ reach the average EU level, while the emissions of NO_x are 30 percent lower.

²⁰ *National Environmental Protection Strategy and National Environmental Action Plan (2002). In 1994, the United Nations Economic Commission for Europe and UN Environmental Program have issued guidelines for management of the environment in accordance with the principles of sustainable development in Central and East European countries. Comparison of specific environmental indicators (air quality) has shown that Croatia is in a better position than most East European countries and that it fully meets the EU standards. See Hughes (1993).*

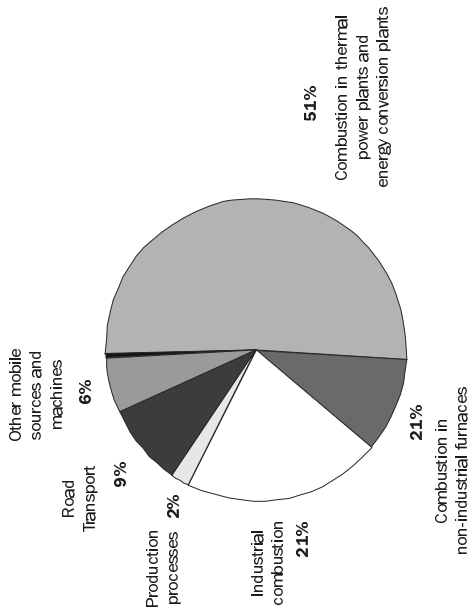
²¹ *About 38 percent of Croatian population or 90 percent of urban population is included in the current air quality monitoring system. The following towns are affected by excessive to moderate pollution: Zagreb, Sisak, Rijeka, Split, Šibenik, Pula, and Kutina.*

²² *More than 90 percent of SO₂ emissions come from the combustion process, while traffic accounts for the largest part of NO_x emissions (over 60 percent). NMVOCs are mostly emitted from natural sources. The main source of ammonium emissions is agriculture (over 70 percent).*

