European Commission, Brussels

Organisation of awareness-raising events concerning the implementation of Directive 1999/31 EC on the landfill of waste

REFERENCE: ENV.G.4/SER/2006/0049

FINAL REPORT

30 May 2007

BiPRO

Beratungsgesellschaft für integrierte Problemlösungen

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List of Abbreviations

Acceptance Criteria Decision	Decision 2003/33/EC on acceptance criteria
BREF	Reference Document on Best Available Techniques (BAT)
C&D Waste	Construction and Demolition Waste
DG	Directorate General
GIS	Geographic Information System
EC	European Commission
EU	European Union
EU-10	Member States part of the EU since 2004
EUROSTAT	Statistical Office of the European Communities
EWC	European Waste Code
ISPA	Instrument for Structural Policies for Pre-Accession
Landfill Directive	Directive 1999/31/EC on the landfill of waste
IMPEL	The European Union Network for Implementation and Enforcement of Environmental Law
MBT	Mechanical-Biological Treatment
MoE	Ministry of Environment
MS	Member State
MSW	Municipal Solid Waste
WEEE	Waste Electrical and Electronic Equipment
PCBs/PCTs	Polychlorinated biphenyls / Polychlorinated terphenyl
PHARE	Programme of Community aid to the countries of Central and Eastern Europe
RDF	Refused Derived Fuel
TAC	Technical Adaptation Committee
WFD	Waste Framework Directive 2006/12/EC (former 75/442/EEC)

1 Background and Objectives

1.1 Background

The amount of waste is increasing year by year within the Member States of the European Union. Every year 1.3 billion tonnes of waste are produced by the citizens of the European Union, 40 Mt of which are classified as hazardous waste.

The environmental policy of the European Commission intends to set standards for the handling, transport, treatment and disposal of waste in order to reduce the negative effects to human health and to the environment. For this purpose **Directive 2006/12/EC** on waste (former 75/442/EEC) set the legal framework and basic definitions relevant for waste management (e.g. the waste hierarchy, environmental sound management etc.). Priority within the European waste hierarchy is given to the avoidance of waste. Reuse, recycling and recovery options should be realized whenever suitable in order to reduce the need of raw materials and the amount of waste. However, a huge amount of waste is currently still being disposed on landfills.

Furthermore the Waste Framework Directive requires that Member States ensure that waste is recovered or disposed of without endangering human health and the environment. Member States must also take the necessary measures to prohibit the abandonment, dumping or uncontrolled disposal of waste. Holders of waste must ensure the disposal or recovery of their waste in accordance with the provisions of the Directive or have it handled by an authorised collection-, recovery- or disposal company. Any establishment or undertaking carrying out waste recovery or disposal operations must have a permit and be inspected at regular intervals by the authorities. There are no transition periods for this Directive for the EU-10 Member States.

Concerning the disposal of waste within landfills the European legislation, especially **Directive 1999/31/EC** on the landfill of waste and **Decision 2003/33/EC** on acceptance criteria set high requirements for the authorisation, design, operation, closure and aftercare period of landfills.

Within the last years many actions were initiated especially by the EU-10 Member States to meet the requirements. However, many of the existing landfills do not fulfil the requirements yet. One of the highest priorities of the European Commission is therefore the further reduction and elimination of uncontrolled, unmonitored and mismanaged landfills and landfills without permits within the EU, which might lead to serious pollution of soil, water and air.

Available information shows that this problem exists in several Member States, which were part of the EU prior to May 2005 (EU-15), but especially in those, which became Member States in 2004 (EU-10).

All new and existing landfills have to comply fully with the requirements of **Directive 1999/31/EC on the landfill of waste** (Landfill Directive) at the latest by **16 July 2009** or as indicated in the accession treaties. Its key requirements aim to ensure that all landfill operators have adequate permits and the landfills are adequately monitored.

Furthermore acceptance criteria have been set by **Council Decision 2003/33/EC**. This decision entered into force on 16 July 2004 and the limit values had to be applied in the Member States at the latest by 16 July 2005.

1.2 Objectives

In order to improve the implementation of the Directive, in particular in the EU-10 Member States, the European Commission initiated a project where national and regional experts are given the possibility to exchange information and experiences and to identify possibilities for improvements within their countries. Eight "**Information Exchange and Awareness Raising Events on Landfill of Waste**" have been realized between January and May 2007 covering the Member States, which accessed the European Union in 2004.

The events dealt with the current status of implementation, cooperation initiatives and joint actions of the authorities concerned.

In particular the following objectives have been set:

- Give a comprehensive overview of the relevant legislation and related guidance documents, administrative practices and legal cases;
- Identify current problems concerning the implementation of the Waste Framework Directive, the Landfill Directive and the Acceptance Criteria Decision and illustrate the consequences of incorrect implementation;
- Explore and discuss current obstacles to correct implementation of the legislation concerning municipal and commercial landfills and such without permit;
- Exchange experiences and provide examples of good practice concerning landfilling in line with Community waste legislation;
- Extract information on systematic problems hampering the correct implementation and which problems are comparable amongst the EU 10.
- Give examples of and visit landfills meeting the requirements by the directives and give an overview of studies and reports of national, regional and local authorities, NGOs and the waste management industry;
- Discuss possible solutions and proposals on how to improve implementation in the Member States, e.g. cooperation initiatives and joint action by the authorities concerned;
- Spread information compiled during the events beyond the participants of the events, to a larger number of relevant officials in the national authorities concerned.

