MSc Program
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Chapter 27 (Environment and Climate Change) of the Serbian Accession Process to the European Union: Challenges and the Way Forward

A Master's Thesis submitted for the degree of
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supervised by
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Affidavit

I, **PETRONELA HALAMOVÁ, LLB**, hereby declare

1. that I am the sole author of the present Master's Thesis, "CHAPTER 27 (ENVIRONMENT AND CLIMATE CHANGE) OF THE SERBIAN ACCESSION PROCESS TO THE EUROPEAN UNION: CHALLENGES AND THE WAY FORWARD", 81 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted the topic of this Master's Thesis or parts of it in any form for assessment as an examination paper, either in Austria or abroad.

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Abstract

The multifaceted character of the environment is undoubtable. Its ongoing exploitation and degradation account for an ecological imbalance and puts the lives of humans at risk. The European Union has reflected this axiom in its environmental policy, to which any aspiring member state must adhere to. Bequeathed with the environmental ghosts of the past, Serbia is faced with a difficult task of meeting the environmental standards prescribed by the European Union. Analysis shows that air pollution, sometimes referred to as a *silent killer*, presents a large risk to public health in Serbia. Water quality is affected by the sector fragmentation and waste management lacks systematisation and strategy, just like Serbian international environmental obligations. To improve the organisation of the environmental sector, environmental protection must be prioritized, technical and administrative capacities strengthen, effective financing imposed, governance harmonised, and the awareness of the public raised. These points will not just lead to a better state of the environmental protection, but also raise overall preparedness of Serbia to join the European Union. Strong environmental protection is crucial to strengthen citizen participation, safeguard their rights, enhance international cooperation, and offer economic benefits – and those are values that any candidate country to the European Union must subscribe to.

Preface

„When the last tree is cut down, the last fish eaten and the last stream poisoned, you will realize that you cannot eat money." - Native American saying -

The aim of this Master Thesis is to critically analyse the progress of the Republic of Serbia in Chapter 27 (Environment and Climate Change) of the European Union accession process. Emphasis are being laid on the areas of air and water quality and waste management, as well as issues related to climate change. Chapter 27 has been named as one of the most expensive and complex chapters of the EU negotiating process, which consists of a total of 35 chapters. As the state of environment remained largely untouched topic during the era of Tito's regime in the Former Yugoslavia, Serbia has been bequeathed with an insufficient state of environmental protection and only a formal legal framework. Due to cross-cutting nature of the environmental protection, which does not only affect wellbeing of the citizens but also impacts the social, economic and political development of the country, its stand towards negotiating the Chapter 27 needs to be analysed in thorough matter with an outlook on the future and the pending EU accession.

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List of Abbreviations

CEE	Central and Eastern Europe
CEP	Centre for European Policy
CIA	Central Intelligence Agency
DSIP	Directive Specific Implementation Plans
EEA	European Environment Agency
EPS	Environmental Program Actions
ETS	Emission Trading System
EU	European Union
EUR	Euros
FRY	Federal Republic of Yugoslavia
GDP	Gross Domestic Product
GHG	Greenhouse gases
HEAL	Health and Environment Alliance
ICJ	International Court of Justice
ICTY	International Criminal Tribunal for Former Yugoslavia
IPA	Instruments for Pre-Accession Assistance
LEP	Law on Environmental Protection
MEPRS	Ministry of Environmental Protection of the Republic of Serbia
MSFD	Marine Strategy Framework Directive
NATO	North American Treaty Organisation
NDC	Nationally Determined Commitments
OECD	Organisation for Economic Cooperation and Development
PM	Particulate Matter
RSD	Serbian Dinar
SEPA	Serbian Environmental Protection Agency
SFRY	Socialist Federal Republic of Yugoslavia
SIDA	Swedish International Development Cooperation Agency
TEU	Treaty on European Union

TFEU	Treaty on Functioning of the European Union
UN	United Nations
UNFCCC	United Nations Framework Convention for Climate Change
USD	United States Dollars
WFD	Water Framework Directive
WHO	World Health Organisation

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Furthermore, I thank my supervisor Professor Klaus Rapp for always guiding me in the right direction and the "fathers" of the ETIA Programme, Professor Hans Puxbaum and Professor Gerhard Loibl. Thanks to them, I believe that the future is not just bright, but most importantly, it is green.

Last but not least, I am immensely grateful to my family and friends who encouraged me throughout my whole studies. I would have not been able to achieve this without you.

1. INTRODUCTION

The enlargement of the European Union to the region of the Western Balkans has have been a prominent topic on the agenda of the European Commission since the 1990s. However, due to the war dominating the area and Slobodan Milošević's nationalist regime during this period, the attempts were stalled. Only after severe reform processes and peace accords, marking the end of the Yugoslav Wars, the negotiations on a Stabilisation and Association Agreement were initiated in November 2005. Serbia was obliged to meet the conditions advised by the International Criminal Tribunal for Former Yugoslavia to arrest its fugitive war criminals, with the high-profile figures being Ratko Mladić and Goran Hadžić, and subsequently extradite them to The Hague, for the negotiations to continue. Those requirements further delayed the accession negotiations and led Serbia to receive the official candidate country status *only* in March 2012. In April 2013, the governments of Kosovo and Serbia completed the Brussels Agreement, a major step for normalisations of their relations. The Stabilisation and Association Agreement between the EU and Serbia entered into force in September 2013. At the same time, the process of screening (investigation of candidate's country shortcomings needing to be improved the country's accession) commenced. The Council then adopted the negotiating framework in December 2013 and agreed to hold the 1st Intergovernmental Conference with Serbia in January 2014. Since then, Intergovernmental Conferences are being held twice a year with at least two new chapters being opened by this occasion (European Council and Council of the European Union n.d.). To conduct the accession negotiations, the EU legislation and standards are divided into 35 Chapters covering vast areas of the state governance where law harmonisation of national legislation with the EU *acquis* is desirable. These can only be open when the negotiating position is ready and closed when the negotiations are concluded. Serbia has so far opened 16 Chapters, of which 2 have been provisionally closed.

1.1 Chapter 27 – Environment and Climate Change

The EU environment policy „(..)*aims to promote sustainable development and protect the environment for present and future generations."* (Government of Serbia 2012). It has its basis in preventive action, the polluter pays principle, fighting environmental damage at the source, shared responsibility and the integration of environmental protection into other EU policies (Government of Serbia 2012). The environmental acquis

of the EU consists of more than 200 legal acts, grouped into 75 main legal groups covering subchapters on horizontal legislation, water and air quality, waste management, nature protection, industrial pollution control and risk management, chemicals and genetically modified organisms, noise and climate change. The Ministry of the Environmental Protection lays in the core of preparations of negotiation of Chapter 27, however other horizontal actors as well as non-governmental organisations and civil societies.

According to the factsheet of Ministry of Environmental Protection of the Republic of Serbia (MEPRS) and Swedish International Development Cooperation Agency (SIDA), European Commission is aware of the challenging nature of Chapter 27 and realistically sees its full achievement only in *long term* (MEPRS and SIDA 2018). The crucial areas of investment are air pollution abatement, water and wastewater management and management and disposal of municipal and hazardous waste. Thus, the Commission has proposed that Serbia needs to plan and implement realistic national long-term *strategies*, which include: 1. key priority areas, 2. objectives to be fulfilled by the dates of accession and 3. timetable for further full compliance after accession (MEPRS and SIDA 2018).

Due to an enormous amount of legislation that needs to be harmonised with the EU acquis in all chapters of the accession process, it is advisable for the candidate countries to attempt for *effective* and *prioritised* management of the limited resources. Furthermore, one needs to bear in mind that the approximation obligation does not stop with the accession and thus, the state institutions of the Republic of Serbia need to be prepared to continue with aligning of the laws also *post*-accession.

1.2 Motivation

Over recent years, I have developed a strong interest in the region of the Western Balkans. I had dedicated my bachelor thesis to a legal analysis of the International Court of Justice case between Serbia and Bosnia, dealing with genocide in Srebrenica during the Bosnian war. Thanks to this paper, I had further engaged with history, politics and socio-economic developments of the area. Thus, I had chosen the Slovak Embassy in Belgrade for a placement during my internship at the Ministry of Foreign and European Affairs of the Slovak Republic. This experience deepened my knowledge of the region and allowed me to gain important contacts. Since the EU accession has been one of the prominent topics in day-to-day Serbian domestic politics, I had acquired curiosity in the negotiation process. Chapter 27 immediately stemmed out from the other chapters for its obvious

connections to my degree and a challenging way forward. I hope that this Master Thesis will prove to be a valuable piece of work, which not just analyses existing environmental policies but also proposes progressive solutions.

1.3 Aim

The aim of this Master Thesis is to identify the most challenging areas in the field of air, water and waste management, as well as climate change, analyse the status quo and the progress, and critically assess whether Serbia will be able to align with the EU environmental acquis. The main objective is to provide viable and practical recommendations and help to answer, whether Serbia will be able to meet the EU set standards in a *timely* manner.

1.4 Methodology

The qualitative research of this Master Thesis is based on obtaining documents and reports via search engines and university library search. Main sources of data were progress reports produced by the European Commission and the shadow reports by the informal group *Coalition 27*. Other sources were journals, news articles, reports on national, European and international level focused on environmental policy, its implementation and progress. National legislation and EU environmental legislation (accessed online from the governmental and EU websites) proved to be useful for assessing the progress of adapting the EU acquis. Furthermore, this Master Thesis used best practices of countries that 1. recently joined the EU and/or 2. share a similar socio-economic background and climate – namely Croatia, and Central and Eastern European countries. Here national, EU and European Environment Agency (EEA) reports proved to be useful.

Additionally, I had spent 12 days in the office of Young Researches of Serbia in Belgrade and concluded 11 interviews with representatives of the Ministry of Environmental Protection, civil society and environmental non-governmental organisations, of which a majority is a member of the informal Coalition 27. Interviews were anonymous and conducted via semi-structured questionnaires. Several interviewees provided me with additional sources, fact sheets and publications containing important data in the field of air, water, waste management and climate change. A sample of the questionnaire is provided in the appendix.

1.5 Structure

This Master Thesis is divided into eight chapters. After the introduction and environmental profile of Serbia, which helps to understand the country's particularities, focuses are on three main topics: air quality, water quality and waste management. Each chapter studies given area from the point of the current challenges and progresses, offers an overview of the existing EU policy and Serbian alignment with it and lastly, gives a perspective of the progress from the experience of other EU member or candidate countries. The chapter on climate change assesses Serbian international obligations and the present developments. This Thesis is concluded with recommendations in the relevant areas and a conclusion.

2. ENVIRONMENTAL PROFILE OF SERBIA

2.1 Country Characteristics

Serbia lays in southeast Europe, in the region often referred to as *Western Balkans*. It shares borders with Hungary to the north, with North Macedonia to the south, with Bulgaria to the southeast. Croatia and Bosnia and Herzegovina border Serbia in the west, Romania in the northeast, and former part of Serbia, Montenegro, borders it in the southwest. This landlocked country also claims a border with Albania through the disputed territory of Kosovo. The population of Serbia's is about seven million with the capital city of Belgrade with 1.1 million inhabitants, famous for the confluence of the Danube and Sava rivers. Danube's catchment covers almost 80% of the country and it is an important international route to the Black Sea. Serbia is a democratic republic with a multiparty parliamentary system. The president is Aleksandar Vučić and Prime Minister Ana Brnabić. The governmental system is based on the division of power into legislative, executive and judiciary.

The territory of the Republic of Serbia is divided into 194 municipalities and 24 cities. Belgrade enjoys a status of local self-government. The territory is also divided into 29 administrative districts, where similarly the city of Belgrade has its own district. Serbia has 6169 settlements, of which 207 are urban settlements (CIA 2019).

Figure 1: Map of Serbia (Geographic Guide n.d.)

Cold winters, hot, humid summers with well-distributed rainfall are characteristic for the north of Serbia, whereas climate is mainly continental in other parts of the country-with some mixed continental and Mediterranean climate. Typical are cold winters with heavy snowfall and hot, dry summers and autumns (CIA 2019). Most of the north comprises of rich and fertile plains, with limestone ranges being characteristic for the east and central parts of the country. Almost 58% of the land used is for agriculture and 31.6% is covered by forest. The Balkans have long been recognised as a region of exceptional biodiversity (Clarke 2002, 397).

In 2017, the Gross Domestic Product (GDP) in Serbia was worth 41.43 billion USD, which represents 0.07% of the world economy. Economic growth was hindered by the ongoing conflict in the 1990s and characterised by a slow-down in production, high

unemployment rate leading to a massive "brain-drain", internal and external debts and low competitiveness. Several reform processes were initiated in 2001, achieving better macroeconomic stability (Ministry of Environment and Special Planning 2010). The major industries in the economy are energy, automotive industry, machinery, mining, and agriculture. Serbian main trading partners are Germany, Italy, Russia, China, and other Western Balkan countries. According to the CIA factbook, the biggest current environmental issues are related to air pollution, especially around Belgrade and other industry-depending cities, inefficient water management and inadequate handling of domestic, industrial as well as hazardous waste. The arguments used in this Master Thesis further support this view.

Table 1 - Economic Forecast for Serbia, 2017-2020 (Embassy of Belgium 2017)

Serbia | Economic Forecasts | 2017-2020 Outlook

Overview	Actual	Q2/17	Q3/17	Q4/17	Q1/18	2020
GDP Growth Rate	0.20	0.6	0.7	0.6	0.5	0.7
Unemployment Rate	13.00	12.4	12	11.7	11.5	10.5
Inflation Rate	4.00	3	2.8	2.9	3	2.6
Interest Rate	4.00	3.75	3.75	3.5	3.5	2.5
Balance of Trade	-469.70	-409	-409	-410	-411	-411
Government Debt to GDP	73.40	74.45	64.75	55.05	51.85	22.69

The Republic of Serbia is 100% electrified but remains dependant on fossil fuels. The main energy sources are combustion of low–rank domestic coals in thermal power plants and utilization of available hydro potential in runoff rivers and pumped storage hydropower plants. The electricity production is facilitated by Public Utility Enterprise „Elektroprivreda Srbije". In particular, coal is abundant mainly in the Central Serbian towns of Kostolec and Kolubara, which represent one of the largest lignite sources in Europe (*B92* 2011). 35% of electricity is produced in hydro-plants, which constructions have gained criticism due to non-transparent communication from the side of the

government and the developers in recent years. Even though the energy sector is covered by a separate Chapter 15 of the accession process, it remains closely connected with Chapter 27, especially in the field of air pollution and climate change.

The 1990s in Serbia witnessed damaging and detriment of the transportation infrastructure, which slowed down industrial logistics. Even today, the country is characterised by an old age of vehicle fleet, import of low–quality fuel, poor conditions of rail infrastructure, low quality of services, increased debt, high operation costs and business losses, improper system organization and others (The Ministry of Environment and Spatial Planning 2010, 15).

2.2 Historical Developments

Formerly part of the Kingdom of Serbs, Croats and Slovenes, which after the World War II changed to Socialist Federal Republic of Yugoslavia (SFRY), led by former partisan and communist Josip Broz Tito, Serbia has been marked by its turbulent history. Its past has in recent years heavily affected economic development. Former Yugoslavia consisted of 6 socialist republics (Serbia, Croatia, Slovenia, Bosnia and Herzegovina, Montenegro and Macedonia) and 2 autonomous regions (Vojvodina and Kosovo). Prior to the creation of SFRY, the territory of the republics was mainly agricultural. During Tito's era (mainly between 50s-70s), Yugoslavia and specifically Serbia were hubs of industrial development and urbanisation, which ranked among the highest in the world (Clarke 2002, 397). Growth was based on energy and materials production as well as rationalisation and intensification of agricultural production in agrarian areas. However, environmental protection, just as in many other countries, was suffering from a lack of attention.

