

Environment and Climate Regional Accession Network (ECRAN)

ECRAN Regional Workshop on Coordination of Strategic and Investment Planning in Waste Sector

25-26 November 2014, Skopje



ENVIRONMENTAL AND CLIMA REGIONAL NETWORK FOR ACCESSION - ECRAN

WORKSHOP REPORT

ECRAN Climate Activity No 2.2

REGIONAL WORKSHOP ON COORDINATION OF STRATEGIC AND INVESTMENT PLANNING IN WASTE SECTOR

25-26 NOVEMBER 2014, SKOPJE, FYR OF MACEDONIA



This Project is funded by the European Union





Table of Contents

I. Background/Rationale 1	Ĺ
II. Objectives of the training	2
General objective 2	2
Specific objectives	2
Results/outputs	2
III. EU policy and legislation covered by the training	3
IV. Highlights from the training workshop	5
V. Evaluation)
ANNEX I – Agenda	5
ANNEX II – Participants	3
ANNEX III – Presentations (under separate cover)	L





LIST OF ABR	LIST OF ABREVIATIONS			
APC	Air Pollution Control			
CAS	Civic Amenity Sites			
DG	Directorate General			
EC European Commission				
ELV	End of life Vehicles			
EOW	End of Waste			
EPR	Extended Producer Responsibility			
EU	European Union			
IBA	Incineration Bottom Ash			
IPA	Instrument for Pre-accession Assistance			
MBT	Mechanical-biological Treatment			
MS	Member States			
MSW	Municipal Solid Waste			
PAYT	Pay as You Throw			
РСВ	Polychlorinated biphenyls			
РСТ	Polychlorinated terphenyls			
RDF	Refuse Derived Fuel			
RDF	Refused Delivered Fuel			
RWMS	Radioactive Waste Management Sites			
SEA	Strategic Environmental Assessment			
SRF	Solid Recovery Fuel			
WEEE	Waste Electrical and Electronic Equipment			
WFD	Waste Framework Directive			
WG	Working Group			
WMP	Waste Management Plan			





I. Background/Rationale

EU requirements for waste management are very demanding. EU sets number of targets to be achieved by the Member States. These include:

- Establishment of source separation system, 50% of recycling of municipal solid waste (Waste Framework Directive);
- Diverting biodegradable waste from landfilling (Landfill Directive);
- Recycling and recovery of packaging waste (Packaging and Packaging waste Directive).

Achievement of these targets require careful strategic planning and elaboration of national planning documents like National waste management plan, Waste prevention plan, Biodegradable waste management strategy, plans for management of other waste streams.

Progress in meeting set objectives will depend on number of factors, which includes organisational, economic, financial, awareness raising and other aspects. Not at least it depends on the infrastructure solutions for waste collection, separation, recycling and recovery.

Acceding countries are facing difficult policy choices on how to achieve targets with limited public financial resources and limited affordability to pay operational costs. In such situation right technological decisions and sets of infrastructure pay significant role not only in saving scarce financial resources for investment, but also in keeping operational costs bellow agreed affordability thresholds.





II. Objectives of the training

General objective

The aim of the workshop is to provide participants with information, share experience and extend capacities in participating countries in strategic planning and related waste management infrastructure development in order to achieve EU acquis requirements in waste sector.

Specific objectives

Specific objectives of the workshop:

- To establish common understanding on strategic planning requirements in waste sector;
- To establish common understanding on links between strategic planning and technological options for support of achievement of targets;
- To establish common understanding on role of waste management infrastructure in supporting waste separation and recycling;
- To present and discuss experience in EU countries on establishment of infrastructure for waste management and how this supports waste separation and recycling;
- To present and discuss how waste management infrastructure can serve achievement of targets for several directives;
- To better understand links between selected infrastructure decisions and investment and operational costs;
- To agree on next steps.

Results/outputs

The expected results are:

- Improved skills in strategic waste management planning;
- Improved understanding regarding interrelation between delivery of targets and selection of technological solutions;
- Improved understanding regarding infrastructure solutions and impacts on financing needs.





III. EU policy and legislation covered by the training

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste;
- Council Directive 99/31/EC of 26 April 1999 on the landfill of waste;
- European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste.

Waste Framework Directive

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. This Directive repealed Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste (the codified version of Directive 75/442/EEC as amended), hazardous waste Directive 91/689/EEC, and the Waste Oils Directive 75/439/EEC. It provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling, recovery. It explains when waste ceases to be waste and becomes a secondary raw material, the so called end-of-waste criteria, and how to distinguish between waste and by-products. The Directive lays down some basic waste management principles: it requires that waste be managed without endangering human health and harming the environment, and in particular without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest. Waste legislation and policy of the EU Member States shall apply as a priority order the following waste management hierarchy:

- Prevention;
- Preparing for re-use;
- Recycling;
- Recovery;
- Disposal.

The Directive introduces the "polluter pays principle" and the "extended producer responsibility". It incorporates provisions on hazardous waste and waste oils, and includes two new recycling and recovery targets to be achieved by 2020: 50% preparing for re-use and recycling of certain waste materials from households and other origins similar to households, and 70% preparing for re-use, recycling and other recovery of construction and demolition waste. The Directive requires that Member States adopt waste management plans and waste prevention programmes.

Landfill Directive

Council Directive 99/31/EC of 26 April 1999 on the landfill of waste - The Landfill Directive defines the different categories of waste (municipal waste, hazardous waste, non-hazardous waste and inert waste) and applies to all landfills, defined as waste disposal sites for the deposit of waste onto or into land. Landfills are divided into three classes:

- landfills for hazardous waste;
- landfills for non-hazardous waste;
- landfills for inert waste.

The Directive does not apply to:



This Project is funded by the European Union



- the spreading on the soil of sludge (including sewage sludge and sludge resulting from dredging operations);
- the use in landfills of inert waste for redevelopment or restoration work;
- the deposit of unpolluted soil or of non-hazardous inert waste resulting from prospecting and extraction, treatment and storage of mineral resources as well as from the operation of quarries;
- the deposit of non-hazardous dredging sludge alongside small waterways from which they have been dredged and of non-hazardous sludge in surface water, including the bed and its subsoil.

A standard procedure for the acceptance of waste in a landfill is laid down so as to avoid any risks, including:

- waste must be treated before being landfilled;
- hazardous waste within the meaning of the Directive must be assigned to a hazardous waste landfill;
- landfills for non-hazardous waste must be used for municipal waste and for other nonhazardous waste;
- landfill sites for inert waste must be used only for inert waste;
- criteria for the acceptance of waste at each landfill class must be adopted by the Commission in accordance with the general principles of Annex II.

Packaging and Packaging Waste Directive

European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste. The EU first introduced measures on the management of packaging waste in the early 1980s. Directive 85/339/EEC set rules on the production, marketing, use, recycling and refilling of containers of liquids for human consumption and on the disposal of used containers.