Beside official institutions like ministries, permitting and controlling authorities also representatives from regional authorities and municipalities, important scientific and educational institutions, associations and NGOs as well as waste management companies and landfill operators should participate in the events.

Additionally representatives from the European Commission, DG Environment and experts from BiPRO should attend the events in order to present the European legislation and to chair the discussions.

2 Organisation of Information Exchange and Awareness Raising Events on Landfill of Waste

2.1 General principles and procedures

Eight workshops concerning the European legislation on landfill of waste were realized between January and May 2007 in the 10 new Member States accessing the European Union in 2004 (EU 10). Table 2-2 contains an overview on dates, location, venue and the number of participants and presentations of each event.

Selection of Venue

It was envisaged to have a strong involvement of the main competent authority of the particular country (usually the Ministry of Environment). Except in Poland, Malta and Cyprus the workshops have been realized in conference rooms of the Ministry of Environment in the capitals of the respective country. In Poland the event was organised in cooperation with the Marshall Office of the Pomeranian Voivodeship in Gdansk. For the three Baltic States one common workshop has been organised in Riga. The events in Cyprus and Malta were realized in conference rooms organised by the MoEs.

Selection of Participants

It was envisaged to cover competent bodies related with landfilling. This included not only authorities involved within the permitting, monitoring and financing process, representatives of the regions and municipalities, but also organisations and associations, waste management companies, landfill operators and if suitable scientific institutions. A list with potential participants was suggested and agreed upon the MoE of each country. The participants were invited by BiPRO. In some countries there was strong support from the national Ministry of Environment. Usually between 20 and 30 participants followed the invitation (for participation lists see Annex I, Chapter 6).

Workshop Structure (Agenda)

The workshops were usually designed as a two days event. After opening, the workshops started with a short introduction to the project and a **presentation** about the legal definitions, requirements and specification of waste management at European level, focusing on the Landfill Directive. Afterwards a presentation of the representative of the European Commission was held, focusing on the intention and on main problems of the waste legislation. The morning session included presentations from the main competent authority about national legislation and the status quo of implementation.

The afternoon session included presentations from other relevant authorities, from organisation and associations, from universities and institutes and from waste management companies and landfill operators covering the practical side or specific aspects such as local permitting experiences, monitoring and control aspects, management of organic waste, waste prevention and recovery and technical construction issues. BiPRO was giving two more presentations, one focusing on the provisions of the Acceptance Criteria Decision and the other one presenting the experiences of previous workshops.

At the end of the first day generally at least one hour for questions and discussions was included. Generally 4 or 8 presentations from national representatives could be organised covering the different aspects of landfilling.

The second day contained a site visit, further presentations if necessary and included a **final discussion round** starting with a summary of the information provided.

The landfill for the **excursion** was generally suggested and selected by the Ministry of Environment. The visit to the landfill for non-hazardous waste or hazardous waste (or both) usually included a presentation from the landfill operator, a guided tour at the premises of the landfill and the possibility for questions and discussion. In all countries landfills were visited, which where newly built or rehabilitated and were supposed to fulfil the European requirements. In Cyprus and Malta additionally a closed landfill was visited. A visit to an illegal landfill was not realized in any country.

The workshops were generally chaired by BiPRO, sometimes together with a representative from the Ministry of Environment.

The event in the Baltic States was extended to two and a half days because of the attendance of three countries with different national requirements and problems. The event in Malta was carried out within one day including an excursion in the late afternoon (see Table 2-1 for general schedule and chapter 7 for specific agendas).

Day One	
Morning Session (10:00-13:00)	**Afternoon Session (14:00-18:00)**
Come Together **Opening** **Presentations** Representative of EC, BiPRO (General Legislation) Main Competent Authority (e.g. MoE**)**	**Presentation Session** Ministry of Environment Environmental Agency / Inspectorate Representative of Municipalities Representatives of Organisation/ Association Waste Management Companies/Operators **Discussion**
Day Two	
Morning Session (9:00-12:00)	**Afternoon Session (13:00-16:00)**
Visit to Landfill	**(Continuing Presentations)** **Final Discussion and Outcome**

Table 2-1: General schedule of the events

Working language (Translation)

All events except the ones in the Baltic States and Malta were realized with simultaneous translation to enable all participants to follow the presentations and discussions. Speakers were asked to deliver their presentations in English beside the national language especially for the purpose of enabling the use of the material for the other MS.

Technical secretariat (Material)

The participant list, agenda and presentations were prepared as handouts at the event and have been uploaded together with available additional material like national legislation, studies and general material and links at European level on a project webpage (**www.bipro.de/waste-events/**)**.** The webpage facilitates access to information not only to participants of the workshops but also to other interested circles. Furthermore it enables the exchange of information amongst Member States.

