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External Funding Analysis of Environmental Projects in Southeast Europe

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Declaration of Authenticity

I hereby declare that the Master's Thesis presented herein is my own work, or fully and specifically acknowledged wherever adapted from other sources. This work has not been published or submitted elsewhere for the requirement of a degree program.

Prague, 7th August 2015 Signature: .....

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Title of the Master's Thesis:

External Funding Analysis of Environmental Projects in Southeast Europe

Abstract:

This thesis highlights the importance of sustainable development, introduces the concepts and principles of European waste management, which became an inseparable part of today's society and therefore is supported by various funds that are analysed together with exemplary cases in this master's thesis.

Key words:

Sustainable development, Environmental projects, Waste management, Funding, Cohesion fund, European Regional Development Fund, Southeast Europe.

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LIST OF ABBREVIATIONS

AA	Audit Authority, Audit of EU Funds Executive Agency of the MoF
CA	Authority, National Fund Directorate of the MoF
CAP	Common Agricultural Policy
CEE	Central and Eastern European Countries
CF	Cohesion Fund
CLLD	Community Led Local Development
CoM	Council of Ministers
DG	Directorate-General in the European Commission
DG REGIO	DG Regional Policy
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EIB	European Investment Bank
EP	European Parliament
ERDF	European Regional Development Fund
ESF	European Social Fund
ESIF	European Structural Investment Fund
EU	European Union
GDP	Gross Domestic Product
GIMF	IMF's Global Integrated Monetary and Fiscal Model
GNI	Gross National Income
GNP	Gross National Product
IB	Intermediary Body
IFIs	International Financial Institutions
IMF	International Monetary Fund
ITI	Integrated Territorial Investment
JASMINE	Joint Action to Support Micro-Finance Institutions in Europe
JASPERS	Joint Assistance to Support Projects in European Regions

JEREMIE	Joint European Resources for Micro to Medium Enterprises
JESSICA	Joint European Support for Sustainable Investment in City Areas
LOTHAR	Forecasting and monitoring system for EU SCFs absorption
MA	Managing Authority
MoF	Ministry of Finance
MTO	Medium-term objective
NSRF	National Strategic Reference Framework
OECD	Organisation for Economic Co-operation and Development
OP	Operational Program
PPP	Public-Private Partnership
SCFs	Structural and Cohesion Funds
SEE	Southeast European Countries
TFP	Total factor productivity
UMIS	Unified Management Information System
WB	World Bank

PREFACE

Recent trends in Southeast European countries confirm that the public sector remains a major finance source for environmental projects. It is therefore important that public environmental expenditure programmes are efficient and effective. This might help to leverage additional resources for environmental investments both from international and private companies.

Why environmental projects? *"If everyone used energy and resources the same way we do in the Western World, we would need three more Earths at least. And we have only one."*[1] When considering this statement, it is what makes me think and inspires me to explore further. Decades of mismanagement of the economy, subsidization of resource use and environmental degradation have left huge needs and meagre resources in countries of Southeast European (further "SEE") region. Sustainable development in the context of economy, environment and society will be therefore defined in the first part of this thesis. The second reason why I chose this topic is the fact that I worked as an intern for the waste management company .A.S.A. Group which is constantly expanding its operations from Central Europe further to Eastern and Southern Europe. The company provides a broad spectrum of waste solutions for municipalities, industrial, commercial and retail customers as well as to domestic households and small trade businesses. [2] Therefore the second part of my thesis is going to focus on waste management, the integral part of sustainable development.

The third part of my thesis will cover funding opportunities in selected countries. The main goal of this thesis is to analyse environmental projects financed mainly from various EU funds. The last part will therefore introduce case studies from SEE region; compare executed projects and financial resources. This will then serve as a guidance for the above mentioned waste management company .A.S.A. Group with regard to the decision making matters of further expansion operations and its financing. It is important to underline that the major purpose of public support is to provide incentives to local communities and enterprises to undertake environmental investments by spending more of their own resources. Therefore, the rate of assistance should be set in such a way to ensure that is does not replace, but rather leverages the recipient spending. For this reason I will pay a close attention to the rate of public versus private sources of financing.

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[1] Mona Sahlin, former Minister for Sustainable Development, Sweden

[2] .A.S.A. Group: Retrieved on 17.7.2015 from http://www.fcc-group.eu/en/A-S-A-Group/Home.html

1. Basic Terms and Issues

1.1. Introduction

In May 2004 ten new countries joined the European Union (EU) including seven countries from the former Eastern Bloc.[3] In January 2007, the European Union was extended by two Southeast European countries – Bulgaria and Romania.

From the perspective of the 15 "old" member states, these extensions were necessary in order to work politically more closely together and to be able to pursue common goals. As the economic and/or social situation in some of the new accessed countries was not necessarily considered to be stable, some of the EU countries expressed their opposition to the accession of the Central-Eastern European countries (further "CEE") to the EU. Later similar opposition arose against Southeast European countries. For the CEE countries, entering the EU meant a big step towards democracy and social market economy. The same situation is happening in the SEE too.

The idea of a creation of a common Europe, i.e. the creation of a space in which the human rights, democracy, cultural and other diversity, social market economy, environmental protection and sustainability are guaranteed, is to be therefore simultaneously achieved by a total of 28 member states which still have many political, economical and social differences within the society.

Since the EU society could not work according to the system designed for the 15 EU member states any longer (due to the eastern enlargement), the Treaty of Lisbon redefined the EU's objectives.[4] This treaty came into force on 1st January 2009.

The EU had to change the responsibilities, update working methods and optimize all previously available instruments. The Treaty of Lisbon also provides the basis for more efficient decision-making, strengthening democracy and more cohesive external representation. The enlargement of the EU demanded not only institutional and administrative changes, but also the redefinition of common goals.[5]

According to the Treaty of Lisbon, the EU is now stronger in the sustainable development. It should primarily address the protection of the environment and the improvement of the environmental quality.

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[3] On 1 May 2004, the states of Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Malta and Cyprus joined the European Union. These are also called the *Luxembourg group* due to the start of accession negotiations which were agreed with them in Luxembourg in 1997.

[4] European Commission, *Lisbon Treaty*, ec.europa.eu, 2014: Retrieved on 30th January 2014 from http://ec.europa.eu/archives/lisbon_treaty/full_text/index_cs.htm

[5] European Commission, *Lisbon Treaty*, ec.europa.eu, 2014: Retrieved on 30th January 2014 from http://ec.europa.eu/archives/lisbon_treaty/countries/index_cs.htm

Although the environment protection was already mentioned as an objective of the EU at the summit conference in Paris in 1972 and since 1986 has officially been part of the integration contract, this objective was more precisely defined and newly rewritten in the Treaty of Lisbon. It is now considered as a tool to strengthen EU's action in this area and to develop it further. Sustainable development is thus playing a central role in the international relations now. The issue of energy supply is also new in the Treaty of Lisbon and it brings attention to a new problem of the member states. A chapter about energy has been included in a EU treaty for the first time and it deals with the overall objectives and the topics of energy security, energy efficiency or the functioning of the energy markets as well. The definition of these objectives shows that the environmental protection in all 28-member states, regarding the development of new and renewable energy sources and the conservation of resources is of a crucial importance.

The topic of environmental and resource protection appears in many acts of the EU (policies, strategies, action plans, etc.) described in detail, e.g. in the Strategy for the Sustainable Development of the EU, in the Thematic Strategy for the Sustainable use of Natural Resources or in the Waste Framework Directive.[6]

It can be concluded that the EU has been trying for some time to minimize the stress on the environment and reduce the consumption of natural resources. To counter preventively the trend of environmental stress, measures on EU-level such as the Framework Programme for Competitiveness and Innovation[7] or the Directive on Environmental Liability with regard to the Prevention and Sanitation of Environmental Damage are being developed.

If one wants to borrow some relevant terms from the economics, he/she will find out, that the economic actors such as consumer and producer tell us through the formation of the demand and the supply policy how much environmental resources are always needed. However, not only the economic actors cause this, it also depends on the existing policy framework.

The environmental policy is strongly connected to the economic policy, since every economic action leaves a footprint in the environment. For decades, the economic activity has been connected with the industrial production with damaging effects on nature; examples are environmental pollution, ozone hole, and wild dumps.[8]

For this reason, the EU policy focuses today – both economically and environmentally – more on limiting or preventing the overuse of the assimilation capacity of the natural environment.

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[6] Strategie zur nachhaltigen Entwicklung KOM (2005) 658.

[7] Thematische Strategie für eine nachhaltige Nutzung der natürlichen Ressourcen KOM (2005) 670.

[8] Directive 2008/98 / EG of the European Parliament and of the Council on waste and repealing certain Directives of 19 November 2008.

In practice however, the measures to "eliminate" the negative consequences of previous actions often precede. Mainly the problems with the increasing waste generation can be named here.

Economically seen by supply and demand, that is, by human action and the interplay of market forces, the raw materials are extracted from nature and they are used in the economic system of production and consumption – after a while they come back as waste.[9]

Therefore, the handling of the raw materials which always eventually become waste is very important. Since only a sustainable, wise organized waste management can eliminate the amount of waste and recover the reusable materials, it is required that the measures to strengthen the waste or materials flow and sustainable waste behaviour will evolve. It is essential to consider the waste in the socio-historical context: from a social perspective the waste was always considered as something useless and unclean that everyone only carries away from its vicinity. Yet, as a result of diseases such as plague and cholera, the mass production and mass consumption, the piles of rubbish, the recurring "garbage scandals", the mention of the scarcity of resources and the "waste emergency" changed the consciousness of the attitude of people to waste. The waste and its meaning were "rediscovered".

The garbage, the impure, has suddenly become a product that is useful and can be made economically profitable. This however brings obligations and responsibilities to all businesses and households. Accordingly, the objective of waste management has changed. To dispose the amount incurred in the economy and in the household and to make waste not only environmentally friendly, but also to reduce as far as economically reasonable, the commitment of the actors involved plays an important role. Thus they make a significant contribution to the conservation of natural resources.

The role of waste management today is not only result of human action remedy; it also allows the recycling of the raw materials and energy they contain.[12] This potential of the waste should not be missed, as population growth, unequal distribution of raw materials and the high levels of consumption of natural resources are becoming increasingly scarce worldwide. In addition, the waste industry has become a very important sector of the economy.

For this purpose, it is useful to make new waste management at European level, so that it is integrated into a sustainable, resource-efficient materials flow management. Production, trade and consumption of goods are included in this process. This could ensure a long-term sustainable development and at the same time intergenerational justice.

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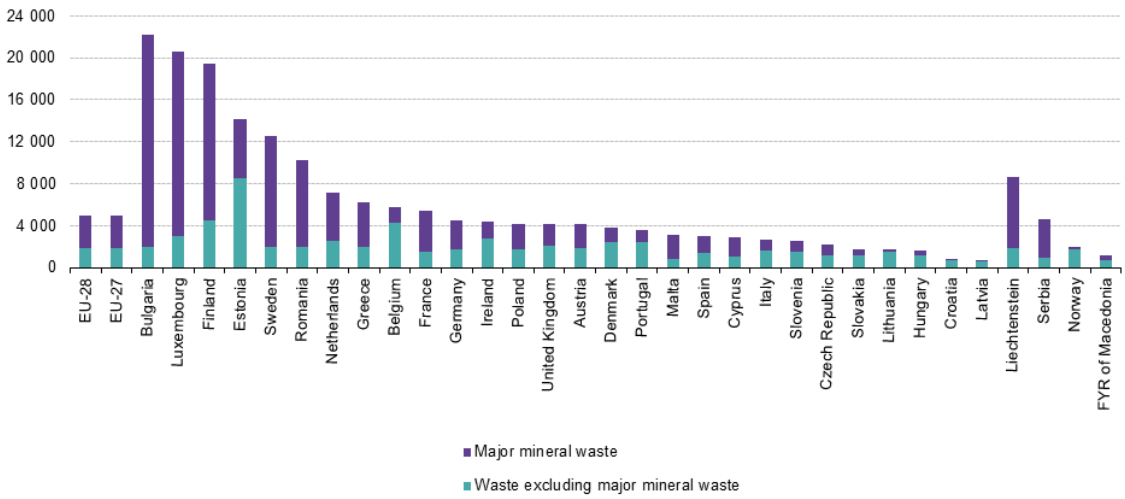
[9] Werner F. (1990): Die Abfallwirtschaft als Teil der Rohstoffwirtschaft, Schäffer Stuttgart.

1.2. Issue Statement

The constantly growing amount of waste and related issues of prevention and disposal of waste are the main problems of the industrial prospering companies as you can see in the figure 1. Leading waste producer is Bulgaria closely followed by another state from our target region, Romania. The waste is a product of both population and companies which EU has for many years paid a special attention to which is confirmed by the messages and strategies.

Figure 1: Waste generation, 2010 (kg per inhabitant)



Source: Eurostat (online data code: env_wasgen)

The central challenges of the sustainable development were specified in the EU Sustainable Development Strategy published in 2006. The sustainable consumption and production were mentioned there as a new aspect among topics such as climate change, sustainable transport or conservation and management of natural resources.

The production of goods with the aim of maximizing profits and the consumption of products with the aim of maximum satisfaction, have led to global environmental problems and social injustice. At the same time a claim-mentality has prevailed in the society which causes that in general the citizens are not willing to renounce their claims to the growing material supply level for benefit of improved environmental quality. It is confirmed by numerous studies. According to Pötter, about 60 % of our environmental problems step back up at a private consumption.[10] Because of that, changes in this area are necessary, too.

[10] Pötter B. (2006): König Kunde ruiniert sein Land - Wie der Verbraucherschutz am Verbraucher schei-tert und was dagegen zu tun, Oekom Verlag München.

The companies often refer to the environment as a free or cheap source of income, e.g. the co-products that are incurred in the production processes such as waste, waste heat, etc. Therefore, that waste is considered as one of the longest lasting products of the company or even as a "ghost" that will still show up after hundreds of years.

For these reasons, a redesign of waste management is urgently needed. It must be also considered that the people involved in the economy will not waive without satisfaction of their needs or the demands of the environment (resources consumption) which is also confirmed in the expressions of neoclassical economy.

In this respect, the neoclassic economy gives us the conclusion that the free decision of consumers and producers in terms of natural resources is based on the optimization of own benefit. This theory then represents the *"homo oeconomicus"* decision making on the market. He strives for his own benefit maximization.[11]

His behaviour on the market is selfish, with no regard to the welfare of the others. The value of an object or behaviour is determined for him according to the extent, to which it is useful to him which may affect not only the consumer's behaviour, but also the producer's. The *homo oeconomicus* uses nature to satisfy his needs and disposes of the soil largely as a waste storage.

Consequently, it can be stated that the pro-egoistic values are deeply rooted in the human mentality. Therefore, it seems politically almost impossible, nowadays, to restrict legally properly or ethically the last attained prosperity. For this purpose, a new sustainable model of prosperity is required.