To harmonize national measures concerning the management of packaging and packaging waste and to prevent or reduce its impact on the environment Directive 94/62/EC was adopted. The Directive aims at providing a high level of environmental protection and ensuring the functioning of the internal market by avoiding obstacles to trade and distortion and restriction of competition.

In 2004, the Directive was amended to provide criteria clarifying the definition of the term 'packaging' and increase the targets for recovery and recycling of packaging waste. In 2005, the Directive was revised again to grant new Member States transitional periods for attaining the recovery and recycling targets. In 2013 Annex I of the Directive containing the list of illustrative examples of items that are or are not to be considered as packaging was revised in order to provide more clarity by adding a number of examples to the list.







IV. Highlights from the training workshop

Day 1 – Tuesday, 25 November 2014, Skopje

Introduction to the Regional Workshop on coordination of Strategic and Investment Planning in Waste Sector – Arunas Kundrotas

Main goals of the Strategic Planning and Investments Working Group (WG) include:

- Improvement of strategic planning ;
- Improvement of investment planning and management (in particular, cost recovery);
- Facilitating IPA2 implementation;
- Liaison with EC, IFIs, WBIF, bilateral donors, NGOs, etc.

During the implementation of the ECRAN project, three annual Working Group meetings are planned, presented as Task 1.Strategic planning represents task 2 of the activity. Three regional training were planned, one was held in Podgorica in March 2014 on strategic planning, and second on strategic planning in waste sector in November 2014. It is expected to develop meta-plans for each beneficiary country together with the agreed lists of sectoral policy documents.

Task 3 is cost recovery and tariff setting. Two regional trainings on economic-financial analysis and cost recovery were planned, combined with other ECRAN sector specific WG. One training was held in Skopje on October 2014 together with Water Management WG. National round tables in each country will also be promoted, on the structure of costs, financial flows, cost recovery, polluter pays and other principles. Final Task 4 covers the issue of capacity building for IPA, including two regional workshops on IPA II Regulation and its implementation rules. First workshop was held in Brussels, in June 2014, while the second one will be organised during 2015.

Second part of the presentation was used for Mr. Kundrotas to introduce the agenda of the workshop and the speakers.

Main Aspects of Waste Management Planning – Nebojsa Pokimica

Presentation was started with the Waste Framework Directive (WFD), Directive 2008/98/EC that sets out the main requirements for the content of a waste management plan. WFD sets out fundamental definitions, basic principles and overall strategic aims, and lays down requirements for all types of waste. A number of other directives is directly connected to WFD by regulating specific waste streams, and concerning packaging and packaging waste (94/62/EC), polychlorinated biphenyls (PCBs) and polychlorinated terphenyls (PCTs) (96/59/EC), end-of-life-vehicles (ELV, 2000/53/EC), waste electrical and electronic equipment (WEEE, 2002/96/EC) and other.

According to the Article 28, the competent authorities of the Member States (MS) are to establish a waste management plan (WMP) that relates in particular to the several elements, mandatorily to be addresses in each waste management plan. Those elements are:

- Type, quantity and source of waste generated and its evaluation;
- Existing waste collection schemes, disposal and recovery installations;



This Project is funded by the European Union



- Assessment of the need for new collection scheme
- Sufficient information on the location criteria;
- General waste management policies.

But the dilemma is, are waste management plans necessary? Waste Management Plans have a key role to play in achieving sustainable waste management that is in line with EU waste legislation. The main purpose is to give an overview of all waste generated and treatment options for this waste.

EU's approach to waste management is based on four principles highly relevant to the planning process:

- 1. The waste hierarchy generally lays down a priority order of what constitutes the best overall environmental opinion in waste legislation and policy. Highest priority is given to waste prevention, followed by preparing for re-use, recycling, or other recovery, e.g. energy recovery. Optimum final disposal is at the bottom of this hierarchy.
- 2. To secure a reduction in the impacts of waste on human health and the environment, especially to reduce the hazardous substances in waste, through the precautionary principle.
- 3. To make sure that those who generate waste or contaminate the environment should pay the full costs of their actions through the principles of polluter pays and producer responsibility.
- 4. To secure an adequate infrastructure by establishing an integrated network of treatment facilities based on the principles of proximity and self-sufficiency.

Drawing up or revising a waste management plan on the basis of the requirements of Article 28 WFD is a challenging task. In order to make the WMP practical and easily readable, it is recommended to keep its content as short and precise as possible. Elements of WMP were presented and discussed, and those include background, status part and planning part. The waste management planning process runs in cycles, i.e. in principle it is a continuous process, where the plan or strategy is revised at regular intervals. The process may be broken down into six phases: general considerations, status part, planning part, consultation process, implementation, and plan revision, as shown on the following picture:



In order to draft a WMO, it is crucial to have political support. A political starting point should include a decision on the following questions:





This Project is funded by the European Union



- Why draw up a waste management plan?
- What is the scope of the waste management plan?
- Who will be involved in the preparation of the waste management plan?
- What is the time frame for finalisation of the waste management plan?
- What is the relationship to other plans?

Regarding the question of who should be involved in the planning process, the list can be endless. It includes the representatives from the political and the administrative level, such as government departments, regional and local authorities. Waste experts are obligatory part of the planning process, as well as the representatives from the waste management sector, industrial and commercial organisations, as well as NGOs. Other parties can also be involved in the planning process.

The time horizon for the WMP depends on several factors, having the plan that may consist of two parts, part 1 for immediate action, and part2 with a long-term perspective. The reason for the long-term perspective part of the plan is that considerable difficulties can be expected in identifying suitable sites for waste treatment facilities or landfills within, or close to, urban areas. Furthermore, it will be necessary to put considerable effort into site selection, environmental impact assessment, and public consultation in order to obtain permission for new sites. Finally, waste treatment facilities represent large investments that need to be recovered over a longer period.

Regarding relationship with other plans and policies, Waste management planning should be an integral part of the overall national planning system, both as a wider approach to sustainable development and in order to achieve the overall goals set out in the waste management plans. A number of different planning areas relate directly to waste management planning and should be carefully considered when deciding on the scope and content of a waste management plan.

In the phase of planning, all data and information on the current situation in the waste management field are gathered and analysed, then the system is being evaluated and possible solutions for the problems are given. It is important to determine whether the current system comply with the objectives that are set and may be expected in the future, and if not, how it can be improved. For the preparation of a status report, it is necessary to collect data and to provide general knowledge. The planning part is prepared on the basis of requirements in EU and national legislation, the status part and relevant assumptions for projecting future developments. Next phase is consultation process, where the public should have a say in any future waste management system and a consultation phase must be included in the planning process before the final WMP and its initiatives are adopted. Public consultations may take place at various stages in the planning process. Following adoption of the waste management plan, its orientations are put into practice via legislation and regulation, negotiations with the industry, or information to the general public.

Once again, the objective of the workshop was presented, that is to provide the participants with experience of Member States in implementation of WFD with focus; on prevention of Waste production, Re use and Recycling, WFD provisions for Producer Responsibility, Status of end of waste and by-product and process of planning in the Waste Management.



