



**POLO-Cro28**

Opervatorij politika u Hrvatskoj  
Jean Monnet projekt

**IRMO**

Institut za razvoj i međunarodne odnose  
*Institute for Development and International Relations*

Co-funded by the  
Erasmus+ Programme  
of the European Union



POLO-Cro28 Policy Paper

# CHALLENGES OF ENVIRONMENTAL POLICY IN CROATIA AND IN SELECTED NEW EU MEMBER STATES IN THE PERIOD 2014 - 2020

SANJA TIŠMA

MARINA FUNDUK

IRMO, ZAGREB

September, 2016.

**Authors:**

Sanja Tišma, PhD, IRMO, scientific advisor

Marina Funduk, PhD, IRMO, assistant

**Reviewers**

Ranko Biondić , PhD

Matija Franković , PhD

**Translation**

Andrea Ruk

**Publisher**

Institute for Development and International Relations - IRMO

LJ. F. Vukotinovića 2

10000 Zagreb

**For the Publisher**

Sanja Tišma

**Published with the support of the program Erasmus+, Jean Monnet Support to Institution**

The research for the purpose of this paper has been carried out within the framework of the ERASMUS+ Jean Monnet support to institutions project POLO-Cro28 (No. 565296-EPP-1-2015-1- HR-EPPJMO-SUPPI) with the function of the observatory of public policies in Croatia. The study is based upon a common methodology and a multidisciplinary approach to the analysis which is to be applied to monitor six selected policy fields during the three-year implementation period of the project.

More information about the project available at: <http://polocro28.irmo.hr/>.

The publication reflects the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## CONTENT

|      |  |    |
|------|--|----|
| I.   | INTRODUCTION .....   | 5  |
| II.  | DEVELOPMENT OF ENVIRONMENTAL POLICIES IN THE EUROPEAN UNION .....  | 5  |
| III. | NATURE PROTECTION, WATER MANAGEMENT AND WASTE MANAGEMENT POLICIES OF THE EUROPEAN UNION .....  | 8  |
|      | a. The European Union's Nature Protection Policy .....   | 8  |
|      | b. The European Union's Water Management Policy .....  | 9  |
|      | c. The European Union's Waste Management Policy .....  | 10 |
| IV.  | EXPERIENCES OF NEW EU MEMBER STATES IN THE FIELD OF NATURE PROTECTION, WATER MANAGEMENT AND WASTE MANAGEMENT: SLOVENIA, BULGARIA AND ROMANIA ..... | 11 |
|      | a. Nature protection .....   | 11 |
|      | b. Water management.....   | 13 |
|      | c. Waste management .....  | 16 |
| V.   | ANALYSIS OF THE SITUATION IN THE SECTORS OF NATURE PROTECTION, WATER MANAGEMENT AND WASTE MANAGEMENT IN CROATIA .....                              | 19 |
|      | a. Nature protection .....   | 19 |
|      | b. Water management.....   | 20 |
|      | c. Waste management .....  | 21 |
| VI.  | CONCLUSIONS AND RECOMMENDATIONS .....  | 23 |
|      | a. Conclusions.....  | 23 |
|      | b. Recommendations for Croatia resulting from this paper.....  | 25 |
| VII. | LITERATURE .....   | 26 |

## **LIST OF ACRONYMS**

**EPA** - Environmental Protection Agency

**CITES** - The Convention on International Trade in Endangered Species of Wild Fauna and Flora

**SINP** - State Institute for Nature Protection

**ERASMUS** - EU program for education, training, youth and sport

**Natura 2000** - The Ecological Network of Protected Areas in the European Union

**IP** - Operational Programme

**OSPAR** - The Convention for the Protection of the Marine Environment of the North-East Atlantic

## **LIST OF TABLES**

Table 1. The priorities of the 7<sup>th</sup> Environment Action Programme

## **INTRODUCTION**

Having entered the European Union in 2013 Croatia has become a part of the international community with the most elaborate and the highest standards of environmental protection in the world. During the accession period, Croatia has taken over and aligned comprehensive environmental legislation, the implementation of which represents one of the biggest challenges in the coming years, primarily due to significant investments in environmental infrastructure.

This paper reviews the experience of the implementation of EU environmental legislation of the new member states Slovenia, Bulgaria and Romania, as well as comparison with the situation in Croatia. New EU member states with which Croatia shares similar challenges in the field of nature protection, water management and waste management were selected for a comparative analysis. In the preparation of the paper the sources used were analytical and strategic documents of the EU, of the new member states and Croatia, relevant academic sources, as well as the information gathered at the round table focused on environmental policy held in Zagreb<sup>1</sup>.

The fundamental purpose of this paper is to assist in better understanding the environmental policy and make recommendations that will be useful to decision makers. The study was conducted as part of the ERASMUS+ Jean Monnet project support to institutions POLO-Cro28, which acts as an observatory of public policies in Croatia. It is based on a common methodology and a multidisciplinary approach to the analysis which, during the three-year implementation of the project, is applied to monitor six fields or six public policies, including environmental policy. Croatian version of the paper was finalised in July 2016.

## **DEVELOPMENT OF ENVIRONMENTAL POLICIES IN THE EUROPEAN UNION**

There are three key development phases of environmental policies in the European Union (Jordan, Liefferink, 2004). The first phase began in 1972, in which the European Union was creating the institutional basis for the environmental policies development and determining key strategic principles. The second phase began with the adoption of the Single European Act in 1987, which strengthened the legal basis for environmental policy and adopted the goals and complementary procedures. The third phase began with the adoption of the Treaty of Maastricht in 1992, where the environmental protection became the essential part of EU policies and continues so to this day. The Treaty of Amsterdam in 1997 (OJ C 340) introduced the obligation according to which environmental policy must become an integral part of all sectoral policies of the European Union in order to promote sustainable development. The Treaty of Lisbon

---

<sup>1</sup> Round table "The challenges of environmental protection for the new EU member states and Croatia – how to proceed?" was held in the scope of the POLO-Cro28 project "Policy Observatory in Croatia" in cooperation of IRMO and the European Commission Representation in the Republic of Croatia at the House of Europe in Zagreb on April 19, 2016

in 2007 (OJ C 306) set out the objectives of preserving, protecting and improving the quality of the environment, protecting human health, prudent and rational use of natural resources and promoting measures at international level to deal with regional or worldwide environmental problems, with special focus on measures to fight climate change.

The EU environmental policy now comprises more than 300 legal acts (directives, regulations, decisions), that all member states have to transpose into national legislation. In addition to directives, important instruments of environmental policies in the European Union are numerous policy documents. These strategic documents include environmental action plans, development strategies and the strategies and plans for sustainable growth. Within the current EU strategy for growth - Europe 2020 (European Commission, 2010), three key priorities of the European Union by 2020 were adopted: sustainable, smart and inclusive economy.

The European Union Environment Action Programmes are strategic frameworks through which environmental policy in the European Union is carried out. They have defined the most important medium-term and long-term goals of environmental protection and a number of measures with a view to achieving those objectives<sup>2</sup>. The Seventh Environment Action Programme 2013-2020 entitled "Living well, within the limits of our planet", which is being implemented, was adopted by the European Parliament and the Council of the European Union in November 2013. It is based on a series of strategic initiatives, such as the Europe 2020 Strategy, EU Biodiversity Strategy to 2020 (European Commission, 2011a) and the Roadmap to a Resource Efficient Europe (European Commission, 2011b). It defines the European framework of environmental protection by 2020 through nine priorities.

There are three key priority objectives: (1) to protect, conserve and enhance the Union's natural capital, (2) to turn the Union into a resource-efficient, green and competitive low-carbon economy, and (3) to safeguard the Union's citizens from environment-related pressures and risks to health and well-being. Four priorities that were identified are called "enablers", which will help Europe deliver on these goals are: (4) to maximize the benefits of the Union's environment legislation by improving implementation, (5) to improve the knowledge and evidence base for the Union's environment policy, (6) to secure investment for environment and climate policy and address environmental externalities and (7) to improve environmental integration and policy coherence. Two additional horizontal priority objectives are: (8) to enhance the sustainability of the Union's cities and (9) to increase the Union's effectiveness in addressing international environmental and climate-related challenges.

The overview of 3 key priorities of the Seventh Environment Action Programme and the related objectives is shown in Table 1 below.

---

<sup>2</sup> The Environment Action Programmes date back to a conference of Heads of State and Government of the European Commission held in 1972. The participants agreed that a common Community environmental policy is essential for the future of Europe and called on the Commission to develop the first Environment Action Programme. Seven Environment Action Programmes (EAPs) have been adopted so far, their duration ranging from 3 to 10 years: the First Environment Action Programme (1973-1976), the Second Environment Action Programme (1977-1981), the Third Environment Action Programme (1982-1986), the Fourth Environment Action Programme (1987- 1991), the Fifth Environment Action Programme (1992-2001), the Sixth Environment Action Programme (2002-2012) and the Seventh Environment Action Programme (2013-2020).