1.3. Starting Position

The concern for a clean environment for the future generations is a main topic of the contemporary European politics and at the same time an essential condition for the sustainable development. The politicians and the public realize strongly the consequences of the development in the field of the environmental knowledge and strive to develop common solution strategies through new agreements and numerous conferences.

The World Conference on Environment and Development in Rio de Janeiro in 1992 is one of the prime examples. Thanks to the leading political authorities a comprehensive turnaround in dealing with the environment was first requested at this conference.[12] The Earth Summit in Kyoto in 1997 is another example; it was decided to make reduction targets for the greenhouse gases there. However, despite

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[11] Runge M. (1994): Milliardengeschäft Müll, R. Piper GmbH & Co. KG München.

[12] It arose as well numerous documents such. B. Agenda 21 or Declaration on Environment and Development.

numerous policies and programs, these conferences are often referred to be, as for the environmental policy, insufficient. Reaching the goal of sustainable development also seems to be still far away.

The negotiations on the Kyoto Connection Agreements should have been updated at the conference in Copenhagen in 2009. However, the results of this conference were considered as very disappointing.[13] The subsequent conferences in Cancun (2010), Durban (2011) and Rio (2012) have not brought any major breakthrough, either.

The recent global economic crisis (2009-201?) has been prioritized in the discussions on the European level which has generally led to downgrading of environmental demands and slowed down negotiations concerning the environmental issues. However, the economic situation shows that the EU can, if countries act together, work out a lot of proposals and solutions. As some European regions have very similar structures and also similar problems, it is important to act on the political level also more across countries and not to only consider the EU as an association of 27 separate states. The geographical nearness to each other can have an increasingly greater influence on the extent of the impact in the field of economy and also in environmental protection.

Based on the reports of the implementation of the Pre-Accessions Fund projects and the Structural Fund projects it can be stated that the country border cooperation, e.g. between Czech Republic and Germany or between Austria and Slovakia, can overcome the political or economic barriers. A close cooperation appears as a possibility for the successful use of measures in the framework of a sustainable EU materials flow management.

Some countries, such as Germany or France, in this case play a leading role in the processing of solutions; new member states such a Romania or Bulgaria rather play the role of a "student" which can achieve the high-community environmental standards most likely based on the key examples of leading EU countries.

But the "old" member states have experience with *corrupt relationships with investments in waste management infrastructure* as well. Therefore, it is important to think of, how the new EU member states will avoid these mistakes and still be able to reach the high environmental standards.

The European countries have become a throwaway society and despite the supposedly increasing environmental awareness everywhere, nothing changes in the behaviour of consumers.[14] Companies contribute by their marketing strategies and

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[13] The Copenhagen outcome is a "slap in the face for the world's climate and the poorest countries of the world." In: Press release of 19 December 2009 Online: http://www.theguardian.com/ (as of 04 January 2013).

[14] Nachhaltige Entwicklung in Europa für eine bessere Welt: Strategie der Europäischen Union für die nachhaltige Entwicklung" KOM (2001) 264.

their goal of profit maximization as well as a high consumption of resources in addition to this situation.

Both consumers and producers manifest by their actions that they are not or only insufficiently subjected to controls.[15]

The still rising or constantly high amount of generated waste and the seemingly uncontrolled behaviour of the economic actors in the market threaten the sustainable development. The action plans required by the EU Commission in accordance with the directive on waste by the end of 2020 for further supporting measures at the European level, particularly for the purpose of changing current consumer behaviour, seem difficult to be prepared[16] and feasible.

As a result, the handling of waste and material flows at the European level provides new challenges to the economy, the consumers, the legislature and the (government or self) management.

After all, the changes in the area of consumer and company behaviour, legislation and the management of waste and material flow should in particular lead to environmental justice. It is about equitable distribution of natural resources and the same rights of the participation in the development, whereas the wealth of nations should not be threatened.

It infers from the Treaty of Lisbon that everyone in the EU should be ensured of the same chances of needs satisfaction and of an equal access to resources.[17] In this case the social justice requires a fair organization of goods and services exchange at all levels of the social interaction.

The role of the government is to safely deliver the relative autonomy of the exchange processes as well as to maintain their operation conditions of legal security. This will never succeed without the framework conditions. However, the new cooperation with the economic actors must be developed in order to encourage an active participation in the effort to sustainable development.

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[15] Stihler A.: Die Entstehung des modernen Konsums- Darstellung und Erklärungsansätze, Dunc-ker & Humboldt Berlin (1997).

[16] According to the EU Commission: "The OECD predicts that volume of waste will have slightly slower rate by 2020. According to the predictions of the Joint Research Centre the increase will be 42.50% till 2020 over the 1995 level as for the ten new Member States, a relatively more rapid increase in the volume is predicted to municipal solid waste."

[17] The rational utilization of natural resources is in Art. 191 (ex Art. 174 TEC). In this case, Art. 11 (ex Art. 6 TEC) pointed out that the environmental protection requirements must be integrated into the Union policies and Union measures mainly due to the promotion of sustainable development.

1.4. METHOD

Since the accession of the Czech Republic and other new member states to the EU on 1st May 2004 (or 1st January 2007 in the case of Bulgaria and Romania), and since the rapid adoption of EU law, the question has been often asked, how the waste policy and the waste management in the EU should further develop.

Firstly, it is necessary to develop future legal development that will ensure us of a formation of the recycling society which will act in accordance with the principles of prevention and waste recycling. Secondly, a question about today's environmental and development issues has been linked to this asking about the limits of environmental stress and a suitable model of prosperity. It also refers to the problems with the scarcity of resources and their equitable distribution, both today and in the future.

It is shown in this present paper that the waste or material flow policy can significantly contribute to resource conservation. This does not only address recycling and management of the recyclable material's circulation, but also the energy generation from the waste. Authors of an article in the "*Energiewirtschaftliche Tagesfragen*" predict that the energy generation from the waste will increase and it must be regarded as significantly growing market of the energy production.[18] Accordingly, the waste management seems to not only eliminate the "waste" to regain valuable materials and energy, but also creates jobs and drives the economy.

Therefore, the waste policy or the economy is considered as a crosscutting policy. The sustainable waste management can be only achieved through the cooperation of the economic actors and the responsibility acquisition of each individual for his actions. Thus, a step towards sustainable development is made.

1.5. SUMMARY

The improvement of the environmental quality, rational use of resources and the regional and global coping with the environmental problems are defined as environmental policy's goals. For the waste- and material flow policy it means, in addition to the reduction of the European waste and a material- and energy-saving handling with the resources, also the avoidance of waste and the changing of the economic actors' behaviour, as well. The aim of these changes is to achieve minimal emissions, waste or waste heat or even reduce it to zero to ensure the same development opportunities for future generations. This is subsumed under the concept of intergenerational justice.

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[18] Briese/Westholm/Meyer „Waste-to-energy: Ausgleich der Kapazitäten und Mengen in Europa bis 2020" in: Energiewirtschaftliche Tagesfragen (Heft 5/2010).

The polluter pays-, burden-sharing-, prevention- and cooperation principles should ensure environmentally legal control instruments for the equitable obligation distribution in society, responsible approach to the environment but also the formation of market mechanisms. These legal but also normative principles can significantly help reduce the environmental stress and the lowering of resources and the energy consumption.

The use of raw materials and energy-saving technologies, that ensure both the input and output side, and the consideration of product and material-cycle management (efficiency) as well as the changes in the consumer sector aim therefore at the waste limitation and prevention, thus at the top objective of the European union waste management.

2. Concepts and principles of European Waste Management

The parameters on waste management placed by the norms of today's society will be introduced in the following chapter.

The amendment of the waste policy from the 19th of November 2008 imposed the waste management hierarchy containing 5 levels. This covers the prevention, preparation of the reutilisation, the recycling and any other utilisation (e.g. energy recovery) as well as their disposal. Preventing waste is here on top of the list which represents a particular challenge for the EU states and their citizens.

According to the EUROSTAT statistics, no sufficient results of the previous measures are visible yet; therefore, the states should be prepared that the new waste management hierarchy and the requirements for the amendment of the waste policy will soon generate economic, social and ecological changes.

With the implementation of the waste management hierarchy into national law, the regulations of the environmental protection alongside the principles of sustainability should be considered.

The model of the lasting development due to Ott/Gorke is based on the demand of cross-generational responsibility and commitment. [19]

A dispute about ethics and morals faces the question whether it was done the right way. However, this changes depending on the worldview. This question will be of significant importance in regards to the solid waste management.

Who will be responsible and compared to whom? The administration compared to society, or society's behaviour compared to the next generation or people's usage of resources compared to the environment.

However, at any rate people (respectively a group of people as a government, consumers, entrepreneurs) are responsible for their moral decisions and results of their own actions, because at the end this is always down to each person's individual decision.[20] This can be compared to the approach by Hager, who claims that "*each person is able to make morale decisions and responsibilities freely. Due to this definition, there is no universal morale responsibility.*"[21] In addition, Hurst postulates, that the

[19] Ott K. / Gorke M.: Spektrum der Umweltethik Metropolis Marburg (2000).

[20] Schmidt-Bleek F.: Nutzen wir die Erde richtig? - Die Leistungen der Natur und die Arbeit des Menschen, Fischer Frankfurt a. M (2008).

[21] Hager F.: Müll und Verantwortung, Oekom München (2004).

“private person” decides if and how he follows the commandment of waste prevention.[22]

As a result it is important to analyse prior, wherefore and compared to whom the responsibility in the waste industry lies, and in which way this responsibility can be delegated, e.g. through privatisation of the waste management industry, the responsibility of the manufacturer or structured due to the institutions of the government or autonomy.

At no time in history, there have been no better requirements on a EU level for human beings to change their actions for the environment; for example the separation of waste, longer usage of items, the more environmental purchase of items or a healthier diet.

However, the majority of people are not following those examples. The way of consumption and the lifestyle of some people, but also strategies of many companies are not gentle to our resources. This results rather in a deficiency of values.[23]

Due to Kranert, the waste prevention requires changes in the area of consumer habits, in a way that the separation of waste will become a task for the whole society. However, it is not easy to achieve this task in regards to the model of sustainability.[24] According to this it is necessary to be more responsive to the requirements of sustainable waste politics in regards to the actions of the economy as well as the actions of the authorities. Therefore I want to illustrate the principles of the European politics such as sustainability, justice and responsibility.

2.1. Sustainability Principle

The principle of sustainability applies in EU politics to the solution for social and financial problems. The term since it was officially defined in the Bruntland-report (1987) for the first time occurs not in European documents only, but in many others.

Sustainability is a fundamental objective of the Lisbon-Treaty and the national constitution of the member states (e.g. Romania and Bulgaria). This is the basis of all political fields and strategies of the EU, with its main goal to form the financial, environmental and social politics in a way, that the ecological, sociological and financial aspects strengthen each other.

Sustainable development is defined by the EU commission as followed:

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[22] Hurst M.: Optionsspielräume Privater im Kreislaufwirtschafts- und Abfallrecht, Carl Heymanns Köln Berlin München (2005).

[23] Jäger J.: Was verträgt unsere Erde noch? - Wege in die Nachhaltigkeit, Fischer Frankfurt a. M (2007).

[24] Kranert M./Brenck A./Beckers T.: Ökonomische und ökologische Bewertung der getrennten Erfassung und Verwertung von Verpackungen (2009).

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

The concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and

The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."[25]

However, this is not a development in accordance with the rule of thumb "more, further and higher", but a re-orientation for a different understanding of development and progress. We have to think long-term, for the benefit of the community and solidarity.[26] We are talking about a new relationship between nature and humans which secures long-lasting and future-oriented prosperity. Thus this concept represents a vision of a successful life which is taking place within the borders of the capacity of nature.[27]

This intention should essentially be achieved through the implementation of the three-pillar-concept (financial, social and ecological dimension) and results in the interdependency of those pillars. Cultural and institutional aspects should be taken into account. Therefore sustainability is also being treated as cross-section topic. The groundwork for a sustainable development is thus formed by ecology. It refers to the aspect of securing the natural livelihood and contains the idea of no negative and uncontrolled drawbacks for the environment. Ecological sustainable development aims amongst other things at the preservation of ecosystems, biodiversity and natural resources. The social dimension deals with the difficulties of equal opportunities for the different generations and of a fair distribution of material and natural goods. On the other hand it deals with the immaterial factors of freedom, democracy, self-determination, poverty reduction etc. which is the basis of prosperity. The financial dimension of sustainability is dealing with the protection of material livelihood of societies and with the further financial development which is aligned with the ecological and social dimension.

Although the official term of sustainable development has been introduced nearly 20 years ago, it seems countries have not been able to come closer to the aims of sustainable development, due to Vogt/ Weber are pointing into the same direction with their claim, that the problem of sustainable development is the difficulty of a

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[25] Nachhaltige Entwicklung in Europa für eine bessere Welt: Strategie der Europäischen Union für die nachhaltige Entwicklung" KOM (2001) 264.

[26] Trange, T./Bayley, A. Sustainable development: linking economy, society, environment. Paris: Organization for Economic Co-operation and Development, (2008).

[27] Vogt M., Uekötter F., Davis M.: Prinzip Nachhaltigkeit: Ethische Fragen im interdisziplinären Diskurs, (2009).

practical operationalization of those goals.[28] We need to stress the process of the sustainable development here, that should be understood as a process which can be implemented on a national, regional and local basis at the same time and that should not be considered as a condition. Depending on country and region, the vision can be implemented in another way. It should be adapted to local customs, cultural requirements and fixed values in society. This relates to the principle of cooperation.

The term of sustainability can indicate the direction which can be achieved between the "actors" through cooperative and collective processes. [29]

Therefore no unlimited packaging should be produced for grocery products, as those need to be incinerated at a later stage, whereby crude materials will be devastated. Also, radioactive waste should not be stored underground, if it is possible that nearby water will be contaminated and will reach the food chain. This is part of the elimination of resources which cannot be replaced.

All in all we can say, that it is essential to rethink the way we deal with waste. We especially need to think long-term in regards to a gentle and economical use of energy and resources, efficient product design, termination of cycles, waste prevention, re-use and recycling of resources, the balancing of the satisfaction of different needs in regards to individual responsibility. The concept of sustainability includes the idea of equity as well; for this reason an environment and waste politic is extremely relevant.

2.2. Principle of Justice

The principle of sustainability is closely connected to the principle of equity. In many cases it derives from two basic ethical choices. Due to Vogt, two basic choices are a prerequisite: same chances in life for future generations and the same right for globally accessible resources.[30] This means, that society should not develop at the expense of future generations or natural environment. Equity signifies collective responsibility for future generations.

Resulting in this principle is the right for a fair distribution of resources within each generation (so called cross-generational equity) and the right for decreasing the pollution (e.g. of waste). According to the cross-generational equity, society is morally obligated to use resources in a way which ensures that future generations will have enough for their needs.

Vogt emphasises, that "society is not responsible for the welfare of future generations, but for their chances." Therefore future generations will be granted conditions that allow them to make their own decisions. This responsibility is

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[28] Vogt M., Uekötter F., Davis M.: Prinzip Nachhaltigkeit: Ethische Fragen im interdisziplinären Diskurs, (2009).