Figure 1. Air pollution in 1990-2000

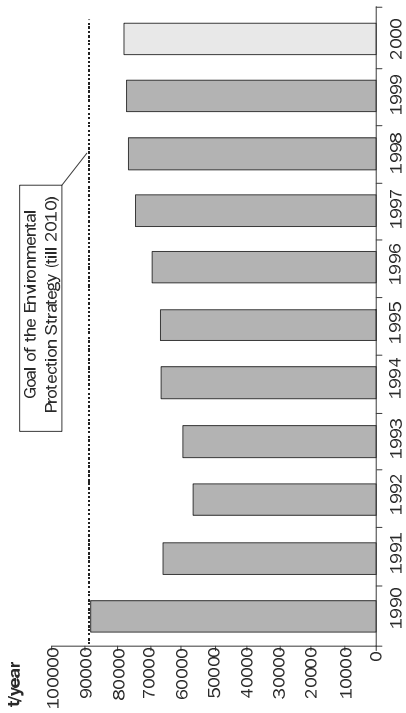


a) SO₂ Emissions

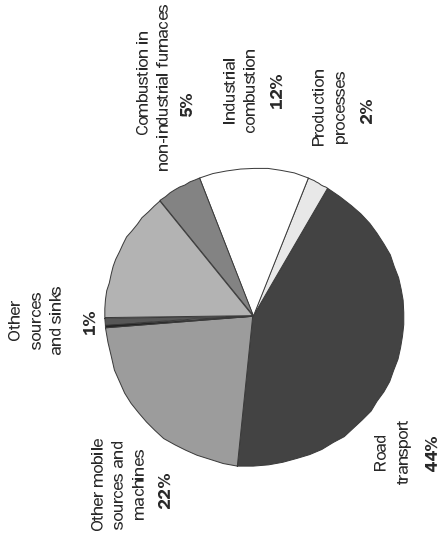


b) Structure of SO₂ Emissions

Figure 1. continued

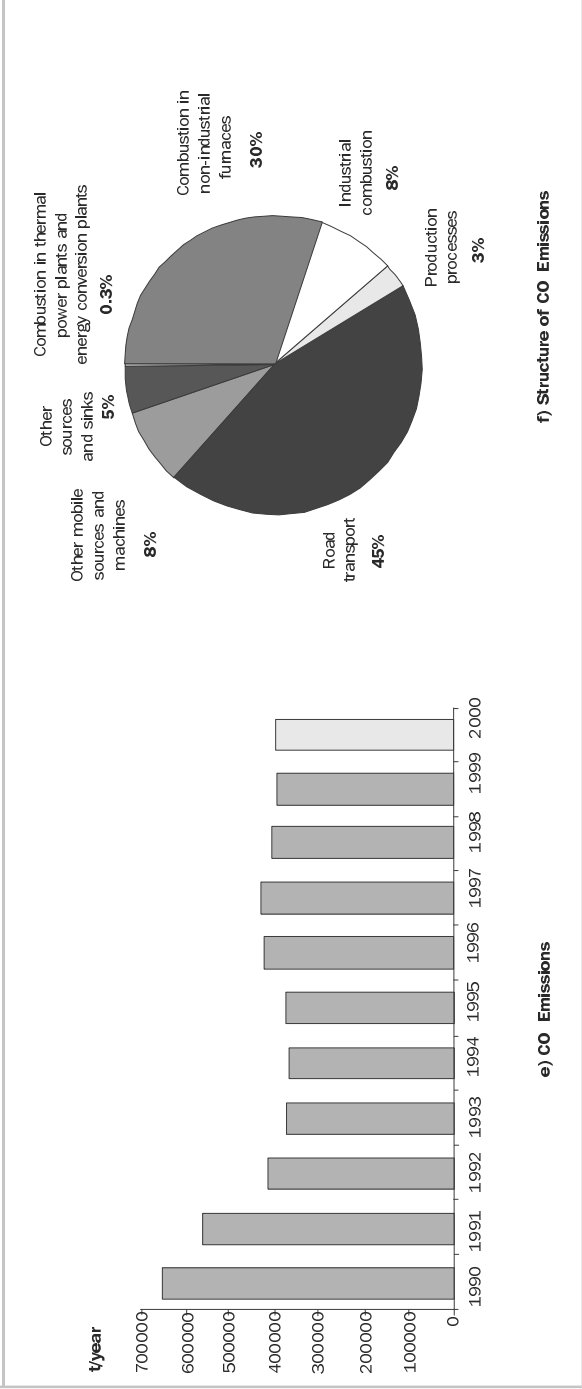


c) NO_x Emissions



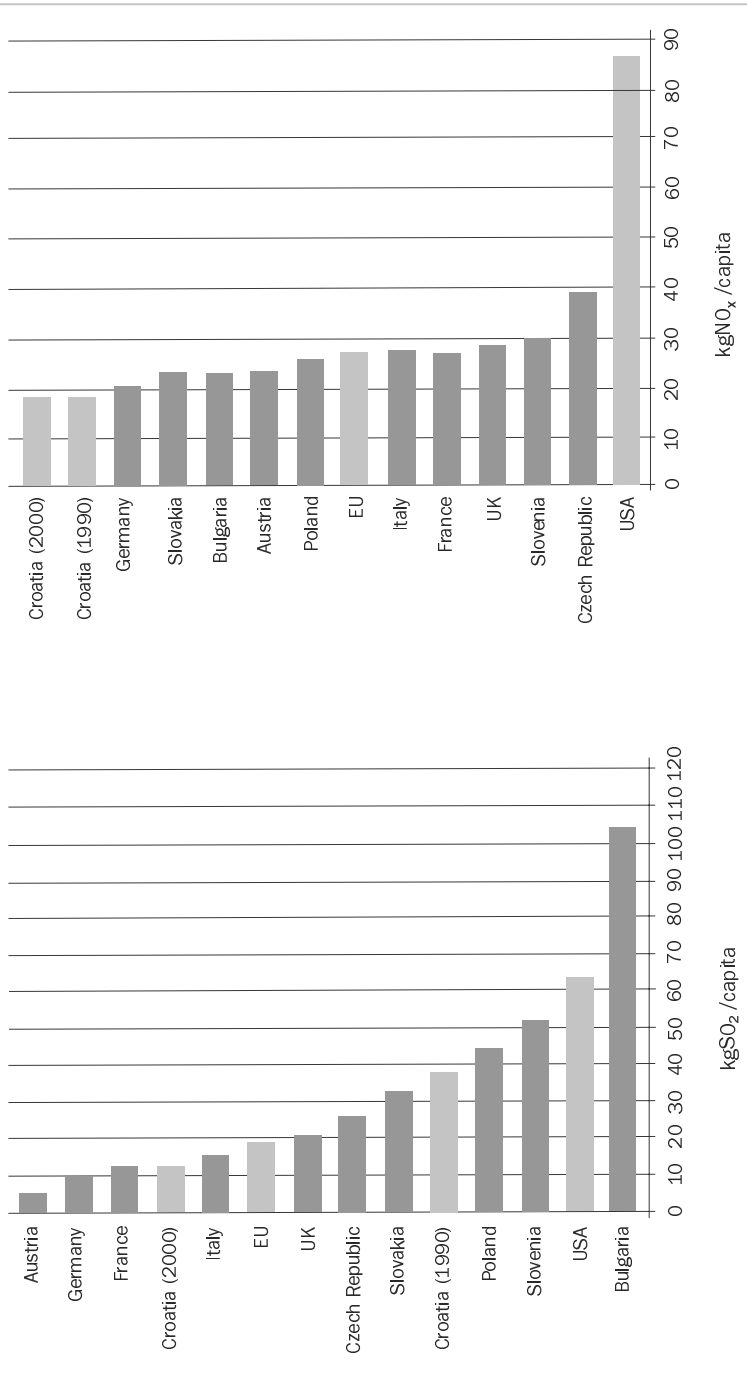
d) Structure of NO_x Emissions

Figure 1. continued



Source: State of the Environment Report (2003), p. 92.

Figure 2. Per capita SO₂ and NO_x emissions in selected countries



Source: State of the Environment Report (2003), p. 91.

approximation process is the application of the Seveso Directive and the Industrial Pollution Prevention and Control Directive²³ (IPPC Directives).

Croatia is rich in water resources. Per capita amount of own waters is estimated at approx. 7000 m³ annually, or approx. 17000 m³ if border and cross-border waters are taken into account, excluding the rivers of Danube and Neretva. Drinking water reserves are also large. Eighty-five percent of water is tapped from groundwater sources. Seventy-five percent of population is connected to public water supply, and 60 percent of population is connected to the sewage system, mostly in urban areas. But how does Croatia manage its rich water resources? Rivers are mostly one grade below the prescribed water quality standard,²⁴ and municipal waste water treatment plants are few. In 1997, only 21 percent of waste water was being purified. Flood protection covers some 500,000 ha, and protection from floods and torrents should become one of the Government's priorities. In regard to EU water quality standards, Croatia should focus its efforts on waste water treatment, notably on protection of costal waters against pollution.

Waste is a priority environmental issue in Croatia. Annual production of waste in Croatia reaches about 9 million tons, or 2 tons per capita. Technological waste accounts for 75 percent and municipal waste for 13 percent of the total amount of waste. Extracted secondary raw materials make up 11 percent of the total waste. Less than 60 percent of population is included in organized collection of municipal waste. There are currently 160 large official landfills²⁵ the majority of which have been built without application of the basic protection measures. Waste disposal in Croatia is conducted in a manner not satisfactory to the EU and therefore changes in legislation are required in accordance with the Directive 99/31 (*On the Landfill of Waste, Council Directive 99/31 EC*).²⁶