Table 1: The priorities of the 7<sup>th</sup> Environment Action Programme

| Number | Priorities   | Objectives   |
|--------|--|--|
| 1.     | Natural capital  | <p>(1) halt the loss of biodiversity and the degradation of ecosystem and maintain and enhance the model of ecosystems management;</p> <p>(2) significantly reduce the impacts of pressures on fresh, transitional and coastal waters to achieve, maintain or enhance good status as defined by the Water Framework Directive (2000/60 / EC);</p> <p>(3) further reduce the impacts of air pollution on ecosystems and biodiversity;</p> <p>(4) manage the land sustainably, with adequate protection of soil and remediation of contaminated sites;</p> <p>(5) manage the nutrient cycle (nitrogen and phosphorus) in a more sustainable and resource-efficient way;</p> <p>(6) protect forest resources and their economic functions;</p> <p>(7) strengthen the role of forests in combating climate change and efficiently protect forests from the occurrence of forest fires.</p> |
| 2.     | Resource-efficient, green and competitive low-carbon economy | <p>(1) strengthen efforts to reduce greenhouse gas emissions by 80-95% by 2050 compared to 1990 in order to achieve the global goal of preventing an increase in average temperatures above 2°C;</p> <p>(2) significantly reduce the negative effects of industrial production in the European Union on the environment and increase resource efficiency;</p> <p>(3) minimize the negative effects of production and consumption on the environment, particularly in the sectors of the food industry, housing and transport;</p> <p>(4) ensure the safe and efficient management of waste as a resource, reducing the amount of waste per capita, eliminating disposal of organic waste and waste that can be recycled;</p> <p>(5) remove, i.e. substantially reduce pressure on water resources.</p>   |
| 3.     | Health and well-being  | <p>(1) substantially improve air quality;</p>  |

|  |  |  |
|--|--|--|
|  |  | <p>(2) significantly reduce noise pollution;</p> <p>(3) provide the citizens of the European Union with high standards of drinking and bathing water quality;</p> <p>(4) efficiently reduce the negative impact of chemicals on human health and assess and minimize the risks of particles hazardous to health;</p> <p>(5) effectively manage the effects attributable to the use of nano-materials;</p> <p>(6) achieve substantial progress in adapting to climate change impacts.</p> |
|--|--|--|

Source: European Parliament and Council, 2013

Important determinants of the Seventh Environment Action Programme are so called "3I": *implementation, integration and international dimension*.

## **NATURE PROTECTION, WATER MANAGEMENT AND WASTE MANAGEMENT POLICIES OF THE EUROPEAN UNION**

### **The European Union's Nature Protection Policy**

The European Union's Nature Protection Policy and supporting legislation developed in accordance with the most important international conventions on biological diversity are: the Convention on Biological Diversity, the Convention on Wetlands of International Importance especially such as wading birds habitats (Ramsar Convention), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) and the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). These conventions are the basis for the EU Strategy on Biological Diversity by 2020 (European Commission, 2011a). The main objective of the Strategy is to stop the loss of biodiversity and maintain adaptive ecosystems and ecosystem services that contribute to the survival of biodiversity, water quality and food safety. The Strategy also defines and promotes "green growth".

The Birds Directive (The European Parliament and the Council, 2009) and the Habitats Directive (Council of the European Community, 1992) represent the core of the EU legislation on nature protection. The Birds Directive was adopted in 1979 and its goal is to protect all wild birds and their habitats throughout the EU, while the Habitats Directive was adopted in 1992 and introduces similar measures to protect European flora and fauna, with the exception of birds, and includes an additional 1,000 species (plants, mammals,

reptiles, fish) and more than 230 habitat types. The implementation of these regulations is conducted primarily through the establishment of the Ecological Network of Protected Areas in the European Union Natura 2000. Each EU member state contributes to this network by allocating the most important areas for each species and habitat type (SINP, 2016b). So far this ecological network includes approximately 30,000 areas in almost 20% of the EU territory, which makes it the largest system of preserved areas in the world (SINP, 2016c).

### **The European Union's Water Management Policy**

The European Union's Water Protection and Management Policy encompasses a very comprehensive legislation, with a number of adopted directives that regulate the field of water protection and water management such as the Groundwater Directive (European Parliament and Council, 2006), the Drinking Water Directive (Council of the European Union, 1998), the Urban Waste Water Treatment Directive (Council of the European Community, 1991a), the Nitrates Directive (Council of the European Union, 1991b) and the Directive on the Assessment and Management of Flood Risks (European Parliament and Council, 2007). In addition to directives, there are international conventions, such as the Convention on the Protection and Sustainable Use of the Danube River (1994), the Convention on the Protection of the Rhine (2009), The Convention for the Protection of the Marine Environment of the North-East Atlantic - OSPAR (1992), the Convention on the Protection of the Marine Environment of the Baltic Sea Area (the Helsinki Convention, 1992), the Convention for the Protection of the Mediterranean Sea Against Pollution (the Barcelona Convention, 1995) and the Convention on the Protection of the Black Sea Against Pollution (the Bucharest Convention, 1992).

But the most important part of EU legislation to date is the Water Framework Directive (European Parliament and Council, 2000), adopted in 2000. This Directive introduces a holistic approach and provides a framework for water protection and water management in the European Union. The Directive was adopted to prevent and reduce pollution of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater, and to promote sustainable water use, protect the aquatic environment, improve the status of aquatic ecosystems and mitigate the effects of floods and droughts. The Water Framework Directive provides a comprehensive overview of the activities and obligations of member states with the ultimate goal of achieving "good status" for all waters by 2015. The mechanisms and specific measures necessary to achieve "good water status" were left to the decision of each member state of the European Union and are the responsibility of the competent authorities at the national level. Good ecological status of waters should be achieved through river basin management plans.

River Basin Management Plan is an integrated document, which creates a framework for sustainable water management and which, through its plan of measures, encompasses the obligations of management deriving from a number of environmental directives of the European Union. It is adopted for a period of six years, after which it is amended for the period of the next six year. For all EU members this document is timely coordinated. The deadline for the implementation of the first management plan for all member states was set for the end of 2015, while the next should be adopted by 2021.

The European Commission published the Blueprint to Safeguard Europe's Water Resources in 2012, which was harmonized with the Europe 2020 Strategy and the efforts for the efficient use of natural resources. The long-term objective of the Blueprint to Safeguard Europe's Water Resources is to ensure the sustainability of all activities that affect the water so that a sufficient quantity of good quality water is available for people's needs and natural ecosystems on which they depend (European Commission, 2012,

p. 3). In order to achieve this long-term goal the Blueprint has three main objectives: (1) improve the implementation of the current European water protection and water management policies, using fully the opportunities offered by the current legislation in force; (2) include the objectives of Water Management Policy into other relevant sectoral policies such as agriculture, fisheries, renewable energy, transportation, as well as measures in the cohesion policy of the European Union; (3) fill out the deficiencies in the existing framework, in particular in connection with the instruments necessary to achieve more reasonable water consumption (European Commission, 2012, p. 4).

### **The European Union's Waste Management Policy**

The European Union's Waste Management Policy and supporting legislation aims to reduce the negative environmental impact caused by the production and processing of waste. The development of Waste Management Policy in the EU has evolved substantially since 1975, when it passed its first legislative act on waste. The long-term goal of EU policy in the field of waste management is to become "society that recycles all types of waste." This objective was identified in the Thematic Strategy on the Prevention and Recycling of Waste (European Commission, 2005) adopted in 2005 and reviewed in the Report in 2011 (European Commission, 2011c).

In 2012, the European Parliament's Resolution on the Roadmap to a Resource Efficient Europe (European Parliament, 2012), which stresses that the need for financing from EU funds must comply with the priority activities that are at the top of the hierarchy of waste management. The concept of hierarchical sequence of waste management is based on the premise that the options of waste disposal are ranked from priority prevention of waste, through reuse, recycling, material and energy recovery to waste disposal. The idea is that waste management, according to a hierarchical order, leads to a reduction in the amount of waste, reducing the percentage of waste that is disposed of in landfills. The objective of this policy is to increase energy efficiency and reduce negative impacts on health and the environment.

The legal instruments that support this approach are the Waste Framework Directive (European Parliament and Council, 2008), the Landfill Directive (European Council, 1999), the Waste Incineration Directive (European Parliament and Council, 2000a) and the Waste Shipment Regulation (EC) of the European Parliament and Council no. 1013/2006. The Waste Framework Directive requires that all member states by 2020 through the competent authorities ensure the preparation for reuse and recycling of paper, metal, plastic and glass from households, in the minimum share of 50% by weight of waste, and the preparation for reuse, recycling and other ways of material recovery of non-hazardous construction waste, in the minimum share of 70% by weight of waste.

The European Union adopted in 2011 a document entitled the Resource Efficient Europe - Flagship Initiative as part of the Europe 2020 Development Strategy (European Commission, 2011). The central aspect of this initiative is the transition from the current, linear to circular economy, the economic model that ensures sustainable management of resources and extending the lifetime of materials and products. The goal of this model is to reduce the generation of waste to a minimum, and not only waste generated in the production process, but systematically, over the entire life cycle of the product and its components (Ministry of Environment and Nature Protection, 2015, p. 73).

Furthermore, this initiative develops the Roadmap to a Resource Efficient Europe (European Commission, 2011b), which sets the framework for the development and implementation of future activities and represents the foundation which will focus the EU on a path to resource efficiency and sustainable growth.

The objectives of the Roadmap up to 2020 envisage managing waste as a resource, decrease in the amount of waste per capita, the use of certain financial instruments to achieve higher rates of recycling and reuse so that these options become economically attractive for public and private sector; recycling a large number of materials, including materials that have a significant impact on the environment; the full implementation of EU legislation on waste, the eradication of illegal exports of waste; limit energy recovery to materials which cannot be recycled and eliminate waste disposal and ensure the quality of recycling.

In 2014 the European Commission adopted the document *Towards a Circular Economy: A Zero Waste Programme for Europe* (The European Commission, 2014) which further promotes the transition of the EU from a linear to a circular model and sets more effective measure for the use of resources and reducing waste disposal. At the end of 2015 the EC adopted a new ambitious package on the circular economy with its Action Plan for the Circular Economy (The European Commission, 2015). The aim of the Action Plan is to facilitate the European companies and consumers the transition to a circular economy in which the resources are used in a more sustainable way. Through the proposed measures, such as increased recycling and recovery, all phases of the product lifecycle are encompassed, from production and consumption to waste management and secondary raw materials market. The new package on circular economy revises the existing legislation and adopts ambitious targets for re-use and recycle of 60% of municipal waste by 2030, recycling 75% of packaging waste by 2030, reducing waste disposal at landfills to a maximum of 10% by 2030, and a total ban on the disposal of separately collected waste in landfills.

## **EXPERIENCES OF NEW EU MEMBER STATES IN THE FIELD OF NATURE PROTECTION, WATER MANAGEMENT AND WASTE MANAGEMENT: SLOVENIA, BULGARIA AND ROMANIA**

### **Nature Protection**

The European Union aims to halt the decline of biodiversity and sustainably manage Natura 2000 sites. This chapter presents the state of nature protection in Slovenia, Bulgaria and Romania and the priorities these countries have decided to finance in the period until 2020 to comply with the Birds Directive and the Habitats Directive of the European Union.