1980's started with the death of Tito, economic stagnation, and rise of nationalism, which was one of the main reasons for the disintegration of Yugoslavia. The Balkans lived to its historic nickname of *the powder keg of Europe*, and wars had beset the region for almost 10 years, intermittently. The international community did now wait long for its response and the United Nations (UN) imposed sanctions on already Federal Republic of Yugoslavia (FRY) in 1992 for its role in the war in Bosnia-Hercegovina, later followed by the NATO attack in 1999, as a response to Serbian aggression in Kosovo. Until today, the environmental consequences of the wars remain under investigation, as several industrial targets were hit during the NATO bombing, including a petrochemical factory,

nitrogen plant and a refinery in *Pančevo.* Following economic regress had led to decreased industrial emissions and smaller agricultural effluent to air and water. On the other hand, these improvements were outweighed by increased use of low-quality fuels and reduced environmental protection investment (REC 1999a).

Serbia also struggled to get its seat at the table of the international community. By the declaration of April 1992, (Government of the Republic of Serbia 1997-2001) FRY, so Serbia and Montenegro were the legal successors of SFRY. However, the UN did not accept this decision and excluded FRY from the General Assembly. The Republic of Serbia officially joined as a part of FRY only on November 1st, 2000. Montenegro declared independence in 2006.

One of the unresolved issues of the past represents the situation in Kosovo, an Albanian dominated, partially recognised republic. Kosovo declared independence in 2008, but the Republic of Serbia has not accepted this development. Kosovo recognition would be an important milestone on the Serbian EU accession path. Chapter 35 - *Normalisation of Relations Between Serbia and Kosovo* of the negotiations directly deals with this issue. For its complexity and difficult political considerations, this problematic remains outside of the scope of this Master Thesis. Nevertheless, the far-reaching impacts of this ongoing dispute do affect also environmental issues, as later shown.

2.3 Past vs. Current Environmental Issues

According to the Organisation on Economic Cooperation and Development, environmental protection refers to „(*...) any activity to maintain or restore the quality of environmental media through preventing the emission of pollutants or reducing the presence of polluting substances in environmental media."* (OECD 2001). Indisputably, these activities cannot be administered by individuals solely and require effective environmental policy and laws on a local, national and international level.

Besides the physical environmental heritage, Serbia has inherited some features of the former method of governance. SFRY had promoted *sui generis* economy, essentially based on socialist foundation, but with a high degree of decentralisation and decision-making devolved to a local level. Thus, environmental regulation and management were largely managed by local municipalities. In Article 74 of its Constitution,[1] Serbia even

[1] Official Gazette of the Republic of Serbia no. 98/2006

recognises a right to a healthy environment and a right full information about its state. Paragraph 2 of the same Article states that „*everyone, and especially the Republic of Serbia and its autonomous provinces, is responsible for environmental protection*", while the next paragraph adds that „*everyone is obliged to safeguard and improve the environment,*" creating an obligation as well. Due to specific administration division, with the autonomous region of Vojvodina in the north (as well as Kosovo, from the point of Serbian government), environmental protection is mainly executed on a *local* level. Besides the importance of the bottom-up approach, the existing level of corruption and involvement of individual investors provides an opportunity for exploitation of resources, rather than their transparent usage. National governance is often too distant to act effectively.

To establish main environmental issues of present Serbia is a complex task. Prioritisation of some areas above others is only possible under a different set of criteria – financially, the waste and water management represent the most challenging ones. Investment in the water sector requires almost 6 billion Euros, whereas poor waste management needs at least 1.5 billion EUR (Fiscal Council of the Republic of Serbia 2018, 11). According to the source, Serbian water infrastructure comes from the second half of the 20th century, but it has not been well maintained and the river quality has fallen by one or two classes (Clarke 2002, 402). Undoubtedly, the mass production and inefficient management of wastewater, hazardous as well as municipal waste in inadequate landfills for decades, has created a difficult starting point. Heavy reliance on coal and energy supply to other countries during the Yugoslavian era, with virtually no abatement technology, is taking its toll today by the alarming state of ambient air and energy poverty. Air pollution presents the largest obstacles to public health.

Excluding the areas that will be assessed in detail in the following chapters (air, water. waste and climate change), horizontal legislation, nature protection, industrial pollution and risk management, chemicals, noise as well as civil protection are other issues reported in the annual country report by the European Commission. The area of horizontal legislation requires proper functioning of the Green Fund, improved public consultations and environmental impact assessment and strengthening ongoing transposition of directives. According to the report, the field of nature protection lacks an institutional framework for *Natura 2000.* Industrial protection and risk management mainly suffer from lack of capacities, similarly as fields of noise and chemicals acquis. Civil protection

has experienced moderate progress, especially in post-disaster need assessments and flood risk mapping (European Commission 2018, 80).

Today, the environmental sector is also affected by geopolitical questions (many considering Serbia a buffer zone between the West and the East), unstable political system (3 last parliamentary elections took place within 6 years) and the lack of awareness. Understandably, a country that so recently has suffered from the civilian horrors of the past fails to recognise the interconnectedness of environmental protection with economic development. It is hard to imagine that the population that not even 20 years ago lost several thousands of their inhabitants, will prioritize environmental questions over those related to mere survival. Thus, the starting point for harmonisation with the EU acquis is rather difficult – but sensitive analysis and systematised bottom-up changes can lead to a successful result.

3. EU ENVIRONMENTAL POLICY

3. 1 Objectives and Framework

The legal basis of the EU environmental policy origin in one of the EU founding treaties - Treaty on the Functioning of the European Union (TFEU).[2] Article 11 emphasises the role of sustainable development, whereas Articles 191 to 193 of the TFEU state the objectives and competences of the EU in the field of environment. The scope for actions is regulated by the *principle of subsidiarity*, meaning that the EU does not possess an exclusive competence to act in this field, but shall act only if actions of individual countries are insufficient. Furthermore, *unanimity* is required in the Council in the fields of fiscal matters, town and country planning, land use, quantitative water resource management, choice of energy sources and structure of energy supply (TFEU Article 192 (2) (b)).

European environmental policy had developed as a topic in the 1970s, when the general awareness of environmental protection became of international concern. In the aftermath of the first UN Conference on the Environment in 1972 in Stockholm, Heads of State or Governments in the European Community called for an action programme (Ohliger 2018). The Single European Act provided for the first legal basis of common environment

[2] Official Journal C 326, 26/10/2012 P. 0001 – 0390

policy, aimed at preservation of the quality of the environment, protecting human health, and ensuring rational use of natural resources (TFEU Article 191 (1)).

The following European treaties further strengthened community environmental protection. In 1993, the Treaty of Maastricht established the environment as an official EU policy area and the Treaty of Amsterdam of 1999 introduced a duty to integrate environmental protection into all EU sectoral policies with a view to promoting sustainable development (TFEU Article 11). A goal of combating climate change was incorporated in Article 191 by the Treaty of Lisbon. Legal personality of the EU was created by the same Treaty (TEU Article 47) and now the EU can conclude international environmental agreements in its own legal capacity (TFEU Article 216).

The main principles of the EU environmental policy are of precaution, prevention and rectifying pollution at source, and on the 'polluter pays' principle (TFEU Article 191 (2)). The *precautionary principle* as defined in Article 191 of TFEU aims at ensuring a higher level of environmental protection through preventative decision-taking in the case of risk. Polluter pays principle is implemented by the Environmental Liability Directive, (European Parliament 2004) and prescribes internationally recognised rule, that the party responsible for producing pollution is also responsible for paying the damage done to the natural environment. Member States need to rectify pollution *at source,* meaning they must align to environmental *emission limit values.* Importantly, environmental policy has become an integral part of other related policy fields – energy, transport, industry, buildings, or agriculture, among others. This cooperation can enhance the transition to a low-carbon, green economy in the European Union area in the upcoming years.

EU has issued 6 Environmental Program Actions (EPS), which outlined the EU environmental path for the next period. The 7th EPS is still ongoing and should finish in 2020. *Inter alia,* two additional objectives have been added to its priorities: to make the Union's cities more sustainable and to help the Union address international environmental and climate challenges more effectively (European Commission n.dc). Besides EPS, the EU implements horizontal strategies, e.g. *biodiversity strategy,* by which in 2011 the EU committed itself to cease the loss of biodiversity and ecosystem services by 2020 (European Commission 2011). EU also ensures that Environmental

Impact Assessment is carried out both on public and private projects in the Member States.

In 1992, European environmental law contained 196 Directives and 40 Regulations. Whereas regulations have immediate and direct effect and apply to all Member States equally, directives require approximation of laws and must be first incorporated into the national law. The numbers have increased since then and today, the environmental acquis consists of around 300 legislative acts in ten broad categories: 1. horizontal (general) legislation, 2. air quality 3. waste management 4. water quality, 5. nature protection, 6. industrial pollution 7. chemicals and GMOs 8. climate change 9. noise and 10. civil protection. Furthermore, the EU must assure that the *acquis communautaire* is properly implemented at *all* levels, thus effective monitoring is demanded. By environmental inspections, criminal sanctions for the most serious threats, and *Environmental Implementation Review*, better implementation of the existing obligations is being attempted. The European Environment Agency based in Copenhagen (also open to non-EU members) provides sound and independent information on the state of and outlook for the environment.

3.2 Law Harmonisation

Presently, four other countries besides Serbia – North Macedonia, Iceland, Montenegro, and Turkey, are candidate countries to EU and three countries (Albania, Bosnia and Herzegovina and Kosovo) are potential candidates, waiting for the official response from the Council.

The process of harmonisation of law is a key concept in the European Union for making identical rules in still rising numbers of governing areas. Those include fields, where the EU has an exclusive or shared competence. The requirement for harmonisation of laws is a central notion for countries wishing to join the EU. As mentioned earlier, this obligation, however, does not end with the accession and represent a moving target – the acquis is being constantly updated and new laws are being introduced. Indeed, this process requires significant effort from the side of the aspiring Member States, as often the national legislation largely differs, and the environmental acquis does cover a vast area of laws.

Most costly areas are usually air pollution, water and wastewater and solid waste management – especially in the fields of building infrastructure and widening capacities.

Nevertheless, the raising of environmental standards also brings important benefits. Increased health and quality of life of their citizens do not occur only in the candidate countries, but due to the transboundary nature of the environment, leads to an improvement of living conditions in the other EU Member States as well. Other advantages include better market participation, reduction of damage to buildings in urban areas, a decrease of safety risks, economic growth stemming from the improved state of tourism and agricultural benefits occurring as a result of improved eco- and biodiversity, to mention but few.

The first step of harmonisation is adoption or *transposition*, meaning that new laws are adopted, or existing ones amended in order to incorporate the relevant EU provision to the national legal order. This usually represents the easiest step. Then, the relevant institutions must ensure proper practical application of the law and most importantly, provide functioning enforcement mechanisms in order for full and proper compliance with the acquis. Naturally, this often causes the largest difficulties on the path.

3.3 Coalition 27

Chapter 27 covers all areas of EU environmental policy. Currently, the status of the Chapter remains closed – so far, two draft negotiating positions have been submitted, with the European Commission leaving its comments for improvements (Jovanović 2019). If the Serbian government manages to submit the final negotiating position in December 2019, as how it is currently perceived, the chapter should be open by June 2020. How long will it take to close, however, remains a question difficult to answer.

This Master Thesis has heavily relied on shadow reports produced by the Coalition 27 - a group of civil society organizations, which has closely monitored Serbia's progress in Chapter 27 in recent years. According to the webpage of Belgrade Open School, one of the founding members of the Coalition, this voluntary cooperation was created to cover the entirety of Chapter 27 more *effectively*. The number of members has now grown to 9 – all of them have in the Memorandum committed to democratic principles, accountability and partnership. The mission has been defined as: „*Monitoring of harmonization and implementation of policies and regulations of the Republic of Serbia with the EU Acquis in areas of Environment and Climate Change, combined with advocacy and encouraging public participation in the accession negotiation process*." (Momčilović 2018). During its 5-year of existence, Coalition has gained greater visibility

and has become an important group of stakeholders. Their main activity, the shadow reports, which are published annually (6th one being published in May 2019) already found its place in the in the recommendation section of EU Commission's annual country report. The Coalition 27 also keeps involving itself in the Draft Law on Climate Change as a public participator.

3.4 Financing of Chapter 27

Generally, financial covering of the whole Chapter remains challenging. According to the National Environmental Approximation Strategy from 2010, the costs for full harmonisation are projected for 10.6 billion EUR and possibly even higher (Ministry of Environment, Mining and Spatial Planning 2011, 10). Thus, an efficient system of financing is *desirable.*

According to the Law on Environmental Protection of Serbia, environmental protection is being financed via the application of "user pays" principle, the "polluter pays" principle, and the "liability" principle. Other sources are provided from the budget of the Republic of Serbia, the budget of the autonomous province Vojvodina or local government funds. Furthermore, EU funds, funds from other states such as the German and Swedish development agencies, international organizations, as well as domestic and foreign business entities and individuals are sources of monetary support. However, as the shadow reports claim, Chapter 27 is hardly a priority by the Government of Serbia and state financing is inefficient (Coalition 27 2018, 10).

The establishment of the Green Fund failed and until today it remains as a non-functioning budget line with a limited scope. In 2016, Serbia only spent 0.5% of the GDP on environmental policy, whereas the EU Member States spend on average 2%. According to the SEPA Report, not all tax revenues coming from the environmental sector end up at the Ministry of Environmental Protection budget (SEPA 2018, 16). Furthermore, research by the Ecological Association and the European Policy Centre has shown that most of the local governments collect more revenue through environmental fees then it is being spent on environmental policy (EPC 2017).

There is an obvious, existing gap between the extensive EU environmental acquis and Serbian national legislation. The task of harmonisation is even more difficult looking at the constantly developing nature of the environmental policy in the EU. As the

government is not prioritising the environment and offers inefficient funding, a huge role is being played by the public and civil organisations.

4. AIR QUALITY

4.1. Current State and Challenges

The importance of good air management is undisputable – a satisfying level of air quality reduces risks to human health immensely. Increased human production and consumption, which dominated the second half of the 20th century, have led to significant changes in the atmospheric composition. Diverse air pollutants have both acute and chronic effects on the population, causing irritation to respiratory system and heart (Kampa and Catanas 2008, 363). More than 2 million premature deaths each year can be linked to the effects of urban outdoor and indoor air pollution (WHO 2005, 5), whereas in the EU only near 400,000 people suffer a premature death (European Commission n.db). Air quality in Serbia has been neglected for decades and the official data indicate that about 2.5 million citizens live in areas with excessive air pollution, wherein 16 of them at least one pollutant is at a level considered hazardous for human health (Fiscal Council of the Republic of Serbia 2018, 2). Serbia places second in premature death caused by air pollution in Europe - in 2010, more than 10,000 people in Serbia died prematurely due to extensive PM exposure (EMRC 2014, 48). The most affected areas are some of the largest cities in Serbia - Belgrade, Kragujevac, Pančevo, Bor, Valjevo, Užice, Smederevo, Subotica and Sremska Mitrovica. (Fiscal Council of the Republic of Serbia 2018, 16)

Serbia suffers from a lack of data on air pollution, serving as a baseline for needed analysis. Energy experts from the RES Foundation, a civil society organisation based in Belgrade, claim that even if published data do exist, they are often unreliable, wrongly interpreted or with a high degree of uncertainty. In 2008, six agglomerations have been identified where the tolerant values were exceeded. There are only three air quality plans - in Bor, Belgrade (2016) and heavily polluted Pančevo (European Commission 2018, 79). According to the EEA report from 2015, there is a fluctuating trend for SO_2 and NO_x as a result of industrial decline, and an increase in NH_3 post-2005. 52% of NO_x and 82% of SO_2 come from combustion in the energy sector, whereas the main source of NH_3 is agriculture (EEA 2015, 1). Coal power plants remain one of the largest emitters, responsible for PM, SO_2 and NO_X, which later leads to the formation of ozone, as well as

the discharge of heavy metals, dioxins and polycyclic aromatic chemicals (PAHs) (EMRC 2014, 2).

PM10, defined as inhalable particles with diameters of 10 micrometres and smaller, are the largest area of concern. They mainly originate from the energy sector, and from individual solid fuels household heating devices, which are dominant in the rural areas of Serbia. According to SEPA's 2017 Annual Report on the Environment, all registered air quality monitoring stations in the country exceed the permitted daily limit value of 50 µg/m3 (Jovanović 2018).