2.2 Overview on realized events

The following table gives an overview on the information exchange and awareness raising events that have been realized in the framework of the project.

Country	Date	Events
Czech Republic	18.-19.01.2007	**Venue:** Prague / Ministry of Environment **Participants:** 39 (14 from national authorities, 14 from regional authorities, 4 from organisations/NGOs, 6 from enterprises) **Agenda:** 16 presentations (including EC and BiPRO) **Excursion**: Benátky landfill for hazardous waste
Slovenia	31.01.-01.02.2007	**Venue:** Ljubljana / Ministry of Environment and Spatial Planning **Participants:** 32 (10 from authorities, 5 from organisations, 7 from municipalities, 6 from enterprises, 3 from laboratories) **Agenda:** 12 presentations (including EC and BiPRO) **Excursion:** Barje landfill for non-hazardous waste
Estonia, Latvia, Lithuania	12.-14.02.2007	**Venue:** Riga / Ministry of Environment. **Participants:** 20 (5 from authorities EE, 6 from authorities LV, 4 from organisation/association LV, 1 from enterprises LV, 3 from authorities LT) **Agenda**: 11 presentations (including EC and BiPRO)**Excursion:** North-Vidzeme Landfill for non-hazardous waste
Poland	27.-28.02.2007	**Venue:** Gdansk / Marshal Office of the Pomeranian Voivodeship **Participants:** 33 (3 from national authorities, 16 from regional authorities, 6 from Universities, 7 from enterprises) **Agenda:** 9 presentations (including EC and BiPRO) **Excursion:** Two landfills in Gdynia and Gdansk
Hungary	27.-28.03.2007	**Venue:** Budapest / Ministry of Environment and Water **Participants:** 25 (4 from national authorities, 10 from regional inspectorates, 3 from organisation/association, 1 from university, 6 from enterprises) **Agenda:** 11 presentations (including EC and BiPRO) **Excursion:** Waste Management Centre in Pusztazámor
Slovak Republic	29.-30.03.2007	**Venue:** Bratislava / Slovak Environmental Agency (support from Ministry of Environment) **Participants:** 23 (10 from national authorities, 4 from regional authorities, 2 institution, 6 from enterprises) **Agenda:** 12 presentations (including EC and BiPRO) **Excursion:** A.S.A. landfill of the municipality of Zohor
Cyprus	25.-26.04.2007	**Venue:** Nicosia / Cyprus International Conference Centre (with support of Ministry of Agriculture, Natural Resources and Environment) **Participants: 36 (14 from authorities, 11 from associations/NGOs, 10 from enterprises)** **Agenda:** 9 presentations (including EC and BiPRO) **Excursion:** Paphos Landfill for non-hazardous waste and Ayia Marinouda Landfill (closed landfill)
Malta	07.05.2007	**Venue:** St. Julian´s / Dragonara Hotel with support of the Malta Environment and Planning Agency (MEPA) **Participants:** 20 (14 from authorities, 1 from NGO, 4 from enterprises) **Agenda:** 7 presentations (including EC and BiPRO) **Excursion**: Landfill for hazardous and non hazardous waste, closed Maghtab landfill and civic amenity site

Table 2-2: Overview on workshops realized during the project running time

Chapter 4 contains a more comprehensive description of the information presented and the discussion minutes of the events.

2.3 Summary information on standard presentations prepared for the events

5 presentations held by the European Commission and BiPRO have been a constant element within all 8 events. They are not included within the country specific minutes (see chapter 4) and are therefore summarised here.

(1) Status and problems with the implementation of European legislation for landfills – A European perspective (Representative from the EU Commission, DG Environment):

The presentation dealt especially with the problem of illegal landfilling and gave exemplary numbers for some old Member States. The presentation pointed out, that there have been conducted or are currently starting infringement cases against old MS for systematic failure especially on the issue of illegal and uncontrolled landfilling and provided information about some exemplary cases. Information on the situation concerning the landfilling issue in the EU -10 is scarce. Information is especially needed about problems which are comparable amongst those MS to support the implementation of European legislation in a more targeted way.

The presentation highlighted the connection of the landfill issue to other environmental topics, e.g. underlining the landfill gas relevance for climate change and the necessity to treat such gas. The presentation stressed as well the need for further reduction of the biodegradable fraction of the waste landfilled as one main target and showed some exemplary strategies from the old MS to reach that target.

In addition to the requirements in the Landfill Directive the Waste Acceptance Criteria Decision contains further specifications on procedures and limit values. The presentation underlined, that there is little transparency about how the Decision is applied in the MS. There are waste streams regularly exceeding the limit values set in the Decision. Furthermore no common guidance exists on how to implement the specifications about the required monitoring system (e.g. on-site verification).

Introduction of the EU Project (BiPRO)

The presentation very shortly explained that the workshop held was one out of 8 workshops. It gave an overview on the other workshops and emphasised the objectives of the project. The presentation furthermore mentioned the different possibilities to obtain and use the workshop materials from all workshops and asked the participants to contribute to the website.