**Slovenia** is the country with extremely diverse and relatively well-preserved nature and is one of the EU member states with the largest proportion of the Natura 2000 sites. Slovenia has declared the Ecological Network of Protected Areas in the European Union on its territory in 2004, which has increased in 2013 and it now covers 37.9% of Slovenian land area. Out of 354 sites, 31 are important for birds and 323 are important for species and habitat types (European Environment Agency, 2015d). The Ecological Network Natura 2000 and other protected areas are found in almost all Slovenian municipalities (203 out of 211), but the management of Natura 2000 in Slovenia is not yet fully established (Government of the Republic of Slovenia, 2015, p. 43).

Nearly half of the habitats in Slovenia have favourable conservation status, but more than 60% of the species do not have this favourable status (Government of the Republic of Slovenia, 2014, p. 51). Effective management of the national protected areas (such as national, regional and landscape parks which cover

13% of the territory) and significant natural areas, including 11,138 underground caves (European Environment Agency, 2015d), can facilitate the conservation of species and habitats that are deteriorating due to numerous pressures (Government of the Republic of Slovenia, 2014, p. 108). In the Operational Programme for the implementation of the EU Cohesion Policy 2014-2020, under the investment priority: *Protection and restoration of biodiversity and soil and promoting ecosystem services, through the Natura 2000 sites, and green infrastructure*, specific objective: *Improving the conservation status of important European species and habitats, giving priority to those with unsatisfactory conservation status of endemic species* Slovenia has provided the allocation of 131 million euros from the European Regional Development Fund for measures which would improve the status of species and habitat types. The aim is that there are only 15 habitat types with unfavourable conservation status by 2023, which represents an improvement of 25% of the current situation, and 42 protected species, which represents approximately 12% improvement of the current situation (Government of the Republic of Slovenia, 2015, p. 128).

**Bulgaria** is ranked the high third place in the EU in terms of the percentage of national territory covered by Natura 2000 (34.4%), out of which 119 sites are of importance for birds and 234 sites are of importance for the species and habitat types (Government of the Republic of Bulgaria, 2014, p. 5). With the support of funding allocated in the Operational Programme Environment 2007-2013 these sites have been mapped, and the National Framework of Priority Actions for Natura 2000 sites has been developed. According to the report from 2013, about 88% of natural habitats and about 36% of protected species have unfavourable/inadequate status, while 2.5% of the species have been marked with unfavourable/bad status (ibid.)

Given the need for additional investment in the biodiversity protection and conservation and the management of Natura 2000 sites, already undertaken investments in the period 2007-2013 will be further expanded with the allocation of funds from the OP Environment 2014-2020. The allocation of about 86 million euros (5.73% of the total financial allocation from the European Regional Development Fund) is envisaged for the priority axis: *Natura 2000 and biodiversity*, specific objective 1: *Improving the conservation status of species and habitats within the Natura 2000 network* (Government of the Republic of Bulgaria, 2014, p. 23). The envisaged measures in a given period will include the full establishment of the Natura 2000 network and the development of management plans, reports and other relevant documents on the status of species and habitat types (Government of the Republic of Bulgaria, 2014, p. 21).

The Ecological Network of Protected Areas in the European Union - Natura 2000 in **Romania** covers 22.7% of the national territory, of which 148 sites are of importance for birds and 383 sites are of importance for species and habitat types. Since the Natura 2000 sites overlap with other national protected areas, Romania has appointed an administrator or curator for the management of certain protected area (Government of Romania, 2014, p. 67). So far, 43 administrators and 289 curators were appointed covering 101 areas important for birds and 229 areas important for species and habitat types (Government of Romania, 2014, p. 136).

Romania faces some challenges with the adoption of Natura 2000 sites management plans. Out of the total of 272 plans foreseen in the Sectoral Operational Programme Environment 2007-2013 by the end of 2014, only 66 management plans have been submitted to the Ministry of Environment, Water and Forests for approval, out of which 10 were granted and 56 are in the approval process. Main reasons for the slow adoption of plans are in the weak administrative capacity and difficulties in cross-sectoral coordination (Government of Romania, 2014, p. 136). By adopting the Framework of Priority Actions for Natura 2000 sites 2014-2020, Romania predicted the priorities to address these problems, which involve the

completion of the process of appointing administrators for the Natura 2000 sites, the implementation of activities aimed at the management processes of Natura 2000 sites management plans, providing the necessary resources and education of the population and the public (Government of Romania, 2014, p. 68).

In Romania there are 63% of habitat types in a favourable protection status, while only 19% of species are in this state (Government of Romania, 2014, p. 12). Due to intensive human activities, Romania has some polluted areas where there has been a degradation of the ecosystem so that under the Investment axis: *Environmental protection measures for the conservation of biodiversity, air quality monitoring and remediation of historically contaminated sites*, specific goal: *Increasing the protection and conservation of biodiversity and restoration of degraded ecosystems*, the allocation of about 275 million euros from the European Regional Development Fund is envisaged. The projects which will stop the deterioration, but also significantly improve the situation of protected species and habitat types by 2023 will be encouraged, as well as those which will help the restoration and preservation of degraded ecosystems.

All the observed countries declared the Ecological Network Natura 2000 on their territory, but management has not been fully established and they need additional EU funding by 2020. The decline in biodiversity has not been stopped, although there are significant efforts for their preservation in all of the countries.

## **Water Management**

The field of water management is one of the most complex in the European Union and it requires a significant investment by member states to comply with the Urban Waste Water Treatment Directive, the Drinking Water Directive and the Water Framework Directive. This chapter presents the situation in Slovenia, Bulgaria and Romania and which investments are planned in the water management system in the coming period.

**Slovenia** should have established adequate infrastructure for the collection and treatment of waste water by 31 December 2015<sup>3</sup> in agglomerations with over 2,000 inhabitants in accordance with the Urban Waste Water Treatment Directive (Council of the European Union, 1991) and the Treaty of Accession (2003, p. 911). However, Slovenia has not yet fulfilled these conditions. In the OP for the implementation of EU Cohesion Policy 2014-2020, under the investment priority: *The investment in the water sector, with specific goal: Reducing emissions into water bodies through the development of infrastructure for the collection and treatment of urban waste water*, Slovenia plans to connect 97% of the population to public sewerage infrastructure in agglomerations with over 2,000 inhabitants by 2020 in order to ensure an adequate level of wastewater treatment in urban areas. Currently the share is 36%. By investing through projects that have received support from the Cohesion Fund for the financial perspective 2007-2013, this share will increase by an additional 16%. Using the funds in the financial perspective 2014-2020, it is planned to increase this share by another 8% (Government of the Republic of Slovenia, 2015, p. 122).

Slovenia has significant needs for investment in the construction of appropriate public water supply infrastructure. The length of the water supply network has improved in recent years and a number of consumers connected to the public water supply has increased. However, two major problems are still present - the quality of drinking water in the public water supply system and huge water losses in the

---

<sup>3</sup> With interim targets up to 31 December 2008 and 31 December 2010.

system (Government of the Republic of Slovenia, 2014, p. 49). Despite investments in the period 2007-2013, some areas are still not in the public water supply system or the water supply is inadequate, therefore drinking water supply is not in compliance with the Drinking Water Directive (98/83/EC). Furthermore, there is no systematic approach to the protection of water sources (Government of the Republic of Slovenia, 2015, p. 122). Slovenia intends to address these problems through the allocation of resources in a specific objective: *Increased security of drinking water supply* of the OP for the implementation of EU Cohesion Policy 2014-2020 related to the activities of providing public water supply in those areas which had not yet been established, and to reducing losses in the system.

Despite the fact that most of the surface waters are of good chemical status, and slightly more than half are of good ecological status, achieving good status of all waters in Slovenia remains a challenge. The dispersion of pollutants from agriculture and hydro-morphological pressures remain the most important problems by 2021. It is estimated that around 30% of the surface water body does not meet the environmental objectives due to hydro-morphological pressures (Government of the Republic of Slovenia, 2015, p.122). Through specific objective: *Achieving good chemical and ecological status of waters* Slovenia has envisaged investments in priority areas that will be determined in the River Basin Management Plan for the Danube and Adriatic region 2016-2021 and in the Activities Programme for Natura 2000 sites. For the period 2014-2020 Slovenia has envisaged the allocation of 269 million euros from the Cohesion Fund for investment priorities related to the investment in water infrastructure.

In **Bulgaria** the level of public service of collecting and processing waste water is relatively low. According to data of the Bulgarian National Institute of Statistics, the percentage of public sewage networks constructed in 2011 was 61%, while the percentage of the population connected to the system amounted to 74% (Government of the Republic of Bulgaria, 2013, p. 42). Data from 2007 stated that Bulgaria lags behind the European average. Only about 70% of cities and 2% of villages have been connected to the public sewerage system. As for the waste water treatment, the number of wastewater treatment facilities has increased since 2005 (European Environment Agency, 2015b), therefore in the period 2005-2010 the share of the population connected to the waste water treatment facilities has increased by almost 7%. In 2011 this share has reached 55.7% (Government of the Republic of Bulgaria, 2013, p. 42).

Under the Treaty of Accession to the European Union Bulgaria should, until 31 December 2014, align with the Urban Waste Water Treatment Directive (Council of the European Communities, 1991a) in agglomerations with over 10,000 inhabitants. According to a report submitted to the European Commission in 2014, these requirements had not been fully met. 13 agglomerations had fulfilled the requirements for wastewater collection and 17 agglomerations with more than 10,000 inhabitants had fulfilled the requirements for wastewater treatment. Both requirements of the Directive were met in only two agglomerations, but it is expected that another 38 agglomerations will meet the requirements of the Directive as a result of the implementation of projects from the Environment OP 2007-2013 (Government of the Republic of Bulgaria, 2014, p. 2).