[29] Scherhorn G./Weber C. (Hrsg.): Nachhaltiger Konsum - auf dem Weg zur gesellschaftlichen Verankerung, Oekom München (2002).

[30] Vogt/Uekötter/Davis: Münchner Kompetenz Zentrum Ethik LMU München (2009)

postulated in the Austrian and Romanian constitution and will be mentioned as goal of the further and long-term development.[31]

Despite morale debates on an international level, people have not learnt for the last 20 years (since the Rio-summit) to live with the natural resources that are available. The habits of today's society which includes the throw-away mentality, as well as the use of resources or illegal export of waste, is contradictory to the principle of equity and a fair distribution.

According to some authors, society remains the right to decide, what is considered right or not. From a socially righteous point of view, you can include the decision on the location of waste incinerating plants, waste disposal sites and power plants which have always led to arguments within the European countries. Waste incinerating plants are an alternative for the handling of increasing waste accumulation respectively for the production of low priced energies, whose environmental security otherwise is still questionable.[32]

Equity cannot be defined in an abstract way at the same time. It always refers to the people, their beliefs, interests and mutual interactions. Based on this, participating in equity is indispensable. However, it should not be understood as a process that has already been finished.[33]

Equity can be promoted by the state, but depends mainly on the fair actions of its citizens. This has to be incorporated more intensely. The European society needs to be aware of the responsibilities towards future generations, both with EU-treaties and Rio-regulations. Therefore the interest has to be drawn to the protection of resources and mass flux restrictions.

2.3. Responsibility Principle

The principle of responsibility is combined with the principle of sustainability and equity. This leaves the search for the "actors". Resulting from this are the consequences of the actions of each individual; we also have to consider the concerning parties, in regards to future generations. Therefore this principle is also linked to the provision of the future.[34]

Nowadays "actors" in the business world have to take responsibility. The state is responsible for the creation of the basic conditions for economic actions. Companies are responsible for the provision of flawless products. Consumers are responsible for

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[31] Spaemann R./Schweidler W.: Ethik Lehr- und Lesebuch - Texte, Fragen, Antworten, Klett-Cotta Stuttgart (2006).

[32] Philipp T.: Grünzonen einer Lerngemeinschaft, Oekom München (2009).

[33] Spaemann R./Schweidler W.: Ethik Lehr- und Lesebuch - Texte, Fragen, Antworten, Klett-Cotta Stuttgart (2006).

[34] Trange, T./Bayley, A. Sustainable development: linking economy, society, environment. Paris: Organization for Economic Co-operation and Development, (2008).

the purchase decision and parents are responsible for the education of children, etc. Those areas of responsibility are combined with the responsibility to act in a certain way and with the fulfilment of a certain role or rather the duty within society.

Therefore we can discuss different forms of responsibility, including amongst others political, juridical, job-related and social responsibility.

In most cases those responsibilities arise from fulfilling roles or rather tasks, and seem to be limited to this task. Taking over the responsibility is linked to the accountability towards third parties.[35]

This, however, does not apply for the morale responsibility, whose area is much more comprehensive. Morale responsibility relates to actions which are not regulated or based on laws. Those are based on other criteria. Therefore it can be associated with the voice of ethics. Due to Etzioni the voice of ethics supports the morale behaviour and encourages people, to hold on to common values. As the disregard of this voice triggers a feeling of discomposure, or a so called crisis of conscience, we can conclude that most people want to follow the voice of ethics; mainly in areas that are important to them for personal reasons. This also links to the responsibility or concern for those areas in life, or people etc. which are entrusted to us.[36]

As there are no limits for the area of responsibility, as for example in the case of responsibility for the preservation of the natural state for future generation, it is difficult to determine the far this responsibility reaches or to hold someone accountable for it. Rather the norms and customs which are present in a society, are playing a primary role here. Therefore we more frequently talk about joint responsibility which corresponds to whole community. The action's objective can be obtained through showing solidarity. This can be applied amongst others to the goal of achieving a sustainable development. Due to Johnke/Scheffran/Soyez, this goal requires taking over the responsibility and the subordination of one's own actions under those conditions.[37]

In relation to the environment the joint responsibility of each individual is coming into existence, not only for defined ecosystems and creatures which everyone has an individual relationship with, but also for the whole nature-mankind relationship, in short the safekeeping of the sustainability of those systems.

Therefore we can speak of joint ecological responsibility in the area of environmental conservation. As the individual would be unable to cope with the responsibility for the natural environment, due to Philipp, this should be considered a collective task for the society.

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[35] Neumaier O.: Moralische Verantwortung, Ferdinand Schöningh Paderborn (2008).

[36] Philipp T.: Grünzonen einer Lerngemeinschaft, Oekom München (2009).

[37] Johnke B./Scheffran J./Soyez K.: Abfall, Energie und Klima - Wege und Konzepte für eine integrierte Ressourcenschonung, Erich Schmidt Berlin(2004).

A collective action of the countries is unquestioned, e.g. on EU level, as this can be pushed forward in a better way than as one single country is acting alone. The collective ecological responsibility is accompanied with a change of awareness, as the "actors" in the business world should add the ecological rationality to their financial rationality (maximising the use) and to follow the voice of ethics.

That means, that in the area of waste and mass flux industry, each individual is responsible for his amount of waste he generated; this was also implemented into the European waste guidelines. The waste stream such as paper, glass, organic waste such as electronic scrap which is produced every day, should be prevented and limited by each individual. This is up to the responsibility of tasks and joint responsibility of each person for the future environmental conditions.[38]

For this reason, consumers play an essential role in the achievement of sustainable waste industry. They decide for themselves in a sensible way what products they buy, what they do not need anymore and want to through away, but also how to separate their waste and eventually what ends up in the container for residual waste. The human being as consumer decides through his action on what level waste hierarchy of waste begins which also results in further treatment processes.

The principle of responsibility also refers to the companies which should bear the responsibility for their production residues that pollute the environment and the side effects of their productions. Therefore no filter ash from the incineration plants or from municipal or rather industrial sewage sludge should be exported abroad illegally. The use of resources and the productivity of material are also being addressed.

Last but not least the principle of responsibility is applied to the countries which are responsible for laying down the relevant basic conditions. For this purpose suitable infrastructure, systems of reward and sanctioning as well as the relevant reporting of such should be accomplished. Therefore menaces, as part of an administrative act should be tied to a law. However, they could also sensibiliser the "actors" in the business world for current environmental problems.[39]

2.4. Summary

In many European documents such as the Lisbon-Treaty, the waste guidelines, but also the international convention as the agenda 21 or the Rio-declaration about the environment a sustainable development is postulated. The way and pace of the globalisation process with all its local and regional changes and increasing adverse

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[38] Hager F: Müll und Verantwortung, Oekom München (2004).

[39] Kramer, A. / Fusaro, P.: Energy and Environmental Project Fiance Law and Taxation, Oxford University Press (2010)

effects on the environment have led to the search of a stable, long-term and environmentally safe development on a political level.

It is obvious, that the by-product of the social and financial welfare such as waste, pollution of the air and water, contamination of the land etc. for the capability of the environment to assimilate cannot be conquered by itself and therefore a limitation or preservation of society's many habits is indispensable.

The principle of sustainability, equity and responsibility demands an intended change of previous strains of environmental resources and previous models of welfare. All members of society are indebted to respect and preserve common goods. In the industry of waste and mass flux those principles mark the freedom for action. Through their imperative approach, they show the way to the necessary changes in the area of consumption and enterprise. The prevention of waste, the recuperation of raw materials and energy, in addition to the responsibility and the commitment but also the obligation to go easy on the environment, should curtail the damaging effects of the throw-away mentality, as well as improve the foundation of resources of the EU countries effectively.

The so called principles are not only aimed at the "actors" in the business world, but also first and foremost at the authorities, who are responsible through launching new laws, that waste streams are being reduced and controlled.

The waste industry should be converted into an integrated mass flux industry, whereby the actions of consumers, companies and public administration would be formed in a new way. The necessary changes ask for new values and a new orientation – within society, the politics and the economy. People should take responsibility for their actions; the morale actions of people should be supported and controlled by the government.

3. Funding in Southeast Europe with emphasis on Romania and Bulgaria

Since countries in the CEE and SEE regions joined the European Union (EU) in 2004, 2007 and 2013, it has become apparent that effective utilisation of EU support can foster the success of their economic performance. Now the region finds itself at the end of the 2007 – 2013 programming period which allows for more strategic conclusions based on an analysis of the EU Structural and Cohesion Funds (SCF) absorption rates. Developing an appropriate focused strategy for the allocation of EU SCF is only the first element, though a basic step in implementing EU cohesion policy. The successful implementation and absorption of EU SCF is contingent not only upon the effectiveness of the Member States' administrative systems, but also on the activity of the potential beneficiaries.

Since the CEE countries became EU member states, EU co-financing has become an essential factor for their development. EU SCF, accounting for 11.3% to 25% of their annual GDP, has significantly fostered regional cohesion. Thus we believe there is a need for an overview and comparison at the CEE level of the implementation status of programmes co-financed from SCF.

The 11 CEE countries joined the EU in GDP per capita three stages:

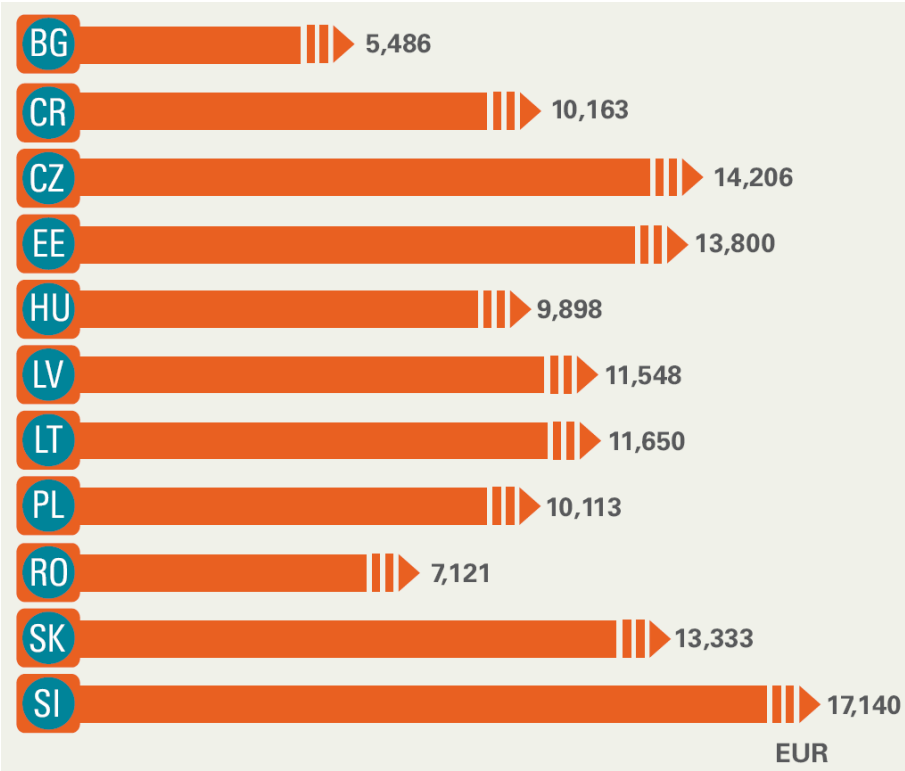
• On 1 May 2004: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia;

• On 1 January 2007: Bulgaria, Romania;

• On 1 July 2013: Croatia.

In the 2007 – 2013 period the 11 CEE countries had access to EUR 174.72 billion of EU funds, i.e. from ERDF, CF and ESF, excluding national public and private contributions. This equals 16.2% of the annual GDP of the region. The following table and graphs show the population, GDP and breakdown of EU funds by country.

FIGURE 2: GDP[40] PER CAPITA



Source: KPMG - EU Funds in Central and Eastern Europe

The following table it is possible to compare statistics from selected countries in Central and Eastern Europe. Romania and Bulgaria have the lowest proportion of GDP per capita.

TAB. 1: BASIC CEE INFORMATION[41] ON NATIONAL ACCOUNTS AND EU FUNDS 2007 – 2013

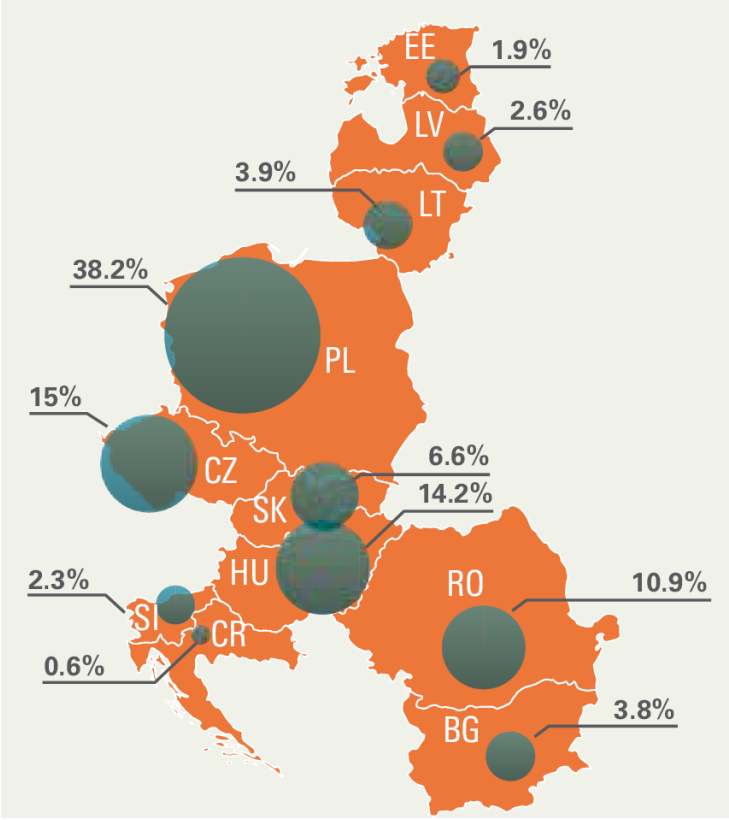
	Bulgaria	Croatia	Czech Republic	Hungary	Poland	**Romania**	Slovakia	**CEE average**
Population (million)	**7.28**	4.26	10.52	9.91	38.53	**20.06**	5.41	**9,49**
Annual GDP (EUR billion)	**39.94**	43.31	149.39	98.07	389.70	**142.82**	72.13	**95.19**
GDP per capita (EUR)	**5,486**	10,163	14,206	9,898	10,113	**7,121**	13,333	**11,31**
EU funds 2007 – 2013 (EUR billion)	**6.67**	1.00	26.30	24.92	67.19	**19.18**	11.65	**X**
EU funds per capita (EUR)	**917**	234	2,501	2,515	1,744	**956**	2,154	**1,83**
EU funds per GDP (%)	**16.7%**	2.3%	17.6%	25.4%	17.2%	**13.4%**	16.2%	**16.2%**

The amount of allocated EU funds varies by country – the highest budget is allocated for Poland which bears the biggest population among the CEE countries. However, EU funds per capita ratio are the highest in the Czech Republic, Estonia and

[40] Based on EUROSTAT data, 2013, iR.euro
[41] KPMG

Hungary. Poland and the Czech Republic account for more than 50% of the allocated EU funds. Together with Hungary and Romania, their total amount constitutes 80% of the total EU funds allocated for the CEE region. Countries with a relatively smaller population altogether hold a 20% share.