Overview on relevant European legislation – The Landfill Directive (BiPRO)

The presentation gave an introduction to the framework of waste policy within the EC and concentrated afterwards on the requirements set in the Landfill Directive. Starting with introducing the relevant legislative documents and basic definitions in the waste sector, the presentation explained what a landfill is and which operations are counted as landfilling operation. The presentation described the three classes of landfills and its specifications and pointed out which wastes cannot be accepted at landfills. It pointed out the reduction targets for biodegradable waste and highlighted specific extensions of deadlines if applicable.

Furthermore the presentation focussed on the siting and general requirements set in the Landfill Directive and on the procedure and necessities during the phases of authorisation, operation, closure and aftercare. Finally the requirements for existing landfill installations were highlighted and it was referred to general and specific transition periods for the countries.

Legal requirements for acceptance and control during operation of landfills (BiPRO)

As the decision on acceptance criteria (2003/33/EC) sets specific provisions especially for the monitoring procedure on landfills and has to be applied since July 2005, it was introduced in a separate presentation. Especially the content of the three Annexes dealing with the procedures for acceptance of waste at landfills, the waste acceptance criteria and the sampling and test methods were highlighted. The steps of the procedures for the acceptance of waste at landfills, being the basic characterisation, compliance testing and on-site verification were explained in detail. Examples were given for specific leaching limit values for different classes of landfills and the procedure of sampling was explained.

Experiences with the implementation of the Landfill Directive from the previous project events (BiPRO)

One major aim of the project was to exchange information obtained at the events. Therefore a presentation was held about the experiences made on all previous events constantly updating the information and including information of the events which have been completed. The presentation contained information about the major problems and deficits considering the status of implementation, the organisational and the technical side which have been common for countries. It furthermore listed good examples of implementation. Finally the presentation recommended priority activities for implementation of the European legislation.

All presentations, including the standard presentations from EC and BiPRO can be downloaded at: **http://www.bipro.de/waste-events/land/landfill.htm**

3 Overall Problems and Deficits in Implementation of the Landfill Directive

The general situation, the state of waste management and major problems related to landfill of waste are largely comparable amongst the EU-10 .One objective of the project was to detect systematically appearing problems amongst the states. Therefore the general situation is shortly explained within this chapter. Secondly major problems summarised are divided into different problem categories. Furthermore the chapter highlights good examples of how to support the implementation process.

All information was derived either from the workshop presentation material or from the discussion minutes, which can be found in chapters 4.1 to 4.8 for each country. Minutes contain information on specific legal provisions, the status quo and the number of landfills as well as the problems, good examples and suggestions for further implementation discussed.

3.1 State of landfill related waste management within the EU 10 Member States

In general the basic situation concerning waste management within the EU-10 Member States, which accessed the EU in 2004, can be characterised as follows:

(1) Low priority for environmental concerns in general, especially for waste management, and lack of administrative capacity

The administrative capacities to deal with waste management issues are generally too low and processes for planning and permitting are long-lasting. Especially regarding monitoring and control of landfills, inspection capacity is not sufficient. In some countries salaries are too low to attract qualified experts.

(2) High share of landfilling in waste management and lack of understanding of the waste hierarchy

The amount of waste disposed of in landfills is still very high. The overall share of landfilling lies between 80 and 90%. Actions are taken slowly to reduce the amount of waste landfilled by investing in separate collection systems and treatment facilities. However, landfilling in many cases is still by far the cheapest and easiest way to get rid of the waste. Consequently especially the installation of new landfills is subsidised although fees are not covering the costs for operating, maintaining and closing of a modern landfill. Landfill capacity aspects (limitations in landfill use, saving of scarce landscape resources) do not seem to be acknowledged as important limiting factor in the majority of the EU-10 MS so far. On the other hand there often is a strong scepticism and opposition in the general population against the installation and use of thermal waste treatment installations.

(3) High content of biodegradables and combustibles in landfilled waste

Mixed MSW with a high content of biodegradable and combustible fractions is landfilled in most cases. The fraction of biowaste in mixed MSW landfilled is ranging between 30-50% and may reach up to 75%. Strategies for the reduction of organic waste in landfills and implementation of systems for separation at source as well as construction of facilities for

composting or energy recovery from combustibles are only started. In general a market for "waste generated" compost is not existent or only slowly developing due to legal restrictions and low acceptance in the population. As the separate collection of biowaste is only feasible at household level with a very regular pick up cycle and treatment facilities are still missing, this fraction yet is not adequately addressed.

(4) *Limited coverage with public collection system in rural areas*

The coverage of the population by public waste services is generally good in towns and residential agglomerations. In rural areas however, the coverage may be down to only 15% in some countries.

(5) Limited separation at source, limited quality of materials for recovery

A separate collection system at household level (special bags, bins etc.) is introduced only in some cases. Installation of collection points for household waste separating especially glass, paper & cardboard and plastics has been generally started in urban. The use of the container system however, depends on the environmental attitude of the citizens as financial incentives are very low. The quality of the collected material especially as concerns plastic is still low. Installation of civic amenity sites is still in the very beginning in the majority of countries. Specific container collection tours (e.g. two times per year) are used for this purpose.