This Project is funded by the European Union



Impacts of Technological Options for Achieving of Targets – Peeter Eek

EU Waste Directives contain a number of recovery and recycling targets, which are binding to the Member states. Not achieving those could trigger the Infringement procedure, which could end up with serious fines through the EU Court of Justice. The most challenging targets are:

- Preparing for reuse and recycling of the Municipal Waste 50% target by 2020;
- Recovery of the Construction/ Demolition Waste 70% target by 2020.

There are four options to calculate Recycling target for Municipal Waste according to EU Commission Decision 2011/753/EU:

- The preparation for reuse and the recycling of paper, metal, plastic and glass household waste;
- The preparation for reuse and the recycling of paper, metal, plastic, glass household waste and other single types of household waste or of similar waste from other origins;
- The preparation for reuse and the recycling of household waste;
- The preparation for reuse and the recycling of municipal waste.

However, the New Circular Economy Package adopted in July 2014 proposes Draft amendment to the several Waste Management Directives, so from 2020, the Municipal Solid Waste (MSW) recycling target only from total mass generated. The draft includes several proposals:

- Separate collection of bio-waste by 2025;
- Packaging recycling targets increased recycling targets (60% plastic, 80% aluminium, 80% glass) by 2025;
- Packaging recycling targets of wood (80%), ferrous metal (90%), aluminium 90%); glass (90%) by 2030.
- Limitations for landfilling MS shall not accept recyclable materials in landfills for nonhazardous waste by 2025;
- Limitations for landfilling MS shall accept only residual waste on landfills, not exceeding 5% by 2030;

Some of the alternatives on collection of waste were presented, such as Municipal Waste Collection (MWC). MWC is proposed to have a three layer system. One layer would be collection on the site of generation, second layer would be bring points, and third, waste stations, that is recycling yards. It is nearly impossible to replace fully on-site collection, this collection level should be directly linked to the property.

After-sorting was mentioned, especially for bio waste, collected with other types of waste, but sorted out in after-sorting line. Solution is to organise separate collection of bio-waste, which is widely used and it cost 50-100 euros per tonne. This solution is practically possible, and used, but it is economically very questionable.

Treatment of mixed-municipal waste has two options that are commonly used, that is incineration and mechanical-biological treatment (MBT). Both options are pre-treatment because large amounts of different secondary waste types are generated. Incineration is more spread in Northern and Central Europe, while MBT is most common in Southern countries. Even though that incineration was not used until 2000, the EU Directive 2000/76/EU have created a new interest to incineration.







Incineration of residual waste have two types, Air Pollution Control (APC) and Incineration Bottom Ash (IBA). Removal of metals in IBA treatment includes screening in several stages. Usual content of metals is 3-4% from the input. Metals that are separated are considered as municipal waste recycling. Ageing process is an integral part of IBA treatments. It is a process where Calcium and magnesium oxides react with water and carbon dioxide, so that pH is lowered and in the process of preparation for the recovery or disposal. Regarding MBT, the positive side is that it had a different technical solution and it has no special hazardous waste separation. However, additional investments are needed for the approach. If high calorific part is treated to Refuse Derived Fuel (RDF) it can be delivered for energy recovery. However, mechanical process with aim to separate RDF suffers a loss trough the evaporation (10-20%).

However, some problems are occurring recently, with the contamination of cement dust. Cement dust have been used in agriculture as limiting agent and special fertiliser, and burning of RDF have influenced its chemical composition, so the content of lead two to four times over limit. SO the cement dust cannot be marked as a non-waste fertiliser.

What is better solution, MBT or incineration? Technically, it is possible to have both, MBT could have fractions but that are not god for RDF. Considering the recycling targets, it would be optimal to create long-term capacity. Both methods separate well metals. On MBT further recycling is possible only through:

- Mineral part of the RDF, which will be part of the cement (< 8 %);
- Cleaning and washing of the <u>plastic fractions</u>, input to some mixed-plastic recycling process;
- Fine fraction: End of Waste (EoW) norms 'Low Quality compost' on National level for the fine fraction (contains usually 10-20 % glass cullet etc.).

MBT in support of achieving targets: Experience from Italy – Francesco Loro

In this presentation Mechanical –biological treatment (MBT) example from Veneto region in northeast Italy was presented. According to the statistical data, level of separate collection in Italy is not equal among the regions. Regions in the northern part of Italy gradually increased the percentage of separate waste collection from 2009, from some 45% to 55%, while on the other hand, in the south Italy, separate collection was increase as well, but from approximately 20% to 28%. Authorities in Italy has put a lot of effort to implement the WFD in many fields since 2009, regarding incineration, composting, recovery, energy recovery, landfilling, etc.

Region of Veneto is covering the area of 18,407km2, with 579 municipalities and five million inhabitants. Urban waste production per capita in Italy in 2012 was 504 kilos/inhabitant/year, while the same year in Veneto it was 447 kilos. There is a positive trend of separate collection in the region. Organic waste is collected using door-to-door method. In 2013, 63.6% of waste was urban waste, comparing to 28.4% in 2000. Composition of residual waste after separate, can be shown of the following graph, where almost 50% of waste is bio waste:





This Project is funded by the European Union







One of the targets of the WFD is also reduction of organic waste in landfills. As previously mentioned, Veneto region is has been decreasing the percentage of organic waste in landfills. Nine provinces in the region in year 2010 bio waste in landfills was in total 37 kilogram per inhabitant per year, in comparison to 133 kilos in 2002. The waste management plants network in the region includes:

- 22 composting plants (plus 50 plants for green waste);
- 40 selection and recovery plants (plus 150 mini plants);
- 6 Solid Recovery Fuel (SRF) plants and 2 bio stabilisation plants;
- 3 incineration plants;
- 10 landfills.

The product of MBT process include the following, in percentages:

- Mater recover (4%);
- Stabilised waste (5%);
- Process loss (13%);
- SRF (31%);
- Scrap (47).

However, scrap presents almost 50% product of the process, so the scrap has to be managed as well. Majority of the scrap produced is being taken to landfills, around 42% of it. Incineration is performed on only 27%, while the remaining 31% is being treated with other methods. The results of the MBT process was shown to the participants, where 432,574 tonnes of waste was input, having output of 354,063 tonnes of urban waste, 67,835 tonnes of industrial waste, and the remaining was categorised as other.

As explained by Mr. Francesco, the production of SRF presents the evolution of MBT process. However, it is fundamental to identify the final users to reduce the costs. One of the example of this scenario was the Fusina plant, in Fusina, near Venice. The plant treats all the waste coming from Venice and its surroundings. It is integrated waste management plants that include MBT process and matter recovery and is also in synergy with Enel power plant. The production process is a "single flow" type, starting from residual urban waste, trough primary and secondary trituration, to SRF. One of the step of the process is also bio cell stabilisation. After the step of primary shredding, an automatic loading bucket loads the waste in each bio cell, than can contain even 200 tonnes each.