²³ *The objective of the Seveso Directive is to prevent major accidents that involve harmful substances (Council Directive 82/501/EEC; Directive on Integrated Pollution Prevention and Control, Council Directive 96/61/EC.)*

²⁴ *Water quality is monitored by widely built national network which needs to be improved. Groundwater has not been adequately researched yet.*

²⁵ *Only 7 landfills have operation permit. Hazardous waste is dumped on 80 municipal landfill sites. The existing municipal landfills should be rehabilitated or closed by the end of 2002, however little has been done so far.*

²⁶ *The new Waste Act (Narodne novine No. 151/2003) has introduced new definitions and harmonized the old ones with those in EU directives.*

Owing to its geographical position and diversity of relief Croatia is rich in various types of habitats (especially karst) and as much as 8 percent of the country's total surface is placed under some degree of protection. Of the total land area, agricultural land accounts for 50 percent, forest land for 44 percent and non-fertile land for 6 percent. In the period 1959-1988, Croatia lost 159 thousand hectares of agricultural land, which is slightly more than 4 thousand hectares a year. In EU documents, decrease in agricultural land and disposal of waste waters in agriculture is considered a priority issue of the agriculture sector.

About 85 percent of forest land has a large productive potential and forest damage has never been above the European average. In 2000, the total damage amounted to 20 percent. Problems specific to Croatia are forest fires in coastal regions and mine contamination of forest land.²⁷

Considering the state of the environment in Croatia and comparing the national priorities set out in the Environmental Protection Strategy and the National Environmental Action Plan, we may conclude that the issues comply with the priorities of the Fifth and Sixth Environmental Action Plan, and that the standards generally coincide with EU standards.

Approximation to EU requires some institutional adjustments for environmental management, which presupposes intersector communication and co-ordination. Transition countries are recommended to undertake institutional changes that should include shifting of responsibility to local authorities, improvement in horizontal co-ordination among ministries, and enhancement of functional capabilities of the central environmental institution.