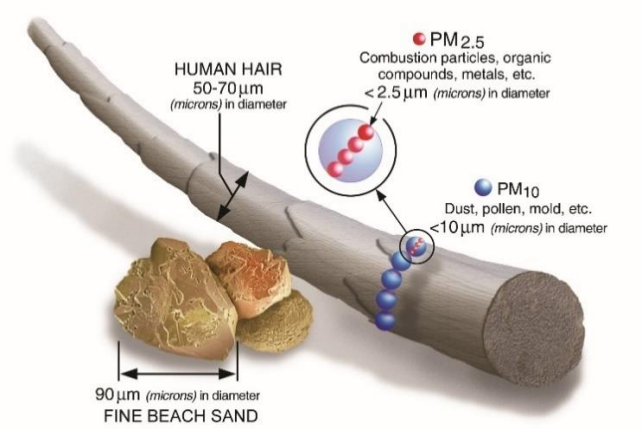

Figure 2 - Size of PM compared (United States Environmental Protection Agency n.d.)

Even though the maximum daily limit exceedances for PM10 is set at 35 days, Pančevo and Užice stations have measured 157 and 122 days off limit in 2017, respectively. For NO_2, there is no allowance for exceedance per year – Belgrade has performed the worst, especially at stations with heavy traffic, such as Despota Štefana Street station, where exceedance occurred during 46 days of the year (Jovanović 2018). According to the last available data for 2015, emissions of SO_2 per capita were by 35% higher in Serbia than the average in Central and Eastern Europe, PM about 70% and 30% for NO_x, CO and organic substances (Fiscal Council of the Republic of Serbia 2018, 16).

There is an existing lack of monitoring and monitoring technology. Worryingly, the functioning of analysers has been steadily decreasing. Whereas in 2011, 94% of the analysers achieved the availability of valid hourly values higher than 90%, in the following years such a degree of measurement realisation was not achieved. In 2012 it was 68%, in 2013 it was 72%, in 2014 it was 30%, in 2015 it was 25%, and in 2016 only

23% (Jovanović 2018). Furthermore, Serbia is not sufficiently applying *best available techniques* to mitigate emissions and there are no enforcement mechanisms for adhering to standards for the biggest polluters - energy facilities**,** the food industry, the chemical industry, and the mining industry (Jovanović 2018). Individual household polluters are a result of poverty issues, mainly in rural Serbia where district heating is virtually non-existing. Overall, only 27% of Serbia utilises district heating (Euro Heat & Power 2017). Financial considerations of the rural population take priority over health concerns, and the total awareness of air pollution remains limited (Coalition 27 2018, 21). The solution of this ongoing problem is comprehensive and requires a significant *shift* in the energy sector. That would, however, demand a considerable investment, which currently does not seem to be on agenda of the Serbian government. The midterm solution of replacing the inadequate heating devices with standardised ones to reduce PM10 lacks *sustainability.*

RES Foundation has during the interview claimed that there is an insufficient exchange of data between the relevant institutions – even though there are existing provisions directly prescribing this technique in the relevant Rulebook. [3] As a member of the Energy Community Treaty, Serbia has prepared a *National Emission Reduction Plan.* Its strategic impact assessment from Old Large Combustion Plants that has been applied since January the 1st, 2018 entered the public debate only on December the 25th, 2018, almost a year since the implementation. Its feasibility is questionable and difficult to achieve in a short time, as it would be necessary to reduce SO_2 emissions between 4 and more than 16 times, in order to align with the allowed limits (Coalition 27 2019, 28).

Last, but not least, the air sector suffers from a lack of governance - the Environmental Inspectorate, which should serve as a watchdog institution, is poorly technically equipped and with insufficiently trained staff (Coalition 27 2018, 26).

4.2 Law Harmonisation

EU air quality Directives aim to protect the population from excessive pollution concentrations, taking into account the latest findings on health effects. The major legal instrument in the field is the umbrella Ambient Air Quality Framework Directive,[4] built

[3] Full title: "Rulebook on the methods for exchanging information concerning measuring points within the state and local networks, on measuring techniques, and on the methods of exchanging data obtained by the air quality monitoring in the state and local networks"
[4] 2008/50/EC

on the Framework Air Quality Directive[5] and four other daughter directives. It provides the current framework for the control of ambient concentrations of air pollution in the EU, including the concentrations of O_3, NOx, SO_2 and PM2.5 and PM10. *Inter alia,* these Directives also cover emissions from mobile sources, ambient ozone fuel quality and aim to promote and integrate environmental protection requirements in the transport and energy sectors by emission trading, emission ceiling and limit values (European Commission n.da).

The legislation in the area of air quality in Serbia is based on two main documents: the Law on the Protection of the Environment,[6] which specifies the global pollutant limits, as well as the terms of protection and the control measures; and the Law on the Protection of Air (LPA)[7] with more specific provisions (Ćemalović 2016, 897). LPA has been amended in 2013 in order to harmonise national standards with the Ambient Air Quality Directive. Articles 65 to 67 of the LPA prescribe information availability to the public. In some elements, the national provisions even go beyond the requirements of the Directive, demanding that any information made available to the public must *be timely, clear, understandable and accessible*. According to this Law, local governments should publish monthly reports based on measuring stations and measuring points. However, other important parts have not been properly transposed. In December 2018, Serbia adopted the Law on Fees for the Use of Public Goods.[8]

According to the 2018 European Commission progress report, Serbia has a *good* level of alignment with the acquis, nonetheless, the proper implementation depends to a large extent on governmental decrees, ministerial decisions as well as local authorities. LPA remains largely impracticable without a series of acts bringing enforcement measures of the objectives set by the legislation. As it has not been the case in practice, the undeniable progress that Serbia has made in the harmonisation of its legislation on air quality with EU's acquis has been followed by a gap between its transposition and a proper and a complete application.

[5] 1996/62/EC
[6] Official Journal of the Republic of Serbia no. 135/2004
[7] Official Journal of the Republic of Serbia no. 36/2009, 10/2013
[8] Official Gazette of the Republic of Serbia no. 95/2018

Serbia has yet to introduce its *Air Protection Strategy,* even though the deadline expired in February 2015. Missing of this document, which would empower air quality policy, largely affects the progress of air pollution legislation harmonisation. However, in November 2018, a selection of the IPA project, of which Air Protection Strategy should be a part too, was completed (Coalition 27 2019, 23). Furthermore, the Law creates an obligation to prepare air quality plans if a zone or an agglomeration belongs to category III. Due to lack of data, the local governments do not have enough capacity to prepare and implement these plans in an effective manner, whereas institutions at national level feel detached from the situation in regions. The European Commission also reminded that continuous efforts are needed to *„(...) finish transposing and implementing the EU Directive on volatile organic compound emissions, and to comply with EU requirements on the sulphur content of liquid fuels. "*(European Commission 2018 79).

The funds for the monitoring of the quality of air for the years 2017 and 2018 have been envisaged in the identical amount of 79,646,000 RSD (circa 674,984.13 EUR). The amount for 2019 is lower – 76,496,000 RSD (circa 648,511.24 EUR). But information is missing for the year 2016, neither it can be seen if part of the funds anticipated for the functioning of the Green Fund for 2017 was spent on air quality improvement activities. According to the report of the Fiscal Council, there is a need for investment of about 2.3 billion EUR for air pollution reduction of multiple sources – whether private, public, governmental or individual (Fiscal Council of the Republic of Serbia 2018, 17).

As mentioned earlier, the main cause of air pollution are large and small fires (from power plants and individual users), there is a need for binding regulations for solid fuel combustion plants. That is prescribed by the new Eco-Design Directive [9] but no progress has been made on its transposition.

4.3 Air Quality in Perspective

The Central and Eastern European countries, which joined the EU in 2004, 2007 and Croatia in 2013 have had to overcome similar obstacles to a certain extent. These republics have equally inherited inefficient environmental policy, obsolete institutions and large exploitation of industry under the socialist rule. In 2001, the EU had estimated that the implementation costs for the environmental acquis in all 10 East European

[9] 2009/125/EC

countries would total between 78 and 109 billion EUR. Regardless of the similarities, there are also numerous differences in size, climate, land use, and history coping.

RES Foundation also stated that inspiration is being sought from countries, which have been actively trying to reduce emission from households – cooperation has been established with the United States Environmental Protection Agency and their programme on reduction of residential wood smoke. Furthermore, they have been looking at the examples of Austria and the UK, where devices which are not approved but the national environmental policy cannot be used in smoke controlled areas. The Nordic countries, which have historically suffered from the same problem, can offer valuable solutions. In Germany, about eleven million stoves and boilers for solid fuels accounted to about 26,860 tons of PM2.5 and 8,240 tons of black carbon in 2015. The reduction has been aimed at the distribution of stringent small heating device ordinance, which contains a list of fuels that are allowed to be burnt and sets the maximum moisture of firewood. Since 2015, new stoves and boilers must align with stricter limit values, depending on a type a of fuel burnt (Deutsche Umwelthilfe 2016, 6).

Even though Croatia, Serbian neighbour to the West, had historically suffered from less polluted air, the main difference in its preparations to join the EU, was the Croatian readiness to prepare strategic documents. The National Environmental Strategy and the National Environmental Action Plan were the basis for the development of supporting implementation documents, such as the Strategy for Sustainable Development, the Air Quality Protection and Improvement Plan for 2008- 2011, the Plan on Reduction of Emissions of Sulphur Dioxide, Nitrogen Oxides and Particulate Matter from Major Combustion Plants and Gas Turbines in the territory of Croatia, the Plan on Allocation of Greenhouse Gas Emission Quotas in Croatia (National Allocation Plan), and the Programme for Gradual Emission Reduction of Certain Pollutants up to the end of 2010, with projected emission for the period of 2010-2020.

Examples from other countries show that reduction or overall ban on coal burning can have a significant effect on the population – coal burning in Dublin in Ireland led to the reduction of black smoke dust by 71% and SO_2 by 34%, which decreased the total mortality rate in the city by 8% (HEAL 2014, 3).

In closing, regardless of relatively good alignment with the EU law, transposition of them to practice remains limited and virtually impractical without strategic documents and by-

laws. The state of data availability is *poor*, which hinders any development for improvement. Air quality is extremely important for public health but unless the situation with individual heating devices is properly tackled, Serbian population remains at high risk and achievement of EU alignment stays afar.

5. WATER QUALITY

5.1 Current State and Challenges

Three large international rivers (Danube, Tisa and Sava) and several small transboundary rivers represent 90% of all surface water resources (162 billion m^3 per annum) in Serbia. The Danube is joined by three major tributaries: the Tisa, the Sava and the Velika Morava, and numerous smaller tributaries. 92% of the territory of Serbia belongs to the Black Sea Basin (through the Danube River Basin). The rest belongs to the Adriatic Sea Basin and the Aegean Sea Basin. The Danube River is the 24th largest river in the world and the 2nd largest in Europe (Embassy of Belgium 2017, 7).

Figure 3 - River Map of Serbia (Maps of World n.d.)

Among the selected three areas of interest, improving water quality is often referred to as the most demanding one, taking into to account the need for capacity and infrastructure development. Well-operating water management reduces water wastage and wastewater treatment improves public health. Indeed, healthy freshwater ecosystems can significantly reduce the effects of climate change and contribute to flooding mitigation.

Serbia often suffers from floods (the last large ones being in 2014) also due to inefficient water risk management.

The representatives of Coalition 27, as well as the Ministry of Environmental Protection, which was also only re-established in 2017, claim that there is a systematic problem with governance. Nowadays, the water sector is split between three different ministries – Ministry of Environmental Protection deals with groundwater and quality standards, Ministry of Health is responsible for drinking and bathing water and the majority, including the most problematic *wastewater*, is in the competence of the Ministry of Agriculture, Forestry and Water Management. Furthermore, provincial administrative bodies, agencies of local administrations, as well as three government-held water management companies are present in Serbia: Srbijavode (Serbia Waters), Vode Vojvodine (Waters of Vojvodina) and Beogradvode (Belgrade Waters) (Embassy of Belgium 2017, 7). There is an ongoing need for an improvement of the local governments by establishing clear rules on responsibilities for the operation and maintenance of facilities in their vicinity (European Commission 2018, 79). However, this diversified system creates obstacles in any attempts for a functioning water management system and a broader framework, as the cooperation between the relevant departments is limited. Thus, Serbia needs to strengthen its administrative capacity, especially in monitoring, enforcement and interinstitutional coordination.

The largest issue in relation to water, according to the shadow reports as well as participating interviewees, is the *wastewater management.* Currently, wastewater is seldom treated and even in large cities as Belgrade, wastewater is directly being disposed to the Danube. In the majority of European cities, the percentage of households connected to the sewerage system is around 95%, whereas Belgrade reaches only 85% (Embassy of Belgium 2017, 14). In 2018, several projects have been initiated for the construction of a wastewater treatment plant (Niš, Bor, Zlatibor, Mladenovac, Vranje, Pirot) (Coalition 27 2019, 41). However, even those operating favour secondary treatment, of which product is only suitable for irrigation or other industrial processes. Thus, they do not align with the EU regulations, which favours a *tertiary* treatment. Approximately 55% of the total population in Serbia is covered by some level of municipal wastewater treatment, whereas among EU 28 that number is above 80% (Coalition 27 2018, 45). Water is also polluted as a result of outdated technology, disposal of leachate from landfills or drainage water from agriculture, among others. The Great Bačka Canal, a part of the Danube - Tisa –

Danube Canal, was once a part of the river traffic network. Today is with over 400,000 meters cube of contaminated sludge and water, estimated to be the most polluted waterway in Europe.

The use of groundwater as well as river sediments is poorly controlled and suffers from an absence of monitoring (Coalition 27 2018, 39). That later translates to a lack of available information. It is the gravel of Drina and Morava that experience the worst case of controlled exploitation of river sediments. This does not just affect water management, but also the protection of nature, promotion of effective agriculture and enriching tourism. There has been an adoption of the Plan for the Extraction of River Deposits planned by August 2019, which has been creating the basis for improving the situation with sediment exploitation. On the other hand, the capacities for proper *in situ* control are limited (Coalition 27 2019, 41).

During the monitoring period 2012-2016, only 3% of streams and river were pronounced as having good ecological status, whereas 40% of lake water bodies were described with poor ecological status (ENVAP and MEPRS 2018). Furthermore, there has been an an ongoing construction of small hydropower plants without a *strategic* planning and controlling of the building sites (Coalition 27 2018, 40). A strong opposition towards their operation has thus been formed, mainly arising from inadequate public participation and communication from the side of the authorities. In November 2018, the Government passed a Decree amending a regulation, which extended the possibility for the incentive measures to be agreed on by the end of 2019 with an incentive period of 12 years, in relation to the Electricity Generation from Energy Sources and High-Efficiency Cogeneration of Electricity and Heat (Coalition 27 2019, 41). But once again, changes were agreed without *any* public consultations, which is worrying especially due to a large public debate on this issue.

Over 40% of water supply networks in the country supply water, which is not fit for drinking. Moreover, about 35% of the produced drinking water is lost annually, mostly because of outdated pipes. There has been a continuous issue with concentration of arsenic in drinking water in Vojvodina, as well as of nitrates and nitrites present, which have not been resolved properly. According to the reports from the Institute of Public Health, in 2017, 56% of city water supply systems had drinking water of adequate quality.

The situation with drinking water in rural areas is even worse - only 37% of water supply systems supply water of adequate quality in villages (Fiscal Report of the Republic of Serbia 2018, 9).

The implementation of several international projects (GEF-DYNA, FORRET), which are initiating improvement of water resources management practice in Serbia has taken place. The EU had, through Instruments for Pre-Accession Assistance (IPA), invested significant means into development of environmental infrastructure, such wastewater treatment plants in Vrbas, Sabac, Leskovac and water supply systems in Rasina and Morava. According to the Fiscal Council, the water sector requires by far the largest public investments among Chapter 27, almost 6 billion EUR. Establishment of the budget line is difficult due to the size and involvement of several ministries. As claimed by The Regulation on Determining Water Management Programme, in 2017 2.5 billion RSD have been allocated for water treatment and use, protection of waters against pollution, watercourse regulation, protection against adverse effects of waters and for planning and international cooperation in the area of water. In 2018, this value was 3.3 billion RSD, which, however, is still insufficient.