(6) No sufficient implementation of the polluter pays principle

The financial incentives to follow the separate collection system are very low as waste fees are very low or are not implemented at all.

(7) Existence of huge numbers of "old, low standard" landfills and systematic infringement by using not compliant landfills

Typically a huge number of small and technically poorly equipped landfills (municipal dumps) were in use in the EU-10 MS. The process of closing down landfills has started during the last years and some countries have made remarkable progress with that. However significant deficits in the recultivation, after care and monitoring of those old landfills exist. A part of the landfills is still in use officially only undergoing a marginal adaptation programme (e.g. fencing the area). In other cases closed down dumps are still used illegally by local citizens, who do not want to accept the elimination of their historic dump site. This practice is often tolerated by the MS. A systematic approach in steering the closing down and recultivation process considering the risk potential of the old landfills is generally used in the Member States, however, due to related costs and reluctance of local authorities it can not clearly be seen how the deadline of 2009 regarding the old landfills will be met.

(8) Existence of illegal dumping of waste, no sufficient controls , prosecution and sanction

A precise number for illegal dumpsites is not available in any of the countries. An inventory on old and illegal dumpsites has been conducted in a number of EU-10 MS only to receive a basis for cleaning up and recultivation measures. While in some countries the problem arises mostly from old dump-sites not actively used anymore, illegal dumping is a common and even increasing practice in others. Deficits and ambiguities in the definition of "illegal landfill"

are important aspects hampering the identification of exact numbers. Often littering is not regarded as illegal landfilling. Sanctions are some times in place but very rarely prosecuted, as administrative capacities for inspections and controls are low and revealed cases are seldom.

(9) No adequate implementation of the Acceptance Criteria Decision

Certain steps of the monitoring procedure during operation are disregarded in a couple of countries. The on-site verification and visual inspections are not always strictly implemented. Regular sampling of incoming waste has only been realised at some of the landfills. The Acceptance Criteria Decision has been clarified within national legislation within most, but not in all of the EU-10 MS.

(10) No sufficient implementation of the "treatment prior to landfilling" principle

The requirement of treatment of mixed MSW before landfilled is widely ignored. In the opposite it was discussed, if the separate collection of certain waste streams at household or public level can be already seen as treatment prior to landfilling. The only measure taken is the compacting of the waste.

(11) Long-ranging storage of waste at temporary storage facilities

As treatment facilities are missing either on regional level or for certain waste streams (e.g. hazardous waste), waste is stored on a long range on temporary sites sometimes without sufficient protection.

(12) Use of shredded or whole used tyres within landfills

It is prohibited to landfill whole or shredded used tyres with the exemption of using them for engineering purposes. The exceptional rule is used to justify the use of large quantities of such waste tyres within landfills.

3.2 Summary of systematic deficits and problems

Major deficits and problems in waste management leading to the situation as described above are to a large extend comparable in the Member States where workshops have been conducted. The following section highlights the main common problems, dividing them into problems which are based on deficits in planning and administrative instructions, (e.g. missing guideline or inconsistent planning), deficits in the practical enforcement structure, (e.g. missing controls and fine systems), problems arising from lack of awareness and cooperation and technical problems deriving from the uncertainty with the interpretation of technical provisions.

Deficits in planning and administrative instructions

(1) Organisational problems with waste collection due to market situation

The organisation of the waste management system at community and regional level hinders in some cases the quick installation of appropriate waste management systems. Municipalities have the responsibility for waste management services and usually assign private companies for fulfilling the task. However, often a free market system has been chosen, contracting is between citizens and the collecting company, fees are to be set by collectors not municipalities and ownership for the waste may be referred to the collection companies. Consequently companies tend to provide services only in areas being profitable like cities and residential agglomerations, fees depend of place and type of residence rather than on amount of waste generated. In addition - due to free market conditions - the landfill where the waste is disposed of may be freely chosen by waste collectors stipulating the preference of using old and cheap landfills. Take back systems e.g. for bottles, waste tyres, batteries only start to be developed.

(1) Lack of investments into landfill standard due to uncertainty on future exploitation

In some countries the decision process regarding the question which landfill will be authorized to operate after 2009 and which landfills will be closed is still ongoing. This uncertainty hinders private and public investors to improve the technical standard of the landfill and to quickly adapt it to the technical requirements in the European legislation. In other countries conditioning plans requested by national and European legislation are not executed adequately.

(2) Deficits in closing and recultivation of old landfills

Good planning exists in most of the countries regarding the installation of new landfills based on the concept of regional landfills for newly established waste management regions. Surveys on existing capacities, future demand and suitable locations were conducted and the construction process for new landfills complying with the European requirements started. However, when it comes to closure and recultivation of old landfills there are significant deficits, although significant efforts as concerns closure can not be neglected. A major problem which hinders a faster approach is the local responsibility and autonomy for waste management and the reluctance of local authorities to cooperate in waste management. As concerns proper recultivation the related costs can be seen as the most important obstacle for realisation. Some countries tend to address old landfills as “environmental burdens” under other legislation than the waste management laws. In general closure of landfills is planned to be achieved by 2009, whereas recultivation is regarded as a matter of finances and tends to be addressed with lower priority. A number of countries have set an internal deadline for accomplished recultivation by 2012. Lithuania even foresees to accomplish only closure by 2012.