In Croatia, environmental protection authorities are divided between central government bodies and local and regional self-government bodies. Since authorities are strictly divided, there is no integral approach to environmental protection and a sectorial approach to the environment dominates. This primarily refers to water, nature and physical planning. Ministries and administrative organizations have executive power in environmental protection. County and city offices for physical planning, housing and public utility services, construction and

²⁷ About 12 percent of forest land is mine contaminated.

environmental protection perform tasks at the local level. The local authority organizes, provides funding and promotes environmental protection tasks of local or regional significance. Furthermore, the local level ensures conditions for implementing environmental protection programs, prepares and implements rehabilitation, monitors the state of the environment and measures emissions. It ensures conditions for keeping an environmental pollution register and environmental status register, environmental protection measures and public notification procedure.²⁸

In short, we may conclude that Croatia, like other transition countries, faces the problem of inefficient government administration. Other sectors are thought to be better organized and they «take advantage of the disorganization» in the environment sector.²⁹ The institutional structure and activities of individual sectors are still not in tune with each other, and the ministry responsible for environment does not incorporate all administrative and legislative functions in the area of environment, because there is a division of authority for individual topics. It is therefore recommended that the authority of the ministry responsible for environment should be extended to all segments of the environment, thus allowing an integrated and more efficient approach to environmental protection. In the overall approximation process the ministry responsible for environmental protection acquires new roles and tasks, the most important being proposing of new legislation, planning of the complete transposition process, but also establishment of links with EU financial institutions and funds to facilitate funding of the harmonization process.³⁰

At this point it should be stressed that in institutional aspects of environmental protection Croatia is still wandering around. The new sphere of activities of the Ministry of Environmental Protection, Physical Planning and Construction will hardly meet all requirements. In restructuring the government administration system in late 2003, the opinions of the profession were disregarded and instead of

²⁸ Article 7 of the *Environmental Protection Act (Narodne novine No. 82/1994)*.

²⁹ *National Environmental Protection Strategy (2002)*.

³⁰ *In order to ensure better adjustment in institutional terms, some candidate countries have developed a Training Strategy for enhancement of administrative capabilities.*

Croatia. It is also thought that in cases when general laws exist the legislators become less interested in including environmental protection in other laws.³⁶

A law on environmental protection allows setting up of a funding system that combines central and local management of environmental protection issues since it provides for enactment of a national strategy and local protection programs, budgetary and extra-budgetary sources of funding, and a possibility of stipulating local contributions and charges.³⁷ General environmental laws also include complete laws on protection of nature, air, etc.³⁸

Croatia has numerous individual laws that regulate a specific natural resource, individual rivers, or valuable plant or animal species.

In addition to general and individual laws, special administrative regulations define hazardous substances, chemicals, waste, noise, and ionized radiation. Furthermore, separate chapters on environmental protection are contained in other laws, such as penal law and civil code. Environmental protection is also regulated by numerous subordinate legislation and general normative deeds. This group includes implementational regulations enacted by competent central government bodies³⁹ as well as Government's general enactments such as decrees⁴⁰ and decisions.⁴¹ As the environment sector is a very dynamic sector, its overdetailed regulation is not recommended. «Environmental norms must be more general, and at the same time clear and defined or definable so as to enable unambiguous legal interpretation, which is essential for their single application

³⁶ See Lončarić - Horvat (1997).

³⁷ Črnjar (2002).

³⁸ *Nature Protection Act regulates protected natural environments in Croatia (Narodne novine No. 30/1994, Narodne novine No. 72/1994); Air Protection Act regulates in detail protection of air and air space (Narodne novine No. 48/1995).*

³⁹ *Included here are different by-laws. Just to mention a few: By-law on Types of Waste (Narodne novine No. 27/1996), By-law on Managing Packaging Waste (Narodne novine No. 53/1996), By-law on Environmental Emissions Register (Narodne novine No. 36/1996). In addition to by-laws this group includes ordinances issued by ministers - e.g. Ordinance on Protection of Fish and Other Marine Organisms (Narodne novine No. 46/1996).*

⁴⁰ *Government generally uses decrees for execution of laws such as Decree on Sea Water Quality Standard for Beaches (Narodne novine No. 33/1996).*

⁴¹ *In the environmental protection sector numerous decisions are in force that protect individual animal and plant species, primarily amphibians, reptiles and birds.*

but also for the control of individual enactments by the courts».⁴² Apart from laws, environmental protection is also regulated by strategic planning documents at national⁴³ and local level,⁴⁴ as stipulated by Environmental Protection Act.⁴⁵

The opinion prevails that some of the laws and regulations in Croatia do not meet the required professional standard, the main reason being missing co-ordination with specialist and scientific institutions during enactment of subordinate legislation.⁴⁶

Despite the observed deficiencies in environmental legislation, such as their fragmented, overdetailed character and sometimes unenforceability, specialists agree that good legal foundations exist for application of European standards in the field of environment. As early as 1999, Croatia has provided a general overview of regulations on environment and environmental charges in the document entitled «Plan of Integrational Activities of the Republic of Croatia»⁴⁷ This document provides correlation with EU legislation as well as a short commentary on what needs to be done.