FIGURE 3: BREAKDOWN[42] OF EU FUNDS 2007 – 2013 BY COUNTRY



Source: KPMG - EU Funds in Central and Eastern Europe

3.1. FUNDS

Most of the projects in Romania and Bulgaria have been implemented with the support of two of the following funds:

3.1.1. EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF[43])

The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions.

The ERDF focuses its investments on several key priority areas. This is known as 'thematic concentration':

- Innovation and research;
- The digital agenda;

[42] EU Funds in Central and Eastern Europe Progress Report 2007 – 2013
[43] Source: http://ec.europa.eu/regional_policy/en/funding/erdf/

- Support for small and medium-sized enterprises (SMEs);
- The low-carbon economy.

The ERDF resources allocated to these priorities will depend on the category of region.

- In more developed regions, at least 80 % of funds must focus on at least two of these priorities;
- In transition regions, this focus is for 60 % of the funds;
- This is 50 % in less developed regions.

Furthermore, some ERDF resources must be channelled specifically towards low-carbon economy projects:

- More developed regions: 20%;
- Transition regions: 15%; and
- Less developed regions: 12%.

The ERDF also gives particular attention to specific territorial characteristics. ERDF action is designed to reduce economic, environmental and social problems in urban areas, with a special focus on sustainable urban development. At least 5 % of the ERDF resources are set aside for this field, through 'integrated actions' managed by cities.

Areas that are naturally disadvantaged from a geographical viewpoint (remote, mountainous or sparsely populated areas) benefit from special treatment. Lastly, the outermost areas also benefit from specific assistance from the ERDF to address possible disadvantages due to their remoteness.

3.1.2. COHESION FUND[44]

The Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90 % of the EU average. It aims to reduce economic and social disparities and to promote sustainable development.

It is now subject to the same rules of programming, management and monitoring as the ERDF and ESF though the Common Provisions Regulation.

For the 2014 – 2020 period, the Cohesion Fund concerns Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

The Cohesion Fund allocates a total of € 63.4 billion to activities under the following categories:

[44] Source: http://ec.europa.eu/regional_policy/en/funding/cohesion-fund/

- Trans-European transport networks, notably priority projects of European interest as identified by the EU. The Cohesion Fund will support infrastructure projects under the Connecting Europe Facility;
- Environment: Here, the Cohesion Fund can also support projects related to energy or transport, as long as they clearly benefit the environment in terms of energy efficiency, use of renewable energy, developing rail transport, supporting intermodality, strengthening public transport, etc.

The financial assistance of the Cohesion Fund can be suspended by a Council decision (taken by qualified majority) if a Member State shows excessive public deficit and if it has not resolved the situation or has not taken the appropriate action to do so.

3.2. ROMANIA[45]

Romania, in Southeast Europe, is dominated by the Carpathian Mountains in the North and centre of the country while the main feature in the south is the vast Danube valley which becomes a delta as it approaches the Black Sea.

The most important sectors of Romania's economy in 2014 were industry (27.3 %), wholesale and retail trade, transport, accommodation and food services (17.9 %) and public administration, defence, education, human health and social work activities (10.3 %).

Romania's main export partners are Germany, Italy and France while its main import partners are Germany, Italy and Hungary.

3.2.1. FUNDING IN ROMANIA

Since joining the EU in 2007, Romania has had access to Structural Funds (ERDF and ESF), Cohesion Funds and agricultural and fisheries funds of around EUR 33.5 billion in total (out of which approximately EUR 19.2 billion come under the Convergence objective, EUR 8.3 billion are for agricultural and fisheries funds, and EUR 455 million come under the European Territorial Cooperation objective). In 2013, Romania reached an absorption level of EU funds of about 34%, with reimbursements in the same year of EUR 2.88 billion from the European Commission. In comparison, during the entire 2007-2012 period, only EUR 2.2 billion were drawn. While 2013 saw a significant improvement in the absorption rate of EU funds, Romania is still behind other EU member states in the overall "absorption rate" picture, despite exhibiting positive trends to recover the gap during the period 2007 – 2013.

By end of 2013, the main challenges faced by the responsible public authorities on EU Funds absorption and implementation were:

[45] Source: http://europa.eu/about-eu/countries/member-countries/romania/index_en.htm

• Major delays on evaluation of financial/reimbursement applications due to lack of resources within MAs/IBs;

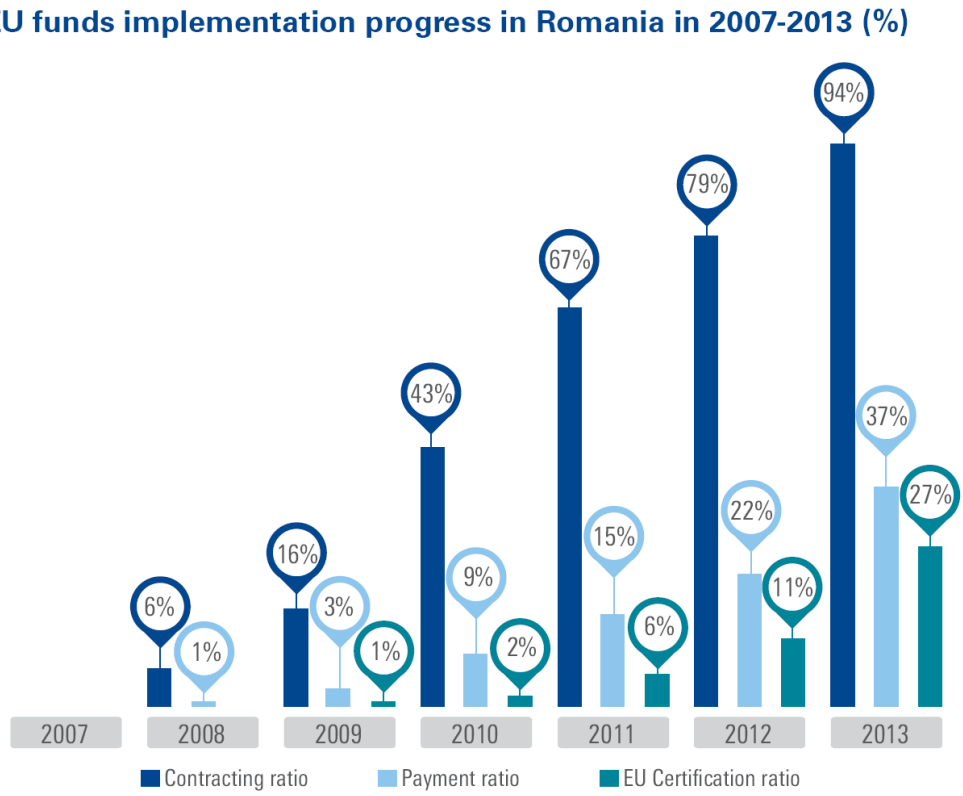
• Lack of project management skills with EU funds beneficiaries which led to numerous financial corrections of a high percentage (in many cases 25%) during the projects' implementation phase;

• Long and cumbersome public procurement procedures, applied even for private sector beneficiaries which led in many cases to significant delays in the project implementation cycle;

• Challenges regarding projects' viability and efficiency, due to the low capacity of beneficiaries to elaborate projects and business plans.

For the period to come, by the end of first programming period it is crucial for the public authorities in charge of each operational programme to focus on efficient monitoring of the projects in progress and on a rapid evaluation of reimbursement applications, in order to speed up the absorption of the allocated European funds. To meet this target, the rapid utilisation of the technical assistance funds is a prerequisite for providing technical professional assistance to the management authorities/intermediary bodies, so as to ensure an appropriate monitoring of the projects under implementation, and to speed up the evaluation/verification of reimbursement applications.

FIGURE 4: EU FUNDS IMPLEMENTATION PROGRESS[46] IN ROMANIA



Source: Progress Report 2007 – 2013, KPMG

3.3. BULGARIA[47]

Located in the Southeast part of the Balkans, Bulgaria has a diverse topography. The North of the country is dominated by the vast lowlands of the Danube Plain with the river Danube defining the border with neighbouring Romania. The South of the country, by contrast, is dominated by highlands and elevated plains while, in the East, the Black Sea coast attracts tourists all year round.

The most important sectors of Bulgaria's economy in 2014 were industry (23.5 %), wholesale and retail trade, transport, accommodation and food services (21.3 %) and public administration, defence, education, human health and social work activities (13.2 %).

Bulgaria's main export partners are Germany, Turkey and Italy while its main import partners are Russia, Germany and Italy.

3.3.1. FUNDING IN BULGARIA

In the 2007 – 2013 period Bulgaria's main programming document, the National Strategic Reference Framework (NSRF), included seven OPs with a EUR 6.67 billion

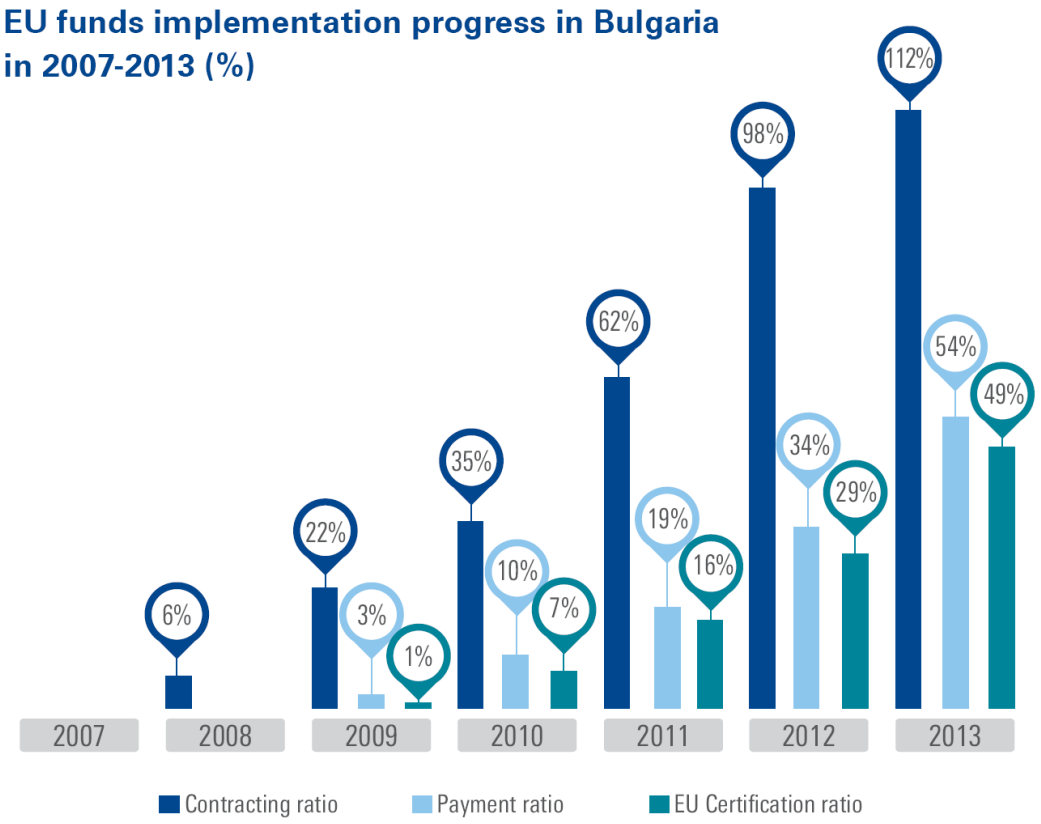
[46] Source: KPMG
[47] Source: http://europa.eu/about-eu/countries/member-countries/bulgaria/index_en.htm

contribution from EU Structural and Cohesion Funds (CSF). The seven programmes addressed the country priorities and challenges of socio-economic development, targeted at reducing the differences with other EU countries and overcoming the negative effects of the global financial and economic crisis. Besides the NSRF there were programmes implementing the European Agricultural Fund for Rural Development (implemented within the Rural Development Programme), the European Agricultural Guarantee Fund and the European Fisheries Fund (implemented within OP Fisheries). During the reference period a number of evaluations established the EU Cohesion Policy's positive impact on the overall economic development of Bulgaria. Significant progress was also achieved with regard to the implementation of the NSRF indicators as compared to their base values, resulting directly from CSF support. SCF contribution mainly addresses public and private physical and human capital. By the end of 2013 Bulgaria had contracted 112% and paid 54% of the total budget allocated for the 2007 – 2013 period. Overall, there is a tendency of accelerated absorption and project prioritisation in order to increase potential growth. Continuous support is provided in the area of strengthening the administrative capacity of the managing, certifying and audit authorities, and further steps have been planned to prevent significant loss of funds.

Recently, Bulgaria has made much effort to increase the absorption rate. Specifically, significant improvements have been achieved in terms of faster verification and payment processes, simplification of procurement rules, preparation of major infrastructure projects, introduction of electronic submission of applications and reporting through the EU Funds information portal, as well as use of innovative financial instruments.

At the beginning of the 2007 – 2013 programming period, the financial management and control systems of the SCF were not operating effectively enough. Administrative staff and beneficiaries needed to go through the learning and developing phases of the process. Many of the initial problems have been overcome, but there are still challenges related to the programming and design of aid schemes, further simplification of procedures, clear rules and implementation of financial corrections, and better prioritisation based on cost-benefit analysis.

FIGURE 5: EU FUNDS IMPLEMENTATION PROGRESS[48] IN BULGARIA



Source: Progress Report 2007 – 2013; KMPG

3.4. NEW SPECIFIC TOOLS OF THE EU PROGRAMMING PERIOD 2014 – 2020

3.4.1. FUNDING LARGE-SCALE ENVIRONMENTAL PROJECTS IN METROPOLITAN AREAS – POTENTIAL FOR ROMANIA AND BULGARIA

The European Commission created a new tool called „ITI" (Integrated Territorial Investments) for the metropolitan areas available for all EU member states in the new programming period 2014 – 2020. This tool was created mainly due to the necessity of concentrating financial resources into large strategic projects which have a key impact on competitiveness and urban sustainable development of city metropolitan areas.