(3) Low or wrong incentives arise from the fee system and reimbursement structure

The fees for the collection of waste at household level are generally too low and not appropriate to set a real economic incentive to firstly avoid waste and secondly separate waste. As public fees are a very delicate topic at the political agenda especially at municipal level, the decision for imposing fees are not based on economical facts but rather on political sensibilities.

Fees are mostly not graded by weight so that increased separation does not pay for citizens. In addition reimbursement for municipalities at least in a number of countries is based on waste amounts delivered to landfills which give a strong incentive to landfill as much as possible instead of investing into separate collection systems.

Deficits in practical enforcement

(1) Deficits in basic characterisation, sampling and visual control during on-site verification and sampling for MSW

According to European legislation waste acceptance criteria have to be applied at all landfill sites from 2005. However, this requirement seems not to be consistently enforced. In the majority of countries basic characterisation documents for mixed MSW do not seem to exist or at least are quite limited. Visual on-site verification of waste batches prior to unloading generally does not take place. Control is restricted to oral or written reporting on waste type and origin and documentation of weight (at new facilities equipped with weight bridges). In a number of countries (e.g. Baltic States) sampling and chemical analysis of mixed MSW is not yet performed.

(2) Deficits in execution of conditioning plans for landfills

European legislation contains clear provisions concerning continued operation of existing landfill sites. In this context the elaboration of a conditioning plan and the prompt execution of measures necessary for adaptation of technical standard requirements are seen as prerequisite for continued operation. In other cases the operation of the landfill shall stop as “soon as possible”. The enforcement of elaboration of conditioning plans as well as the enforcement of necessary adaptation works however, seems not to be always thoroughly executed. It seems that operators do not fulfil permit requirements and permit authorities do not always decide upon interim permits in a consistent way. In a number of cases old landfills continue operation until 2009 although it is already obvious that they will not be able to meet EU technical requirements by that time.

(3) Deficits in control of closed dump sites and illegal landfills

The control of closed landfills and the identification of illegal dump sites and littering generally is the responsibility of environmental inspectorates. Police may be involved as well. A system for administrative fines in case of littering does generally exist. However, due to the large number of closed “old” dumps and illegal landfilling, limited infrastructure and limited personal capacity in environmental inspectorates, control of closed dumps is not frequent and persecution of illegal dumping is difficult. At least in a number of countries closed dump sites are normally not fenced, but only covered with soil. Monitoring of closed dumps seems

to take place. However, specific information on extent of monitoring and investigation in waste composition and environmental impacts has not always been available. The cooperation between the involved authorities is not sufficient.

Problems derived from lack of acceptance, awareness and cooperation

(1) Lack of acceptance and understanding among population

Environmental issues in general still do not have a high priority in civil society in the majority of the EU-10. The need for separation of waste and appropriate treatment of waste is not seen. In addition there is low awareness of potential environmental impacts ("we always have used this dump", "…burned in our backyard") and historically there is a lack of habit that individuals have to pay for waste. In the context of low average salaries and increasing life costs there consequently is very low acceptance of waste fees and fees tend to be avoided. In addition the general population is normally highly opposing construction of regional waste treatment facilities in their neighbourhood, fearing environmental impacts from "their neighbours" waste.

(2) Reluctance and objections of local authorities against regional cooperation

Competences in the waste management sector are divided between national, regional and municipal level. Whereas the national and some times regional level is in charge for general planning, the municipalities have the responsibility to organise local waste management services. In this context significant resistance of local authorities against inter-municipal cooperation has repeatedly been reported. Local authorities prefer to keep municipal dumps and try to avoid construction of a regional landfill or treatment facility on their territory.

(4) Missing market for compost generated of biowaste

Major problems with marketing of compost basically occur in all countries. Marketing is nearly impossible both due to legal restrictions (fertilizer legislation without adequate consideration of compost; marketing permit restrictions for facilities) and due to lack of knowledge and acceptance by farmers ("we always used synthetic fertilizer") or in the general population ("I will not pay for a batch of soil which I can dig out in the nature", "what has been produced at a landfill certainly is hazardous", etc). Consequently compost is currently only used for engineering purposes at the landfill sites.

Technical problems and uncertainty with interpretation of technical provisions

In almost all events it became obvious that there are some aspects in European legal documents which are not always well understood or which leave significant space for diverging interpretations. In particular issues such as treatment prior to landfill (Art. 6 1999/31/EC), requirements for basic characterisation (2003/33/EC), technical construction requirements for landfill sites (e.g. sealing layer, use of waste tyres, degassing, leachate collection) gave raise for questions and discussions or resulted in diverging practice in different Member States.

(1) Disregard the principle of "treatment prior landfilling"

Concerning "treatment prior to landfill" namely the issue of additional treatment requirements for mixed MSW delivered at landfill has to be further investigated.