Enel power plant is very close to Veritas MBT, thus there is a co-combustion with coal. Until 2012, it was a small incineration plant with energy recovery process with local treatments of scraps, where



This Project is funded by the European Union



energy was produced to reduce the consumption. However, in 2014, there has been an increase of production of SRF and thus its use on Enel plant. According to the financial analysis, a treatment cost of MBT in Veritas is 30-60 euros per tonne. Other relevant costs include management of scraps into landfill and management of light scraps that is incineration cost. The total cost ends up to 100-130 euros per tonne.

From this example in Italy, the conclusion is that MBT process is very flexible and can face a wide range of solutions. It is important to reduce the bio waste into landfills, and in case of high rate of separate collection, it is possible to convert the plant to either composting process with anaerobic digestion, or SRF production plant. The economic balance is possible only when the user is close to the producer.

MBT in Support of Achieving Targets, Experience from Austria – Christoph Planizer

The presentation was divided into three part. The first part was a European and National approach for proper management of solid waste, whose "driving forces" include:

- Creation of revenue;
- Health protection;
- Reduction of amounts of waste;
- Environmental; aspects;
- Reduction of greenhouse gas emissions;
- Resource saving.

European waste policy has three main pillars. One is waste prevention and minimisation, meaning that less we generate, a reduction in its hazardousness makes the management of the waste easier. Second is recycling and reuse, waste that cannot be prevented should be recycled. The third pillars is improving final disposal and monitoring. Where waste cannot be recycled or reused, it should be safely burned through the process of incineration, and landfilled as a last resort. Waste policy was graphically presented:



EU legislation on Waste was briefly described. It started with the WFD 2008/98/EC, covering legislations on waste treatment operations (Directive on the Landfill of Waste 1999/31/EC, Waste

This Project is funded by the European Union



Incineration Directive 2000/76/EC), legislations on waste streams (Directive on Packaging and Packaging Waste 94/62/EC, WEEE Directive 2012/19/EU, etc.), ending up with Industrial Emission Directive (IED) 2010/75/EU. In Austria, all measures for prevention, reduction, recovery, collection, safe treatment and disposal of waste are regulated through Waste Management Act, passed in 2002. Since 2004, it is forbidden to dispose untreated Municipal Solid Waste on any landfill in Austria.

Federal Ministry of Agriculture, Forestry, Environment and Water Management is responsible for waste policy, laws and regulations. Waste Management Plans are drafted every five years by the Federal Minister, and it must be complied with waste policy and target achievements. It comprises three main elements:

- Background to waste management; .
- Status (i.e. waste streams, sources, guantities and options);
- Planning objectives and action for collection, treatment and disposal options, including financial investments.

Part 2 of the presentation was about amount and composition of waste, fee and disposal costs. Treatment of non-hazardous waste on EU level was presented, along with total waste treatment, landfilling, incineration disposal and recovery. Regarding specific generation of MSW, in EU, Finland has the highest percentage of recyclables, while in candidate countries, and potential candidate countries, percentages of recyclables and compostable are almost insignificant.

As presented by Mr. Planitzer, according to the data from 2005 on landfill levies, the highest levy was in Austria, almost 90 euros per tonne, then having Flanders region of 60 euros per tonne. Range of typical disposal costs including pre-treatment in Austria is from 140-150 euros per tonne, which is the highest in Europe after Switzerland. Total volume of waste including all groups in Austria is around 54 million tonnes, out of which 41% are excavated materials. Waste generated by economic activity and households on EU 28 level according to Eurostat can be seen on the following graph:





This Project is funded by the **European Union**

human dynamics

As the graph shows, the greatest piece of the pie (34%) goes for waste from construction, while in Austria on the other hand, only 12% of waste comes from construction, the greatest amount of waste (41%) comes from excavated materials

Third part of the presentation was about MBT facilities in Austria. There are 16 MBT facilities in Austria, in six federal provinces, having in total over 650,000 tonnes of authorised capacity, and around 560 tonnes of authorised MBT capacity. During waste treatment air emission occur. Thus, during mechanical treatments, polluted air is treated with dust filter, and during biological treatments of waste, polluted air is send trough washer and bio filter.

<u>Strategic Planning and Investment: Developing Waste Management System in Lithuania – Rasa</u> <u>Uselyte</u>

Country of Lithuania cover the area of 65,300 km2, divided into 10 counties that are then divided into 60 municipalities. The population counts 2.94 million inhabitants, out of which 67% in urban areas. Several factors influenced the development of waste management system, such as public awareness, legal framework, social and economic aspects and waste amount and composition. From 2000 to 2013, Lithuania received 362 million euros from the Cohesion Policy Funding for waste related projects. Starting from 2004, a slight improvements have been shown. In 2003, 100% of municipal waste was landfilled, but in 2012, some 22% was recycled, and improvement have been made with incineration and composting. Lithuania still belongs to the group of countries where both recycling and incineration present less than 25% of total waste treatment.

Strategic documents for EU funds were listed. In the period from 2000 to 2006, it was an ISPA Funding Strategy, later transposed to the National Cohesion Fund Strategy approved by the Government in 2004. From 2007-2013, V3 Operational Programme for Promotion of Cohesion was in power, and from 2014 to 2020, it is an Operational programme for the EU Funds' investments in 2014. Specific goal of this strategy is the reduction of MSW landfilling.

There are ten regional waste management systems, managed by the regional companies founded and owned by municipalities. First stage of development of waste management systems consisted of:

- Construction of new regional landfills for municipal waste;
- Closure of old landfills and dumpsites;
- Construction of transfer stations (in some regions);
- Construction of recycling stations / civic amenity sites (CAS) in municipalities;
- Construction of composting facilities for green waste in municipalities.

In the second stage, the following tasks were made:

- Establishment of recycling stations / civic amenity sites (CAS) in municipalities;
- Construction of composting facilities for green waste in municipalities;
- Closure of old landfills and dumpsites.

In total, 808 landfills were closed, 123 recycling stations were opened, and 54 composting sites.





Basic elements of MSW system in landfills was presented, for both thermal treatment and MBT. Thermal treatment is simpler treatment, starting from residual waste that is treated mechanically then thermally and then landfilled. In MBT, after residual waste is treated mechanically, it is divided into heavy and light fraction. Heavy fraction is biologically inerted and then landfilled, while light fraction is threated thermally and landfilled. Construction of MBT plants for municipal waste and containers for stearate collection and home composting costs around 150 million euros.

Biodegradable MSW waste was landfilled 100% in 1996. In 2000, this percentage was lowered to 75%. However, MS that landfilled more than 89% of MSW received four year extension period. Total EU support for biodegradable waste management project from EU was almost 150 million euros.

So what the advantages are of the MBT. Biological treatment usually results in reduced landfill gas generation, reduces leachate generation and weight of waste requiring disposal, and in higher density of landfill materials. MBT can then be good option for further use of existing landfill capacity, wide range capacity and lower investment costs even though that the value remains in the region, and possible use of existing plants for con-incineration. So MBT needs cooperation with thermal recovery facilities for energy recovery.