In the programming period 2014 – 2020 the EU regional policy will focus more on the territorial dimension which derives from the Regulations of the European Commission and from the Partnership Agreement between the particular member

[48] Source: KMPG

state and EU. According to the Article 7 of the Regulations it is necessary to allocate at least 5 % of the ERDF to metropolitan areas:

- EU perceives the cities as the poles of growth and introduces a new term urban dimension;
- Urban dimension is the possibility of concentrating the financial resources from the European Structural Investment Funds (ESIF) into specific types of territories;
- Urban dimension will be fulfilled by two tools during the programming period 2014 – 2020:
  - Integrated Territorial Investment (ITI);
  - Community Led Local Development (CLLD) where the Local Action Groups are active;
- The main goal of the urban dimension is the integration of investment and non-investment projects supported from various operational programmes (it is possible to apply for the EU funds from at least two or more operational programmes), however it is also important to consider the territorial principle and aim for projects which cover the entire metropolitan area;
- The European Commission leaves it up to each individual EU member state if it implements the urban dimension and if it uses the ITI tool;
- ITI – key types of interventions where the tool ITI is used:
  - Infrastructure and mobility
  - **Environment**
  - Social issues and health
  - Competitiveness and education

The EU programming period 2007 – 2013 showed that the demand for the large scale infrastructure projects is still very intense, especially with regard to transportation and environment. It is in fact hard to imagine that those types of investments are financed from the private sources. Therefore both Romania as well as Bulgaria have the opportunity to implement the large-scale environmental projects with the new available tool of ITI. ITI is certainly a challenge since it is a new tool at the European level. Nevertheless, it is very likely that large metropolitan areas of Europe will benefit from implementing this new tool (especially with regard to environment and sustainable infrastructure).

4. Case Studies: Environmental Projects financed from EU

The importance of proper waste management has proved to be essential to sustainable development. This basis was a starting ground of opportunities for at least three parties: EU, countries lacking the funds that can serve among others for education of citizens, collection and recycling projects. And last but not least waste management companies, for which produced garbage is great and long-term business opportunity.

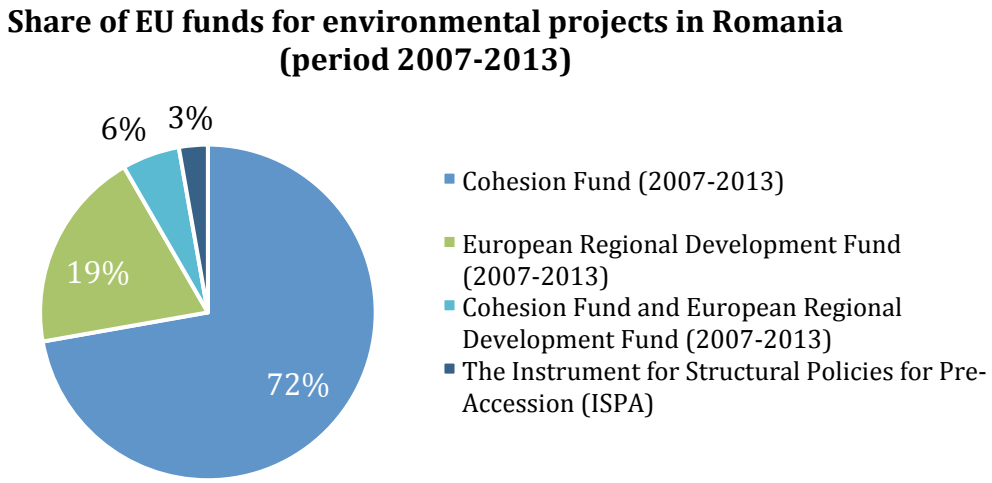
Romania and Bulgaria are the poorest countries in Southeast part of EU, so the second and third part of this chapter provides an overview of selected projects realized in these during the years 2007 – 2014. Most of the information comes from website of the European Commission.

In the last part, there is a summary and comparison of types of projects, investments and themes of realized projects in Romania and Bulgaria.

4.1. Projects focused on the environment in Romania

All projects mentioned below are related to the Environmental subject. Three are within the Environmental topic related also with Energy theme (The rehabilitation of the district heating system in Iasi municipality, Heating system for clean living in Timisoara, Rehabilitating the district heating system in Oradea), three are also related with Urban Development theme (The rehabilitation of the district heating system in Iasi municipality, First-class new water services, Integrated and exemplary waste management). Following graph shows the distribution of funds between projects.

Figure 6: Share of EU funds for environmental projects in Romania



Source: Ministry of European Funds Romania, ec.europa.eu, own research

In the programming period 2007 – 2013 Romania drew the most funding from the Cohesion Fund for environmental projects, a total of nearly three quarters of all funds. The second largest financial instrument was ERDF (19%). Both tools then combine 6% of projects. Marginally used mainly for pre-accession ISPA.

The most expensive and biggest project was Extension and modernisation of sewer systems to benefit Romania's capital city. The project cost 258 million co-financing from the EU was equal to 51%. Generally speaking, the most expensive environmental projects in Romania related to the sewer system and drinking water. Detailed figures are illustrated in the following summary table.

TAB. 2: PROJECTS FOCUSED ON THE ENVIRONMENT – ROMANIA (2007 – 2013)

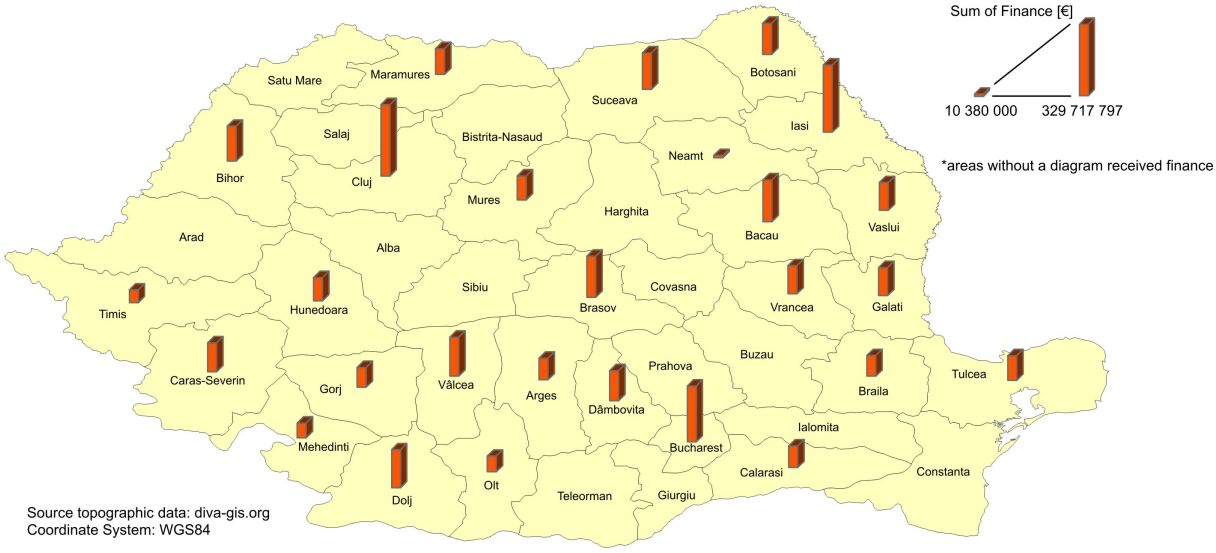
Project Name	Total Investment	EU Investment	Public Investment
Extension and modernisation of sewer systems to benefit Romania's capital city	258 352 050 €	130 491 396 €	127 860 654 €
Extension and the rehabilitation of water and wastewater systems in Brasov County	189 305 930 €	144 693 502 €	44 612 428 €
Upgrading water and wastewater systems in Mures	110 875 965 €	84 518 530 €	26 357 435 €
Thousands to enjoy enhanced water services	95 750 000 €	73 890 000 €	21 860 000 €
The rehabilitation of the district heating system in Iasi municipality	61 237 712 €	30 618 856 €	30 618 856 €
Improved water, waste and sewerage treatment for Botosani County	102 472 400 €	80 826 500 €	21 645 900 €
Raising flood protection levels in the Prut Barlad catchments	58 521 100 €	48 008 200 €	10 512 900 €
Improved water network reaching more residents in Galati	129 805 160 €	99 249 000 €	30 556 160 €
Bacau County spruces up water network	117 953 200 €	91 391 600 €	26 561 600 €
Iasi County sets stage for improved water and wastewater management	136 109 000 €	103 809 700 €	32 299 300 €
Reducing air pollution from a city's main power plant	24 747 000 €	21 777 360 €	2 969 640 €
Heating system for clean living in Timisoara	58 346 700 €	27 131 200 €	31 215 500 €
Raising the bar for water and wastewater systems	150 281 399 €	116 178 792 €	34 102 607 €
Suceava County to get improved access to clean water	119 989 198 €	91 781 537 €	28 207 661 €
County looks forward to new waste management facilities	48 000 000 €	36 000 000 €	12 000 000 €
Thousands to benefit from new water and sewerage systems	128 389 032 €	81 455 746 €	46 933 286 €
Cleaning up life quality in North-East Romania	55 095 293 €	42 232 195 €	12 863 098 €
Extension and the rehabilitation of water and wastewater systems in Turda-Campia	79 906 606 €	63 679 761 €	16 226 845 €
Extension and the rehabilitation of water and wastewater systems in Cluj – Salaj	196 911 998 €	145 643 721 €	51 268 277 €
Rehabilitating the district heating system in Oradea	77 700 000 €	38 900 000 €	38 800 000 €
Quarter of a million to get better sanitation	119 868 031 €	92 668 506 €	27 199 525 €
First-class new water services	83 274 500 €	63 542 200 €	19 732 300 €
A modern, hygienic solid waste system for Cluj	52 899 193 €	38 773 186 €	14 126 007 €
Extension and the rehabilitation of water and wastewater systems in Calarasi County	99 451 813 €	81 389 048 €	18 062 765 €
Improved water and wastewater management in Romania	138 860 717 €	107 647 179 €	31 213 538 €
Wider access to EU-standard water services	99 776 000 €	74 621 100 €	25 154 900 €
Extension and the rehabilitation of water and wastewater systems in Tulcea County	113 786 589 €	91 307 621 €	22 478 968 €
Ensuring safe drinking water and modern sewerage systems in Vrancea county	97 484 764 €	82 862 049 €	14 622 715 €
Integrated and exemplary waste management	20 959 726 €	11 004 825 €	9 954 901 €
Extension and the rehabilitation of water and wastewater systems in Olt County	72 787 679 €	60 999 949 €	11 787 730 €
Extension and rehabilitation of water and wastewater systems in Gorj County	90 750 846 €	74 373 313 €	16 377 533 €
Valcea County cleans up its act	98 874 509 €	76 935 536 €	21 938 973 €
Green, clean heating investments in Romania	59 332 500 €	29 666 250 €	29 666 250 €
Improvements to water infrastructure in Mehedinti County	67 000 000 €	57 000 000 €	10 000 000 €
Investment in water and sewerage system to improve public health and environment	133 500 639 €	89 252 991 €	44 247 648 €
Improved waterworks extended to tens of thousands of citizens in Romania	106 684 333 €	88 232 538 €	18 451 795 €
Sum	**3 655 041 582 €**	**2 672 553 887 €**	**982 487 695 €**
Average	101 528 933 €	74 237 608 €	27 291 325 €
Max	258 352 050 €	145 643 721 €	127 860 654 €
Min	20 959 726 €	11 004 825 €	2 969 640 €

Source: Ministry of European Funds Romania, ec.europa.eu, own research

Spatial projection of the project database environment demonstrates even distribution of investments. Most of finance has flowed to the region of Cluj - a total of 330 million euros. Other regions with large volume of subsidies are Iasi and the capital Bucharest. Conversely, any major environmental project have regions Arad,

Alba, Satu Mare, Sibiu, Harghita, Bistrita-Nasaud, Covasna, Buzau, Iaomita, Teleorman, Giurgiu and Constatnta.

FIGURE 7: SUM OF FINANCE (EURO) USED FOR EUROPEAN PROJECTS ASSOCIATED WITH THE ENVIRONMENT IN INDIVIDUAL ADMINISTRATIVE UNITS NUTS 1 IN ROMANIA



Source: Ministry of European Funds Romania, ec.europa.eu, own research

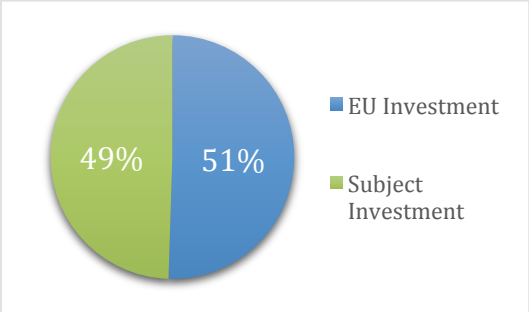
4.2. TYPES OF PROJECTS IN ROMANIA BY THEMES

Total was created database projects in Romania thematically divided into five groups.

- Water, sewage, drainage and sewers
- Waste management
- Improving air quality
- Flood protection
- Heating systems

4.2.1. THEME "WATER, SEWAGE, DRAINAGE AND SEWERS" - EXTENSION AND MODERNISATION OF SEWER SYSTEMS TO BENEFIT ROMANIA'S CAPITAL CITY[49]

FUND: Cohesion Fund
TOTAL INVESTMENT: € 258,352,050
EU INVESTMENT: € 130,491,396
PROGRAMMING PERIOD: 2007 – 2013



49 ec.europa.eu/regional_policy/index.cfm/en/projects/romania/extension-and-modernisation-of-sewer-systems-to-benefit-romanias-capital-city

An investment in sewerage infrastructure in Bucharest and surrounding localities looks set to improve the quality of life for more than two million people. Work covers the rehabilitation and extension of wastewater collection and treatment systems.

The project is expected to benefit inhabitants in Bucharest and eleven neighbouring localities in the county of Ilfov and aims to meet the country's water compliance obligations in the EU Accession Treaty.

The overall scheme has been divided into two stages for environmental, technical and financial reasons. This project covers stage one and includes the following:

- The extension of the wastewater treatment plant located at the Glina commune which lies to the south-east of Bucharest
- Construction of a sludge incinerator, and
- Action to reduce the infiltration flow in the Bucharest municipality of Caseta which consists of building a drainage system and related works at drainage outlets at the lakes of Titan, Carol and Tinetetului. A couple of main sewer collectors are also rehabilitated as part of the scheme.

FIGURE 8: PROJECT - EXTENSION AND MODERNISATION OF SEWER SYSTEMS TO BENEFIT ROMANIA'S CAPITAL CITY

Source: Bucharest EU Magazine, 2014

Thanks to the project, the quality of the Dambovita river will also meet the objectives assigned by the corresponding river basin management plan.

In addition, EU funding covers technical assistance for project management and the supervision of works, as well as auditing services.

Stage two of the scheme is scheduled to be carried out between 2014 and 2020, and will include extensive work to revamp the sewerage network around Caseta.

Total investment for the project "Finalisation of Glina WWTP, rehabilitation of the main sewer collectors and of Dambovita sewer collector canal (CASETA), Bucharest Municipality" is EUR 258 352 050, of which the EU's Cohesion Fund is contributing

EUR 130 491 396 from the "Environment" operational programme" for the 2007 to 2013 programming period. Work falls under the priority "Extension and modernisation of water and wastewater systems".