5.2 Law Harmonisation

The EU environmental policy on the water is based on two main legal framework directives - the Water Framework Directive (WFD)[10] and the Marine Strategy Framework Directive (MSFD).[11] The EU WFD establishes a framework for the protection of all water bodies, inland surface waters, transitional waters, coastal waters and groundwater. Its goals are pollution reduction, promotion of sustainable water use, protection and improvement of the aquatic environment and mitigation the effects of floods and droughts. The overall objective is to achieve a *good environmental status* for all waters. In order to attain it, Member States are requested to create River Basin Management Plans, as well as specific programmes of measures to achieve the objectives. The EU key objective is to achieve a good status of surface as well as ground waters in EU territory by 2027 the latest. The WFD is supported by more specific Directives, namely the Groundwater Directive,[12] the Environmental Quality Standards Directive (together establishing the chemical status criteria),[13] the Urban Waste Water Treatment

[10] 2000/60/EC
[11] 2008/56/EC
[12] 2006/118/EC
[13] 2008/105/EC

Directive,[14] the Floods Directive, [15] the Drinking Water[16] and Bathing Water Directive (which sets out quality standards for both)[17] and the Nitrates Directive[18] (dealing with relationship between agriculture and water quality). The MSFD has not been transposed yet.

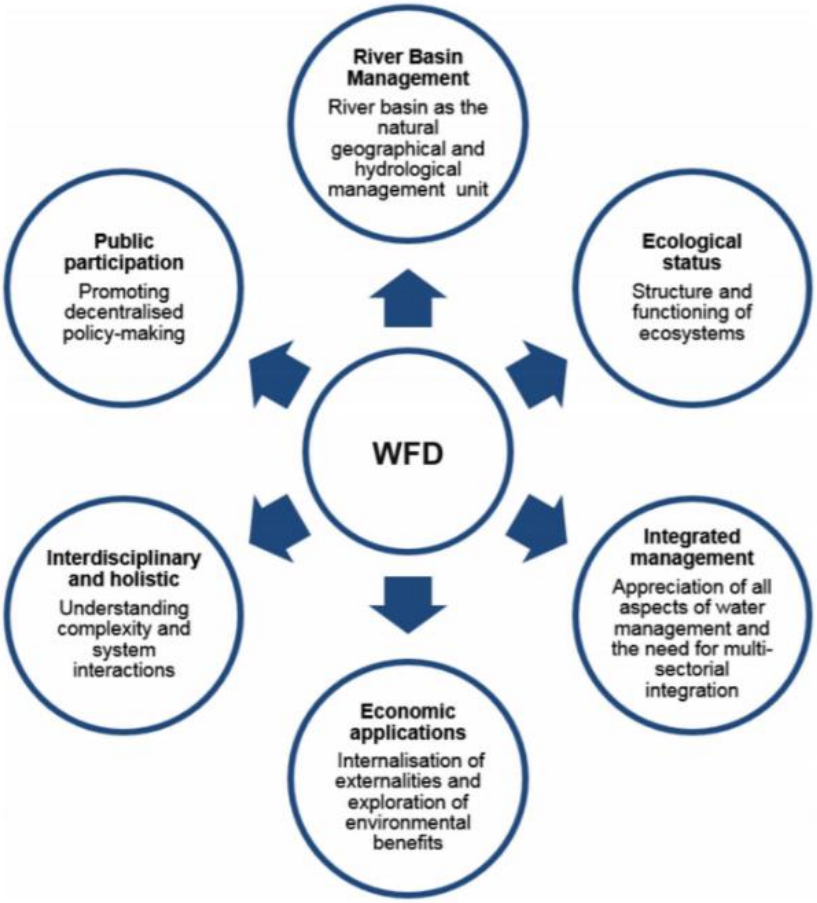

Figure 4 - Innovations introduced by WFD (Giakoumis and Voulvoulis 2017)

Serbia's alignment with the water acquis has been assessed as *moderate* in the European Commission progress report from 2018. Serbian legal framework in relation to waters stems out from the Law on Environmental Protection (LEP), which requires appropriate treatment of waters. Articles 23 and 107 of LEP refer to the comprehensive management and ongoing monitoring of quality, while Article 94 LEP provides for measures to reduce pollution and sewage system. Serbia has also adopted The Strategy on Water Management in the Republic of Serbia until 2034 and The Law on Amendments and

[14] 1991/271/EEC
[15] 2007/60/EC
[16] 1998/83/EC
[17] 2006/7/EC
[18] 91/676/EEC

Modifications to the Law on Waters.[19] There have been two amendments to the law on waters in 2018[20] – one facilitates changes in the regulation of river basin land lease and the other, water conditions issuance for the reconstruction and rehabilitation of traffic infrastructure facilities. However, this has still not provided a full harmonisation with the EU legislation.

More detailed provisions are stipulated in the Law on Water Protection, [21] which set off a series of decrees, further transposing WFD to the national legal order. According to the Commission report, a national strategy and action plan on water protection still need to be adopted. However, considering the current situation with water sector infrastructure, full implementation will take a rather long time period, potentially 20-25 years. In October 2018, the Water Directorate has announced the beginning of preparations of the Action Plan for the implementation of the Water Management Strategy. Since then, no further information has been released (Coalition 27 2019, 40).

The Water Management plan for the Danube River Basin has been drafted, but not adopted due to only partial compliance with WFD. The drafting of the new Law on Waters is continuing, and it should fully implement the EU water legislation and water management plans, which will be timely harmonised with the third cycle (2022-2027) of the development of river basin management plans in the EU.

Until today, Serbia has prepared four Directive Specific Implementation Plans (DSIP) – the Water Framework Directive, the Nitrates Directive, the Urban Wastewater Treatment Directive and the Drinking Water Directive. DSIP consist of a short description of the requirements of the Directive, legal, technical and institutional considerations of the implementation, plans, cost assessment, funding mechanisms and a timetable for the full implementation of the given directive. DSIPs are developed as a part of the "Further Implementation of the National Environmental Approximation Strategy" which also encompass participation of civil society representatives, including the Coalition 27.

Urban Waste Water DSIP proposes an identification of sensitive areas and anticipates the need for building another 359 wastewater treatment plants, construction of 10,400 km of wastewater collection networks and approximately 1,000km replacement or rehabilitation

[19] Official Gazette of the Republic of Serbia, No. 101/2016
[20] Official Gazette of the Republic of Serbia, No. 95/2018 40
[21] Official Journal of the Republic of Serbia" no. 30/2010, 93/2012

of the existing networks. The costs represent around 4.3 billion EUR. Drinking Water DSIP introduces more than 150 investment projects and estimates the costs for 1.5 million EUR. It includes plans for institutional changes, development assessment and describes the shortcoming in the river basin management. Serbia also needs to significantly increase the number of its operation stations - 230 are needed or surveillance, 1000 for operational monitoring and about 70 for investigative monitoring (MEPRS and SIDA 2018).

Raising environmental standards in the water sectors, requiring significant efforts in financial as well as human resources, will however majorly improve the quality of life of Serbian citizens. Several projects have already been initiated, aimed at improving the situation in water supply and wastewater treatment. The primary investments of great size will, however, not just be beneficial for this but also for the upcoming generations. (MEPRS and SIDA 2018).

5.3 Water Quality in Perspective

The EU water acquis has been problematic to implement not only in the Central and Eastern Europe (CEE) region. Despite the considerable effort to coordinate the WFD implementation across the EU Member States and its strict timetable, it represents one of the most challenging parts of the acquis similarly for the current Member States. The progress towards achieving the WFD objectives and improving the ecological status of waters in Europe has been slow across all Member States.

During the accession process of the CEE countries, it has been claimed that „*meeting the EU water quality legislation is likely to be the most important issue*" (World Bank 1998, 110). The CEE countries were particularly hit by the agricultural regress, which took place after the fall of the Iron Curtain at the beginning of the 1990s. In 2000, 50% of sampling sites in Slovenia exceeded 50 mg NO_3/litre, the drinking water limit, and in Romania, 35% of sites tested above 25 mg NO_3/litre (Jones 2000; Nixon 2000). Drinking water sources contained more than 50 mg NO_3/litre in Slovakia (Kovač 2000). Nitrate pollution must be tackled at source (usually coming from fertilisers used in agriculture). Good examples are Denmark, where national nitrate management plan began even before the adaption of the directive – the aim was to inform farmers about efficient use of fertilisers and introduced annual limits for farms. Possibly, the amount of nitrate will be

reduced naturally, as Serbia is nowadays shifting more towards a market-oriented economy.

The WFD aims to ensure that by 2027 all surface water achieve a good status - but the European Waters Assessment from 2018 shows that only 38% of surface waters are in good chemical status and just 40% are characterised by good *ecological* status. There has been limited progress in this respect compared to the first WFD management cycle, which lasted for six years (2009- 2015) (EEA 2018, 7). The second cycle of the WFD has started in 2016 and is currently ongoing until 2021.

The impacts of agriculture, such as over abstraction, using chemicals and pollution from manure are often among the main obstacles for meeting the WFD projected objectives. The WFD also allows for exceptions for certain water bodies if achieving good status is impossible or the achievement bears disproportionate costs to the benefits. However, even today these exemptions cover around half of EU water bodies**.** Generally, the management lacks information, consultations with the public are sporadic and the transposition of certain aspects of the WFD in national perspective is difficult. The Directive does not specify the structures for its implementation and as the existing water governance systems in the EU member States largely differ and the Member States are often facing technical and organisational challenges (Moss 2012).

The WFD also suffers from terminological vagueness and therefore, it is considered *„one of the most complicated and hard to interpret pieces of EU environmental legislation*" (Giakoumis and Voulvoulis 2017, 826). It financially relies on the recovery of the costs of water services, as envisaged in Article 9. Noticeably, its implementation has no specific EU funding, only as a part of the EU's LIFE financing instrument for environment and climate.

The Member States, according to the Institute for European Environmental Policy, need to put in place more innovative and ambitious restoration measures, improve data availability and quality, apply the polluter pays principle and the recovery principles and increase participation of all relevant stakeholders to facilitate this process (European Commission 2019). Lastly, one needs to bear in mind the interrelation of EU water policy with other areas of the EU acquis, such as the Common Agricultural Policy or the Floods

Directive, which has been only partially implemented in Serbia. According to the conducted interviews with a representative from the Environmental Ministry, other countries such as Croatia and Montenegro (which has even already opened their Chapter 27), can be only of a partial help. The situations and nationally unique nature of water structure do not always allow for a thorough comparison.

For example, water competencies, are most often led by the core environment ministry and in the CEE (Hungary, Romania, Slovakia) one of the most common intragovernmental organizational reforms during acquis harmonization was to consolidate water and environment, which helped to aggregate and report water issues under many environment directives (World Bank 2007, 16).

Even though the water sector is often named as the most demanding part of the environment, the existence of DSIPs has been a crucial step on the way to further law harmonisation. If it is stuck to the plans, the building of infrastructure to resolve the biggest issues with wastewater, floods and water quality can be carried out in a timely manner. Otherwise, the perspective of meeting the acquis in a foreseeable future remains *impossible.*

6. WASTE MANAGEMENT

6.1 Current State and Challenges

The EU acquis on waste is vast and presents a complicated issue. In particular, the number and type of actors involved in its management are complex. The area of waste management in Serbia was neglected for years and is still characterised by negative principles and non-enforcement of existing obligations, notably on the level of local governments and public utility companies. According to the WHO, inefficient handling, disposal and subsequent treatment of waste may cause serious health problems for populations in the surrounding areas. Especially dangerous are water leaks, polluting soil and water streams and exuberating air pollution. It also impacts the rise of greenhouse gases and leads to losses of materials. Even though that the available scientific data on the waste-related health effects are inconclusive, they suggest a possible occurrence of serious adverse effects, such as higher mortality, cancer, reproductive health complications, and well-being deterioration (WHO 2015, abstract). As there is a lack of

systematic monitoring and availability of data, the precise determination of public health impacts represents an obstacle for Serbia (Coalition 27 2018, 30).

The Coalition 27 claims that every citizen of Serbia generates 0,73 kg of waste per day, totalling to 270 kg of waste per year. In 2017, the total of the generated waste was about 11 million tons (Coalition 27 2019, 33). Unlike in comparable CEE countries, primary waste separation in Serbia is not developed and waste separation facilities are only available at a few landfills. Furthermore, Serbia has no installations for environmentally sound incineration of waste or composting. Almost 70% of all active landfills do not have a completed environmental impact assessment study or are not even shown in spatial planning documents. According to the SEPA, the number of registered illegal landfills is 2170, which, however, does not include information from local governments. Hence, the fiscal report of 2018 suggests even a higher number of 3,500 *illegal* landfills. Many of them are near to highly populated areas and present a major health risk to the population, as there is an ongoing possibility of underground and surface waters contamination and land explosions of flue gas.

It is alarming that there is virtually no difference between illegal and legal landfills, utilised by public companies, as they equally lack sanitary standards. There are 10 sanitary landfills, of which 3 are under construction - 8 are regional (Užice, Lapovo, Kikinda, Jagodina, Leskovac, Pirot, Sremska Mitrovica, Pančevo) and 2 of them are local (Vranje and Gornji Milanovac). Another health concern represents hazardous waste, especially from thermal processes, contributing to 40% of the total quantity of produced hazardous waste, and to about 70% of the total waste (The Ministry of Environmental Protection, the Environment Protection Agency 2017). Thermal waste mainly comes from thermal power plants, mainly in the form of coal fly ash, slag, filter cakes and others. Regardless of the obligation under the Article 53, points 1 and 2 of the Amendments and Modifications to the Law on Waste Management[22] to establish collection centres of municipal waste, the main challenges still preserve to sufficiently carry out collection, transportation and sanitary waste disposal. Today, only 80% of municipal waste in Serbia is collected in an organized manner, unlike in CEE countries where this indicator is over

[22] Official Gazette of the Republic of Serbia, No 14/16

95%. The rest ends up at illegals landfills or at unsanitary legal landfills (Fiscal Council of the Republic of Serbia 2018, 10).

Industrial waste is handled in a like matter. In addition to the lack of treatment, there is an existing absence of documentation and control of industrial waste, which can eventually lead to improperly disposed toxic waste being discovered throughout the county (Fiscal Council of the Republic of Serbia 2018, 11). The reasons are manifold. Enterprises, regardless of their legal obligation, do not report on the quantities of waste created, and on the other hand, the government lacks capacities to control or sanction misbehaviours. Fly ash, shale sludge, or EPS can be reutilised in construction or cement industry; however, this practice is not utilised in Serbia.

The system of recycling is underdeveloped – only 4% is recycled in comparison to 47%-EU average. Systematic primary and secondary selection of packaging waste in the utility sector has not been established in most local governments. Surprisingly, 80% of PET bottles recycled in Serbia is collected by *informal individual* collectors (Coalition 27, 35) while only 20% comes from the collection of utility companies (Coalition 27 2018, 28).[23] There are 6 operators having a license for packing waste management: Sekopak, Eko star pak, Cenex, Tehno eko pak, Ekopak sistem and Delta pak. Based on the data from 2016, they collected 155,645 tons of packaging waste in 2016, amounting to 47.4% of the total quantities placed on the market. That led to the exceedance of the national target of 44% by 3%. Moreover, the large number of system operators competing for their share of the market has led to packaging fees in Serbia being several times lower than elsewhere in the region, which results in insufficient financing of the sector. According to the Coalition 27 report from 2019, the total quantity of packaging placed on the market of the Republic of Serbia in 2017 was 357,918.9 tons.