The private sector has also a role in operation of MBT, and that is to ensure a level playing field across market participants, to avoid distortions and maximise efficiency. Also, the precondition of EU funding is that operation of MBT should be subcontracted, and organising tenders for construction and operation together.

Biodegradable waste management projects started in 2010, doing a feasibility study in September 2010, tendering and contracting, with the deadline of September 2013. However, the quality of the projects can also be negatively affected by:

- the late approval of project financing conditions and a list of state projects;
- short deadlines for submission of applications and feasibility studies;
- problems with public procurement for the selection of external consultants;
- poorly defined and unclear requirements for projects;
- limited knowledge and experience in the creation of biodegradable waste infrastructure;
- the absence of a clear strategy for the creation of biodegradable waste treatment capacities at the national level.

Also, there are potential problems that might occur in the future, such as achievement of waste management targets, where organic output from MBT cannot be used as compost, and RDF valorisation also has limited possibilities. There is also possibility of high operational cost, especially when operated by a private company.

Strategic Planning at national level in Lithuania was presented starting from 2002, where National Strategic Waste Management Plan 2002-2006 was passed. Second National Strategic Waste Management Plan was passed in 2007, and finally the third one, in 2014, that will cover the period to 2020.

National Strategic Waste Management Plan 2002-2006 was focusing on EC Landfill Directive 99/37/EC and packaging directive. With the second directive, economic instruments were introduced, having main goal to implement WFD. Also, infrastructure investment were used for



This Project is funded by the European Union



treatment of biodegradable waste. Also, Klapeida Waste-t-Energy plant was constructed during this period, with total investment of 126 million euros. It was officially opened in 2013, and with firing capacity of 34 tonnes per hour, it produces 120 GWh electricity and 380 GWh heat annually.

National Waste Management Plan for 2014-2020 introduced landfill tax and pay-as-you-throw schemes for charging users. Separate collection was increased and the 50% target was set for recycling. Following tasks were imposed for municipalities:

- Landfilling of municipal biodegradable waste in 2020: 35 % of 2000;
- Recovery of municipal waste not less than 45 % of municipal waste by 2016;
- Recovery of municipal waste not less than 65 % of municipal waste by 2020;
- Preparation for reuse and recycling of not less than 50 % of municipal paper, glass, plastic and metal waste by 2020;
- Separate collection of food waste from 2018.

Strategic Environmental Assessment (SEA) of four different scenarios in Lithuania was presented, including generation of waste, recycling, biological treatment, incineration and landfilling. In this scenarios, it can be seen than MBT is the best solution for recycling, while incineration is the best solution for landfilling, as it can be seen from the table below.

Scenarios	Generation of waste, t	Recycling, t	Biological treatment, t	Incineration, t	Landfilling, t
0 – situation in	1.367.000	266.000 S.C.	42.000 A.S.	0	1.030.000
2010		19%	3%	0%	75%
I - MBT		428.890	259.735	39.224 RDF;	313.676 (without
		(353.381 S.C. +	(Comp. 90.838 S.C.,	359.098 other	ashes after
	1.400.623	75.509 from	30.027 H.C. +		incineration)
		MBT)	138.869 from MBT)		
		31%	19%	28%	22%
II A –Recycling +		424.962	218.575	10.410 RDF;	653.330 (without
Incineration in		(420.203 S.C. +	(30.027 (2%) H.C;	93.346	ashes after
Klaipeda	1 400 600	4.758 from MBT)	Comp. 100.749 S.C.	other	incineration)
	1.400.623		(7%); Anaer. 80.000 S.C.		
			+ 8.000 from MBA (6%)		
		30%	16%	7%	47%
II B – Recycling +		424.962 (tame	218.575	10.410 RDF;	307.926 (without
Incineration in		tarpe 420.203	(N.K. 30.027 (2%);	438.750	ashes after
Vilnius, Klaipeda	1 400 622	A.S.	Komp. 100.749 A.S.	other	incineration)
and Kaunas	1.400.025	+ 4.758 iš MA)	(7%); Anaer. 80.000 S. C.		
			+ 8.000 from MBT (6%)		
		30%	16%	32%	22%
III - Incineration		403.030 (167.780 (30.027 (2%)	55.937 RDF,	257.849 (without
		353.146 S.C. +	H.C; Comp. 100.749 A.S.	516.027	ashes after
	1.400.623	49.884 from	(7%); Anaer. 40.000 S. C.	other	incineration)
		MBT)	+ 8.000 from MBT (3%)		
		29%	12%	41%	18%

Regional Waste Management Plans are pre-requisite for EU funding, and in order to allocate EU funds for the period 2014-2020, development of separate collection system must be made. Also, landfill tax will be imposed in 2016, and it will gradually rise to 2020.

EU funding has played an important role in the development of critical infrastructure for municipal waste management. Local and regional authorities are responsible for waste management, but not always directly responsible for the fulfilment of EU targets and obligations, which can complicate investments.



This Project is funded by the European Union



 $_{\rm Page} 15$

Day 2 – Wednesday, 26 November 2014, Skopje

Financing of Waste Management: Impacts on Investment Policy Choices – Arunas Kutondras

	Population 2011	Funds for Environment	Funds for waste management	Funds for water management
2007 - 2013				
2014 - 2020				
Bulgaria 2007 - 2013	7,364,570	244 EUR/inhabitant	50 EUR/inhabitant	174 EUR/inhabitant
Romania 2007 - 2013	20,121,641	279 EUR/inhabitant	58 EUR/inhabitant	162 EUR/inhabitant

EU funds allocation in the period from 2007 to 2013 was shown for Bulgaria and Romania.

However, one of the precondition for EU funding is a validate policy. Assessing costs of waste management policy is good tool to check if clear policy exists. If policy gaps remains, they have to be closed before developing investment and financial plan. Financing in waste sector has three targets that is development and implementation of three directives, Waste Framework Directive, Landfill Directive and Packaging Waste Directive.

Target 1 concerns landfill directive, where all waste delivered into complaint landfills must be done by certain year, as well as biodegradable waste. Target 2 regards packaging and packaging waste directive. 60% of recovery and 55% recycling targets must be achieved by certain target year, along with specific targets regarding paper and cardboard, plastic, glass, metal and wood. Target 3 includes WFD, where by certain target year separate collection should be set up for at least paper, metal, plastic and glass, and household recycling rate must reach 50%.

Three different technologies for source separate waste were presented, material recovery, composting and anaerobic digestion, including input, output and compliance. So, for example, diversion bio-waste is not large positive only for material recovery, while energy recovery is negative for composting, positive for anaerobic digestion and for simple MBT has no direct impact. Same revision was made for residual waste, where simple MBT, MBT to produce RDF/SRF and incineration were revised.