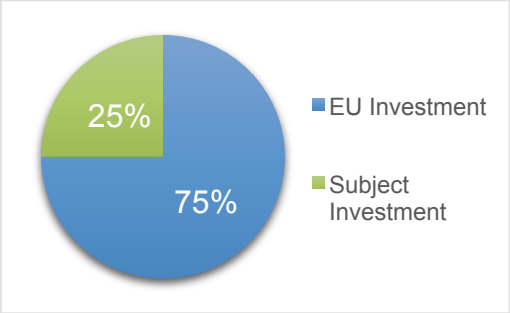
4.2.2. Theme "Waste management"- County looks forward to new waste management facilities[50]

Fund: European Regional Development Fund

Total Investment: € 48,000,000

EU Investment: € 36,000,000

Programming period: 2007 – 2013



A new integrated waste management system will help reduce landfill rates and illegal dumping in Suceava County, Romania. The project will also boost recycling rates and promises to make the environment more attractive.

The objective of this project is to provide solid waste management facilities and activities which will integrate waste separation, collection, transport, treatment, recycling and disposal. At the same time, several urban landfills will be closed and rehabilitated and a public awareness campaign will promote the benefits of recycling. The scheme will be implemented by the local county council and will help to meet Romania's EU Accession Treaty obligations and environmental priorities.

The project will be supported by improvements to local institutional and management frameworks which will ensure the new facilities are run as efficiently as possible. The majority of the county's 685 700 population will benefit in a number of ways. The scheme will reduce the need for illegal dumping of rubbish which in turn will be better for people's health, improve hygiene and help keep the environment clean. In addition, the development of a reliable solid waste management system will make Suceava a more attractive place for investment.

50 ec.europa.eu/regional_policy/index.cfm/en/projects/romania/county-looks-forward-to-new-waste-management-facilities

FIGURE 9: COUNTY LOOKS FORWARD TO NEW WASTE MANAGEMENT FACILITIES

Source: ec.europa.eu

Under the new waste management system, collection rates for mixed waste will cover 100 % of the urban population and 95 % of the rural population. In 2013 the scheme should lead to a 50 % reduction in the amount of biodegradable waste that ends up in landfill (compared to 1995). This will be made possible thanks to the improved waste collection rates and the promotion of home composting and the in-situ composting of park and garden waste.

A separate collection of packaging waste will be provided to the entire urban population and 95 % of the rural population. Therefore, by 2013, the county will have a total waste recovery rate of 60 % and a recycling rate of 55 %. Projected recycling rates can be broken down as follows: glass 60 %; paper and cardboard 60 %; metal 50 %; plastic 22.5 %; and 15 % for wood.

The project will provide home composting units in suburban and rural areas, as well as shredders for the in-situ composting of park and garden waste. Three transfer units for handling rubbish will be built at Radauti (capable of dealing with 40 757 tonnes/year), Falticeni (27 544 t/year) and Campulung Moldovenesc (11 197 t/year). In addition, two existing transfer stations at Gura Humorului (16 691 t/year) and Vatra Dornei (11 787 t/year) will be upgraded.

A sorting plant will be built at Moara that will be capable of dealing with 28 600 t/year of waste. Two new landfills will also be constructed at Moara and Pojorita which will have capacities of 1.38 million tonnes and 0.39 million tonnes respectively. This work will be complemented by the closure and rehabilitation of seven non-

compliant landfills. During implementation, the project is expected to generate 221 jobs.

The project "Integrated Waste Management System in Suceava County" has a total eligible budget of EUR 48 000 000, with the European Regional Development Fund contributing EUR 36 000 000 for the 2007 to 2013 programming period.

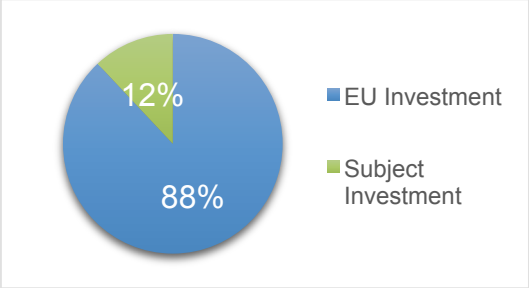
4.2.3. Theme "Improving air quality"- Reducing air pollution from a city's main power plant[51]

Fund: European Regional Development Fund 2007 – 2013

Total Investment: € 24,747,000

EU Investment: € 21,777,360

Programming period: 2007 – 2013



New pollution-scrubbing equipment is being fitted to a power plant in Craiova, in South-West Romania. The goal is to clean up the plant's sulphur dioxide and other particulate emissions, in line with the country's commitments to comply with specific EU legislation on air pollution.

Figure 10: Reducing air pollution from a city's main power plant

Source: Craiova Power Plant – advertisement publication

[51] ec.europa.eu/regional_policy/index.cfm/en/projects/romania/reducing-air-pollution-from-a-citys-main-power-plant

Flue gas desulphurisation (FGD) equipment is being installed at two units of the power plant. The main expected outcome is better air quality for this city of some 300 000 people.

The Craiova Power Complex employs around 1 630 people. A branch of the complex, the Craiova II Combined Heat and Power Plant (CHPP), supplies electricity for the Romanian national grid and produces 95% of the heat required for the district heating of the city's hospitals, schools, public institutions and some companies.

The current project stems from the necessity for all Romanian power plants to limit their emissions of sulphur dioxide (SO2) and nitrogen oxides (NOx) into the air, to comply with EU legislation on industrial pollution. Under the country's Accession Treaty to the EU, Romania was granted transition periods to meet the EU rules on limiting NOx emissions (31 December 2009) and SO2 emissions (31 December 2010).

To meet the sulphur dioxide emissions limit by the end of 2010, the Craiova Power Complex decided to install FGD equipment at two units of its CHPP branch. This equipment uses wet limestone to remove the targeted chemicals from exhaust gases. Besides controlling the emissions of SO2 in the flue gas, the FGD equipment will control emissions of hydrogen chloride, sulphur trioxide, mercury, particulate matter and other pollutants that may be present in the flue gas. The company's choice of system was also guided by recommendations in the EU best available techniques.

The main result at regional level will be an improvement in air quality, benefiting biodiversity and the local population. As a result, the project is expected to help attract new investors to the region and improve its living standards.

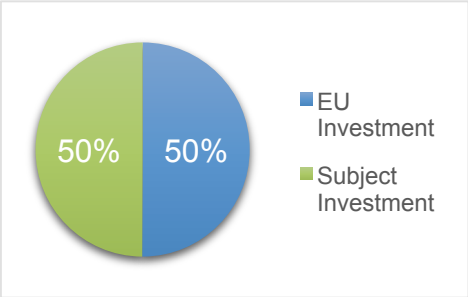
Thanks to this project, and other environmental projects carried out by the company, Craiova II CHPP will be fully compliant with EU environmental law, as it applies to Romania, by the end of 2010. The FGD system will initially reduce the Craiova II CHPP's SO2 emissions to a maximum limit of 379 mg/Nm3, for a standard fuel mixture of lignite and gas. The system can also reduce SO2 emissions still further, if required by future EU legislation.

4.2.4. Theme "Heating systems"- Rehabilitating the district heating system in Oradea[52]

Fund: Cohesion Fund (2007 – 2013)

Total Investment: € 77,700,000

EU Investment: € 38,900,000



52 ec.europa.eu/regional_policy/index.cfm/en/projects/romania/rehabilitating-the-district-heating-system-in-oradea

PROGRAMMING PERIOD: 2007 – 2013

This project involves the rehabilitation of the existing urban heating plants and heat supply networks in the Oradea municipality with the aim of reducing CO, SO2, NOx and dust emission concentrations and improving the energy efficiency of the system.

The measures taken will help bring the plant in line with relevant EU legislation on the environment and the EU policy to reduce air pollution in an effort to tackle climate change. They will also improve energy efficiency by reducing the heat losses in the district heat supply network.

FIGURE 11: REHABILITATING THE DISTRICT HEATING SYSTEM IN ORADEA

Source: Project materials of City of Oradea

Reducing the SO2 and NOx emission concentrations which were exceeding authorised thresholds prior to the project, and improving the heating system for more than 141 000 inhabitants in Oradea are just two of the major benefits expected as a result of the project.

In concrete terms, the project involves the construction of specialist equipment and the rehabilitation of the existing network. Project tasks include:

- The construction of two hot boilers run on natural gas/fuel oil;
- The construction of one hot boiler run on natural gas;
- The installation of a co-generation unit with a gas turbine and heat recovery boiler in the first plant, known as CET1, in order to reduce NOx, SO2 and dust emissions by phasing-out the use of lignite and increasing energy efficiency;
- The installation of numerous auxiliary systems;
- The partial rehabilitation of the transport network.

Following the project implementation, the infrastructure will be managed by the local operator, SC Electrocentrale Oradea SA, owned entirely by Oradea municipality.

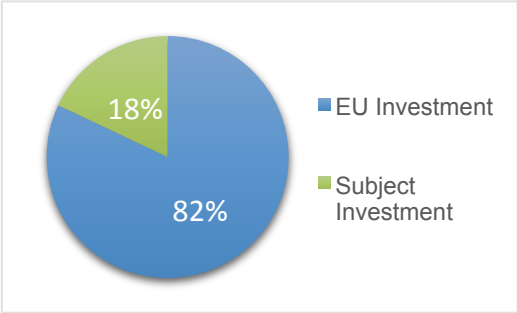
Apart from improving the heat supply for 141 000 inhabitants, representing 70% of the population of the Oradea municipality, by reducing SO2 and NOx emissions, the project will contribute to improving the air quality and the health conditions for the whole population of the area. Moreover, the improvement of energy efficiency will allow for a reduction in the consumption of primary energy, including fossil resources and will therefore also contribute to a reduction in greenhouse emissions.

From a financial point of view, the project will contribute to making the Oradea area a more attractive place to invest in. It will directly create 185 jobs during the implementation phase. Energy efficiency gains, together with tariff increases, will also contribute to improving the financial sustainability of the district heating system which is currently heavily reliant on operating subsidies.

4.2.5. Theme "Flood protection "- Raising flood protection levels in the Prut Barlad catchments[53]

Fund: Cohesion Fund (2007 – 2013)
Total Investment: € 58,521,100
EU Investment: € 48,008,200
Programming period: 2007 – 2013

Flood protection and prevention are the central aims of this project. The works undertaken include constructing polders, dredging and stabilising river beds, and providing flood hazard and flood risk mapping.



Some 16 000 local residents will directly benefit from better protection from floods, notably through new alert systems giving 3 to 4 hours warning to those in the risk areas of the Bahlui River basin.

53 ec.europa.eu/regional_policy/index.cfm/en/projects/romania/raising-flood-protection-levels-in-the-prut-barlad-catchments

FIGURE 12: BARLAD RIVER

Source: Panoramio.com

The body responsible for carrying out the project is the Prut Water Directorate of the national administration 'Romanian waters' (ANAR). There are vulnerable areas along Bahlui River that are in need of protection against flood risks. The project will ensure flood protection for the Iasi and Podu Iloaiei and Targu Frumos municipalities. It also aims at contributing to compliance with the requirements of EU Directive 60/2007 on the assessment and management of flood risks.

The result of the project will be an improved quality of life for citizens living in the service area, alongside added security, with the area being more attractive for business ventures and investments. The project is expected to directly create 315 jobs during the implementation phase.

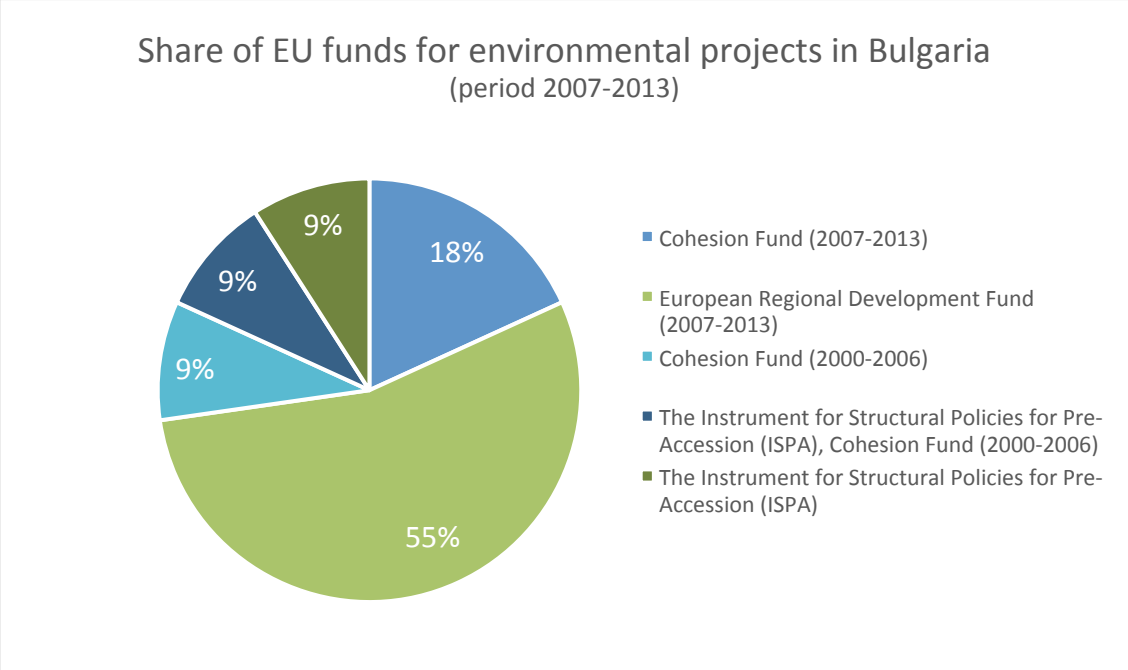
The channel works on the Bahlui River include constructing and raising the defence embankment, reconstructing floodwalls, and dredging and stabilising the riverbed in the Iasi municipality. Polders will also be constructed on the River, covering respectively 120 and 265 ha downstream and upstream of the Podu Iloaeiei municipality. Furthermore, upstream of the Targu Frumos municipality, temporary storage will be developed by constructing temporary reservoirs and embankments.

Forecasting and warning systems will form an integral part of the decision support system in the Bahlui River basin. This will be backed by river level and runoff modelling, together with action plans and training. The Prut Barlad catchments will also benefit from flood hazard and flood risk mapping.

4.3. PROJECTS FOCUSED ON THE ENVIRONMENT IN BULGARIA

In Bulgaria was collected database of eleven projects with a total financial assets of € 420,428,805. In the programming period 2007 – 2013 Bulgaria drew the most funding from ERDF for environmental projects (55%). From the cohesion fund was financed 18%. From earlier pre-accession funds have been used nearly a third of all finances.

FIGURE 13: SHARE OF EU FUNDS ON THE ENVIRONMENT IN BULGARIA



Source: Author

The most expensive and biggest project was Overhauling the city's waste management system. The project cost 107 million co-financing from the EU was equal to 78%. In Bulgaria you cannot determine the most widely thematic area of the environment, because it realized a small number of large projects. Generally speaking, that even access to information about projects with Romania was better than in Bulgaria.