The percentage of population connected to public water supply system in Bulgaria is very high (99%), and the quality of drinking water generally meets standards (meets the legal requirements for water supply in terms of microbiological and chemical parameters in more than 95% of large water supply zones and more than 90% in small water supply zones) (Government of the Republic of Bulgaria, 2014, p. 3).

However, due to the inadequate legal framework and lack of funding, water supply infrastructure is very outdated with large losses in the system of 60% (Government of the Republic of Bulgaria, 2013, p. 42). According to the World Bank estimates, Bulgaria needs between 325 and 400 million euros per year for

the cost of repair and replacement of water supply network (Government of the Republic of Bulgaria, 2014a, p. 3).

According to the latest published report of the European Commission from 2014 on the implementation of the Drinking Water Directive (Council of the European Union, 1998), the major weaknesses in Bulgaria are the inadequate content and scope of the implementation of the Directive and the low monitoring frequency. It is stated that in 55.5% of large water supply zones the information is missing or monitoring data are insufficient, and that the percentage of water supply zones that do not meet the requirements of the minimum monitoring frequency is relatively high (Government of the Republic of Bulgaria, 2014a, p. 3). It is stated that the main cause for diffuse pollution of surface and ground waters is agriculture, which emits nitrates, phosphates, pesticides and other substances used in plant protection and maintenance of animals. Vulnerable areas that are exposed to water pollution by nitrates constitute 34.5% of the country (Government of the Republic of Bulgaria, 2013, p. 41).

In the OP Environment 2014-2020 Bulgaria has envisaged the allocation of 1 billion euros, or 67.57% from the Cohesion Fund for the priority axis: *Water* and two specific objectives: *The protection and improvement of the status of water resources* and *The improved assessment of water bodies*. In order to comply with the water utility directives, the investments will be directed to the public water supply and drainage systems, with a focus on agglomerations with over 10,000 inhabitants. This will be followed by the completion and/or optimization of the system of monitoring and equipping the laboratory of the Environmental Protection Agency and the competent authorities for health control of water quality as well as for the development of new and/or updating existing policy documents.

According to the Treaty of Accession to the European Union, **Romania** has received a transitional period until 31 December 2015 for compliance with the Drinking Water Directive (Council of the European Union, 1998) and until 31 December 2018 for compliance with the Urban Waste Water Treatment Directive (Council of the European Communities, 1991a). This proved to be a very complex and difficult task, but the construction and modernization of infrastructure for public water supply and wastewater systems remains one of the highest priorities in Romania in the coming period (Government of Romania, 2014, p. 66).

Alignment with the Urban Waste Water Treatment Directive has its interim goals, for the collection of urban waste water (61% in 2010, 69% in 2013 and 80% in 2015), and for the treatment of urban waste water (51% in 2010, 61% in 2013 and 77% in 2015). In Romania, in December 2013, the rate of connection to public sewerage system amounted to 59.95% (compared to a targeted 69%), while the rate of waste water treatment was 49.89% (compared to the targeted 61%). Both rates should be increased in the next programming period for the agglomeration of over 2,000 inhabitants, which will require significant investments (Government of Romania, 2014, p. 66).

In 2012, 60.15% of the population in Romania was connected to the public water supply (Government of Romania, 2014, p. 10), while in rural areas the figure was only 30% (Government of Romania, 2014, p. 66). As for the quality of drinking water, 25% of public water supply in areas from 50 to 5,000 inhabitants, and 10% of public water supply in areas above 5,000 inhabitants, does not meet the microbiological and chemical parameters (Government of Romania, 2007, p. 19). The major problem is the contamination of water sources. In the past, the groundwater had been partly contaminated with heavy metals from mining, while today pollutants are mainly from agricultural sources (Government of Romania, 2007, p. 14). The use of agricultural fertilizers and pesticides has reduced thus the quality of surface water has improved.

However, given the level of accumulated nitrate<sup>4</sup>, especially in groundwater, Romania will take further measures to conserve water and soil (Government of Romania, 2014, p. 66). In terms of monitoring, significant investments have been made, but further investments will be necessary to ensure proper monitoring of the concentration of certain priority substances identified in European legislation (ibid.).

It is estimated that for Romania to comply with the Drinking Water Directive (Council of the European Union, 1998) and the Urban Waste Water Treatment Directive (Council of the European Community, 1991a) about 13.85 billion euros will be necessary (5.8 billion euros for water supply and 8.03 billion euros for sanitation) after the completion of projects financed by the Sectoral Operational Programme Environment 2007-2013 (Government of Romania, 2014, p. 121). It will not be possible to finance these investments from a single source, thus in the Large Infrastructure Operational Programme 2014-2020 Romania has prepared the allocation of about 2.5 billion euros from the Cohesion Fund, for the investment priority: *The investment in the water sector*, specific priority: *Increasing rates for the collection and treatment of urban waste water and rates for water supply of the population*. The construction and renovation of public sewage networks, devices for waste water treatment, as well as the construction of infrastructure for public water supply in urban and rural areas (Government of Romania, 2014, p. 122) will be financed.

All the observed countries need additional financial resources for the development of infrastructure for the collection and treatment of urban waste water and for the increased water supply system in order to comply with European legislation. The best situation is in Slovenia and the worst in Romania, which has envisaged the highest investment in the water sector. However, all the observed countries have problems with alignment with the EU legislation, particularly in the area of wastewater collection and treatment of urban waste water.

## **Waste Management**

The European Union aims to reduce the amount of waste, manage waste in accordance with the waste hierarchy and become a society based on circular economy. This chapter presents the situation in the waste management sector in Slovenia, Bulgaria and Romania and how these countries coordinate with the Waste Framework Directive and other EU directives in the field of waste.

In **Slovenia** there is a trend of reducing the amount of waste, mainly due to a massive reduction in the volume of construction waste and the fact that certain types of waste are being recovered in the light of the objective of the transition to a circular economy. Most of the waste is generated from production and service activities (3.7 million tons in 2012). Since 2002, 60% of such waste is being recovered, so the recovery rates are constantly growing. In 2012 the amount of municipal waste was 672,000 tons (327 kg per capita) and is in constant decline (from 74% in 2008 to 47% in 2012) (European Environment Agency, 2015d). Most of the waste is still disposed of in landfills (more than 70% of waste produced, or 900,000 tons per year) (Environmental Protection Agency of the Republic of Slovenia, 2009), although there is a trend of decline. Since in most sectors a system of extended producer responsibility (for packaging waste, for old vehicles, for medical waste) was introduced in 2004, recycling rate of waste is on the rise, and Slovenia is on track to meet the goals of recycling waste by 2020 set in the Waste Framework Directive.

---

<sup>4</sup> The territory of Romania is designated as Nitrate vulnerable area - 2.37% of the country is potentially vulnerable, 5.77% of the country has a medium risk vulnerability, while 0.50% of the country is highly vulnerable (Government Romania, 2007, p. 20), it has increased from 58% to 100% of the territory.

However, a program for the prevention of waste generation has not been made yet and therefore no appropriate measures to prevent the generation of waste have been developed (Government of the Republic of Slovenia, 2014, p. 50). The reason for the still relatively high percentage of waste disposal in Slovenia is in low environmental tax for environmental pollution. The prevailing opinion is that this tax does not have sufficient deterrent effect on the change in behaviour of the population, and appropriate changes will have to be adopted in this field.

Another challenge for Slovenia will be increasing the share of composting biodegradable waste, given that the data for 2009 indicate that the country is far below the EU-27 average (EU-27 more than 15%, Slovenia less than 5%). In the National Reform Programme 2013-2014, Slovenia has recognized the need to develop measures in the field of waste management in order to create green jobs and the transition to a circular economy.

It is estimated that the investments that have been completed or are in progress in the field of waste management will meet the capacity of Slovenia for processing of mixed municipal waste and disposal of residual waste. After completion of the facilities financed by the financial perspective 2007-2013, funds from the new financial perspective 2014-2020 will be allocated only if necessary. In the framework of the thematic objectives 1. *Strengthening research, technological development and innovation* and 3. *Enhancing the competitiveness of SMEs, agriculture, fisheries and aquaculture* Slovenia will promote eco-innovation, technological modernization and development of new products/services and business models that aspire to reducing waste and improving the competitiveness of enterprises with improved material efficiency, and support the transition towards a circular economy (Government of the Republic of Slovenia, 2014, p. 50).

The amount of produced waste in **Bulgaria** was reduced by 20% in the period from 2007 to 2011. The reasons for this decrease were a drop in construction activities in the country due to economic reasons, but also the completion and optimization of separate waste collection system, the improvement of waste measuring system by installing the scales weighing on landfills, and increased control by interest groups.

The amount of collected municipal waste in 2011 amounted to 2.753 million tons, of which 160 tons were delivered for recycling. A significant progress can be seen when compared to 2010 when only 26 tons of waste were recycled. In 2011, 2.586 million tons or 93% of municipal waste was dumped in landfills, whereas the percentage for 2010 was 98%. In 2011, Bulgaria had 164 landfills, of which 30 at the regional level (Government of the Republic of Bulgaria, 2013, p. 43).

Between 2007 and 2011 the amount of hazardous waste increased by 73% due to reclassification of certain types of waste produced in the metallurgical sector. On the other hand, in 2010 Bulgaria had achieved national targets for the recycling of packaging waste.

Since further actions are necessary regarding the implementation of the Waste Directive (European Parliament and Council, 2008), the Law on Waste Management in 2012 set the following targets for reuse and recycling of paper, metal, plastic and glass from households: by 1 January 2016 the goal is to recycle at least 25% of the total waste mass, by 1 January 2018 40% of waste mass and by 1 January 2020 50% of the total waste mass (Government of the Republic of Bulgaria, 2013, p. 43).

Bulgaria has adopted the National Waste Management Plan 2014-2020, which stipulates gradual reduction of the amount of biodegradable waste disposed at landfills to 35% by 2020, from the total mass of biodegradable municipal waste in 1995. Since currently there are only three plants for processing of biodegradable municipal waste in Bulgaria (in the municipalities of Varna, Plovdiv and Sofia), which do not

meet all the needs with regard to the amount of generated waste, investments are planned which would provide additional capacity for recycling (Government of the Republic of Bulgaria, 2014, p. 4).