The experts from Environment Engineering Group, Serbian NGO, which mission is to contribute to environmental protection and sustainable development and actively work on improving waste management, stated that the current status quo is *not* a technical question. However, as with any other environmental issues in Serbia, there is a persistent lack of political will. Waste management does require forward -looking, long term plans

[23] As claimed by Serbian Association of Packaging Waste Recyclers.

and thus becomes unattractive for much shorter mandates of local and national politicians. According to the existing data, 6 municipalities of 145 have not yet joined any of the regions for waste management. Moreover, this absence of motivation then translates to insufficient inspections, stemming from low capacities at all levels. Even though the need for improving Serbian waste management has been obvious for decades, due to its slow progress and changing nature of the EU standards, the gap has widened. One could claim, that Serbia is trying to shoot a moving target with a broken arrow.

Hazardous waste permits management is administrated by the Ministry of Environmental Protection, while local governments have the authority to issue permits for inert and non-hazardous waste in their vicinity. But in practice local governments often deal with all types of waste, including hazardous waste, so the need for common actions is ongoing (Coalition 27 2019). As waste management offers considerably large space for private contractors, a misuse of these opportunities and related corruption role a play, too. For instance, Novi Sad, Serbian second largest city, which only last year introduced a new system of underground, semi-ground and over-ground waste collectors. One of the reasons was to avoid individual collectors from stealing valuable materials – unfortunately, not even a year since the installations, the devices are being worn out and showing signs of low quality, as shown on the pictures below. It is distressing that the city has paid several thousand euros, but with no real, long-term outcomes. Lastly, one cannot forget to mention the missing awareness of waste management among the general public and the lack of formal or informal education on waste prevention, recycling or waste separation.

Figure 5 - Two overground containers for municipal and packaging waste in Novi Sad (Halamova 2019)

Figure 6 and Figure 7 - Underground facilities in Novi Sad (Halamova 2019)

6.2 Law Harmonisation

EU waste acquis is based on the Waste Framework Directive,[24] which provides for a general framework of waste management requirements and sets the basic waste management definitions in the EU. The EU has created legislation on waste management operations, including incineration of waste,[25] port reception facilities[26] and on the landfilling of waste.[27] Furthermore, the EU legislated provisions on specific waste streams – the list is extensive and includes directives on end-life vehicles, electronic and electric equipment, waste electronic and electric equipment (WEEE), disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT), on waste from the titanium dioxide industry, legislation on batteries and accumulators, packaging and packaging waste, agricultural use of sewage sludge or disposal of waste oils.

EU waste management policies are aimed at reducing the environmental and health impacts of waste and enhancing resource efficiency in the EU. The EU's approach to waste management is based on "waste hierarchy." In 2018, the revision of 5 main waste

[24] 2008/98/EC
[25] 2000/76/EC
[26] 2000/59/EC
[27] 1999/31/EC

management directives was adopted – so-called *Circular Economy* package. The new legislation requires the Member States to take specific measures to prioritize prevention, re-use and recycling above landfilling and incineration, thus making the circular economy a reality. EU recycling targets require achieving 50% of recycling of municipal waste by 2020 and gradually achieving 65% of material recovery target by 2035 and by the same year to reduce waste landfilled to 10% or less, recycle 70% of construction and demolition waste by 2020.

Figure 8 – Waste Hierarchy of the EU (European Commission 2016)

The aim of negotiation in the waste sector is to balance the goal of establishing proper waste management in a timely manner and realistically available resources to prevent excess burdens of the negative impacts of waste on the citizens. As the amount of waste generated is deemed to raise, Serbia has been developing following strategic documents to fully comply with the EU requirements: 1. National Waste Management Strategy and Waste Management Action Plan, 2. Waste Prevention Programme, 3. 5 DSIPs including, Waste Framework, Packaging Waste, Electric and Electronic Waste, Waste Batteries and Accumulators and Landfill Directives (Ministry of Environmental Protection of Serbia 2018).

The Landfill DSIP encompasses an implementation plan, includes information about existing dumpsites and landfills, including the state of their compliance with the EU directives, plans for developments of regional infrastructure and fully engineered sanitary landfills or closure of existing landfills. Moreover, a timetable for regional systems and

strategy for reduction of landfilling of bio gradable waste. The Waste Framework DSCP encompasses measures for increasing recycling, secondary waste separation, construction of small composting capacities, collection and treatment of construction and demolition waste, treatment of hazardous waste as well as cost assessment of these measures, financing and implementation timetable. The DSIPs on packaging waste, batteries and accumulators, waste electrical and electronic equipment similarly detail the current situation and planned steps (Ministry of Environmental Protection of Serbia 2018). For Serbia to achieve the 50% recycling target, prescribed by the EU, DSIPs offer a stepwise approach to establish the required infrastructure until 2035, with focuses on source separation, secondary separation, separate collection, establishing amenity sites and composting sites. [28]

Table 2 – Infrastructure planned for Municipal Waste Management (Ministry of Environmental Protection 2018)

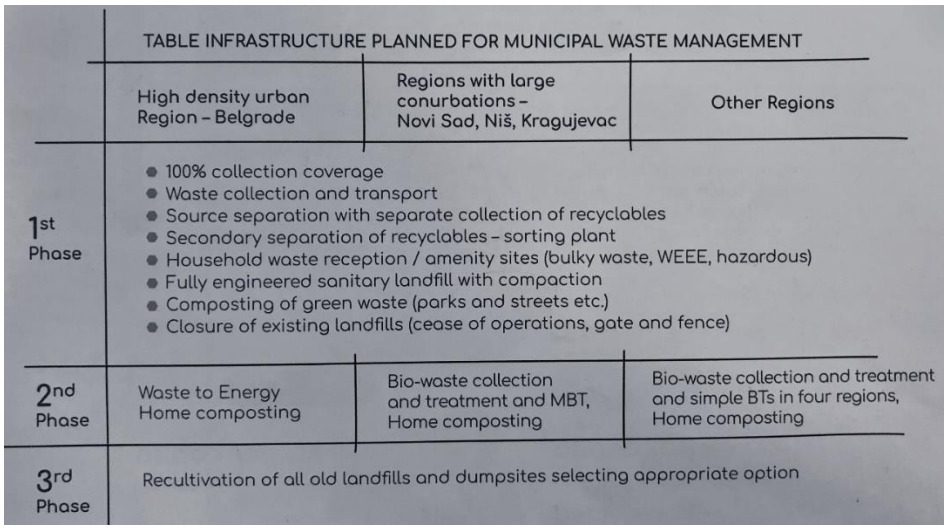

TABLE INFRASTRUCTURE PLANNED FOR MUNICIPAL WASTE MANAGEMENT			
	High density urban Region – Belgrade	Regions with large conurbations – Novi Sad, Niš, Kragujevac	Other Regions
1st Phase	• 100% collection coverage • Waste collection and transport • Source separation with separate collection of recyclables • Secondary separation of recyclables – sorting plant • Household waste reception / amenity sites (bulky waste, WEEE, hazardous) • Fully engineered sanitary landfill with compaction • Composting of green waste (parks and streets etc.) • Closure of existing landfills (cease of operations, gate and fence)		
2nd Phase	Waste to Energy Home composting	Bio-waste collection and treatment and MBT, Home composting	Bio-waste collection and treatment and simple BTs in four regions, Home composting
3rd Phase	Recultivation of all old landfills and dumpsites selecting appropriate option		

According to the European Commission, there is a *good* level of alignment with the acquis. By adopting the Law on Waste Management,[29] the Law on Packaging and Packaging Waste,[30] and the Law on Mining and Geological Surveys, [31] Serbia has established a legal framework for waste management in accordance with the EU rules. Some additional guidelines for the development of the system were given by the Strategy for Waste Management for the period 2010-2019, [32] providing guidelines and proposing steps for rational and sustainable waste management, in line with the EU existing acquis.

[28] Actions and targets are still subject to change
[29] Official Gazette of the Republic of Serbia, No. 36/09 and 88/10, 14/16
[30] Official Gazette of the Republic of Serbia, No. 36/2009
[31] Official Gazette of the Republic of Serbia No. 101/15
[32] Official Gazette of the Republic of Serbia, No. 29/2010

The Law on Waste Management transposes the basic principles of the EU waste management system into domestic legislation as the principle of self-sufficiency; the principle of waste management hierarchy; the principle of proximity and regional approach to waste management; the principle of liability and the polluter pays principle. It also covers data collections - all reporting entities are obliged to keep a daily record of the quantities of generated, recovered, used, deposited, imported or exported waste and to submit annual reports to the SEPA. However, reality largely differs. Several other directives were transposed by this law or other bylaws, in particular for specific space streams.

In 2018, two new documents have been adopted in order to fulfil the obligations prescribed by the Law on Waste Management: The Rulebook on the Content of Documentation[33] (in relation to permit for import, export and transit of waste) and The Rulebook on the Form of Application for the Issuance of a Permit for the Storage,[34] Treatment and Disposal of Waste. Furthermore, the Regulation on the Approximation of Conditions was passed in March 2018 as well as the Rulebook on Harmonized Amounts of Compensation[35] for Management of Special Waste Streams were adopted. The new Regulation on Harmonized Fees for Environmental Pollution[36] via its annual ordinance prescribes harmonized amounts of environmental pollution charges, among others for plastic bags. Last year, Serbia introduced a mandatory payment for biodegradable bags in order to further support these efforts (Balkan Green Energy News 2018). Even though the usage has decreased, the utilisation of the collected payments remains idle and in the pockets of the private owners, as Coalition 27's expert on waste management, Environmental Engineering Group claims.

The Law on Packaging and Packaging Waste defines environmental conditions for packaging, management of packaging and packaging waste; reporting economic instruments; control; penalties, *inter alia.* The Law on Mining and Geological Explorations have EU principles on management of waste from extractive industries.

[33] Official Gazette of the Republic of Serbia, No. 038/2018
[34] *Ibid*
[35] *Ibid*
[36] Official Gazette of the Republic of Serbia, No. 43/2017

According to the Fiscal report, waste management will need investments as high as 1.5 billion EUR. Ministry of the Environment approximates the costs a bit lower, 1.344 billion EUR, of most of which expected from private funds, EU support, and national funds (MEPRS and SIDA 2018). The basis for financing the water sector is based on the polluter pays principle – however, the system is incompetent in finding the culprits and the funds thus remain *limited.*

6.3 Waste Management in Perspective

In 2015, each EU citizen generated 475kg of waste, which is a number significantly higher than in Serbia. Prevention of waste generation is important, however, what matters equally is the treatment of waste. That depends on a waste management system and the composition of waste. It is projected that with economic growth and increase of consumption and production; the waste generation Serbia will expand, too (FCC Environment n.d.).

In terms of waste management, the CEE countries are the most comparable with Serbia, as the treatment was similarly neglected for decades, unlike in the Western European countries. The challenges are similar to the Serbian reality: lacking infrastructure, absence of political will enforcing domestic legislation and policy and missing awareness among the population, amid others.

The alignment with the waste acquis within the CEE countries has been rather challenging – in the beginning, countries lacked guidance and knowledge, and often, the reform process was based on a trial-error approach. That has also led to a transposition of large parts of the acquis, only to revise them later due to new institutional arrangements (World Bank 2007, 3). Similarly, one of the ongoing problems had been landfilling, especially regarding diverting biomedical waste from landfill and operating landfill sites that do not align themselves with the EU standards.

Article 5 of the Landfill Directive provides that countries, which disposed more than 80% of their municipal waste to a landfill, could *postpone* aligning with the targets by a period of maximum four years. Bulgaria, the Czech Republic, Poland, Romania, Slovakia all made use of the four-year extension. However, they missed the also the new deadline in 2010, which threatens also the 2020 target. On the other hand, Hungary has made rapid

progress and managed to meet interim targets for 2006 and 2009 by achieving a reduction of 34% in 2006 and 54% in 2009. This was caused mainly due to an increase in material recovery and an improved separate paper (and packaging paper) collection system (Pokrass et al. 2013, 10). Similarly, derogation periods were granted for packaging and packaging waste legislation also for several CEE countries as well as Cyprus A positive example has been the introduction of a *landfill tax,* according to the EEA. Its study shows that the Member States, which charged landfill tax of 30 EUR or more per tonne were more successful in switching biomedical from landfill.

Slovakia, which similarly suffered from a large number of illegal landfills, has attempted to resolve the alarming landfill situation by economic incentives – by the introduction of charging mechanisms for compliant and non-compliant landfills. [37] That had led to a decrease of almost 43% of the total volume produced in between 2002 and 2009 (15,100,00 vs 8,500,000 tonnes). Serbian neighbour, Croatia suffered from comparable issues, as a large share of municipal waste has been being disposed in landfills, often in non-sanitary condition. The landfill restoration has begun in 2004 and several landfills are becoming transfer stations or recycling yards. Moreover, illegal dumps are being remediated and closed. On the other hand, Croatia is also affected by the waste from its over 1000 islands, largely caused by tourism and with difficult logistics. In contrast, the Waste Management Plan for Croatia as well as the Packaging Waste Management System lead to achieving good results in recycling and disposal of packaging – over a period of nine months, Croatia collected 12,000 tons of PET packaging, 42,000 tons of glass packaging and 1,100 tons of aluminium cans (Populari 2012). In terms of foreign help and sharing practices, representatives of the Environmental Engineering Group pointed out to Sweden, which has had successful waste management for decades as well as to the support of German Development Agency - GIZ, which collects data and aims to transfer techniques and facilities.

Lastly, it is worth to mention that Serbia does not produce an enormous amount of waste in comparison to countries of similar size in Western Europe, however, the treatment system is poor. Formally, existing plans and strategic documents, as well as DSIPs, have

[37] Act No 17/2004 on landfill charges.

contributed to a good level of alignment with the acquis. On the other hand, without a strong political will, real achievements will only stay on the paper.

7. CLIMATE CHANGE – INTERNATIONAL CONSIDERATIONS

7.1 Current Status and Challenges

The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change in Article 1 as: *"Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."* (UNFCCC 1992). Just as with any other country in the region and virtually anywhere in the world, the effects and progress of climate change are *inevitable.*

Average annual temperature for Serbia is about 10.6ºC, with a considerably cooler temperature of 6ºC in the mountains and warmer of 12.4ºC in the lowlands (US Aid 2017, 2). Precipitation rates peak in May through July but occur regularly during the year. Average annual precipitation is about 741 mm, ranging from about 600 mm in the north to about 2,000 mm in the mountainous regions. Historical data show that annual temperature has increased by 0.15°C per decade from 1960 to 2015, whereas no significant trends were recorded with precipitation during the same period. Drought severity increased from 1990-2016 in comparison to the period between 1960 and 1989. Future climate projections include an increase from 1.5° to 2.2°C, possible decrease in average annual precipitation from 1.1 to 3.5%, and a 21% to 31% increase in total annual precipitation on *extreme* rainfall days (US Aid 2017, 2).

Currently, Serbia is a party to international environmental agreements covering Air Pollution, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Ozone Layer Protection, Ship Pollution, Law of the Sea, Marine Dumping, Marine Life Conservation and Wetlands. The Republic of Serbia has been a member of the UNFCCC since 10 June 2010, and Kyoto Protocol since 17 January 2008, as a developing country (non–Annex I country). Therefore, Serbia does not have quantitative greenhouse gases (GHG) emission reduction

commitments, in the first commitment period. It has ratified the Paris Agreement on May, the 29th, 2017.