At none of the visited landfills the principle was implemented consequently and facilities for prior treatment as sorting lines, shredders, MBAs are not introduced or only planned for the future. The practice is widely tolerated be the authorities of the Member States.

(2) Difficulties with the interpretation of "basic characterisation"

Concerning "basic characterisation" the need for specific information, chemical analysis and specific documentation was not always understood or accepted.

(3) *Interpretation of technical requirements*

Concerning technical requirements for landfill construction or operation and aftercare the issue of the hydrological conductivity restrictions in the landfill directive ($k < 10^{-9}$) has been questioned. Besides this, the use of shredded or whole tyres as engineering material in drainage layers is practiced differently in Member States. Need for degassing of closed landfills, energy use of gas from smaller landfills and collection and treatment of leachate water were additional topics that were discussed.

(4) Representativeness of samples, qualification and independence of analysing laboratory

The need to ensure a common standard for representativeness of samples taken in the context of waste acceptance criteria as well as quality standard and independence of the sampling and analysing laboratory has been raised by Czech representatives.

(5) Exceedance of limit values set in Decision 2003/33/EC

Czech representatives highlighted the problem that specific limit values set in Decision 2003/33/EC are exceeded in certain types of waste (e.g. soils, C&D wastes) for which alternative treatment methods currently do not seem to be feasible. Corresponding problems have also been reported by other Member States (e.g. Hungary) on request. Representatives from a number of other Member States (e.g. Baltic States) were not aware of the existence of limit values, as chemical analysis is currently not practiced in MSW management. Information on management of hazardous waste has not been provided in this event as landfill of hazardous waste has still to be started.

(6) Classification as waste or as secondary raw material

The need for guidance and harmonisation of classification of a specific substance as waste or secondary product and guidance on the question when a waste becomes a product again has been mainly raised by Slovenian representatives but has been supported during the event in Hungary as well.

3.3 Examples for good practice

In general the implementation of the landfill directive requirements and the development of a modern waste management structure is still underway in the EU-10 Member States and important steps concerning construction of compliant landfills, operation and aftercare according to legal requirements as well as increased separation and recovery have still to be taken, so that identification of examples of good practice in comparison with countries where a modern system has already been established is not too easy. However, in comparison with the waste management system in place in the countries prior to accession, a number of examples for good practice concerning implementation of the Landfill Directive (1999/31/EC) have been provided during the events. In particular these examples concern construction of landfill sites and closure recultivation of old dumps, establishment of recovery infrastructure, administrative instruments to direct waste management from landfill to recovery, training awareness raising and control. As examples may be of use for all Member States a specific allocation to one event is not presented.

In the past years important steps have been undertaken to change the waste collection system and the management infrastructure to make it compatible with European landfill requirements. In particular the following examples shall be highlighted. A more detailed description of figures in specific Member States is provided in chapter 4.

(1) Closure of non-compliant dumps

A large number of non-compliant municipal dump sites have already been closed in most of the EU-10 Member States

(2) Identification and Elimination of illegal dumps

Important initiatives have been taken to identify and combat illegal dumping. In Hungary 1% of the annual taxes are dedicated to detection and elimination of illegal dumps in 2007.

(3) Construction of modern landfills with separation lines

In all of the Member States a first set of modern regional landfills has been constructed in the past years or is projected for the near future in order to replace “old” municipal dumps. Namely the landfills visited in Poland and Latvia have been equipped with high technology separation lines for effective recovery of recoverable fractions (paper, glass, plastics, refused derived fuel, biodegradables) from mixed municipal waste and selectively collected packaging waste from trade and commerce. In addition landfills contain storage facilities for hazardous waste. WEEE and waste metals are dismantled and thoroughly separated at the Polish landfill site.

(4) Start of composting

In all of the Member States composting has been started at the modern landfill sites visited and initiatives for home composting have been presented. Namely in Hungary the issue of mechanical biological treatment (MBT) constitutes an integrated part of waste management planning.

(5) Use of biogas for energy recovery from degassing of closed landfills

In all of the Member States recovery of biogas has been started or is foreseen at the modern landfill sites visited, although the techniques used for gas collection vary between the landfill sites. The use of biogas from closed dumps is principally foreseen. However, it depends on the size and type of the landfill or dump. In small uncompacted sites degradation of biowaste may often already have taken place or production of biogas will not be sufficient for economic recovery. Namely the landfill sites visited in the Pomeranian Voivodeship can serve as example for effective and economic energy recovery from biogas derived from closed landfill sections. In Ecodolina the construction of the "new" sites directly besides the closed "old" landfill enables an effective management of biogas from the closed site.

(6) Installation of civic amenity sites at landfills

Whereas the establishment of civic amenity sites in urban areas and municipalities is only at its start, the visited modern landfills provide this type of service for citizens in their surroundings free of charge. In addition storage facilities may be used from collectors during selective kerbside collection activities.