Thus, in the National Environment OP 2014-2020 the priority axis *waste* envisaged the allocation of 245 million euros, or 16.26% from the European Regional Development Fund for investment priority: *The investment in the waste management sector*, specific objective 1: *Reduction of the amount of waste disposed at landfill*. The projects will be financed in accordance with the requirements of the hierarchical sequence of waste management and the objectives and measures of the National Waste Management Plan 2014-2020.

In **Romania** waste management is still below European standards. According to the Treaty of Accession to the European Union and the Landfill Directive (Council of the European Union, 1999) Romania is required to close down 240 non-compliant landfills and reduce the amount of waste that is deposited there by 2017. According to data from 2014, 92 non-compliant landfills have been closed, 79 non-compliant landfills are scheduled to be closed through Sectoral OP Environment 2007-2013, 46 through OP Large infrastructure 2014-2020, while 23 non-compliant landfills will be closed from other sources (17 of them will be included in the projects being implemented) (Government of Romania, 2014, p. 9).

According to the Landfill Directive, Romania should reduce the amount of biodegradable municipal waste to 1.68 million tons, or 35% of the total amount of biodegradable waste disposed in landfills in 1995 by 2016. In 2011 the estimated amount of biodegradable municipal waste amounted to 3,000,000 tons (Government of Romania, 2014, page 109).

According to the Treaty of Accession and national legislation, Romania has committed itself to recycle 55% of packaging waste (60% of paper and cardboard, 22.5% plastic, 60% glass, 50% metal, 15% wood) and use 60% of this packaging waste for energy efficiency. The targets of recycling of those materials and the overall objective of the recycling of packaging waste were achieved in 2012, while 57.4% of packaging waste was used for energy efficiency (Government of Romania, 2014, p. 12).

According to the Waste Framework Directive (European Parliament and Council, 2008) Romania is required, as well as other member states, to ensure through the competent authorities the preparation for reuse and recycling of paper, metal, plastic and glass from household waste in the minimum share of 50% of municipal waste by 2020 (in 2016 - 25%, in 2018 - 40%). The rate of recycling of municipal waste in Romania is below the European average. In 2010, from 5.325.810 million tons of municipal waste, only 296.140 tons were recycled. Local authorities are responsible for the separation and collection of waste, however the level of selective waste collection is low (only 698 sites have implemented a system of selective waste collection by 2010) (Government of Romania, 2014, p. 66). Since the objectives of recycling municipal waste by 2020 and the objectives of reducing the total amount of waste from the Waste Framework Directive cannot be achieved from the local budget, the implementation of European directives will require other measures.

For the fulfilment of the obligations in the waste management sector Romania has prepared the allocation of 318 million euros from the Cohesion Fund (Government of Romania, 2014, p. 34) through investment priority: *The investment in the waste sector*, specific priority: *Reducing the number of non-compliant landfills and increasing recycling rates of waste in Romania*. The allocation of about 60 million euros is envisaged to close non-compliant landfills, 233 million euros to build plants for biodegradable waste, while for recycling procedures the infrastructure for the collection, transport and sorting of waste will be funded in the amount of 36 million euros.

The situation in the field of waste management is different in the observed countries. Slovenia appears to be the best performing country which has already undertaken a significant investment in the previous period. If these investments are successfully completed, Slovenia will not need financing from European funds in the future. On the other hand, Romania still has to fulfil the commitments made in the Treaty of Accession and reduce the number of non-compliant landfills. Romania has envisaged the most funds for investment in the waste sector by 2020, followed by Bulgaria, which plans to further reduce the amount of waste disposed at landfills in a given period.

## **ANALYSIS OF THE SITUATION IN THE SECTORS OF NATURE PROTECTION, WATER MANAGEMENT AND WASTE MANAGEMENT IN CROATIA**

### **Nature Protection**

Croatia has committed itself, in its basic legal document, the Constitution of the Republic of Croatia, to the preservation and protection of its precious resources - the environment and nature. In comparison with the large part of the European Union, nature in Croatia is very well preserved. In Croatia, the EU Ecological Network of Protected Areas - Natura 2000 covers 36.73% of the continental territory and 15,42% of the coastal sea, and consists of 38 conservation sites of importance for birds and 781 conservation sites of importance for species and habitat types (SINP, 2016).

Croatia has developed and greatly improved the overall system of protection and conservation of biodiversity of the early 1990s. Progress has been made in the area of inventory and evaluation of biological and landscape diversity, as well as in the development of a legislative and institutional framework and in the improvement of the system of protection of natural resources. (Tišma, Boromisa, Pavičić-Kaselj, 2012). However, although there is sufficient data on biodiversity in the Natura 2000 network for terrestrial habitats, data for sea water are still insufficient, and there is no detailed map of marine habitats (Government of the Republic of Croatia, 2014, p. 12). Furthermore, a steady loss of biodiversity is observed, caused by the loss of habitats and the introduction of alien species to ecosystems, the pollution of the environment, spatial urbanization, global climate changes and the pressures of economic activity.

To manage the National Ecological Network established in 2007 (conceptually as the other side of the Natura 2000 network), the development of management plans for individual locations and responsibility for the management have been entrusted to the regional bodies that have proven inadequate, largely due to the lack of staff and limited financial resources. Therefore, the establishment of the EU Natura 2000 and sustainable management mechanisms represent the most important obligations according to the Habitats Directive for the protection of nature in Croatia. A special aspect of this issue is the presence of the remaining minefields and unexploded ordnances. Of all the mine suspected areas in the country, approximately 313 km<sup>2</sup>, more than 50%, are in the areas of Natura 2000 network. The problem is disproportionately present in forests and forest areas which endanger the sustainable and effective management of these areas (Government of the Republic of Croatia, 2014, p. 12).

In the OP Competitiveness and cohesion in the Thematic objective 6: *Preserving and protecting the environment and promoting resource efficiency*, through investment priority 6ii: *Protection and restoration of biodiversity and soil and promotion of ecosystem services, including the Natura 2000 network and green infrastructure*, Croatia has envisaged the allocation of 125 million euros from the Cohesion Fund. For the

protection and promotion of biodiversity, nature conservation and "green" infrastructure the allocation of 54 million euros has been envisaged, while for the protection, restoration and sustainable use of Natura 2000 sites the allocation of 71 million euros has been envisaged (Government of the Republic of Croatia, 2014, p. 138).

## **Water Management**

According to the Treaty of Accession to the European Union Croatia was approved a transitional period until 31 December 2018 to comply with the Drinking Water Directive (Council of the European Union, 1998) and by 31 December 2023 with the Urban Waste Water Treatment Directive (Council of the European Community, 1991a).

Compared with most EU member states, public drainage system in Croatia is not developed and has quite a low level of connection of 46%.<sup>5</sup> Only 28% of collected waste water is being processed, but one-third of this percentage actually refers to the pre-treatment or primary treatment of waste water (Government of the Republic of Croatia, 2014, p. 12).

Losses in the public water supply are significant (in the amount of 48% in 2012). 82% of the Croatian population has access to public water supply (European Environment Agency, 2015), and the remaining 18% are supplied from the so-called local water supply or individually from their own wells, cisterns. There are significant regional differences, i.e. connection rate is higher in the Adriatic (91%) than in the Black Sea basin (77%) (Government of the Republic of Croatia, 2014, p.11). Since there are approximately 160 public water suppliers in Croatia, it can be said that the sector is highly fragmented and the quality of that service differs.<sup>6</sup>

Furthermore, there are limitations in the monitoring of surface water. The network for monitoring of water status is established, but all the parameters required for monitoring are not monitored (Government of the Republic of Croatia, 2014, p. 11). It is estimated that a satisfactory ecological status of surface waters has not been achieved in 58% of rivers, 54% of lakes and 55% of transitional and 12% of coastal waters (Government of the Republic of Croatia, 2016, p.87). Good chemical status of surface waters has not been achieved at around 8% of rivers, 15% of transitional and 6% of coastal waters, while all the lakes have good chemical status. Groundwater status shows a much more favourable situation. Bad chemical status of groundwater has been established only in a few areas. It was determined that in the Black Sea basin, in the water body of groundwater in Varaždin there are nitrates and in the basic water body HR204 of groundwater in Zagreb there is a high level of reliability of the presence of trichloroethene and tetrachloroethene, while in the Adriatic basin a bad chemical state was determined in a water body of South Istria (nitrates) and in the water body Bokanjac-Poličnik (salt water intrusion) (Government of the Republic of Croatia, 2016, p.88).

---

<sup>5</sup> This difference is also expressed at the regional level. The level is lower in the Dalmatian basin (31%), but more in terms of the size of the settlement, with a relatively satisfactory rate only in settlements with a population greater than 10,000.

<sup>6</sup> In fact, about 70% are small businesses that have an annual distribution of less than 1 m<sup>3</sup> / m<sup>3</sup> (compared to 45 m<sup>3</sup> / m<sup>3</sup> which is the average of the European Union) with insufficient staff and technical capacity for project preparation and implementation in the period 2014-2020 (Government of the Republic of Croatia, 2014, p.12).

In order to comply with European directives, Croatia has envisaged the allocation of 1,049 million euros from the Cohesion Fund for investment in the water sector in the scope of the OP Coherence and Cohesion. For the supply of water for human consumption, which includes infrastructure for extraction, processing, storage and distribution of water, Croatia has envisaged the allocation of 169 million euros. For water management and conservation of drinking water (including the management of river basins, water supply, specific measures to adapt to climate change, measurement units and consumers, payment systems and decreased leakage) Croatia has envisaged the allocation 40 million euros. Most of the funds, 840 million euros, are allocated for waste water treatment (Government of the Republic of Croatia, 2014, p. 138).