Croatia has already achieved a great deal in approximation of national environmental legislation with EU legislation. For example, in each of its segments the National Environmental Action Plan states a reference to EU regulation for each measure. The document accords priority to the analysis and adjustment of Croatian legislation with EU legislation and provides an estimate of costs. Also,

⁴² Lončarić - Horvat (1997, p. 60).

⁴³ These include strategies for individual media of the environment (air, soil, waste), currently under preparation; National Plan for Protection of Waters (Narodne novine No. 8/1999), Strategy and Action Plan for Protection of Biological and Landscape Diversity (Narodne novine No. 81/1999), Croatian Physical Planning Program, Environmental Protection Interventions Plan (Narodne novine No. 82/1999, Narodne novine No. 86/1999, Narodne novine No. 12/2001, Narodne novine No. 14/2001).

⁴⁴ Under the Environmental Protection Act counties are required to prepare environmental protection programs and state of the environment reports for their respective areas. Towns and municipalities may also prepare their own environmental protection programs «when there is a need for special protection of a specific town or municipality area».

⁴⁵ Article 18-22. Environmental Protection Act.

⁴⁶ For details see National Environmental Protection Strategy and National Environmental Action Plan (2002).

⁴⁷ The document prepared by the European Integration Office can be considered a good starting document for the analysis of legal gaps in individual sectors of the environment.

Croatia ensures that all new regulations comply to respective EU regulations, and there are also mechanism for integrating environmental issues into other sector policies pursuant to Article 6 of the Treaty on European Union. The principle of integration of environmental protection in other sectors is one of the basic principles of the National Environmental Protection Strategy and the implementing document National Environmental Action Plan. In addition to integration mechanisms contained in individual development documents, intersector influence is also provided in the process of preparation and adoption of such documents.⁴⁸

4 How Much Will It Cost?

The EU approximation process is inevitable associated with costs. The estimate of investments required to meet the European environmental standards is fraught with uncertainty both when it comes to investment assessment and conducting of the policy itself. Two investment assessments were available to us, each based on somewhat different assumptions. The first assessment is from the National Environmental Action Plan and is made on the basis of estimated investment requirements of Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, and the Baltic countries for a 20-year period. The total investment requirement in those countries amounts to 860-1720 euro per capita. According to general estimates in the National Environmental Action Plan, the investment requirement in Croatia will amount to 1500-2000 euro per capita, totaling between 6.6-8.8 billion euro, as indicated in Table 2. Research for transition countries⁴⁹ has shown that smaller countries have larger per capita investments due to environmental protection directives being burdened by a substantial share of fixed costs. Among «expensive» directives are those in the segment of waters and air quality. Implementation of these directives entails about 50 percent larger investments that those associated with directives on waste. To be

⁴⁸ *Drafts of strategic documents and statutory regulations are referred for opinion to different government administration bodies. The principle of integration of environmental protection in other sectors is also ensured by environmental impact assessment, which allows us to see the possible adverse effects of the intended environmental actions, taking into account other planned actions and possible interreaction. Implementation of environmental impact assessment calls for participation and engagement of other sectors as well.*

⁴⁹ *EDC (1997) and DISAE (2003).*

added to the capital costs are recurring costs of some 80-120 euro per capita. If we assume that investments will be made over a period of twenty years, expenditure will be between 4 and 5 percent of GDP.

Solid Waste	Waste Waters	Air	Industrial Pollution Prevention and Control	Other	Total
2.6 – 3.4	2.9 – 3.9	0.6 – 0.8	0.14 – 0.8	0.34 – 0.45	6.6 – 8.8

Source: Croatia - Country Economic Memorandum (2003).

The second estimate resulted from the research conducted for the Country Economic Memorandum⁵⁰ and rests on several assumptions: data on water and solid waste expenditure are based on expert assessments that are primarily collected for this study; data on air expenditure are based on average figures in the National Environmental Action Plan and per capita expenditure in candidate countries; figures for prevention and control of industrial pollution are derived on the basis of estimates for 10 accession countries.

This study has reached a very «stretched» estimate of required funds (for capital expenditures) of 6-12 billion euro, i.e. between 1400-2700 euro per capita. At first glance, such large range might indicate that the estimate is unfounded, the authors, however, explain it with the large uncertainty about unit costs, but also with the choice of investment strategy and the development of reforms. The assumption is that investments would be divided over a period of twenty years according to the Polish model. Poland will invest 40 percent of total funds in the first six years, of which 30 percent will be funded by the government, 60 percent from other domestic sources, and the rest from foreign financial resources. The role of government differs according to environmental segment. For example, in water protection programs the government plays a very important role, whereas industrial pollution control projects are mostly funded from private domestic sources. In waste disposal government has dominating role.