First phase in all regions is to 100% cover waste collection and implement collection of recyclables. Also, sorting plant must be made in the next period, providing secondary separation of recyclables. Sanitary landfills must be fully engineered with compaction, and existing landfills must be closed. Second phase of waste management include more advanced and expensive technologies for municipal waste treatment, like waste to energy plant and MBT for the production of RDF for coincineration. First and second phase of waste infrastructure will gradually be implemented in all regions in accordance with the investment plan for the regional systems.

The importance of investments support is often over-estimated, Infrastructure is important, but if other factors do not support the whole process, it is useless. In order to advance, it is obligatory to:

- Have proper legislations in place, clear requirements and sanctions;
- Right Economic incentives and measures, to promote recycling;



This Project is funded by the European Union



- Proper support schemes for new Infrastructure;
- Active awareness campaigns and general Environmental Education on all levels;
- Adequate Control and Enforcement capacity, well trained and motivated staff.

Achieving Waste Management Targets – Peeter Eek

General factors to achieve targets were set up as a conclusion in the previous presentation. General prerequisites however, include waste permits and waste reporting system, so called "waste regime" implementation. Waste reporting is based on waste codes, so in Estonia for example, there are 450 waste codes covered in Yearly Waste Report. Internet place "wheretotake" (<u>http://kuhuviia.ee</u>) is a place where can be addressed waste types, public containers and recycling sites in Estonia, in even three languages.

Regarding landfill tax, its introduction is different in EU MS. Denmark introduces landfill tax in 1987, Netherlands in 1995, and Estonia in 2012. Landfill tax has increased overtime in each of the EU MS. Environmental Charges, including Landfill tax was introduced in 1991. At that time, Environmental Charges were considered as main source of income to the Environmental Fund, what is now Centre for Environmental Investments. The landfill tax was applied for all types of waste, where absolute majority of the landfills waste was related to oils-shale industry, while the household tax level was very low. Also, in 1001, gate fees were maximum 10 euros per tonne, while nowadays they went up to 55 euros per tonne. Landfill gate fee is considered as economic benchmark, with which all recovery operations are compared with.

Regarding investment support, the Environmental Programme finances following activities related to non-hazardous waste:

- Construction of waste management plants and reloading plants, if the cost does not exceed 300,000 €, on the basis of local government waste management plans;
- Construction of waste collection points on the basis of local government waste management plans;
- Development and implementation of newer waste treatment systems and waste handling technologies.

Economic instruments for packaging tax and other product taxes started in the last decade. Alcohol packages were regulated in 1996, non-alcoholic beverages packaged in 1998, sales packaging in 2005 and in 2009, all kinds of packaging was legislatively regulated. The packaging Excise Duty sets the compulsory recovery and recycling targets, from the amount which remained missing from the target, should be paid the duty. Packaging excise duty price for plastic and metal is 2.5 euros per kilogram, 1.2 euros for paper, cardboard and wood, and 0.6 euros per kilogramme for glass.

Pay as You Throw (PAYT) is another instrument for waste charging. Since flat free model is not widely used in Estonia, everything else could be considered as Pay-as-You-Thro mode. There is no legal definition for PAYT, but usually three options are considered:

• Fee, based exactly on measured amount of service - per exact weight or volume delivered (Full-unit pricing), mostly common in one-family houses on the "free market";



This Project is funded by the European Union



- Certain amount is included in 'basic fee', what goes above, is charged additionally (Partialunit pricing);
- The fees are based on different service packages, there is option to choose and change those packages (Variable-rate pricing). This approach, along with the previous one is used mainly by municipalities, however with critics stating that it demotivates source separation.

Extended Producer Responsibility (EPR) is a strategy designed to promote the integration of environmental costs associated with goods throughout their life cycles into the market price of the products, and it applies to packages, WEEE, batteries and accumulators, tyres, ELV and agricultural plastics. EPR organisation should be owned by the obligated companies and run on a non-profit basis. There are many advantages of having one rather than multiple organisations in each country. For example, this ensures that the government can execute effective and efficient control, that obligated companies are treated in a non-discriminatory manner and that there is an effective market-functioning. According to EU Circular Economy Waste Package developed in July 2014,, when developing EPR, MS shall:

- 7.1. ensuring the transparency of the schemes in terms of contributions paid by the producers, including the impact on sale prices and in terms of the impact on competitiveness and the openness to small establishments and undertakings;
- 7.2. defining the geographical coverage of the schemes;
- 7.3. ensuring equal treatment for domestic producers and importers;
- 7.4. ensuring a self-control mechanism via regular third party audits of the schemes in terms of both:
- 7.4.1. sound financial management of the scheme calculation of the entire
- 7.4.2. appropriate collection and treatment of waste, control over the legality of waste shipments and quality of data and reporting;

Advantages of EPR are that costs are covered by producers, while on the other hand, the producer responsibility organisations are sometimes non-transparent and controlled by a very small group of producers and there is a lack of legal requirements. Deposit-return system is very interesting for EPR since it has five different views:

- Environmental view deposit systems can collect between 80-95%, container systems 40-60% as average;
- Quality view material coming from deposit systems are of highest value and therefor guarantee near 100% recycling of collected material;
- Consumer view gives clear message and motivation to consumers, even nonenvironmental consumers contribute;
- Social view significant non-formal or "after collection", income for less fortunate people;
- Economical view if set up correctly, can be cheaper than container system.

The groups that should be covered by the deposit obligation include all kinds of alcoholic and nonalcoholic beverages if packed in plastic bottles, metal cans and glass bottles. But because of a different product groups, there are cases where some drinks like ciders and beer have deposits, while wines in glass bottles do not.

In order to invest in deposit system, it has been calculated that the initial investment starts with around 4 million euros, and including Reverse Vending machines, around 8 million euros. In 2012 in







Estonia, 12 tonnes of high quality packaging materials were collected. There are 550 Reverse Vending machines, where 90% of packages deposit comes from these machines, and the remaining 10% from manual take-back.

Deposit refund system is very effective, having an 80-90% collection rate, and clean material suitable for high quality recycling. It also visually reduces littering in public places and in nature. But the retailers do not like to take back the obligation in shops at the starting phase, where fraud can also be motivated.