## **Waste Management**

According to data collected for the OP Competitiveness and Cohesion 2014-2020, the existing waste management system in Croatia can be considered as environmentally unacceptable and unsustainable, marked by insufficient facilities for waste management, a high proportion of municipal / biodegradable waste disposed at landfills and low recycling of municipal waste. In the next few years Croatia has to address the issue of inherited inadequate waste management through the remediation of municipal landfills, illegal landfills and highly polluted sites with waste, so called "Hot spots" (Government of the Republic of Croatia, 2014, p. 11).

According to the Environmental Protection Agency, the total amount of municipal waste generated in 2013 amounted to 1,720.758 tons, of which 76% consisted of mixed municipal waste. The organized collection of municipal waste in 2013 was not carried out in only one municipality, and the public service covered 98% of the Croatian population (EPA, 2013). However, the overall system is focused on the collection of waste as such and on the disposal. In the period 2008-2013, the share of municipal waste which was disposed at landfills has been reduced from 97% to 82% (1,413.113 tons). Almost the entire amount has been disposed without pre-treatment (ibid.).

The number of local governments that implement primary waste selection increased in recent years, but still a large number (2/3) of useful types of waste from municipal waste are not collected separately. According to the data for 2013, separate collection of useful wastes from municipal waste organized by local government units was carried out in 200 municipalities / cities and 119, 421 182 tons of municipal solid waste (24% of the total amount of municipal waste) was separately collected (the Ministry of environment and nature protection, 2015, p. 12).

The Waste Framework Directive (European Parliament and Council, 2008) requires 50% of separately collected waste and recycling of municipal waste by 2020, while according to the Environmental Protection Agency data from 2014, Croatia has reached 17% (272,421 tons) of municipal waste sent for recovery (EPA, 2014).

The Treaty of Accession to the European Union prescribes that Croatia is obliged to ensure gradual reduction of the amount of biodegradable municipal waste disposed at landfills: by 31 December 2016 the reduction to 50% of the total amount of biodegradable municipal waste (378,088 tons) produced in 1997 and by 31 December 2020 the reduction to 35% (264,661 tons) produced in 1997. Although the amount of landfilled biodegradable municipal waste in the period 2010-2013 has decreased, according to the Environmental Protection Agency 870,434 tonnes of biodegradable municipal waste was disposed at landfills in Croatia in 2013 (Ministry of Environment and Nature Protection, 2015, p. 13), and the objective

of reducing disposed waste to 75% of the total amount of biodegradable municipal waste (567,131 tons) produced in 1997 under the Treaty of Accession has not been reached (EPA, 2013).

The obligation of the Treaty of Accession to reduce the total amount of waste disposed at landfills is inconsistent: by 31 December 2016: 1.010,000 tonnes and by 31 December 2017: 800,000 tons. From 2005 to 2014 a total of 312 sites of official landfills were registered. By the end of 2014, a total of 164 landfills were closed, while 148 were active. Of the estimated 3,000 unofficial landfills, contracts were signed for the remediation of 1,007 locations by the end of 2013. In 2013 the Fund for Environmental Protection and Energy Efficiency continued the process of the remediation of priority sites contaminated with hazardous waste (hot spots) (EPA, 2013).

Another obligation of the Treaty of Accession was the construction of 13 regional waste management centres until 31 December 2018. Two centres are already operable (Kaštijun and Marišćina). The EU has already approved funding of another two (Bikarac and Biljani Donji), while the remaining 9 are in the process of revision by the Ministry of Environment and Nature Protection.

Through the implementation of the Operational Programme Competitiveness and Cohesion 2014-2020, Priority Axis 6: *Preserving and protecting the environment and promoting resource efficiency* Croatia has set the investment in the waste sector as one of the main investment priorities. The planned allocation of funds from the Cohesion Fund amounts to 475 million euros for investment priority 6i: *The investment in the waste sector*, Specific target 6i: *The reduced amount of waste disposed of in landfills*, or 50 million euros for measures to reduce the amount of waste, sorting, recycling and 425 million euros for measures of mechanical biological treatment, thermal treatment, incineration and landfill disposal (Government of the Republic of Croatia, 2014, p. 138). The plan is to finance projects to improve separate collection, recovery, recycling and reuse of waste, as well as to invest in recycling and recovery, centres for waste management at the regional level and remediation of existing non-compliant municipal landfills and illegal dumping, as well as remediation of hot spots.

With regard to legislation, it is necessary to note that currently Croatia does not have a Waste Management Plan. The Croatian Waste Management Plan for the period 2007-2015 (OG 85/07, 126/10, 31/11, 46/15) has expired, while a new draft Waste Management Plan 2015-2021 has not been adopted. Croatia also does not have a plan to prevent the generation of waste which should have been established no later than 12 December 2013, according to the Waste Framework Directive (European Parliament and Council, 2008). It is envisaged that plans to prevent the generation of waste can be constructed as independent documents or may be included in the waste management plans. Croatia decided that its plan to prevent the generation of waste should be included in the new Waste Management Plan 2015-2021. However, since it has not been adopted, there is currently no plan to prevent the generation of waste in the Republic of Croatia.

## **CONCLUSIONS AND RECOMMENDATIONS**

## Conclusions

The European Union has implemented the **nature protection** policy in accordance with the Birds Directive (European Parliament and Council, 2009) and the Habitats Directive (Council of the European Community, 1992). The implementation of these regulations is carried out through the Ecological Network of Protected Areas in the European Union - Natura 2000. All analysed EU member states: Slovenia, Bulgaria, Romania and Croatia declared the European Ecological Network Natura 2000 on their territory upon their accession to the EU. However, the sustainable management of the Natura 2000 has not been fully established in any of these countries. Romania and Croatia face major challenges as regards the development of management plans for individual locations. Croatia has entrusted the responsibility for managing individual sites to regional authorities, which have proven inadequate largely due to lack of staff and limited financial resources. Romania is in the process of appointing an administrator for certain Natura 2000 sites, and the main reasons for the slow adoption of the plans are found in weak administrative capacity and difficulties in cross-sectoral coordination. A special aspect of the management of Natura 2000 sites in Croatia concerns the remaining minefields and unexploded ordnances. Therefore, Croatia has envisaged the allocation of European funds to address these issues.

All observed member states are faced with the loss of biodiversity caused by habitat loss. Bulgaria has the highest percentage of unfavourable status of habitats, while Romania has the highest percentage of unfavourable status of species. Due to intensive human activities, Romania has some historically polluted areas in which ecosystem has degraded and which should be restored. Croatia, on the other hand, has very little data on the biodiversity of maritime species and habitats. To improve the management of the Natura 2000 sites and protect species and habitats within the European Ecological Network all observed member states decided to allocate sources from the European funds: Slovenia in the amount of 131 million euros, Bulgaria in the amount of 86 million euros, Romania in the amount of 275 million euros, and Croatia in the amount of 125 million euros.

In the field of **water management** the EU requires from all member states coordination with the Urban Waste Water Treatment Directive (Council of the European Community, 1991a), the Drinking Water Directive (Council of the European Union, 1998) and the Water Framework Directive (The European Parliament and the Council, 2000) which requires large investments. All observed member states have been given transition periods for compliance with the Urban Waste Water Treatment Directive (Council of the European Community, 1991a) in the Treaties of Accession to the EU. Slovenia had to establish adequate infrastructure for the collection and treatment of waste water by 31 December 2015 in agglomerations over 2,000 inhabitants. However, these conditions are not yet fulfilled. Bulgaria was granted a transitional period for compliance by 31 December 2014 for agglomerations of over 10,000 inhabitants but these conditions have not yet been fulfilled. Romania was granted a transitional period until 31 December 2018 and awaits a difficult task. Croatia was granted a transitional period until 31 December 2023, which will require substantial investment in water infrastructure.

Despite investments in the period 2007-2013, there are still some areas in Slovenia which are not part of the public water supply system or where the water supply is inadequate, therefore drinking water supply is not in compliance with the Drinking Water Directive (Council of the European Union, 1998). Bulgaria has a high percentage of connections to the public water supply, but there are large losses in water supply system of 60%. In Romania, the percentage of the population connected to the public water supply is very low, 60.15%, while in rural areas the figure is only 30%. In Croatia, the percentage of the population that has access to the public water supply is 82%, while the losses in the system are substantial, amounting to 48%.

Achieving good status for all waters, in accordance with the Water Framework Directive (The European Parliament and Council, 2000), remains a challenge in all the observed countries. Slovenia has most of the surface water of good chemical status, and slightly more than half with the good ecological status. Bulgaria has insufficient monitoring data. Romania faces the problem with the pollution of water sources. Croatia has established a network for water monitoring, but does not follow all necessary parameters.

In the period 2014-2020, all observed member states have allocated the funds from the Cohesion Fund for priorities related to the water infrastructure. Slovenia has envisaged allocation of 269 million euros, while Bulgaria has envisaged allocation of 1 billion euros. The estimates for Romania suggest that it would need about 13.85 billion euros to comply with the Water Framework Directive. Given that such a high investment cannot be financed from a single source, Romania has prepared an allocation of around 2.5 billion euros for the period 2014-2020. Croatia has prepared an allocation of 1,049 million euros for investment measures in the water sector.

In the field of **waste management** the EU aims to reduce the amount of waste, manage waste in accordance with the waste hierarchy and in the long term focus to society based on circular economy. Of all observed member states, Slovenia is closest to achieve EU objectives. This member state is on the right path to meet recycling targets by 2020, established by the Waste Framework Directive (European Parliament and Council, 2008), and one of the few challenges that still remain are the increase in the share of composting biodegradable waste. Slovenia has already undertaken a significant investment in previous periods, and if these investments are successfully finalised, financing from European funds in the period until 2020 will not be needed.