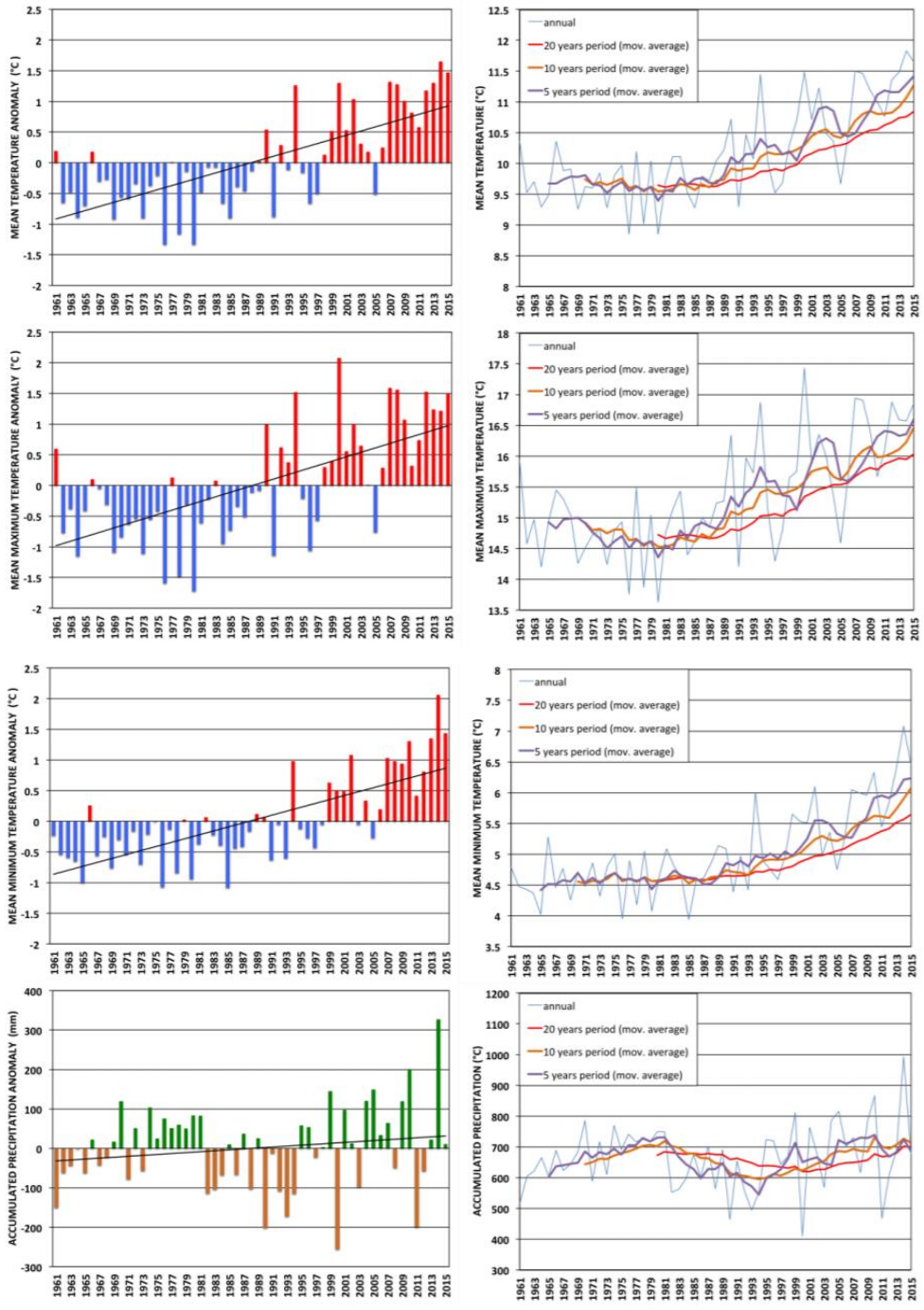

Figure 9 - Anomaly of mean annual values of mean, maximum and minimum temperature, and of annual accumulated precipitation with respect to the mean values for the period 1961-2015 (left panels), and annual values with moving average values for 5-yrs, 10-yrs and 20-yrs periods assigned to the last year of the period. (Vuković et al 2018)

The impacts of climate change in Serbia have been translated into several greater issues. There has been an increase in heat waves, with the maximum temperature of 44.9°C reached in 2007. These have significant effects on the population's health, especially with elderly people. Together with the increase in rainfall, it has led to a higher occurrence of Asian tiger mosquitos. In 2014, Serbia was hit by severe floods – 50 people died, and more than 32,000 people were forced to leave their households. They also affected the power sector, caused landslides and further damages to the infrastructure. It is expected that more floods will occur at the end of the 21st century. Just like increased runoffs is a threat, similarly, it is a *decreased* run off – it is estimated that the average annual discharge in Serbia will drop by roughly 13% by 2020 and by 19% by 2100, resulting in water quality deterioration and drought occurrence. In terms of ecosystems, the most vulnerable to the changes in weather are wetlands and steppe habitats. Forests, which cover over 32% of the territory might be subject to change of composition and distribution and with increased droughts, the risk of forest fires raises majorly. The droughts are also largely affecting agriculture - according to the evaluation of drought impacts on the crop yield the average drop in yield was 40.9% in comparison to the average annual yield in the years without drought (Ministry of Environment and Spatial Planning of the Republic of Serbia 2010, 21).

Based on the shadow reports of the Coalition as well as individual interviews conducted with the representatives of Coalition 27 member institutions, the progress of the climate change legislation has been significantly *slow.* The main area of interest in order to reduce the amount of GHG is the energy sector. The total GHG emissions in the referent year 1990, not taking into account the amounts removed by forests, was 80,803 GgCO2eq (Ministry of Environment and Spatial Planning of the Republic of Serbia 2010, 17). The largest share, 77.69 % of the total emissions, came from the energy sector (Ministry of Environment and Spatial Planning of the Republic of Serbia 2010, 17).

Despite the formal aligning with the Paris Agreement, the shift away from heavily subsidized fossil fuels is *minimal*. Furthermore, more money is being spent on the development of fossil fuel energy sources than on the prevention and mitigation of climate change (Coalition 27 2018, 72). Coal remains strong, and even though almost 1/3 of energy is produced by hydropower plants, the public has been recently showing reluctance to their expansion (Embassy of Belgium 2018, 10). The rise of wind or solar

energy is still very limited. The Large Combustion Plant Directive[38] and Industrial Emissions Directive[39] have come to force, but the question is still what comes after coal to meet the energy demand?

The role of Environmental Impact Assessment must thus be enforced for both coal and renewables (Spasić 2018a). Serbian regulatory framework for renewable sources of energy is based on the decree on incentives for the production of electricity from renewable energy sources and high-efficiency cogeneration and the decree on the terms and manner of gaining a status of a privileged producer. In order to obtain a right to price support, the plant operator needs to acquire the status of a *privileged power producer.* When the guaranteed supplier (Elektroprivreda Srbije) concludes a power purchase agreement, she is obliged by law to buy the specified amount of energy from privileged producers at an incentive price (RES LEGAL Europe 2019). The existing quotas for solar (10 MW) and wind (500 MW) have been awarded. In November 2018, the government has announced to extend the decree on incentives to produce electricity from renewable energy sources and high-efficiency heat and power cogeneration, instead of an introduction of auctions for renewable energy, until the end of 2019.

However, the reactions of experts were diverse – it certainly does support small projects not subjected to quotas, such as biogas, biomass or the already mentioned small hydropower plants, but just one year will not be enough to start new projects (Spasić 2018b). Most of the renewable energy comes from wind power parks, which are located in the province of Vojvodina. Aleksandar Macura from the RES Foundation has claimed that Serbia has not exploited its potential for production of heat and electricity via solar panels, even though it has considerably many sunny days per year. In his opinion, the problem also lays in the continuous promotion of feed-in-tariffs, which are limited and quickly exhausted. If Serbia wants to meet its objective of securing 27% energy be renewables by 2020, a new way of boosting renewables thus *needs* to be found (Simić 2017).

[38] 2001/80/EC
[39] 2010/75/EU

7.2 Alignment with the EU actions

The EU has stood at the forefront of the fight against climate change since its beginning. By its proactive approach has been setting an example for other countries, including the candidate countries for EU membership. If no mitigation actions are taken, global temperature will rise by 2°C above pre-industrialised levels, having an irreversible effect on the ecosystem and the world's population. The EU has established the European Climate Change Programme (ECCP) in 2000 order to reduce GHG, as prescribed by the Kyoto Protocol. The Second ECCP was launched in 2005. Besides that, the EU environmental policy has aimed to limit CO_2 emissions and promote renewable energy as its priorities in the attempts against climate change (European Commission n.de).

The EU aims to transfer to a low-carbon economy and has set several targets for it. Firstly, it is the 20-20-20 Target, which main objectives are: a 20% reduction in greenhouse gas emissions, increasing the share of renewable energy to 20% and making a 20% improvement in energy efficiency by 2020. The 2030 Climate and Energy Framework mainly facilities the period between 2020 and 2030, and it is designed to transpose the EU economy to a greener alternative, yet keeping it *competitive, secure and sustainable.* The EU also has a long-term strategy of the climate-neutral economy by 2050. One of the key tools of the EU is the EU Emission Trading System (ETS), which is based on emission caps, with the possibility of trading surplus emission allowances by the EU companies. From January 1st, 2019, the ETS also has a market stability reserve, to assure better market security even in terms of crisis (European Council 2019).

After the ratification of the Paris Agreement, which provided a legal basis for national implementation of its commitments, no specific development has taken place in Serbia. There have been no steps forwards on the revision the Nationally Determined Contribution (NDCs), which under the Paris Agreement, embody efforts by each country to reduce national emissions and adapt to the impacts of climate change. In Article 4, paragraph 2, it requires „*each party to prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.* "(UNFCCC 2016). The Serbian NCDs offer also another story – in 2015 and prior to the COP 21 Summit in Paris, Serbia has pledged to reduce its CO_2 by 9.8% by 2030 – a commitment strongly supported by the European Commission as

exemplary. However, according to a Serbian government report for the UNFCCC from April of the same year (GEF, MEPRS and UNDP 2015, 14), because of the collapse of heavy industry during post-Tito era, Serbia's emissions have fallen by a quarter since 1990. Furthermore**,** the 1990 year serving as baseline figures counted high-emitting Kosovan coal plants, which will almost certainly not be included in the 2030 statistics. This *de facto* means that 9.8% cut in emissions would in real terms allow a de facto 15.3% rise. How is that showing leadership in the region thus remains an open question (Neslen 2015).

The advancing of the National Climate Change Strategy has been resumed and included meetings with the participation of members of Coalition 27, too. According to its website, The Climate Strategy and Action Plan Project**,** which is funded through the EU IPA funds prepares a national cross-sectoral Climate Change Strategy and Action Plan, „*to establish a strategic and policy framework for climate action in Serbia in compliance with its international obligations."* (Serbia Climate Strategy and Action Plan 2016). It aims to identify emissions reduction measures needed, responsible stakeholders, timeline and financial schemes. The future projections are including milestones in 2020, 2025, 2030, 2050 as well as 2070. Furthermore, it calls for large-spectral participation and the creation of clear economic advantage and potential. The energy sector has enjoyed special attention, due to its leading contribution to GHG emissions (accounting to 79% of the total emissions), however, no concrete strategies to overcome it have been initiated (Coalition 27 2019, 69). Moreover, the Strategy continues to rely on the controversial NDC of 9.8%, and inadequate Second National Communication Report of Serbia to UNFCCC.

Within the National Climate Change Strategy and Action plan, the Adaptation Planning Framework, which uses a risk-based approach in order to encourage strategic climate change adaptation planning, has been created in three priority sectors: 1. agriculture – food production 2. forestry – bioenergy 3. hydrology and water resources – hydro-electric production. The objective is to use it as a general tool for policies and measures in Serbia in relation to climate change, by assessing associated risk and determining potential measures (Carter and Cavalheiro 2018, 3).

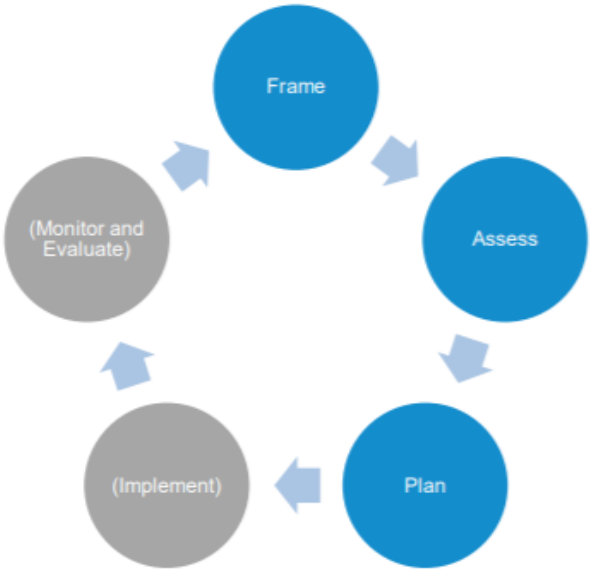

Figure 10 - The Adaptation Planning Framework (Carter and Cavalheiro 2018)

In comparison, the newly formed National Climate Change Council, regardless of its participatory nature, lacks strategic planning and integration. The European Commission report also calls for needed improvement on cooperation with other sectors (European Commission 2018, 80). The Serbian Second National Communication the UFCCC from October 2017 was submitted with inadequate data leading to inaccurate plans for future, which was also criticised by the Commission (European Commission 2018, 80). The third National Communication is estimated to be delivered in 2021. Generally, the information on GHG has been problematic to attain and remains inaccessible to the public (Coalition 27 2019, 71).

Based on the EC progress report from 2018, implementation of the EU climate change framework is at a *very early* stage. Even though that drafting of legislation on greenhouse gas emissions monitoring, reporting and verification in line with the EU emissions trading system was finalised in November 2017, The Emission Trading Directive has not yet been transposed to the national legal order. Some awareness raising projects and creation of informative website have been launched and supported by the French Ministry of Ecology, Sustainable Development and Energy, German Federal Ministry for Environmental, Nature Conservation and Nuclear Safety and Austrian Environment Agency (Climate Changes 2018). There are ongoing efforts on the transposition of legislation on fluorinated gases and ozone-depleting substances, as well as a number of

by-laws were adopted on the Fuel Quality Directive. Furthermore, the draft law on Climate Change has been prepared and passed the public debate, but it is yet to be approved by the National Assembly. The members of the public and the Coalition 27 have criticised its drawbacks, in relation to EU ETS transposition and the overall lack of progress towards the Serbian membership in the EU (Coalition 27 2019, 69).

As mentioned early, climate change considerations are cross-dimensional and many directives from different environmental sectors bear also climatic aspects. The Energy Community Treaty, an international organisation of which Serbia is a member, has pushed the transposition of some of the directives, such as the LCP and Industrial Emission Directives. Emission limit values for new and existing plants are now based on them, via the Decree on the Emission Limit Values of the Pollutants into the Air. Serbia has so far put 8 plants on the opt-out list, which limits their operating hours below 20,000 hours per annum. As mentioned before, the Draft National Emission Reduction Plant has, however, not been adopted yet.

In terms of finances, it can be observed that climate change is barely a priority to the government. When the Progressive Party of the current President Aleksandar Vučić took power in 2012, the Ministry of Environment, Spatial Planning and Mining was abolished and only re-established as the Ministry of Environmental Protection only in 2017. The Green Fund for financing environmental protection has not been utilised for its purpose – efficient monetary mechanisms would need common efforts from a series of sectors, due to cross-dimensional nature of climatic changes. That would include energy, transportation, agriculture, to mention just a few.

The Program for the Implementation of the Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 was adopted in October 2017. It includes some proposals for the employment of renewable sources, but the overall feasibility, motivation and enforcement are low. All in all, despite the creation of several documents, plans, strategies and draft law, they remain declaratory by and large and failing to understand the urgency of the actions. Serbia needs to reinforce its administrative and technical capability to fully align with climate acquis monitoring and reporting. Considerable strengthening education on ecological topics, together with awareness-raising activities should be at the core of these efforts.

In short, the progress of Serbian international obligations in relation to climate change is *limited* and without prioritisation by the side of government, will only enforce the status quo.

8. RECOMMENDATIONS AND THE WAY FORWARD

The list of recommendations builds on the aforementioned challenges in the areas of air, water and waste. A general list of recommendation for the environmental sector follows the more specific ones in order to create a comprehensive action plan. None of the lists is exhaustive by any means.