TAB. 3: PROJECTS FOCUSED ON THE ENVIRONMENT – BULGARIA (2007 – 2013)

Name	Total Investment	EU Investment	Public Investment
Lowering the risk of floods in the Danube basin	6 376 563 €	5 003 647 €	1 372 916 €
Keeping the Danube blue	57 800 000 €	46 800 000 €	11 000 000 €
River systems given the royal treatment in Bulgaria	X	11 230 000 €	X
Waste not, want not	X	44 190 000 €	X
Raising the standard of water infrastructure in Gabrovo	63 164 582 €	48 039 861 €	15 124 721 €
Efficient risk prevention against natural disasters through cross-border cooperation in the	11 508 671 €	9 761 655 €	1 747 016 €
"Regions4GreenGrowth" helps regions to invest in green energy schemes	2 090 577 €	1 621 841 €	468 736 €
Controlling the water cycle	69 726 600 €	50 525 300 €	19 201 300 €
Overhauling the city's waste management system	107 462 400 €	83 741 917 €	23 720 483 €
New research centre and laboratory in Kardzhali to serve as a pollutant early warning	1 977 362 €	1 618 157 €	359 205 €
ARDAFORECAST - a reliable flood warning system, developed for the cross-border Arda	82 322 050 €	69 973 743 €	12 348 307 €
Sum	**402 428 805 €**	**372 506 121 €**	**85 342 684 €**
Average	44 714 312 €	33 864 193 €	9 482 520 €
Max	107 462 400 €	83 741 917 €	23 720 483 €
Min	1 977 362 €	1 618 157 €	359 205 €

Source: Ministry of European Funds Romania, ec.europa.eu, own research

The spatial projection shows that Bulgaria their projects concentrated in a few regions. Specifically, these are the regions Stolichna, Vratsa, Gabrovo and Rousse, where they were executed large expensive projects. Projects focusing on the environment were also implemented in the regions of Lom, Pernik, Veliko, Popovo, Haskovo, Strelcha, Pazardzhik and Varna.

FIGURE 14: SUM OF FINANCE (EURO) USED FOR EUROPEAN PROJECTS ASSOCIATED WITH THE ENVIRONMENT IN INDIVIDUAL ADMINISTRATIVE UNITS NUTS 2 IN BULGARIA

Source: Ministry of European Funds Romania, ec.europa.eu, own research

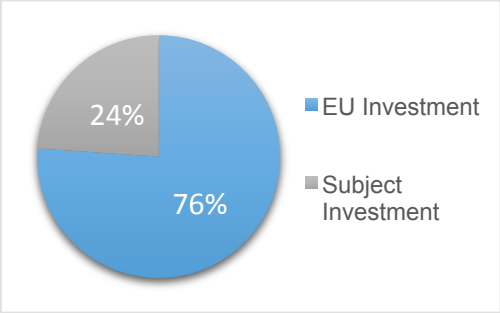
4.4. TYPE OF PROJECTS IN BULGARIA BY THEMES

Total was created database projects in Bulgaria thematically divided into four groups:

- Water, sewage, drainage and sewers
- Waste management
- Improving air quality
- Flood protection

4.4.1. Theme "Water, sewage, drainage and sewers"- Raising the standard of water infrastructure in Gabrovo[54]

Fund: Cohesion Fund (2007 – 2013)
Total Investment: € 63,164,582
EU Investment: € 48,039,861
Programming period: 2007 – 2013



Improving the water infrastructure in Gabrovo, central Bulgaria, will deliver great benefits to the local environment and population and will bring the area's water system in line with EU environmental standards.

The project focuses on improving drinking water distribution and treatment, as well as wastewater collection and treatment for Gabrovo, thereby raising infrastructure to the standard required by the EU Drinking Water and Urban Wastewater Directives.

Expected to benefit around 63 000 people, the project will deal with the two distinct parts of the water system – water supply and treatment and wastewater collection and treatment.

Figure 15: Project - raising the standard of water infrastructure in Gabrovo

Source: ec.europa.eu

In order to tackle problems relating to the water supply system, the drinking water treatment plant will be reconstructed, one new pumping station will be constructed and four will be rehabilitated and 76 km of water supply system will be upgraded. As well as raising the system to the standards prescribed in the Drinking Water

54 ec.europa.eu/regional_policy/en/projects/bulgaria/raising-the-standard-of-water-infrastructure-in-gabrovo

Directive, this work will improve the security of supply and decrease operation and maintenance costs through reduced physical water losses.

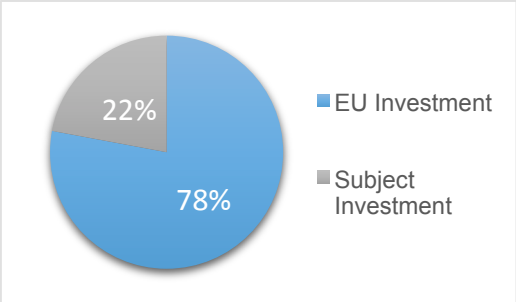
As regards wastewater collection and treatment, 21.6 km of the existing sewerage network and nine creek crossings will be rehabilitated. The current wastewater treatment plant will be reconstructed and approximately 18.5 km of the sewerage network will be extended. These actions will significantly increase the quality of treated wastewater and therefore the quality of water in the Yantra River and the Danube River. They will also raise the system to the standards required by the EU's Urban Waste Water Treatment Directive.

Some 63,000 inhabitants living in the project area will enjoy an improved quality of life thanks to the project. Safer drinking water will contribute to reducing health risks for the population while improved wastewater disposal and treatment will raise hygiene standards. Technical water losses in the water supply network will be reduced by 34% and a further 17% of the population will be connected to the sewerage system (up from 79% to 96%).

From a financial perspective, reliable and compliant water services will make the Gabrovo area a more attractive place to invest in and 400 jobs will be created during the implementation phase of the project. In terms of environmental impact, organic and nutrient pollution will be reduced while the quality of water in the Yantra and Danube rivers will be improved. Significant environmental benefits will also stem from the elimination of groundwater and sub-soil contamination.

4.4.2. Theme "Waste management"- Overhauling the city's waste management system[55]

Fund: European Regional Development Fund (2007 – 2013)
Total Investment: € 107,462,400
EU Investment: € 83,741,917
Programming period: 2007 – 2013



The bustling capital city of Bulgaria, Sofia, is the 15th largest city in the EU and is host to a number of major universities, cultural institutions and businesses. However as the city grows and modernises, the city is also making sure that its waste management system keeps up.

[55] ec.europa.eu/regional_policy/en/projects/bulgaria/overhauling-the-citys-waste-management-system

Behind the scenes of every major city lies the issue of what to do with the waste created by its inhabitants. The city of Sofia is establishing a modern, compliant and integrated municipal waste management system that it will meet the requirements of the EU waste legislation.

The rubbish we create can sometimes be more than trash, and can be used to create energy. As part of the project a Mechanical Biological Treatment (MBT) plant is being constructed at the Sadinata site with Refuse Derived Fuel (RDF) production capabilities. The RDF can be used as an alternative fuel in a co-generation facility at the Sofia District Heating Plant as well as in cement factories in Bulgaria. Once bio-waste and green waste have been sorted out, the plant will then treat all household waste from Sofia. With a capacity of approximately 410 000 tons per year, waste treatment operations is aimed to run 310 days a year, meaning that it will have an average daily treatment capacity of 1 320 tons per day.

FIGURE 16:PROJECT - OVERHAULING THE CITY'S WASTE MANAGEMENT SYSTEM

Source: City of Sofia - webpage

In addition to the production of RDF, the MBT process comprises of the mechanical/manual separation and sorting, biological treatment of organic waste. Residual waste treated in the MBT plant is composed of two different streams: waste produced by households (household waste) and waste generated by shops, stores, offices and factories (commercial wastes).

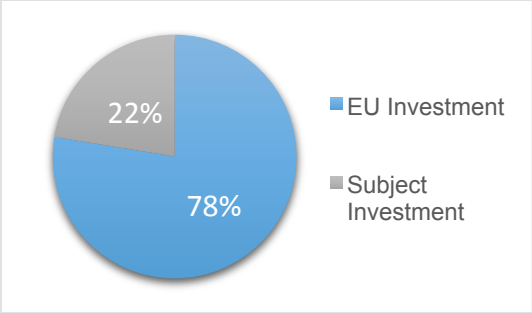
During the course of the project it is estimated that 70 jobs will be created while 120 new jobs are estimated once the project is completed. In addition to the number

of maximum direct jobs created, a number of non-direct jobs will be created, in much the same way the MBT plant will maximise the amount of recycling of materials. Organic fraction will be utilised to obtain a Compost Like Output (CLO), stabilised compost which can then be applied in land remediation processes or as a soil improver.

By segregating and finding alternative uses for waste the city is limiting and reducing the amount of waste that would potentially be deposited in a landfill, and reduce potential emissions on the landfill.

4.4.3. Theme "Improving air quality" -"Regions4Green-Growth" helps regions to invest in green energy schemes[56]

Fund: European Regional Development Fund (2007 – 2013)
Total Investment: € 2,090,577
EU Investment: € 1,621,841
Programming period: 2007 – 2013



A ground-breaking knowledge-exchange programme has helped to boost investment in sustainable energy projects in thirteen regions of ten European countries, by improving access to finance and helping regions to roll out green energy policies.

At a time when public funds in most European regions are decreasing, one of the main aims of the Regions4GreenGrowth (R4GG) project is to find new ways to finance green energy projects, such as renewable energy generation and energy efficiency measures, thereby helping the EU to achieve its ambitious energy targets.

Potential investors in green energy infrastructure projects often find it hard to raise finance as banks are often reluctant to invest in the sector. Meanwhile, state funding for green energy is often limited and lacks continuity. For those reasons, a particular focus of the R4GG project is to boost private-public financing schemes.

Through the programme, regions have received advice on, for example, the creation of regional energy funds, energy service companies and green public procurement to stimulate innovation and the local market.

The R4GG project involves project partners visiting other regions to analyse the specific challenges facing those regions. These visits, and the organisation of related workshops, give regions the opportunity to share their experience and knowledge and allow for the creation of tailor-made solutions so that regions are helped to achieve their sustainable energy targets.

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56 ec.europa.eu/regional_policy/en/projects/bulgaria/regions4greengrowth-helps-regions-to-invest-in-green-energy-schemes

FIGURE 17: PROJECT - "REGIONS4GREENGROWTH" HELPS REGIONS TO INVEST IN GREEN ENERGY SCHEMES

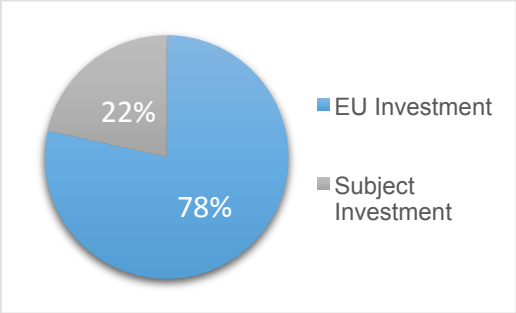
Source: Webpage of the project - Regions4GreenGrowth

An example of such a peer review, was a five-day visit to the Valencia region of Spain when experts from the Netherlands, Hungary, Sweden and the Assembly of European Regions provided advice on the creation of clusters, the use of loans rather than grants to establish an investment community and a green investment fund and how to improve communication. Energy efficiency measures in the public sector are now being successfully implemented.

R4GG's peer review methodology has been surprisingly effective as the international team of experts possesses a great deal of knowledge and experience. Practice has shown that all host regions discover as a result of the process that they have blind spots or problem areas that other regions have already found a solution to.

4.4.4. Theme "Flood protection"- Lowering the risk of floods in the Danube basin[57]

Fund: European Regional Development Fund (2007 – 2013)
Total Investment: € 6,376,563
EU Investment: € 5,003,647
Programming period: 2007 – 2013



Co-financed by the European Regional Development Fund, the DANUBE FLOODRISK project has introduced the most cost-effective measures to reduce flood risk across the region, with large benefits for the rural and urban environment.

Figure 18: Scalable system of flood risk maps for the Danube floodplains

Source: Panoramio.com

The project brought together scientists, public servants, NGOs and stakeholders from all the Danube countries. Together, they developed a scalable system of flood risk maps for the Danube floodplains. The project team also introduced a series of flood mitigation measures, new spatial development plans and assessment tools for economic development in flood plains. Crucially, their work has resulted in a heightened awareness of flood risk among key stakeholders, including the general public.

The Danube is one of the most important natural axes in South-East Europe, linking most countries in the region. The catastrophic flood events 2006 revealed for the first time how vulnerable it is to extreme natural events. In addition, the recent

[57] ec.europa.eu/regional_policy/en/projects/bulgaria/lowering-the-risk-of-floods-in-the-danube-basin

increase in industrial and urban settlements means that damage costs as a result of flooding have increased significantly.

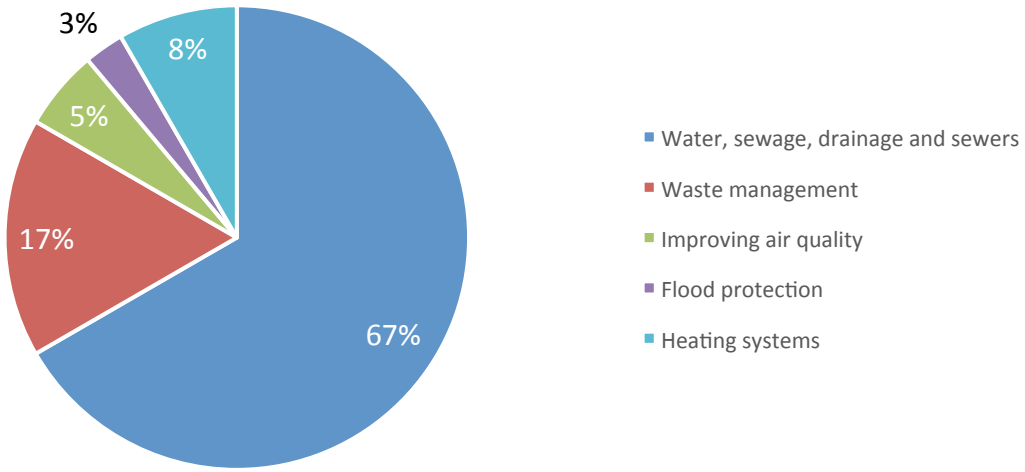
4.5. Comparison of the countries

For comparison, all project were distributed into five main categories:

- Water, sewage, drainage and sewers;
- Waste management;
- Improving air quality;
- Flood protection;
- Heating systems (only in Romania).