The situation in other member states is somewhat different. Bulgaria and Croatia have reduced the amount of waste produced. In Bulgaria the reason is the decline of construction activities in the country for economic reasons, but also the completion and optimization of the system of separate waste collection and the improvement of the system of measuring the amount of waste at landfills, as well as increased control by interest groups. In Croatia, the reason for decline is the separate collection of useful wastes from municipal waste, but this percentage is still very low (24% of the total amount of municipal waste). Bulgaria and Croatia have delegated European targets for separate collection and recycling of 50% of waste by 2020 in their national legislation. Bulgaria has adopted the National Waste Management Plan 2014-2020, which Croatia has not done yet, but is in preparation. In Bulgaria, there are three treatment plants for biodegradable municipal waste and there are planned investments that would provide additional capacity for recycling in order to comply with the requirements of reducing the amount of biodegradable waste disposed at landfills to 35% by 2020. Croatia has the same target by 2020, but even the interim target to reduce 75% of the total amount of biodegradable municipal waste produced in 1997 has not yet been reached, for which Croatia was given a transition period up to 2013.

Romania and Croatia have obligations under the Treaties of Accession and the Landfill Directive (Council of the European Union, 1999) to reduce the amount of waste going to non-compliant landfills: Romania until 31 December 2016, and Croatia until 31 December 2017. Romania is obliged to close down 240 non-compliant landfills by 16 July 2017, while in Croatia all existing landfills must meet the requirements of the Landfill Directive by 31 December 2018. By that date, Croatia needs to build 13 regional waste management centres. Two centres are already operable, for two EU funds have been approved, while the remaining 9 are under revision by the Ministry of Environment and Nature Protection.

For the period 2014-2020 Bulgaria provided the allocation of 245 million euros from the European Regional Development Fund to reduce the amount of waste disposed at landfills. Romania has prepared the

allocation of 318 million euros from the Cohesion Fund. The allocation of about 60 million euros is envisaged to close non-compliant landfills, 233 million euros to build a plant for biodegradable waste, while 36 million euros have been secured for recycling procedures. Croatia has allocated funds amounting to 475 million euros from the Cohesion Fund: 50 million euros for measures to reduce the amount of waste, sorting, recycling and 425 million euros for measures of mechanical biological treatment, thermal treatment, incineration and landfilling.

### **Recommendations for Croatia resulting from this paper**

- Improve the knowledge of the public sector, private sector, NGOs and citizens on environmental issues and open a space for dialogue and cooperation between state institutions, non-governmental organizations and the private sector (economy) on environmental topics.
- Specific challenges are related to the regulatory framework, in particular to speed up subordinate legislation. Without subordinate legislation, laws are unenforceable. A greater control over the implementation of regulations is necessary, as well as checking regulations before making the model and increasing the level of understanding regulations. A good example of achieving a better understanding of adopted acts are so called "citizen summary" regulations.
- In the field of nature protection, within the Natura 2000 network, it is necessary to continue data collection activities on biodiversity for marine waters under national jurisdiction.
- In the field of water management significant investments in public water and sewage system are required in order to reduce losses in the supply system and increase the level of connections to public sewerage system. It is necessary to improve the monitoring system of surface waters.
- In the field of waste management it is necessary to achieve critical breakthroughs in the next few years. Activities are now focused on the revision of the development of waste management centres, given that the focus of the planned centres is on mixed waste whose mechanical-biological treatment could lead to the production of fuel for burning in cement plants or in incinerators within the centres. One of the priority objectives of waste management policy in the EU is to restrict the disposal and burning only to materials that cannot be recycled, as well as separate collection and reuse of waste. Therefore, it is expected to prepare and implement measures to reduce, reuse, separate and recycle waste in accordance with the hierarchy of waste management, and to give incentives for investments in recycling yards, sorting and composting centres and centres for reuse. Some of the activities that are expected as soon as possible are the adoption of the Waste Management Plan 2016-2022, the Prevention of Waste Generation Plan (which Croatia was required to draw up not later than 12 December 2013 under the provisions of the Waste Directive (European Parliament and the Council, 2008), the closure of illegal landfills and the remediation of existing inadequate landfills.

### **LITERATURE**

#### **Books and articles**

Jordan, A., Liefferink D. (ed.) (2004), *Environmental Policy in Europe: The Europeanization of National Environmental Policy*, London: Routledge

Tišma, S., Boromisa, AM, Pavičić-Kaselj A. (2012) *Environmental Finance and Development*, London: Routledge

## Official documents

European Commission (2005) *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions Taking Sustainable Use of Resources Forward: a Thematic Strategy on the Prevention and Recycling of Waste*. Brussels (COM (2005) 666 final). Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0666:FIN:EN:PDF>

European Commission (2010) *Communication from the Commission EUROPE 2020 A strategy for smart, sustainable and inclusive growth* (COM (2010) 2020). Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

European Commission (2011) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions A resource-efficient Europe - Flagship initiative under the Europe 2020 Strategy* (COM (2011) 21). Available at: [http://ec.europa.eu/resource-efficient-europe/pdf/resource\\_efficient\\_europe\\_en.pdf](http://ec.europa.eu/resource-efficient-europe/pdf/resource_efficient_europe_en.pdf)

The European Commission (2011a) *Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions - Our life insurance, our natural capital: an EU biodiversity strategy to 2020* (COM (2011) 244 final). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52011DC0244>

The European Commission (2011b) *Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions - Roadmap to a Resource Efficient Europe* (COM (2011) 571). Available at: [http://www.europarl.europa.eu/meetdocs/2009\\_2014/documents/com/com\\_com\(2011\)0571/\\_com\\_com\(2011\)0571\\_en.pdf](http://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com(2011)0571/_com_com(2011)0571_en.pdf)

The European Commission (2011c) *Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Region on the Thematic Strategy on the Prevention and Recycling of Waste* Brussels (COM (2011) 13 final). Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0013:FIN:EN:PDF>

European Commission (2012) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A Blueprint to Safeguard Europe's Water Resources*, (COM (2012) 673) Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0673&from=EN>

- European Commission (2014) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions Towards a circular economy: A zero waste program for Europe* (COM / 2014/0398 final / 2). Available at: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52014DC0398>
- European Commission (2015) *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions Closing the loop - An EU action plan for the Circular Economy* (COM (2015) 614 final). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614>
- The European Parliament (2012) *European Parliament resolution of 24 May 2012 on a resource-efficient Europe* (2011/2068 (INI)), available at: [http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT/TA/P7-TA-2012-0223\\_0\\_DOC\\_XML\\_V0//EN](http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT/TA/P7-TA-2012-0223_0_DOC_XML_V0//EN)
- The European Parliament and the Council (2000) *Directive 2000/60 / EC of the European Parliament and of the Council of 23 October 2000 on establishing a framework for Community action in the field of water policy* (OJ L 327, 22/12/2000)
- The European Parliament and the Council (2000a) *Directive 2000/76 / EC of the European Parliament and the Council of 4 December 2000 on the incineration of waste* (OJ L 332/91, 28th 12. 2000 Available at: <http://eur-lex.europa.eu/legal-content/HR/TXT/?Uri=CELEX%3A32000L0076>
- The European Parliament and the Council (2006) *Directive 2006/118 / EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration* (OJ L 372, 27/12/2006)
- The European Parliament and the Council (2007) *Directive 2007/60 / EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks* (OJ L 288, 6/11/2007)
- The European Parliament and the Council (2008) *Directive 2008/98 / EC of the European Parliament and of the Council of 19 November 2008 on Waste and Repealing Certain Directives* (OJ L 312/3, 22/11/2008) available at: <http://eur-lex.europa.eu/legal-content/HR/ALL/?uri=CELEX:32008L0098>
- The European Parliament and the Council (2009) *Directive 2009/147 / EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds* (OJ L 20, 26/1/2010). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147>
- The European Parliament and the Council (2013). *Decision No 1386/2013 / EC of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 "Living well, within the limits of our planet* (OJ L 354, 28/12/2013). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013D1386>
- The Croatian Parliament (2013) *The Law on Sustainable Waste Management* (OG 94/13)
- The Croatian Parliament (1996) *Law on Ratification of the Convention on Biological Diversity* (OG 6/96). Available at: [http://narodne-novine.nn.hr/clanci/medunarodni/1996\\_05\\_6\\_39.html](http://narodne-novine.nn.hr/clanci/medunarodni/1996_05_6_39.html)

- The Croatian Parliament (1999) *Law on Ratification of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)* (OG International Agreements 12/99). Available at: [http://narodne-novine.nn.hr/clanci/medunarodni/1999\\_10\\_12\\_196.html](http://narodne-novine.nn.hr/clanci/medunarodni/1999_10_12_196.html)
- The Croatian Parliament (2000) *Law on Ratification of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)* (OG International Agreements 6/00). Available at: [http://narodne-novine.nn.hr/clanci/medunarodni/2000\\_05\\_6\\_66.html](http://narodne-novine.nn.hr/clanci/medunarodni/2000_05_6_66.html)
- The Croatian Parliament (2000a) *Law on Ratification of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)* (OG International Agreements 6/00). Available at: [http://narodne-novine.nn.hr/clanci/medunarodni/2000\\_05\\_6\\_67.html](http://narodne-novine.nn.hr/clanci/medunarodni/2000_05_6_67.html)
- Comments on the draft Waste Management Plan of the Republic of Croatia 2015-2021 Available at: [http://www.zelena-cistka.org/wordpress/wp-content/uploads/2015/10/zajednicki-komentari-PGO-RH\\_finalni.pdf](http://www.zelena-cistka.org/wordpress/wp-content/uploads/2015/10/zajednicki-komentari-PGO-RH_finalni.pdf)
- The Ministry of Environment and Nature Protection (2015) *Waste Management Plan of the Republic of Croatia for the period from 2015 to 2021 (draft)*. Available at: <http://gospodarenjeotpadom.hr/wp-content/uploads/2015/10/Nactr-plana-gospodarenja-otpadom-2015-2021.pdf>
- OraH (2015) *Nature Protection and Biodiversity Policy*. Available at: [https://www.orah.hr/files/Prijedlog-politika/ORaH\\_politika\\_zastite\\_prirode\\_i\\_bioloske\\_raznolikosti.pdf](https://www.orah.hr/files/Prijedlog-politika/ORaH_politika_zastite_prirode_i_bioloske_raznolikosti.pdf)
- The Treaty of Amsterdam (1997) *Treaty of Amsterdam Amending the Treaty on European Union, the Treaties Establishing the European Communities and Certain Related Acts 1997* Luxembourg (OJ C 340, 10/11/1997) available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:C:1997:340:TOC>
- The Treaty of Lisbon (2007) *Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007* (OJ C 306, 17/12/2007) Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2007:306:FULL:EN:PDF>
- Treaty on European Union - Maastricht Treaty (1992). *Treaty on European Union, Signed at Maastricht on 7 February 1992* (OJ C 191, 29/07/1992) Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:1992:191:FULL&from=EN>
- Treaty of Accession of Bulgaria and Romania (2005) *Treaty of Accession of the Republic of Bulgaria and Romania* (OJ L 157, 21 June 2005). Available at: <http://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=OJ:L:2005:157:FULL&from=en>
- Treaty of Accession of the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Polish, Slovenia and Slovakia (2003) *Treaty of Accession of the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia* (OJ L 236, 23 September 2003). Available at: <http://eur-lex.europa.eu/legal-content/HR/ALL/?uri=OJ:L:2003:236:TOC>
- Treaty of Accession of the Republic of Croatia to the European Union (2012) *Treaty concerning the Accession of the Republic of Croatia to the European Union* (OJ L 112, 24 April 2012). Available at: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=OJ:L:2012:112:TOC>

Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of June 14, 2006 on shipments of waste (OJ L 190/1, 12/7/2006). Available at: <http://eur-lex.europa.eu/legal-content/HR/TXT/?uri=celex%3A32006R1013>

The Council of the European Community (1992) *Council Directive 92/43 / EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora* (OJ L 206/7, 22/7/1992.) Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN>

Council of the European Community (1991a) *Council Directive of 21 May 1991 concerning urban waste water treatment (91/271 / EEC)* (OJ L 135/40, 21.05.1991). Available at: <http://eur-lex.europa.eu/legal-content/HR/TXT/?uri=CELEX:31991L0271>

Council of the European Community (1991b) *Directive 91/676 / EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources* (OJ L 375, 31 December 1991)

Council of the European Union (1998) *Council Directive 98/83 / EC of 3 November 1998 on the quality of water intended for human consumption* (OJ L 330, 5 December 1998)

Council of the European Union (1999) *Council Directive 1999/31 / EC on waste disposal* (OJ L 182, 16 July 1999) Available at: <http://eur-lex.europa.eu/legal-content/HR/TXT/?uri=CELEX:31999L0031>

The Government of the Republic of Bulgaria (2014) *National Waste Management Plan 2014-2020*, Ministry of Environment and Water, Republic of Bulgaria. Available at: [http://www.moew.government.bg/files/file/Waste/NACIONALEN\\_PLAN/NPUO\\_ENG\\_22\\_10\\_2014\\_06\\_01\\_2015.pdf](http://www.moew.government.bg/files/file/Waste/NACIONALEN_PLAN/NPUO_ENG_22_10_2014_06_01_2015.pdf)

The Government of the Republic of Bulgaria (2014) *Operational Programme Environment 2014 -2020*, Republic of Bulgaria. Available at: [http://ope.moew.government.bg/files/useruploads/files/ope\\_2014\\_-\\_2020\\_eng\\_15\\_june.pdf](http://ope.moew.government.bg/files/useruploads/files/ope_2014_-_2020_eng_15_june.pdf)

The Government of the Republic of Bulgaria (2013) *Partnership Agreement of the Republic of Bulgaria outlining the support from the European Structural and Investment Funds for the period 2014-2020* (Draft). Available at: <https://www.president.bg/docs/1382969003.docx>

The Government of the Republic of Croatia (2014) *Operational Programme Competitiveness and Cohesion 2014-2020*. Available at: [http://www.mingo.hr/public/investicije/OPKK\\_2014\\_2020\\_31316.pdf](http://www.mingo.hr/public/investicije/OPKK_2014_2020_31316.pdf)

The Government of the Republic of Croatia (2007) *Waste Management Plan of the Republic of Croatia for the period 2007 - 2015* (OG 85/07, 126/10, 31/11)

The Government of the Republic of Croatia (2013) *River Basin Management Plan 2013 - 2015*. (OG 82/2013)

The Government of the Republic of Croatia (2016) *River Basin Management Plan 2016-2021* (Draft) Available at: [http://www.voda.hr/sites/default/files/plan\\_upravljanja\\_vodnim\\_podrucjima\\_2016.\\_-\\_2021.pdf](http://www.voda.hr/sites/default/files/plan_upravljanja_vodnim_podrucjima_2016._-_2021.pdf)

The Government of the Republic of Croatia (2014): *The partnership agreement between the Republic of Croatia and the European Commission to use EU structural and investment funds for growth and jobs in the period 2014-2020*. Available at: [http://www.mrrfeu.hr/UserDocsImages/EU%20fondovi/Programi%20prekogranicna\\_2014-2020/GLAVNI%20DOKUMENT\\_Sporazum\\_o\\_partnerstvu\\_HR.pdf](http://www.mrrfeu.hr/UserDocsImages/EU%20fondovi/Programi%20prekogranicna_2014-2020/GLAVNI%20DOKUMENT_Sporazum_o_partnerstvu_HR.pdf)

The Government of the Republic of Croatia (2005) *Waste management Strategy* (Official Gazette 130/05)

The Government of the Republic of Croatia (2009) *Sustainable Development Strategy of the Republic of Croatia* (OG 30/09)

The Government of Romania (2014) *Large Infrastructure Operational Programme 2014-2020*, Ministry of European Funds, Republic of Romania. Available at: <http://www.fonduri-ue.ro/poim-2014>

The Government of Romania (2014) *Romanian Partnership Agreement for the 2014-2020 programming period*, Ministry of European Funds. Available at: [http://www.fonduri-structurale.ro/Document\\_Files/Stiri/00014830/sfvjd\\_Acord%20de%20parteneriat%20oficial.pdf](http://www.fonduri-structurale.ro/Document_Files/Stiri/00014830/sfvjd_Acord%20de%20parteneriat%20oficial.pdf)

The Government of Romania (2007) *Sectoral Operational Programme Environment 2007-2013, Revised Official Proposal*, Ministry of Environment and Sustainable Development, Republic of Romania. Available at: [http://www.fonduri-structurale.ro/Document\\_Files//mediu/00000029/uk47g\\_POS\\_Mediu\\_EN.pdf](http://www.fonduri-structurale.ro/Document_Files//mediu/00000029/uk47g_POS_Mediu_EN.pdf)

The Government of the Republic of Slovenia (2013) *National Reform Programme 2013-2014*, Government of the Republic of Slovenia. Available at: [http://ec.europa.eu/europe2020/pdf/nd/nrp2013\\_slovenia\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nd/nrp2013_slovenia_en.pdf)

The Government of the Republic of Slovenia (2015) *Operational Programme for the Implementation of the EU Cohesion Policy 2014-2020*, Government Office for Development and European Cohesion Policy of the Republic of Slovenia, Ljubljana. Available at: [http://www.eu-skladi.si/si/dokumenti/kljucni-dokumenti/op\\_ang\\_final\\_web.pdf](http://www.eu-skladi.si/si/dokumenti/kljucni-dokumenti/op_ang_final_web.pdf)

The Government of the Republic of Slovenia (2014) *Partnership Agreement between Slovenia and the European Commission for the period 2014-2020*. Available at: [http://www.svrk.gov.si/fileadmin/svrk.gov.si/pageuploads/KP\\_2014-2020/Partnerski\\_sporazum/SI\\_PARTNERSHIP\\_AGREEMENT.pdf](http://www.svrk.gov.si/fileadmin/svrk.gov.si/pageuploads/KP_2014-2020/Partnerski_sporazum/SI_PARTNERSHIP_AGREEMENT.pdf)

### Internet pages

Environmental Protection Agency (2013): *A short review of data on waste management in the Republic of Croatia for 2013*. Available at: <http://www.azo.hr/GospodarenjeOtpadomU>

Environmental Protection Agency (2014): *The requested data on municipal waste in 2014*. Available at: <http://www.azo.hr/PrivremeniPregledPodataka>

The Environmental Protection Agency of the Republic of Slovenia (2009) Vukadin, B. and Polanec, V. *Waste Management*. Available at: [http://kazalci.arso.gov.si/?data=indicator&ind\\_id=403&lang\\_id=94](http://kazalci.arso.gov.si/?data=indicator&ind_id=403&lang_id=94)

- State Institute for Nature Protection (2016b) *EU directives- Foundations of the Natura 2000 network*. Available at: <http://www.dzrp.hr/ekoloska-mreza/natura-2000/eu-direktive-718.html>
- State Institute for Nature Protection (2016) *Ecological Network (Natura 2000)*. Available at: <http://www.dzrp.hr/ekoloska-mreza/natura-2000/ekoloska-mreza-rh-natura-2000-1300.html>
- State Institute for Nature Protection (2016c) *Natura 2000*. Available at: <http://www.dzrp.hr/ekoloska-mreza/natura-2000/natura-2000-340.html>
- European Environment Agency (2015b) *SOER 2015 - The European environment - state and outlook 2015 Country briefings, Bulgaria*. Available at: <http://www.eea.europa.eu/soer-2015/countries/bulgaria>
- European Environment Agency (2015) *SOER 2015 - The European environment - state and outlook 2015 Country briefings, Croatia*. Available at: <http://www.eea.europa.eu/soer-2015/countries/croatia>
- European Environment Agency (2015c) *SOER 2015 - The European environment - state and outlook 2015 Country briefings, Romania*. Available at: <http://www.eea.europa.eu/soer-2015/countries/romania>
- European Environment Agency (2015d) *SOER 2015 - The European environment - state and outlook 2015 Country briefings, Slovenia*. Available at: <http://www.eea.europa.eu/soer-2015/countries/slovenia>
- Environmental Protection and Energy Efficiency Fund, *Circular economy*. Available at: [http://www.fzoeu.hr/hr/zastita\\_okolisa/odrzivi\\_razvoj/kruzno\\_gospodarstvo/](http://www.fzoeu.hr/hr/zastita_okolisa/odrzivi_razvoj/kruzno_gospodarstvo/)