8.1 Air Quality

a) Thorough monitoring with well-maintained monitoring systems

- Dependable data are crucial for baseline analysis and those can be only obtained from reliable monitoring stations. Serbia needs to strengthen its monitoring network, especially in areas prone to high pollution as well as to improve technology and decrease the number of non-operational analysers.

b) Exchange of data and its public availability

- Once reliable data exist, they must be publicly available. That can only be achieved by a proper exchange between relevant intentions (e.g. the Statistical Office and local government). This cooperation can strengthen the participation of several sectors and their mutual assistance, including different levels of governance.

c) Creation of strategic documents

- Serbia needs to create and adopt the Air Protection Strategy, which would also include National Air Pollution Control Programmes, as a comprehensive framework for long-term environmental policy.

d) Regulation of low-power combustion appliances

- Inadequate individual heating devices must be regulated – thus, the Ecodesign Directive needs to be transposed and implemented as soon as possible, to create a systematic reduction. Serbia needs to adhere with emission limit values under the Directive and gradually even create its own, stricter values.
- The state must provide for more effective devices and measuring systems, including proof of origin for firewood and pellets and standardisation of devices.

- Further efforts could include taxes on wood burning according to particle pollution or ban on wood burning in urban areas, or in areas covered by district heating/gas.

e) Improving information and public awareness

- This applies generally to air quality and pollution as well as to more specific cases of customers using individual heating devices, to educate them about its impacts and possible alternatives. Also, municipalities should be allocating funds for such initiatives.

f) Clean fuel transition

- Whereas replacement of individual heaters represents a mid-term solution, Serbia needs a clean fuel transition, especially in large installations that rely on coal or mazut. Furthermore, the completion of gasification of Serbia (however, expensive) could help to distribute heat in areas which are not otherwise covered by the network (Fiscal Report of the Republic of Serbia 2018, 18).
- State ownership of large industrial sites creates problems with their monitoring – privatisation should be supported.

g) Enforcement of regulations

- Relevant pieces of legislation, such as the LPA need to be complemented by regulations that are enforceable. Moreover, authorities must meet the deadlines related to air quality and related policies.

h) Improving inspections and capacities

- Effective monitoring of the progress can be achieved by inspections – those capacities and knowledge need to be improved and provided with additional funding.

i) Modernisation of the vehicle fleet

- Air pollution also origins from traffic, especially from obsolete and inefficient vehicle fleet. Thus, cities need investment for modernisation and electrification of public transport.

8.2 Water Quality

a) Effective water management

- Serbia needs to strengthen its effort to establish a functioning water management system, mainly by improving technical and human capacities. Only those can create forward-looking plans based on thorough analysis.

b) Improve governance and establish cooperation

- As the water sector is divided to several sectors, they need to establish systematic cooperation, based on regular communication and information sharing, especially between agriculture, energy, spatial planning and others.

c) Public information and participation

- The involvement is crucial in order to avoid a dissatisfaction of the citizens. Emphasis should be on consultations at the earliest stage of the planned projects.

d) Improve the control and mitigation of intensive and poorly planned mini-hydropower plant development, gravel extraction, use of ground waters, illegal construction along rivers

- These actions not just impede efforts for environmental protection but heavily harm natural habitats – thus, the integration and coordination of the nature directives (Birds and Habitats Directives) needs to be pushed.

e) Building wastewater installations

- Deficient wastewater system remains the largest challenge for water sector in Serbia. According to the Fiscal Report, four wastewater treatment plants treat wastewater at the tertiary level; another 350 installations need to be built. Thus, concrete strategies to widen investment and obtain technologies should be enhanced. The development of the sewer network is equally important, as an initial step for collecting wastewater and transporting it to the wastewater treatment plants.

f) Increase the quality of water

- Drinking water is still subjected to threats from arsenic, nitrates and nitrates which originated mainly from agriculture. Therefore, a concrete plan and measures for improvement of monitoring of water quality according to the Water Framework Directive (WFD) requirements must be developed. Furthermore, outdated pipes leading to annual losses of drinking water must be replaced.

g) Increase of the budgetary allocations

- Water management and its monitoring cannot be improved without an increase in the budget – focuses should be on monitoring of the whole territory of the country and not just isolated actions.

8.3 Waste Management

a) Strong waste management

- Serbia needs to establish reliable waste management. According to the Fiscal Council report, emphasis should be laid on the waste collection of individual

households as well as business, proper treatment and disposal of the remaining municipal waste in an *environmentally* safe manner.

b) Emphasize waste hierarchy and increase its public awareness

- The most important step is prevention – in 2017, the total amount of waste per capita rose from 1.3 tonnes to 1.6 tonnes, thus Serbia needs to seriously emphasize the waste hierarchy among the public. Media literacy is quite high and thus various channels can be used to initiate campaigns about the need for waste prevention and separation as well as the impacts of improper waste management on health. Furthermore, civil society needs to be increasingly involved in policy making from its early stage.

c) Landfill reduction

- Reduction of existing non-sanitary landfills as well as suspension of building new ones is absolutely crucial. One of the ways proposed by the Coalition 27, is a creation of an economic model motivating "*local governments to deposit waste on sanitary landfills and accelerate the process of closing and rehabilitation of illegal landfills"* (Coalition 27 2019, Annex 1).

d) Improve enforcement and monitoring of obligations

- Polluter Pays principle is an important principle in order to ensure enforcement of legal obligations and also support proper financing of the sector. The involved industries are reluctant to report on the generated waste, and thus a stricter legal control and monitoring system must be established, which would also introduce penalties for local governments not having waste management plan and not submitting data to the Environmental Protection Agency (even though they are prescribed by the Law on Waste Management).

e) Hazardous waste minimisation

- Introduce an umbrella insurance policy to hazardous waste operators so that in the event of revocation of the license, the insurance will bear the costs of remediating hazardous waste and incurred damages

f) Better support of EU funding on a local level

- As waste management is mainly in the hands of local authorities, they need to be given support to prepare the documentation necessary to obtain the EU funds needed for the construction of sanitary landfills.

8.4 General

As the area of climate change is cross-cutting by and large, some of the related recommendations are included in the following list of propositions, which are aimed to improve the *overall* state of the environment in the Republic of Serbia.

a) Long-term strategic planning

- Serbia has to introduce a *long-term* environmental strategy, which would be a starting point for policy making in the sector. It would clearly set its mission, goals, objectives and strict deadlines.

b) Build up capacities and institutions

- Environmental protection must be built on strong administrative capacities – they are the ones who bear the responsibility to put policies in practice. Thus, their number, knowledge and experience must be enhanced at all levels of governance. Similarly, decision makers must improve their knowledge of environmental issues.
- Only strong institutions can make strong policies – expansion of the competencies of the Ministry of Environmental Protection is recommended to achieve centralisation of efforts.

c) Develop public awareness of environmental protection

- The state of the environment affects every single individual. Therefore, the public needs to be informed and involved in decision making. Awareness must be raised on manifold levels, via both informal as well as *formal* education.

d) Increase financing and promote sustainable funding

- One of the most comprehensive improvements must be in the field of environmental financing. The Fiscal Council proposes 3 stages of increasing public expenditure: the 1st stage is aimed at enlarging budget for priority projects (e.g. landfill reduction, wastewater treatment facilities), the 2nd stage keeps the status quo of high-level investments whereas the the 3rd stage due to achieved infrastructure allows for a lower investment.
- It is absolutely crucial to make the Green Fund functional. Financing out of the general budget makes the process non-transparent and inefficient.

e) Better intersectoral coordination

- The environment is by default a multisectoral issue – however, that needs to translate to its coordination, too. Functional cooperation must be ensured on *both* horizontal and vertical level.

f) Extend environmental monitoring and enforcement of obligations

- In order to bring tailor-made solutions, monitoring must be improved. Based on reliable data, environmental obligations can be enforced – without enforcement, even a full transposition of EU acquis is ineffective.

g) Strengthen international cooperation

- Serbia needs to intensify its position towards international climate change agreements. That can be achieved via strategic documents such as the National Climate Change Strategy, which considers a multitude of sectors and by the prompt adaption of the Law on Climate Change. It is vital to revisit its NDCs, which are unsatisfactory and do not align with the EU goals. Moreover, GHG inventory needs to be clear and easily accessible, just as prescribed by the Aarhus Convention and the Paris Agreement. That is a *key* step to support decarbonisation of the energy sector and increase of the share of renewables.

h) Improve political will

- Last, but definitely not least, there is an ongoing problem with the lack of political will. The environment is not a priority for the government, and unless that changes, plans, strategies and actions are hardly effective. The government needs to realize that environmental protection is not just a set of obligations but also an opportunity for economic growth. The Ministry of the Environmental Protection should improve its coordination with public and private investors to support green projects. Importantly, political will can be obtained also by efforts of civil society to push it on the agenda, and as the environment deals with every citizen, the potential is large.

9. CONCLUSION

This Master Thesis has provided a deep analysis of the Serbian accession process to the European Union in the question of environmental Chapter 27. The main challenges in air, water, waste management and climate change have been presented with a vision for possible ways forward. The most crucial question standing is whether Serbia will be able to meet the requirements prescribed by the European Commission and eventually join the EU. Current administration hopes to finish the negotiations and become a member of the EU by 2025, but that largely depends on the normalisation of the relationship with Kosovo.

Under the current regime, the outlook for the development of environmental protection remains *sceptical.* Even if formally Serbia achieves submitting its negotiating position by the end of 2019 and possibly opens the Chapter in spring 2020, the closing of it is nowhere near being in prospect. The main challenges are huge environmental heritage, lack of political will related to absence of motivation, inefficient capacities, defective financing, diversification within sectors and low awareness of the public, *inter alia.*

On the other hand, the efforts of some of the stakeholders are indisputable. The members of Coalition 27 have accomplished a difficult task of reporting on the complexity of Chapter 27. It is the pressure of the civil society, which is moving things forward – if people are aware of the immense and irreversible impacts of climate change, the will to alter the *status quo* grows. The above-mentioned recommendations can pave the way forward for Serbian environmental protection. Thus, let us hope that the government will realize the manifold nature of the environment and that what today might seem as an obligation, will turn to a benefit tomorrow.

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APPENDICES

Appendix 1 – Questionnaire

PETRONELA HALAMOVA – MASTER THESIS QUESTIONNAIRE

DATE:

NAME:

POSITION:

Inform that it will be recorded and can be anonymous/public – can be quoted if requested so

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1. Please tell me about your background, current position and your connection to Chapter 27.

2. What are generally the biggest environmental challenges in Serbia?

3. Which are the areas that require most work in order to meet the EU requirements set by the EU?

4. What are most challenging issues in the field of air, water and waste management for Serbia and why?

5. What is the progress of these areas in terms of EU acquis harmonisation?

6. Will Serbia be able to meet the accession criteria and join by 2025? Or by which year?

7. How could Serbia enhance progress in the area of air, water and waste management?

8. What are the most important principles that Serbia should align to during the process of harmonisation? The most important stake holder?

9. Which countries can serve as 'best practice'?

10. How is Serbia progressing on international level in terms of climate change and its legislative framework, esp. Paris Agreement, Kyoto?

Appendix II - Fact sheets by the MEPRS and SIDA, 2018. Unpublished.

EU ACCESSION

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An opportunity to improve standards and quality of life

FULL COMPLIANCE

The Commission recognizes that achieving full compliance with the environmental acquis is one of the major challenges for accession and probably only achievable in the long term. The bulk of the investments will be needed for air pollution abatement, water and waste water management and management and disposal of municipal and hazardous waste.

COMMISSION PROPOSES THAT:

Before accession the candidate countries should, in partnership with the EU, draw up and start implementing realistic national long-term strategies and plans for gradual and effective alignment with the environmental acquis, in particular for tackling water and air pollution, improving waste management practices.

These long-term national strategies and plans should include:

- key priority areas
- objectives to be fulfilled by the dates of accession and
- timetables for further full compliance after accession.

Corresponding obligations should be incorporated in the accession treaties. All new investments should comply with the acquis.

APPROXIMATION PROCESS

The approximation of law is a unique obligation of membership in the European Union. It means that countries aspiring to join the European Union must align their national laws, rules and procedures in order to give effect to the entire body of EU law contained in the acquis communautaire. Further, countries have to implement and enforce these aligned requirements.

Effective, prioritised management of the approximation process is crucial, because of the limited resources, and therefore requires careful strategic planning and cost-effective programmes. As the obligation to approximate continues after accession, the pre-accession approximation process becomes an opportunity for countries to organize their institutions and procedures and to train their staff for the daily processes and responsibilities of European Union law making, implementation and enforcement.

These special strategies and plans for adoption and implementation of the environmental acquis should be combined with a reinforced EU pre-accession assistance strategy where investment for adoption of the environmental acquis is one of the priorities, recognizing that the EU's financial assistance will only cover a part of the resources required.

The process of environmental approximation should be an integrated element in the overall strategy for accession. Compliance with the EU environmental acquis is necessary both for environmental and economic reasons.

Republic of Serbia
Ministry of Environmental Protection

Шведска
Sverige

WATER MANAGEMENT

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In order to prepare for negotiations, Serbia has developed four Directive Specific Implementation Plans (DSIP) for Water Framework Directive, Urban Waste Water Treatment Directive, Drinking Water Directive and Nitrates Directive. These documents will be approved together with the Negotiating Position for Chapter 27.

IN ORDER TO SIGNIFICANTLY IMPROVE WATER QUALITY IN SERBIA, SEVERAL PRIORITY MEASURES INCLUDE:

Considerable strengthening of both, surface and groundwater monitoring systems. In order to meet the requirements of the WFD, UWWT Directive, Nitrates Directive and other water related directives, about 1300 monitoring stations might be needed, of which: about 230 monitoring stations for surveillance, about 1000 for operational monitoring and about 70 for investigative monitoring. Adoption of a new water monitoring programme and collection of monitoring data according EU requirements from 2021;

5 River Basin Management Plans to be developed. The biggest - for Danube river basin (it covers 92% of water) is under development and to be officially adopted end of 2021;

Construction around 10,370 km of additional collection network and 1,050 km of the existing network replacement/rehabilitation (2,552 MEUR investment);

Implementation of 140 projects in order to ensure compliance with drinking water requirements mainly dealing with water quality parameters, addressing health impacts issues (presence of arsenic, nitrate and nitrite, etc.) and acceptability concerns (turbidity, color, etc.) and solving water shortage issues (1,551 MEUR);

Development of the Flood Risk Management Plan for the territory of Serbia to be ready by the end of 2021 as well as the first cycle for water districts;

Construction of 359 wastewater treatment facilities in 398 agglomerations (1,266 MEUR investment);

Reform of the water utility sector, which will balance and improve the quality of service and lead to more efficient management of public water supply, as well as the systems for collection and treatment of wastewater in service areas. It will focus on the improvement of performance and efficiency of utilities and implementation of tariff reform measures indicated in the Water Law.

Environmental standards are essential to an improved quality of life for Serbian Citizens. Major efforts in terms of financial and human resources are foreseen during the implementation process across the entire sector. Large scale investments will support the construction or modernization of urban waste water collection and treatments systems, improvement and extension of the water supply networks to ensure that safe drinking water is available to everybody. There is number of significant steps already being made in order to improve situation in water supply and waste water treatment with full understand that there will be a cost to improved standards but greater benefits for this and coming generations.

¹PE - population equivalent

Republic of Serbia
Ministry of Agriculture, Forestry and Water Management
Republic Water Directorate

Republic of Serbia
Ministry of Environmental Protection

Шведска
Sverige

WATER MANAGEMENT

The European Union's key objective is to achieve, by 2027 the latest, good status for the over 111 000 surface waters (e.g. rivers, lakes, coastal waters) and the over 13 000 groundwaters in EU territory. Achieving "good status" means securing good ecological and chemical status for surface waters and good quantitative and chemical status for groundwaters, main sources of abstraction of drinking water. Achievement of EU goals is supported by number of directives, including the **Water Framework Directive** (WFD), which establishes a strategic framework for the protection of all water bodies, i.e. rivers, lakes, coastal waters and groundwater in a highly integrated manner and complementary Directives on the protection of Groundwater against pollution and deterioration (GWD) and on Environmental Quality Standards (EQS) establishing the standards which constitute the chemical status criteria for the **Water Framework Directive**. River Basin Management Plan is the main tool for planning and implementation of WFD, EQS and GW directives.