⁵⁰ *The World Bank (2003).*

The Study emphasizes that the estimate of investment requirements is a result of the development of reform in the environmental policy. There are three basic scenarios, depending on the method of determining public utility charges, use of economic instruments, private sector participation, and reforms in energy and industry sectors – the first scenario involves slow reforms, the second moderate reforms (Poland), and the third quick reforms such as those conducted in the Czech Republic. The following table provides a brief description of the characteristics of individual scenarios.

Measure	Scenario		
	Basic Scenario	Moderate Reform	Strong Reform
Determination of public utility charges	Poor application of the principle of recovery of the costs in water sector	Slow progression towards principle of recovery of costs	Fast progression towards full cost recovery
Application of economic instruments	Gradual introduction of certain new charges (on air pollutants and polluting products)	Rate of charges grows and new charges are being introduced faster	Fast introduction of charges that have incentive effects
Participation of private sector in water management and waste disposal	Participation of private sector is limited: water resources management – 10% of total investments; waste – 25% of total investments	Water resources management – up to 20% of total investments; waste – up to 40% of total investments	Water resources management – up to 30% of total investments; waste – up to 60% of total investments
Reform of energy sector	50% investments from private sector	More than 90% investments from private sector	Increased share of renewable sources in consumption; incentives for reduction of greenhouse gas emissions
Reform of industry sector	75% investments from private sector	More than 90% investments from private sector (Poland's case)	

Source: See Table 2.

The authors of the Study conclude that required investments will become smaller the faster the reforms develop. In the first six years, assuming the basic scenario conditions, investments would total approx. 4.8 billion euro, while in quick reform conditions they would total approx. 2.4 billion euro. Sources of funding also depend on how fast the changes will be taking place. In the basic scenario about 2.5 billion euro are estimated to come from the public sector, while the estimate for the quick reform scenario is that this sector will contribute 810

million euro. Table 4 shows the estimated expenditures for environmental acquis communautaire in the first six years, and Table 5 shows their dynamics over the first six years. The main assumption is that Croatia will follow Poland's example, which increased its environmental protection investments over time, and that it will opt for the second scenario and moderate reforms.

Table 4. Environmental acquis communautaire expenditures in the first six years (Million Euro)					
Basic scenario (I)		Investments in the first six years			
Category/Resource	Public sector	Private sector	Foreign sources	Total investment	Total investment (20 Years)
Water	1467	120	808	2395	6200
Ind. pollution	190	569	0	759	1180
Air	56	136	80	272	1550
Waste	769	347	272	1388	2900
Total	2482	1172	1160	4814	11830
Moderate reform (II)		Investments in the first six years			
Category/Resource	Public sector	Private sector	Foreign sources	Total investment	Total investment (20 Years)
Water	1070	184	590	1844	4775
Ind. pollution	40	532	0	572	890
Air	1	221	1	223	1270
Waste	415	410	140	965	2015
Total	1526	1347	731	3604	8950
Strong reform (III)		Investments in the first six years			
Category/Resource	Public sector	Private sector	Foreign sources	Total investment	Total investment (20 Years)
Water	626	324	345	1295	3350
Ind. pollution	27	359	0	386	600
Air	1	172	1	174	990
Waste	160	325	57	542	1130
Total	814	1180	403	2397	6070

Source: See Table 2.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Public sector						
I Scenario	233	305	450	474	503	516
II Scenario	143	187	277	291	309	317
III Scenario	76	100	148	155	165	170
Total Funds						
I Scenario	553	649	842	887	935	943
II Scenario	414	486	630	664	700	706
III Scenario	275	323	419	441	465	469

Source: See Table 2.

As shown in Table 5, in the first year public expenditure will be between 75 million euro in case of quick reforms and 230 million in case of slow reforms. Total funding requirement in the first year is estimated at about 275 million euro in case of quick reforms and 550 million euro in case of slow reforms.

It should be pointed out here that due to incomplete information system in environmental protection it is difficult to estimate total environmental protection investments in Croatia. The national statistics currently monitors only investments in capital assets, environmental protection infrastructure, and current expenses pursuant to the National Classification of Activities (NKD). According to official data, in the period 1995-2000 environmental protection investments accounted for 0.1 and 0.3 percent, as shown in Table 6,⁵¹ and in 2000 investments totaled 47 million euro.⁵² If these data are compared with figures in Tables 5 and 6, we can see that Croatia will face a deficit in funding required for implementing the environmental acquis of 200 million euro in the best case of quick reforms in the first year only.