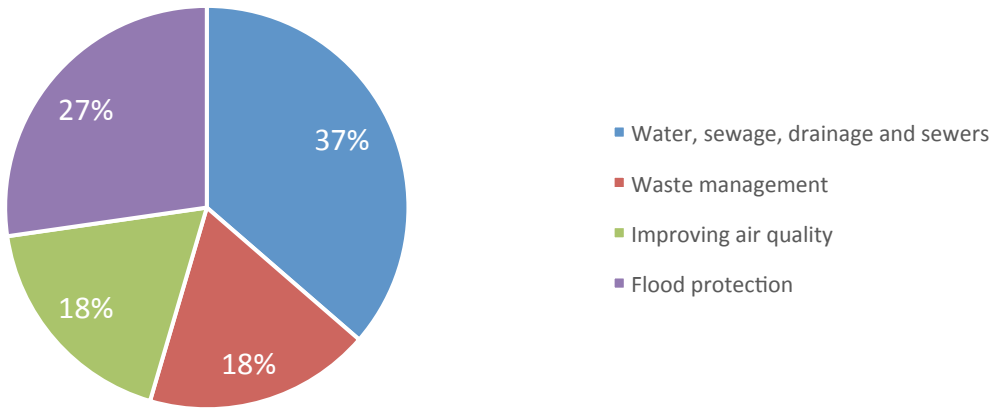
In graphs below, you can see the percentage distribution of these categories by the frequency of the project in the categories.

Figure 19: Distribution of project into categories in Romania



Source: Author

FIGURE 20: DISTRIBUTION OF PROJECT INTO CATEGORIES IN BULGARIA



Source: Author

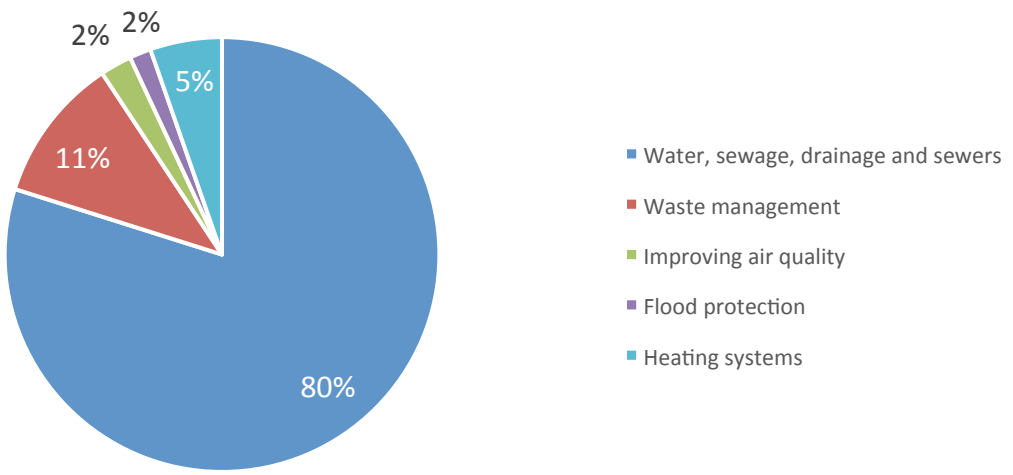
In graphs we can see the disparity of uniformity in the countries. Meanwhile most of the project in Romania belongs to category "Water, sewage, drainage and sewers" (over 65%), the rest of categories are just over 20% ("Waste management") or even over 10%.

In Bulgaria are all categories represented more evenly.

In next two graphs below, you can see the share of categories by total investment of the projects belongings to these categories. Again, in Romania, there is clear predominance of the "Water, sewage, drainage and sewers" category (80%).

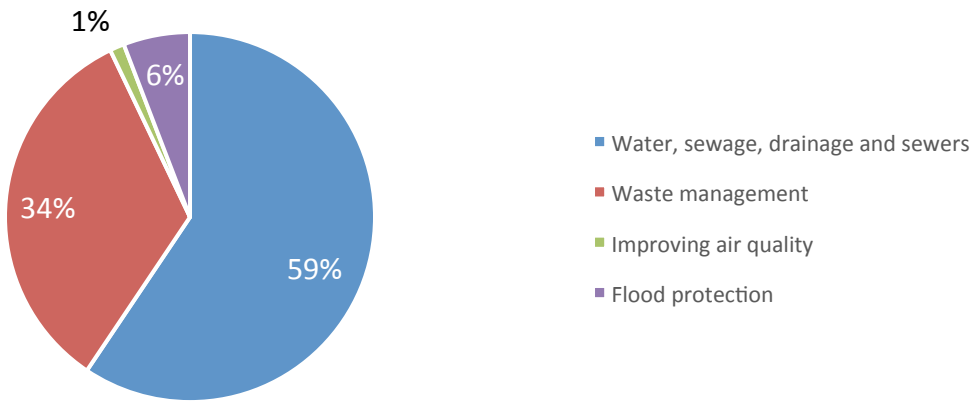
In Bulgaria, there was just 59% in "Water, sewage, drainage and sewers" category.

FIGURE 21: SHARE OF CATEGORIES BY TOTAL INVESTMENT IN ROMANIA



Source: Author

FIGURE 22: SHARE OF CATEGORIES BY TOTAL INVESTMENT IN BULGARIA



Source: Author

Air pollution and water pollution caused by industry are serious environmental problems in Romania. The country's factories, chemical plants, and electric power plants depend heavily on burning fossil fuels, a process that emits high levels of carbon dioxide and sulfur dioxide - a key component of acid rain[58]. This could be the main reason, why about 80% of all environmental projects in Romania are aimed to water and sewage management, improving water quality etc. Romania has already started investing in clean energy, such as solar, wind and hydro energy sources. Also, several projects on using geothermal energy have already been implemented in the country.

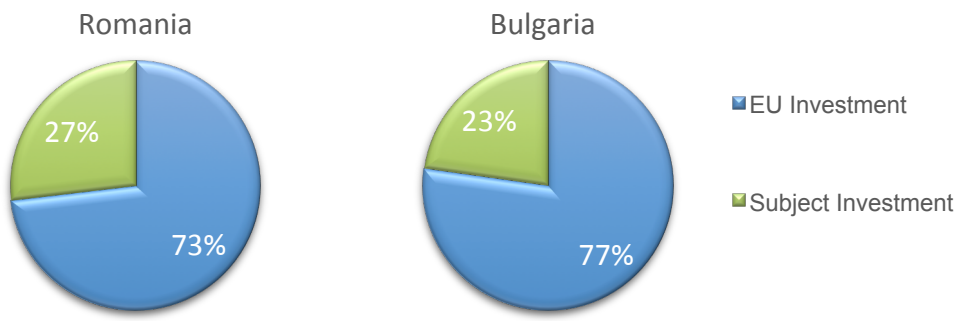
[58] naturvernforbundet.no/international/environmental-issues-in-romania/category944.html

4.6. SUMMARY

Most of the selected projects in Romania were financed by the Cohesion Fund (72%). In Bulgaria more than half of the projects was funded through the ERDF (55%).

In these two graphs, we can see the distribution of money invested by EU and by public subjects in each of the countries. 73% of all total investments in Romania was paid by European funds, in Bulgaria, it was even more, about 77%.

FIGURE 23: DISTRIBUTION OF MONEY INVESTED BY EU



Source: Author

Total amount of money invested in Romania was € 3 655 041 582 (EU: € 2 672 553 887, Subject Investment: € 982 487 695), with average investment € 101 528 933 per project, maximal amount invested on one project was € 258 352 050 (Extension and modernisation of sewer systems to benefit Romania's capital city), and minimal € 20 959 726 (Integrated and exemplary waste management).

Total amount of money invested in Bulgaria was € 320 929 976 (EU: € 303 232 115, Subject Investment: € 73 117 860), with average investment € 35 658 886, maximal amount invested on one project was € 107 462 400 (Overhauling the city's waste management system), and minimal € 823 221 (ARDAFORECAST - a reliable flood warning system, developed for the cross-border Arda River).[59]

Next graph below shows us the allocation of funds according to the amount of the EU investment. As we can see, more than 80% of EU investments in Romanian environmental projects comes from Cohesion Fund for 2007 – 2014 period, 15% comes from European Regional Development Fund, and the rest come from combination of the two funds or from ISPA (The Instrument for Structural Policies for Pre-Accession).

In the case of Bulgaria is seen more even distribution of all EU investments. Almost half (47%) come from Cohesion Fund, for 2000-2006 or 2007 – 2014 period. One

[59] Some amounts may be misleading due to the unavailability of certain data in Bulgaria.

third of the all EU investment comes from European Regional Development Fund (2007 – 2014), 15% comes from ISPA (The Instrument for Structural Policies for Pre-Accession), and the rest from combination of funds.

In both of the analysed countries, more than half of the investment was focused on the issue of “Water, sewage, drainage and sewers” category (Romania: 80%; Bulgaria: 59%). In the case of Bulgaria, however, seen a more even distribution of projects between the created categories. While in Romania, two-thirds of the projects fall into the category of water management, in Bulgaria it is just over one third. Almost a third of it is focused on flood protection: 27% (in Romania just 3%). The rest of Bulgarian project was distributed into Waste Management category and Improving Air Quality.

Another interesting phenomenon which we can see on the maps of both states, is the difference in geographic distribution of the realized projects. In the case of Romania, projects are spread more or less evenly distributed throughout the territory. Unlike most of the projects in Bulgaria are focused into four main areas. This could be the reason of low diversity in Romanian projects (the same type of project all over the country), compared to the Bulgarian variety of different projects in the same areas.

But the question remains whether this layout is a reflection of the real needs of their regions, or whether it is the result of a concentration of the Governments of the country's regions on specific areas, with the omission of the need for intervention in the other.

5. CONCLUSION

The topic of waste and material flow policy is being intensively discussed at the EU level. However, it has not yet succeeded to implement effective tools against decreasing resources and in some cases increasing amount of waste. The effectiveness and the efficiency of all tools used in the past for controlling the waste, material flow and the implementation of European law depended on each member-state's policy and it varied a lot, there has been a lack of a common EU resource policy.

A fundamental rethinking concerning the waste and the concept of sustainability is essential. Despite numerous European measures and the economic growth, it has not still come to any recycling in many European countries. It is important to develop waste legislation in order to secure resource conservation and to strengthen recycling. Key waste management's action areas lie both in overtaking responsibility for the company's products and the company's waste procedures considering their environmental impact throughout the life cycle and in the development of waste-recycling strategies even in their everyday activities.

The waste-related topic is linked to the discussion of the environmental and development issues, about where it comes to the limits of the environmental rights and about a suitable model of prosperity. It also influences the problems of resource scarcity and its equal distribution – today and in the future.

The core of these considerations lies in the idea of sustainability and the role of the waste management concerning this concept. The sustainable development is to be understood as an indicator of direction which can be reached throughout cooperative and collective processes of all people economically involved. At the same time, the idea of sustainability shows the structural problems of our contemporary way of living which is thanks to the changing life values, connected with a disposable mentality characterized by overconsumption and a high usage of resources.

Financial needs for environmental management and sustainable development are far-reaching. Financial resources are needed for combating poverty and improving health, for halting deforestation and protecting fragile ecosystems, for providing clean water and sanitation and for addressing urban congestion and air pollution problems. No transitional economy has the resources to directly address all these problems, not even stabilize environmental degradation at current levels.

There are prospects that adequate resources can be transferred from external sources to address these problems through direct public sector investment which were shown on the specific examples of Romania and Bulgaria in the last chapter. Public sector expenditures are by necessity limited to interventions that have catalytic or demonstration value and that leverage additional resources from the

private sector and which finance the supply public goods that are undersupplied by the market.

The financial needs of the public sector in its role as facilitator and regulator of economic activity are defined by the costs of establishing the necessary institutions and incentive systems for advancing sustainable development. These costs include design, information, administration and enforcement costs, as well as the cost of supplying the basic environmental infrastructure, it means legal, human and physical. Like the private sector, the public sector may find that a good part of the needed financial resources can be found within the sector through win-win interventions.

Despite the prospects for reducing financial needs and generating additional financial funds from domestic sources, the need for the infusion of external financial resources is not eliminated, though it is substantially reduced.

External financial funds are needed to resolve cash flow problems arising from the time distance between the benefits and costs of individual projects and policies in each state. If sustainable development is a project which generates a positive net present value, the benefits may not accrue for a number of years, while the costs need to be paid today, necessitating long-term bridge financing which is scare and often unavailable in transitional economies.

Additionally, external financial resources are necessary for financing the foreign exchange components of investments, and to build expected investors confidence as well as to leverage domestic sources of financing.

Cleaning up past contamination, mainly hazardous waste sites, and restoring damaged natural resources tends to be extremely costly and capital and technology intensive, and it cannot be accomplished with domestic resources to the extent possible. More than any other part of the world, countries of Southeast Europe have embarked on their sustainable development efforts with a huge liability of past contamination which can easily drain all financial resources available with few benefits and high opportunity cost. It is necessary a reform process itself.

Very important is the need for external financing, mainly in the form of grants rather than loans, to internalize global externalities, projects which have both local and global benefits which would not be undertaken otherwise. This type of external financing does not represent development assistance or resource transfer, but payments are provided to global community by developed countries and transitional economies.

These financial funds need may arise from international conventions or simply from pressures from developed countries or the global community to conserve resources of global value. It may also arise from the host country itself wanting to avoid irreversible losses of environmental assets in earlier years that may be highly valued in later years. This sort of financing need is, again, of particular importance to

transitional economies because of the real risk of irreversible environmental losses, especially in fragile ecosystems, during the temporary transition process.

The results show that Romania and Bulgaria have different approaches to EU funds both thematically as well as geographically (concentrated versus even distribution). Additionally compared to Western European countries new EU members are still tackling fundamental development problems with infrastructure. This suggests that each country has its own specific challenges as well as governance which complicate usage of universal financial instruments and plans. Nevertheless, investments in environmental projects may have various multiplier effects ranging from the quality of life, economic environment to tourism etc.

When looking at both countries, Romania as well as Bulgaria have encountered a number of similar problems during the programming period 2007 – 2013 and both countries had various problems with EU funds absorption. The main problems included especially poor administrative capacity, lack of skills, poor transparency, public procurement procedures etc. Whether the new programming period 2014 – 2020 will be more successful is a question, however, both countries have gained experience in using EU funds therefore situation shall improve gradually within the current programming period 2014 – 2020.

Regarding the common interests, Romania and Bulgaria are a part of macroregional Danube Strategy. This strategy could open a great opportunity for both countries in the new programming period 2014 – 2020, especially with regard to environment, sustainable development and transportation. The macroregional Danube Strategy is a relatively new concept of regional cooperation in Southeast Europe. It is aimed for countries in the catchment area of the Danube River. The goal of the strategy is to create a common framework for cooperation which would lead towards common answers and solutions of challenges which the region faces. It is a tool which should ensure efficient horizontal coordination, synergy of existing activities and more effective and integrated use of available EU financial sources. In order to ensure the implementation of the Danube Strategy, the Operational programme Danube was prepared by the European Commission in cooperation with EU member states. Therefore, it is up to the countries of macroregional Danube Strategy whether they embrace the chance and opportunity given to them.

With regard to new financial tools and financial resources, there is of course also a great opportunity for private businesses which can participate in the process of sustainable development. Sustainability is one the key priorities of Strategy Europe 2020 and the new programing period both public as well as private sectors should help to implement measures and technologies which would support sustainability as well as improve environment all over Europe.

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