Other important legislation includes the **Urban Waste Water Directive** which requires that wastewater generated by agglomerations is collected and made subject to appropriate treatment before being discharged into the natural environment, the **Nitrates Directive**, which deals with the relationship between agriculture and water quality, the **Floods Directive** which requires Member States to assess flood risks and to establish flood risk management plans with the aim to reduce flood risk for human health, economic activity, the environment and cultural heritage, the **Drinking and Bathing Water Directives** which require Member States to meet binding quality standards to ensure safe drinkable water from the tap and clean water for bathing, to monitor whether the standards are complied with and to inform consumers and the public accordingly.

Serbia is aligning it's legal and institutional framework with EU directives as well as already implementing some of requirements. Considering current situation with water sector infrastructure, full implementation will take rather long time period, potentially in next 20-25 years.*

In Serbia, around 67% of water for drinking water supply is abstracted from groundwater sources (well and karst springs), whereas 33% is abstracted from surface waters (rivers and reservoirs).

67%

Certain municipalities are lacking of availability of good quality drinking water. Parameters like arsenic, nitrites and nitrates are the most frequent cause of non-compliance.

55%

Approximately 3.9 million residents are currently connected to wastewater collection systems (55% of the total population)

According to 2012-2016 monitoring data, 40% of lake water bodies were characterized as having poor ecological status, only 3% of stream and river water bodies were characterized as having good ecological status

40%

7.3%

Only about 7.3% of waste water receives biological treatment and 1.3% more stringent treatment

*Actions and target dates reflect plans as described in the draft strategic documents. This still may change during process of approval or as a result of negotiations.

WATER MANAGEMENT

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In order to prepare for negotiations, Serbia has developed four Directive Specific Implementation Plans (DSIP) for Water Framework Directive, Urban Waste Water Treatment Directive, Drinking Water Directive and Nitrates Directive. These documents will be approved together with the Negotiating Position for Chapter 27.

IN ORDER TO SIGNIFICANTLY IMPROVE WATER QUALITY IN SERBIA, SEVERAL PRIORITY MEASURES INCLUDE:

Considerable strengthening of both, surface and groundwater monitoring systems. In order to meet the requirements of the WFD, UWWT Directive, Nitrates Directive and other water related directives, about 1300 monitoring stations might be needed, of which: about 230 monitoring stations for surveillance, about 1000 for operational monitoring and about 70 for investigative monitoring. Adoption of a new water monitoring programme and collection of monitoring data according EU requirements from 2021;

5 River Basin Management Plans to be developed. The biggest - for Danube river basin (it covers 92% of water) is under development and to be officially adopted end of 2021;

Construction around 10,370 km of additional collection network and 1,050 km of the existing network replacement/rehabilitation (2,552 MEUR investment);

Implementation of 140 projects in order to ensure compliance with drinking water requirements mainly dealing with water quality parameters, addressing health impacts issues (presence of arsenic, nitrate and nitrite, etc.) and acceptability concerns (turbidity, color, etc.) and solving water shortage issues (1,551 MEUR);

Development of the Flood Risk Management Plan for the territory of Serbia to be ready by the end of 2021 as well as the first cycle for water districts;

Construction of 359 wastewater treatment facilities in 398 agglomerations (1,266 MEUR investment);

Reform of the water utility sector, which will balance and improve the quality of service and lead to more efficient management of public water supply, as well as the systems for collection and treatment of wastewater in service areas. It will focus on the improvement of performance and efficiency of utilities and implementation of tariff reform measures indicated in the Water Law.

Environmental standards are essential to an improved quality of life for Serbian Citizens. Major efforts in terms of financial and human resources are foreseen during the implementation process across the entire sector. Large scale investments will support the construction or modernization of urban waste water collection and treatments systems, improvement and extension of the water supply networks to ensure that safe drinking water is available to everybody. There is number of significant steps already being made in order to improve situation in water supply and waste water treatment with full understand that there will be a cost to improved standards but greater benefits for this and coming generations.

¹PE - population equivalent

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CHAPTER 27 – ENVIRONMENT

Promote sustainable development and protect the environment for present and future generations.

CHAPTER 27: ENVIRONMENT

The acquis comprises over 200 major legal acts covering various sectors. For negotiations purposes, EU legal acts are grouped into about 75 main legal acts/ groups of legal acts into following subchapters: horizontal, air quality, waste management, water quality, nature protection, industrial pollution control, chemicals, noise and climate change. Chapter 27 also includes civil protection area.

EU environmental policy is realized through the **EU legal system** (acquis). There are two main types of legislation in the EU legal system. Some laws – regulations – apply in the whole EU as soon as they are adopted. Others – directives – have to be converted into national law. Directives say what we are aiming to achieve but let Member States decide how they will do it.

PREVENTIVE ACTION

EU environmental policy aims to promote sustainable development and protect the environment for present and future generations. It is based on preventive action: the polluter pays principle, fighting environmental damage at source, shared responsibility and the integration of environmental protection into other EU policies.

The Environment Directorate General of the European Commission (**'DG Environment'**) is responsible for EU policy on the environment. It also makes sure that Member States apply EU environmental law correctly. Together with DG Climate Action they are main professional counterparts for Serbian institutions during screening and negotiations

NEGOTIATIONS are held with each candidate country to determine their ability to apply EU legislation (acquis) and examine their possible request for transition periods. To conduct the accession negotiations, EU legislation and standards are divided into 35 chapters which are negotiated one by one. ENVAP is assisting Serbia in preparing to negotiate the Chapter 27 Environment and climate change.

STRONG ADMINISTRATION

A strong and well-equipped administration at national, regional and local level is imperative for the application and enforcement of the environment acquis.

CHAPTER 27 – ENVIRONMENT

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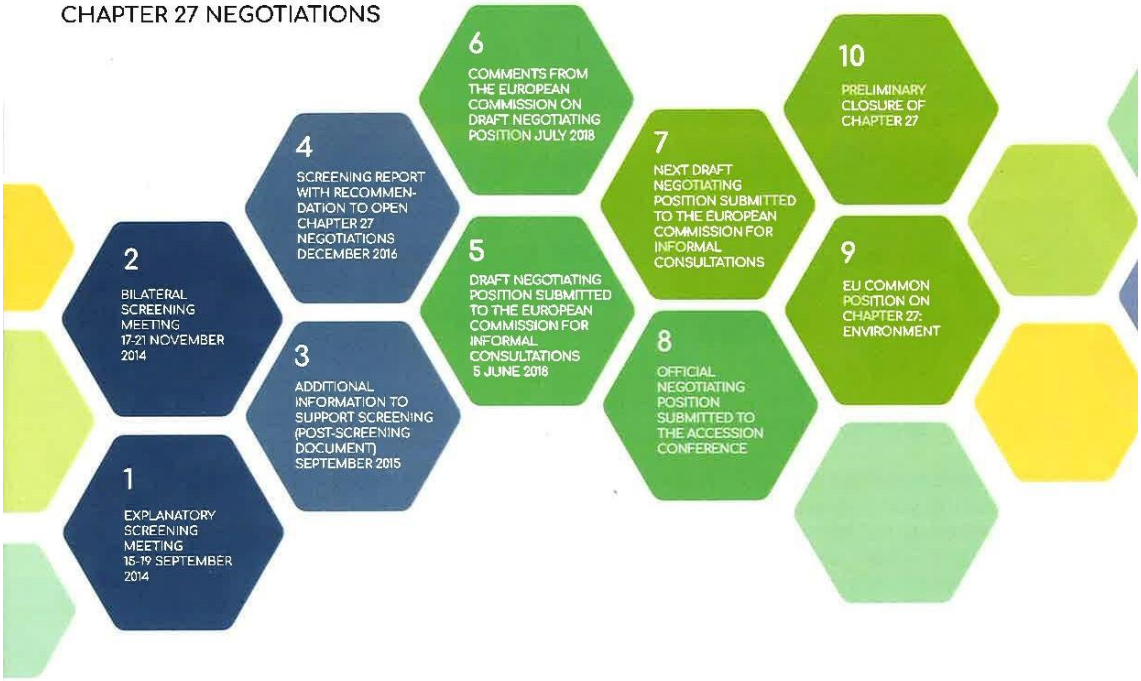
Promote sustainable development and protect the environment for present and future generations.

CHAPTER 27 NEGOTIATIONS



INVESTMENT DEMANDING

Compliance with the acquis requires significant investment into environmental infrastructure. If extended periods after membership are required, transitional periods have to be negotiated. Request for transitional period has to be supported by the Directive Specific Implementation Plan – DSIP.

For the process to be a success, politicians must move Environment and Climate Change up their list of priorities. Strong determination will be necessary to address decades of accumulated environmental challenges and the immediate and future challenges posed by climate change.

ENVIRONMENT ACCESSION PROJECT 3 (ENVAP 3) is a project funded by The Swedish International Development Cooperation Agency (Sida) for the period 2016 – 2020 assisting Serbia and the MEP particularly in preparing to negotiate and comply with Chapter 27 Environment requirements.

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WASTE MANAGEMENT

Waste has a huge impact on the environment and human health, causing pollution, greenhouse gas emissions and losses of materials

EU waste management policies aim to reduce the environmental and health impacts of waste and improve Europe's resource efficiency. The European Union's approach to waste management is based on the "waste hierarchy". In 2018 revision of 5 main waste management directives was adopted (so called Circular Economy package). The new legislation requires Member States to take specific measures to prioritize prevention, re-use and recycling above landfilling and incineration, thus making the circular economy a reality. EU recycling targets require achieving 50% of recycling of municipal waste by 2020 and gradually achieving 65% of material recovery target by 2035, by the same year reduce waste landfilled to 10% or less, recycle 70% of construction and demolition waste by 2020.

Did you know?

Serbia in 2017 generated about 2.15 million tons of municipal waste.

SERBIA		EU
300 KG per capita		480 KG per capita
4% recycled		47% recycled
Most of waste is being landfilled		24% of waste is being landfilled

There are about 3500 of non-compliant landfills and dumpsites leaking pollution into the soil, air and water whereas modern sanitary landfills keep the materials contained. About 21% of waste is landfilled into sanitary landfills.

Completing strategic framework for waste sector

Waste generation in Serbia has tendency to grow what also means growing need for proper waste management. In order to plan required actions for waste treatment according to waste management hierarchy fully complying with EU requirements in Serbia, following planning documents are under development:

These strategic documents will define Serbia's future waste management approach and will be completed in 2019.

WASTE MANAGEMENT

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Towards recycling society

In order to achieve 50% recycling target in Serbia, waste sector DSIP foresees stepwise approach establishing required infrastructure until 2035, emphasizing source separation, separate collection, secondary separation, establishing amenity sites and composting sites, etc.[1]

TABLE INFRASTRUCTURE PLANNED FOR MUNICIPAL WASTE MANAGEMENT

	High density urban Region – Belgrade	Regions with large conurbations – Novi Sad, Niš, Kragujevac	Other Regions
1st Phase	• 100% collection coverage • Waste collection and transport • Source separation with separate collection of recyclables • Secondary separation of recyclables – sorting plant • Household waste reception / amenity sites (bulky waste, WEEE, hazardous) • Fully engineered sanitary landfill with compaction • Composting of green waste (parks and streets etc.) • Closure of existing landfills (cease of operations, gate and fence)		
2nd Phase	Waste to Energy Home composting	Bio-waste collection and treatment and MBT, Home composting	Bio-waste collection and treatment and simple BTs in four regions, Home composting
3rd Phase	Recultivation of all old landfills and dumpsites selecting appropriate option		

Serbia is in the process of introducing regional waste management systems with 8 operational so far. By 2031 all waste will go into sanitary landfills or be treated in line with the hierarchy, non-compliant landfills will be closed and re-cultivated by 2035. These regional systems shall allow achieving modern waste management saving resources and protecting environment and human health, significantly reducing landfilling and increasing waste reuse and recycling at the same time creating green job opportunities.

Negotiations regarding waste sector

It is assessed, that about 1,344 million euro will need to be invested in Serbia for proper waste management. Most of financial resources are expected from private funds, EU support and national funds. Nevertheless, this is significant amount of financial resources and time is needed to accumulate them and invest into establishment of waste management infrastructure. Therefore negotiations in waste sector will need to balance goal to establish environmentally sound waste management system as soon as possible with realistically available resources avoiding excess burden on inhabitants of the country. Such assessment is done in 5 DSIPs, which will be submitted together with the Negotiating Position for Chapter 27.

Implementation of EU environmental standards is essential to an improved quality of life for Serbian Citizens. Local self-governments, civil society organisations and citizens can make a big, positive impact improving waste management, in particular, in areas like recycling and biodegradable waste management.

[1]Actions and target dates reflect plans as described in the draft strategic document. This still may change during process of approval or as a result of negotiations.

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EU ACCESSION PART 2

GLOSSARY FOR EU ACCESSION PHASE

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TP - Transitional Period Some of the requirements of the various directives may require longer implementation periods, which continues after accession to EU - for example, high implementation costs, financing of which can be accumulated only during longer periods. Each transitional period during negotiations shall be substantiated providing a Directive Specific Implementation Plan.

DSIP - Directive Specific Implementation Plan usually provides a short description of: main requirements of the directive, assessment of situation in implementation of directive (including legal, institutional and technical aspects), plan for actions to be taken to fully implement EU requirements, cost assessment of these actions, financing mechanism and timetable for full implementation.

Landfill DSIP – The Plan for implementation of the Landfill Directive (Council Directive 1999/31/EC) that includes information regarding existing landfills and dumpsites, assessment of their compliance with directive requirements, plan for development of regional infrastructure (waste collection and transport, transfer stations, source separation - two bins system, with separate collection of recyclables, secondary separation of recyclables – sorting plant, household waste reception / amenity sites (bulky waste, WEEE, hazardous), fully engineered sanitary landfill with compaction, composting of green waste, closure of existing landfills. This DSIP provides a timetable for development of regional systems and strategy for reduction of landfilling biodegradable waste.

Urban Waste Water Treatment (UWWT) DSIP – The Plan for the implementation of the Urban Waste Water Treatment Directive (Council Directive 91/271/EEC) includes a description of the situation in the sector, proposes identification of 398 agglomerations, an identification of sensitive areas and foresees the need for construction of 359 wastewater treatment plants, approximately 10,400 km of new wastewater collection networks and more than 1,000 km replacement/rehabilitation of the existing network. It also provides investment cost assessment (4.3 billion EUR) and indicates main financing sources and implementation periods.

Drinking Water Directive DSIP – The Plan for the implementation of the Drinking Water Directive (Council Directive 98/83/EC) includes a situation description, identifies 139 investment projects mainly dealing with water quality parameters (presence of arsenic, nitrate and nitrite, cloudiness, colour, water shortage, etc.) and provides assessment of total the investments costs needed for compliance (1,551 MEUR) as well as financing sources and implementation periods.

Water Framework Directive DSIP – The Plan for implementation of the Water Framework Directive (2000/60/EC) includes a transposition and institutional system development assessment, a description of situation with river basins plans development, remaining gaps - and actions to close these gaps, proposed measures for full implementation, assessment of costs and financing sources and a timetable for full implementation.

Waste Framework DSIP – The Plan for implementation of the Waste Framework Directive (2008/98/EC) includes description of the situation in Serbia regarding municipal waste management, measures for increasing waste recycling (separate collection for recyclables by establishing 2 (two) bins collection system – one for mixed waste and another for recyclable waste, secondary waste separation in separation lines, construction of small composting capacities including appropriate vehicles for compost transport, home composting, in order to recycle organic waste from households), collection and treatment of construction and demolition waste, treatment of hazardous wastes, costs assessment of these measures, financing sources description and implementation timetable.

Industrial Emissions DSIP – The Plan for implementation of the Industrial Emissions Directive (2010/75/EU) includes the assessment of legal and institutional system, situation assessment with integrated permitting of 227 installations requiring an IPPC permits at present (165 applications have been submitted and 28 integrated permits have been issued, while 26 applications remain still to be submitted or have to be fully revised). The assessment of technical and financial situation in companies operating these installations and their capacity to finance necessary environmental protection measures, indicates required implementation periods until full implementation of the directive at operators level.

RSIP - Regulation Specific Implementation Plan - During negotiations to be used for explanation of required adaptation periods.

*Development of these documents is in progress.

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