⁵¹ Since the data on environmental expenditure are disorganized and come from different sources, this percentage is probably higher than indicated by official figures.

⁵² As regards the investments structure, the largest investments went to protection of surface waters (37 percent) and groundwaters and soil (41 percent). The water resources management system has traditionally been well organized and financially independent as it generates income from its own sources, primarily from water protection charges. See Kordej - De Villa (2003).

Year	Environmental protection investments ¹ (in 000 HRK)	Share of environmental protection investments in GDP (%)	Environmental protection investments /capita (USD) ²	Gross Domestic product/capita (USD)
1995	206090	0.20	8.44	4028
1996	198562	0.18	8.13	4422
1997	281679	0.23	10.01	4389
1998	237869	0.17	8.31	4805
1999	177901	0.12	5.49	4371
2000	394012	0.25	10.86	4153

¹ Included are investments in land, buildings, machinery and equipment for collection, transport, processing, disposal and storage of waste; investments for reduction of waste water or groundwater protection against waste water; for reduction, avoidance and elimination of noise; for removal, avoidance or reduction of gas emissions to the air; for soil and groundwater protection and nature and landscape protection.

² HNB's average annual exchange rate (HRK/USD) in 1995: 5.23; in 1996: 5.43; in 1997: 6.16; in 1998: 6.36; in 1999: 7.11; in 2000: 8.28.

Source: Statistical Annual of Croatia, different years and own calculations.

In 2003, with the aim to find additional sources of funding for environmental protection projects, thus ensuring approximation with EU environmental standards, Croatia founded an Environmental Protection and Energy Efficiency Fund. The Fund's financial resources will be allocated to business entities and individuals who meet the Fund's requirements for allocation of funds, primarily in form of subsidized interest on commercial bank loans and incentive loans, or grants.

The Fund's main sources of funding will be provided from own earmarked charges paid by polluters, users of the environment, business entities and individuals who dispose of municipal and non-hazardous technological waste, and individuals producing hazardous waste, as well as special environmental charges paid by owners of motor vehicles or their authorized persons.

Environmental polluter charges are charges imposed on emissions of polluting substances to the environment, such as carbon dioxide, sulfur dioxide, and nitrogen oxide. CO₂, SO₂ and NO_x emissions charges would be calculated based

on the amount of emissions in a calendar year, the unit charge and the incentive coefficient that depends on the amount and origin of emissions.

Charges paid by users of the environment are the charges imposed on buildings for which the law prescribes obligatory environmental impact assessment. The amount of charge would depend on the spatial and technical and technological features of the building, the unit charge, and the corrective coefficient depending on the degree of environmental impact. Charges imposed on producers of environment-burdening waste include charges on municipal and/or non-hazardous technological waste, and charges on hazardous waste. The charge would be paid according to the amount of dumped municipal and/or technological waste and the amount of produced, non-treated or non-exported hazardous waste.

Special environmental charge imposed on motor vehicles would be payable upon each vehicle registration, i.e. regular technical examination, depending on the type of vehicle, type of engine or fuel, cubic capacity or horse power and vehicle age.

Introduction of new charges will promote investments in different segments of environmental protection and energy efficiency, thus facilitating faster resolution of priority environmental issues and faster achievement of environmental standards required by the EU. According to estimates, charges imposed on emissions of pollutants CO₂, SO₂, and NO_x would annually raise 27 million euro, charges on environment-burdening waste would raise 6 million euro, and environmental charges on motor vehicles would raise 19 million euro,⁵³ or a total of 52 million euro.

Like other accession countries, Croatia will have to procure a large portion of the required funds from the business sector and at local level. Available in the pre-accession period are also the funds of the ISPA program (assistance instrument for structural policies in the area of traffic and environmental protection in pre-accession).

⁵³ *Results of work on the project for establishment of the Environmental Protection and Energy Efficiency Fund performed by the Institute of Economics, Zagreb for the Ministry of Environmental Protection and Physical Planning in the period 2001-2003. Environmental charge on motor vehicles will become effective as of April 2004, while the application of other charges will be extended to 2005.*

5 EU and Subsidiarity

The issue of environmental federalism has lately become vital in the EU, and is known as the «principle of subsidiarity and shared responsibility».⁵⁴ This principle is applied in cases when achievement of goal is not possible by other means, or if application of this principle would facilitate faster achievement of goal. It is also used as an instrument for better connection among member states, the emphasis being on the principle according to which the public should participate in decisions as much as possible. With regard to the principle of subsidiarity, it has to be noted that all activities should be performed in such a manner as to ensure participation of all interested parties and the use of available instruments, without jeopardizing the authorities of individual levels.