V. Evaluation

Workshop - participant Evaluation

58066 - ECRAN - TAIEX ECRAN Multi-Country Workshop on the coordination of strategic and investment planning in the waste sector (Skopje - 25/11/2014 to 26/11/2014)

Question	N°. Responses	Yes	No	Partially	Do not know
1. Was the workshop carried out according to the agenda	20	19 (95)%	1 (5)%	0 (0)%	N/A
2. Was the programme well structured?	20	19 (95)%	0 (0)%	1 (5)%	N/A
3. Were the key issues related to the topics addressed?	20	20 (100)%	0 (0)%	0 (0)%	N/A
4. Did the workshop enable you to improve your knowledge?	20	18 (90)%	0 (0)%	2 (10)%	N/A
5. Was enough time allowed for questions and discussions?	20	20 (100)%	0 (0)%	0 (0)%	N/A

	Speaker/Expert	N°. Response	es Excellent	Good	Satisfac	tory Poor
	Mr Kundrotas	20	16 (80)%	4 (20)%	0 (0)%	0 (0)%
	Mr Pokimica	20	12 (60)%	6 (30)%	2 (10)%	0 (0)%
6. How do you assess the quality of	Mr Loro	20	15 (75)%	5 (25)%	0 (0)%	0 (0)%
the speakers?	Ms Peçi	16	7 (43)%	9 (56)%	0 (0)%	0 (0)%
	Ms Uselyte	19	9 (47)%	10 (52)%	5 0 (0)%	0 (0)%
	Mr Planitzer	19	11 (57)%	7 (36)%	1 (5)%	0 (0)%
	Mr Eek	20	17 (85)%	3 (15)%	0 (0)%	0 (0)%
O			N		a utta lla d	

Question	N°. Responses	Yes	No	Partially	Do not know
7. Do you expect any follow-up based on the results of the workshop (new legislation, new administrative approach, etc.)?	20	18 (90)%	2 (10)%	N/A	N/A
8. Do you think that further TAIEX	17	16 (94)%	1 (5)%	N/A	N/A



This Project is funded by the European Union



assistance is needed (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?						
9.Were you satisfied with the logistical arrangements, if applicable?	Conference venue	20	14 (70)%	4 (20)%	2 (10)%	0 (0)%
	Interpretation	17	17 (100)%	0 (0)%	0 (0)%	0 (0)%
	Hotel	18	7 (38)%	4 (22)%	7 (38)%	0 (0)%

Comments :

- Please, do not organize meetings and events in Karpos hotel. Meeting rooms are too small, you can not see video screen from most of the places you sit, also there is no oxygen in the meeting room. It is really very very bed. Also in rooms was freezing. It is very bed option for organizing such event;
- The heat did not work in hotel room :(;
- The hotel room was so cold, since the heating system didn't properly work in the room that
 I got very ill; except this, everything else was excellent;
- No Comment!
- The hotel has very low servisis;





This Project is funded by the European Union











This Project is funded by the European Union



Workshop - speaker Evaluation

58066 - ECRAN - TAIEX ECRAN Multi-Country Workshop on the coordination of strategic and investment planning in the waste sector (Skopje - 25/11/2014 to 26/11/2014)

Question		N°. Responses	Yes	No	Partially	Do not know
1. Did you recent necessary for t contribution?	eive all the information he preparation of your	7	7 (100)%	0 (0)%	0 (0)%	N/A
2. Has the overa been achieved?	ll aim of the workshop	7	7 (100)%	0 (0)%	0 (0)%	N/A
3. Was the agen	da well structured?	7	7 (100)%	0 (0)%	0 (0)%	N/A
4. Were the part throughout the	ticipants present scheduled workshop?	7	7 (100)%	0 (0)%	0 (0)%	N/A
5. Was the bene the appropriate	ficiary represented by participants?	7	6 (85)%	0 (0)%	1 (14)%	N/A
6. Did the partic in the discussior	ipants actively take part ns?	7	4 (57)%	0 (0)%	3 (42)%	N/A
7. Do you expec will undertake for results of the wo new administrat	t that the beneficiary ollow-up based on the orkshop (new legislation, tive approach etc.)	7	7 (100)%	0 (0)%	N/A	0 (0)%
8. Do you think needs further TA (workshop, expe assessment miss workshop?	that the beneficiary AIEX assistance ert mission, study visit, sion) on the topic of this	7	7 (100)%	0 (0)%	N/A	N/A
9. Would you be ready to participate in future TAIEX workshops?		7	7 (100)%	0 (0)%	N/A	N/A
10.If applicable,	Conference venue	7	3 (42)%	3 (42)%	1 (14)%	0 (0)%
were you satisfied with	Interpretation	7	7 (100)%	0 (0)%	0 (0)%	0 (0)%
the logistical arrangements?	Hotel	6	2 (33)%	2 (33)%	2 (33)%	0 (0)%
Comments:			,			



This Project is funded by the European Union



- TAIEX has to start learning from mistakes and not using meeting rooms which are not suitable for 2 days events. Room without windows and little oxygen. Shape of room makes impossible for participants to see the presentations well. Room is simply too long and not possible to reshape sitting. If the room will be used again, better do not ask questions from 1 to 6. As that will be TAIEX responsibility that participants do not have conditions to properly participate in the event;
- Room in hotel was very cold. Also, the conference venue was not adequate for number of participants;
- The hotel Karpov is not adequate in terms of meeting rooms. The hotel is perfect from the other points of view, but the dimensions of the meeting room were to small;
- The Conference room was simply too small for given number of participants.







This Project is funded by the European Union



ANNEX I – Agenda

Day 1 – Tuesday, 25 November 2014

Topic: ECRAN Task 2.2.2 Strategic planning. Subtask 3: Combined regional trainings between the Strategic Planning Working Group and Waste Management Working Groups

Co-Chair: Arunas Kundrotas

Co-Chair: Nebojsa Pokimica

Venue: Skopje

Start	Finish	Торіс	Speaker	Sub topic/Content
08:30	09:00	Registration		
9:00	9:10	Address by ECRAN	TBD	
9:10	9:20	Address by the representative of the host country	Jadranka Ivanova, Ministry of Environment and Physical Planning	
9:20	9:30	Introduction to the Activity 2.2.2	Arunas Kundrotas, ECRAN SPIWG Coordinator	Brief recap on the Tasks of activity 2.2.2
9:30	9:40	Introduction to the Activity 2.3	Nebojsa Pokimica,ECRAN WMWG Coordinator	Brief recap on the Tasks of the activity 2.3
9:40	9:50	Introduction to the workshop	Arunas Kundrotas, ECRAN SPIWG Coordinator	Presentation of the agenda, scope, objectives and expected results of the workshop
9:50	10:20	Main aspects of waste management planning	Nebojsa Pokomica	Presentation and questionsMain messages from Podgorica workshop
10:20	11:00	Impacts of technological options for achieving of targets	Peeter Eek, Ministry of Environment, Estonia	 Presentation and questions Waste treatment options Impacts of waste treatment options on separation, recycling and need for final disposal Cost impacts of technological solutions Recommendations
11:00	11:30	Coffee Break		
11:30	12:15	Achieving waste management targets. Infrastructure development plan	TBD, Croatia	 Presentation and questions Waste management situation Strategic documents for waste management Regional approach Infrastructure development plan Role of MBT in achieving targets