The subsidiarity principle is very difficult to apply at a global level. At EU level, agreement has been reached on joint implementation of programs in the segment of water and air,⁵⁵ and there has also been some talk of expansion of activities to programs for labeling environmentally-friendly products, to regional development, and protection of sensitive habitats.

What the subsidiarity principle seeks to achieve is that action is not taken by the Union unless it is more effective than when such action is taken at national, regional or local level. At the same time, this principle is bound up with the principles of proportionality and necessity, which require that any action by the Union should not go beyond what is necessary to achieve the goals of the Treaty (Article 5). The subsidiarity principle contains an assumption in favor of decentralization. Transfer of functions at EU level is namely justified if it allows greater effectiveness of policy. The main argument in favor of decentralization is that it may help citizens to better satisfy their interests. In keeping with the tenets of fiscal federalism, EU action is justified in case of externalities that go beyond national boundaries, so that transfer of responsibility for policy to EU level may become the only solution for inefficiency of national policy. It is therefore generally accepted that responsibility should be transferred to the EU whenever

⁵⁴ *This principle is in relative contradiction to the polluter-pays principle, because a part of environmental costs may also be financed from the budget.*

⁵⁵ *National Environmental Protection Strategy (2002).*

global externalities exist and the control over adherence to bilateral contracts is too complex for the national legislator. Furthermore, until recently EU was considered as having an important role in defining goals, but not in the choice of methods and details of implementation. However, we may say that this is not viable and that EU should have a vital and legitimate interest in both the form of environmental policy and definition of goals.⁵⁶ The issue of the extent to which environmental taxes represent a part of the national tax system, and to which extent they should be decided upon by the EU becomes all the more relevant as in many European countries tax reforms are currently under way. As regards environmental policy, at national level it is limited by the need to avoid measures that protect domestic producers against the competition from other member states. EU should ensure that regional and global externalities are also reflected in national policy measures.

Considering the subsidiarity principle from the Croatian perspective, we find that the Environmental Protection Act opens up a possibility for participation and joint solutions to regional issues.⁵⁷ On the other hand, no clear legal conditions exist for application of the shared responsibility principle. What's more, integration of environment at all administrative levels is made difficult by the limitations of human resources both in terms of numbers and in terms of knowledge and skills. It has been observed that in individual segments of government administration technical and human resources are inadequate, which will probably become apparent in the process of fulfilling the EU accession obligations. The lower levels of government administration will be most affected by the changes in legislation, which will impose new requirements for funding and professionalism.

⁵⁶ *Smith (1995)*.

⁵⁷ *Article 48(2) reads as follows: Local self-government units ensure participation and solidarity in solving regional and local issues (Narodne novine No. 82/1994).*

6 Conclusion

Although the price that Croatia has to pay for approximation and harmonization in the environment sector is high, the “environmental *acquis communautaire*” represents a significant impetus to the process of strengthening the institutional and legal infrastructure and securing the funds required for formulating and implementing the environmental protection policy. In keeping with the EU requirements, Croatia will improve its environmental protection system and integrate environment into development plans. There is a need for a better communication among different ministries, administrations and government bodies, but also between decision makers and the public in general. As an EU candidate country, Croatia must primarily concentrate on the development of institutional, professional and financial capabilities of the local administration in charge of environmental issues.

If we compare the level of harmonization of Croatian law with the European Union’s legal system, we will find no significant deviations. The main problem is the weakness in application of legal regulations and enforcement of environmental policy. Future actions and initiatives must therefore be oriented towards strengthening of institutional and legal infrastructure and ensuring of financial resources required for development and implementation of environmental policy in accordance with the principles of European environmental policy.

The ministry in charge of environment faces numerous tasks. Efficiency in performing these tasks is diminished by non-existence of a strategic approach in the legislation harmonization process and a lack of co-operation of the ministry responsible for environment with other ministries and government bodies. Finally, we should once again point to the weak position of the ministry in charge of environment in the government administration system as well as the insufficient competence of local self-government in implementation of the *acquis*.

Experts also face enormous tasks. These primarily include analysis of the effects of adoption of EU environmental legislation and elaboration of a program for harmonization of national legislation, including a gradual analysis of legal gaps as per individual sectors.

Experience of candidate and accession countries⁵⁸ shows that the success of the approximation process also depends on the task of the overall government administration and the success of its co-ordination at national and international level. To make the whole process as simple as possible, the candidate countries are referred to both regional co-operation and the use of EU technical and financial aid. All this should also result in a better state of the environment in Croatia, which in turn would contribute to a greater prosperity for citizens.

⁵⁸ See for example www.mzopu.hr.

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