This Project is funded by the European Union





				- Experience, lessons learnt
12:15	13:00	Achieving waste management targets	Peeter Eek, Ministry of Environment, Estonia	 Presentation and questions Waste management situation Strategic documents for waste management Infrastructure solutions to support achievement of targets Problems faced Experience, lessons learnt
13:00	14:00	Lunch Break		
14:00	14:45 15:30	MBT in support of achieving targets Planning of	Representative of the EU Member State with experience in MBT All participants	 Presentation and questions Waste management situation Achievement of targets Use of MBT Preconditions for effective functioning of MBT solutions Financial impacts of MBT on investment and operational costs Lessons learnt
		infrastructure to support achievement of waste management targets		 Status of waste management planning infrastructure in countries of the ECRAN region
15:30	16:00	Coffee Break	ſ	
16:00	16:45	Discussion	All participants	Selecting right set of infrastructure solutions
16:45	17:00	Conclusions and closure of the first day	Nebojsa Pokimica Arunas Kundrotas	

Day 2 – Wednesday, 26 November 2014

Торіс:							
Chair: Arunas Kundrotas							
Venue: Skopje							
Start	Finish	Торіс	Speaker	Sub topic/Content			
08:30	09:00	Registration					
09:00	09:10	Summary of	Arunas Kundrotas,				
		findings					
09:10	09:30	Financing of	Arunas Kundrotas	Presentation and questions			
-		waste		- Strategic planning			
		management:		- Directive specific			





		impacts on investment policy choices		 implementation plans Assessing available financing and matching with costs Policy choices
09:30	10:00	Revising National Waste Management Plan: experience of Serbia	Representative of the Ministry of Agriculture and Environmental Protection, Republic of Serbia	 Presentation and questions Developing of DSIP Reviewing National Waste Management Strategy of Serbia
10:00	10:30	Experience in designing investment projects	Representative of ECRAN country	 Presentation and questions Proposed waste management infrastructure package for IPA financing Costs of infrastructure elements Selection of best option
10:30	11:00	Coffee Break		
11:00	12:30	Discussion	All participants	Meeting requirements with least costs
12:00	12:30	Defining next steps	Arunas Kundrotas Nebojsa Pokimica	 Areas to focus for waste management infrastructure planning
12:30	14:00	Lunch Break		
14:00	15:30	Defining next steps	Arunas Kundrotas Nebojsa Pokimica	Areas to focus for waste management infrastructure planning







ANNEX II – Participants

First Name	Family Name	Institution Name	Country	Email
Olja	Stanić Marić	Ministry of Agriculture and Environmental Protection	Serbia	olja.stanic@yahoo.com
Tijana	Đekić	Ministry of Agriculture and Environmental Protection	Serbia	tijana.djekic@eko.minpolj.gov.rs
Milena	Markovic	Ministry of sustainable development and tourism	Montenegro	<u>milena.markovic@mrt.gov.me</u>
lgor	Jovanovic	Ministry of sustainable development and tourism	Montenegro	igor.jovanovic@mrt.gov.me
Boris	Nisavic	Environmental protection Agency of Montenegro	Montenegro	boris.nisavic@epa.org.me
Radoman	Vukic	Environmental protection Agency of Montenegro	Montenegro	radoman.vukic@epa.org.mer
Stevan	Stanisic	Ministry of Sustainable Development and Tourism	Montenegro	<u>stevan.stanisic@mrt.gov.me</u>
Daniela	Ristova	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	<u>dristova@hotmail.com</u>
Ana	Karanfilovska- Mazneva	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	anamazne@gmail.com
llber	Shabani	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	<u>ilbershabani@hotmail.com</u>



This Project is funded by the European Union



A project implemented by Human Dynamics Consortium ${}^{\rm Page}28$

First Name	Family Name	Institution Name	Country	Email
Lence	Kurcieva	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	lkurcieva1951@gmail.com
Dragana	Cherepnalkovska	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	dcherepnalkovska@yahoo.com
Besare	Osmani	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	besare.osmani.hotmail.com
Vlado	Karovski	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	<u>vkarovski@gmail.com</u>
Zlata	Trpevska	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	zlata707@yahoo.com
Suat	Abazi	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	<u>suat-abazi@hotmail.com</u>
Gorgi	Velevski	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	velevski@gmail.com
Kiril	Kalkasliev	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	k.kalkasliev@gmail.com
Shpresa	Mezini	Ministry of Environment	Albania	Shpresa.Mezini@moe.gov.al
Jorida	Enesi	Ministry of Environment	Albania	Jorida.Enesi@moe.gov.al
Ledjana	Bojaxhi	Ministry of Environment	Albania	Lediana.Karalliu@moe.gov.al





First Name	Family Name	Institution Name	Country	Email
Ledja	Bonja	Korça's Prefecture	Albania	prefekturakorce@gmail.com
Enver	Tahiri	MESP	Kosovo	<u>enver.tahiri@rks-gov.net;</u> <u>envertahiri@gmail.com</u>
Ibrahim	Balaj	MESP	Kosovo	<u>ibrahim.balaj@rks-gov.net</u>
Mimoza	Hyseni Spahiu	Kosovo Environmental Protection Agency	Kosovo	mimoza.hyseni@rks-gov.net
Qefsere	Mulaku	MESP	Kosovo	Qefsere.Mulaku@rks-gov.net
Azra	Basic	Federal Ministry of Environment and Tourism	Bosnia and Herzegovina	azra.basic2@gmail.com
Fadila	Muftic	Federal Ministry of Environment and Tourism	Bosnia and Herzegovina	f_muftic@yahoo.com
Sara	Bosnic	Ministry of Physical Planning, Civil Engineering and Ecology of Republic of Srpska	Bosnia and Herzegovina	<u>s.bosnic@mgr.vladars.net</u>
Jasmina	Hodzic	Ministry of Physical Planning, Civil Engineering and Ecology of Republic of Srpska	Bosnia and Herzegovina	j.hodzic@mgr.vladars.net
Srđan	Todorović	Environmental Protection and Energy Efficiency Fund of the Republic of Srpska	Bosnia and Herzegovina	srdjan.todorovic@ekofondrs.org
Zoran	Lukač	Environmental Protection and Energy Efficiency Fund of the Republic of Srpska	Bosnia and Herzegovina	zoran.lukac@ekofondrs.org





First Name	Family Name	Institution Name	Country	Email
Peeter	Eek	Ministry of Environment	Estonia	peeter.eek@envir.ee
Francesco	Loro	Environmental Protection Agency of Veneto	Italy	floro@arpa.veneto.it
Christoph	Planitzer	Lower Austrian Government	Austria	<u>christoph.planitzer@noel.gv.at</u>
Rasa	Uselyte	Ministry of Environment	Lithuania	<u>rasa.uselyte@ktu.lt</u>
Nebojsa	Pokimica	ECRAN	Serbia	npokimica@yahoo.co.uk
Arunas	Kundrotas	ECRAN	Lithuania	arunas@axante.lt
Alisa	Peçi	ECRAN ECF	Albania	alisa.peci87@yahoo.com

ANNEX III – Presentations (under separate cover)

Presentations and workshop materials can be downloaded from:

http://www.ecranetwork.org/Files/Regional_workshop_on_coordination_of_strategic_and_investm ent_planning_in_waste_sector,25-26_Nov_2014_Skopje.zip