(7) Leachate collection and treatment

Leachate collection according to EU requirements is performed at the modern landfills visited during the project. Leachate is either recycled to the landfill body in case annual evaporation outweighs precipitation (Hungary) or is treated by reverse osmosis. Namely at the Polish sites treated waste water is then directed to municipal waste water treatment plant.

(8) Installation of collection points

In addition to separation lines at landfills collection points for separate collection of glass, paper, metal and plastics from citizens are increasingly established. Containers are mostly managed by landfill operators. In the Pomeranian region kerbside collection of packaging waste free of charge has been established as separation tool in some municipalities.

(9) Enhanced investigation of old and illegal landfills

Cyprus has carried out an inventory on uncontrolled landfills using GIS technology, questionnaires and field data collection. The study includes a risk assessment of the located landfills and results in a list of priority actions for closure and recultivation measures.

The following initiatives have been taken in different Member States in order to redirect waste streams, enforce compliance with legal requirements and to educate regional and local authorities, waste operators as well as the general public:

(1) Combined control activities of environmental inspectorates and police

(2) Standardised documents and guideline for basic characterisation established at national level (CZ, PL)

(3) Training of regional authorities; regular meetings with central authorities (CZ, PL)

(4) Early evaluation of waste management plan by means of indicators (CZ)

(5) Investigation in alternative treatment and recovery methods for waste (CZ)

(6) Training courses concerning legal and technical requirements for operators (SI)

(7) Qualification standards for landfill operator and the working staff (SI)

(8) Information material, visits and open days organised by landfills for information of the population (SI, Baltic States, PL) with focus on children

(9) Raised landfill taxes and raised waste fees (SK)

(10) Ban of landfilling green wastes from gardens and parks (SK)

(11) Initiate an Environmental Fund based on taxes and fines for support of investment projects

(12) "Private" initiatives of landfill operators and collectors e.g. Green Dot Latvia for separate collection systems and environmental education including specific school activities (Baltic States)

4 Description and results of specific events

4.1 Czech Republic: Minutes and outcome

Date	Czech Republic
18.-19.01.2007	**Venue:** Prague / Ministry of Environment **Participants:** 39 (14 from national authorities, 14 from regional authorities, 4 from organisations/NGOs, 6 from enterprises) **Agenda:** 16 presentations (including EC and BiPRO) **Excursion**: Benátky landfill for hazardous waste

The information exchange and awareness raising event in Prague has been organised with support of the Ministry of the Environment. Beside representatives from the Ministry of Environment, the 39 **participants** comprised especially representatives from the Czech Environmental Inspectorates and the Regional Offices. NGOs, associations, companies and landfill operators were also attending the workshop (participant list see chapter 6.1).

The workshop in Prague was planned as a two days event. In total, 16 **presentations** were held (including BiPRO and EC). An excursion to the Benátky landfill for hazardous waste was realized the second day.

Presentations held addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in the Czech Republic stressing aspects such as statistical data, administrative infrastructure, cooperation and permitting. In addition practical experiences with landfilling, acceptance criteria and control were presented from waste operators, regional authorities and the Environmental Inspectorate. The specific issue of organic waste management including examples for good practice in the field of separation at source and home composting has been addressed by an NGO speaker. The Ministry of Environment contributed to the event with 5 presentations, showing the strong dedication of the Ministry to the workshop.

For the second day an excursion to Dablicka landfill for municipal waste in Prague was planned which had to be cancelled due to bad weather condition (extra strong wind) and the operating instructions of the Dablicka landfill. Instead an excursion to the Benátky landfill for hazardous waste was undertaken. The excursion provided valuable insight into technical standards and the state of landfill for hazardous waste in the Czech Republic (agenda see chapter 7.1).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in the Czech Republic:

Legal framework of the Czech Republic

The European legal requirements of Directive 2006/12/EC, 1999/31/EC and Decision 2003/33/EC have been well transposed into national legislation (most recently *Decree No. 294/2005* to implement 2003/33/EC). Slight variations such as three different landfill types under the landfill category “non-hazardous waste landfill” have been established in

accordance with the EU legal framework. Technical specification as concerns design, sealing, degassing, leachate management, closure and monitoring are compiled in the *Czech State Standards*.

For testing the leachate limit values standards EN12457-4 was chosen, requiring the testing of the leachate performance out of 10L/s.

Facts and Figures of the Czech Republic

In the last years about 37 Mt of wastes have been generated annually in the Czech Republic with slightly increasing trend. As concerns MSW approximately 4.5 Mt have been landfilled in 2005. For separate collection of packaging, glass and paper rates of 19-25% have been reached within one year. The rate of landfilling of both for MSW and for hazardous waste is decreasing. However, it still accounts for up to 69%. With respect to the amount of biowaste, the share in 2005 was 19% above the 2010 target, which means that additional efforts have to be taken to meet the deadline.

In 2005 in total 237 landfills with an overall capacity of 93 million m³, out of which 33 were hazardous waste landfills, were in operation in the Czech Republic. The majority has been built after 1996. Due to beneficial hydrogeological conditions landfilling is cheap in the Czech Republic.

Figure 4-1 and Figure 4-2 shows the distribution of non-hazardous and hazardous waste.

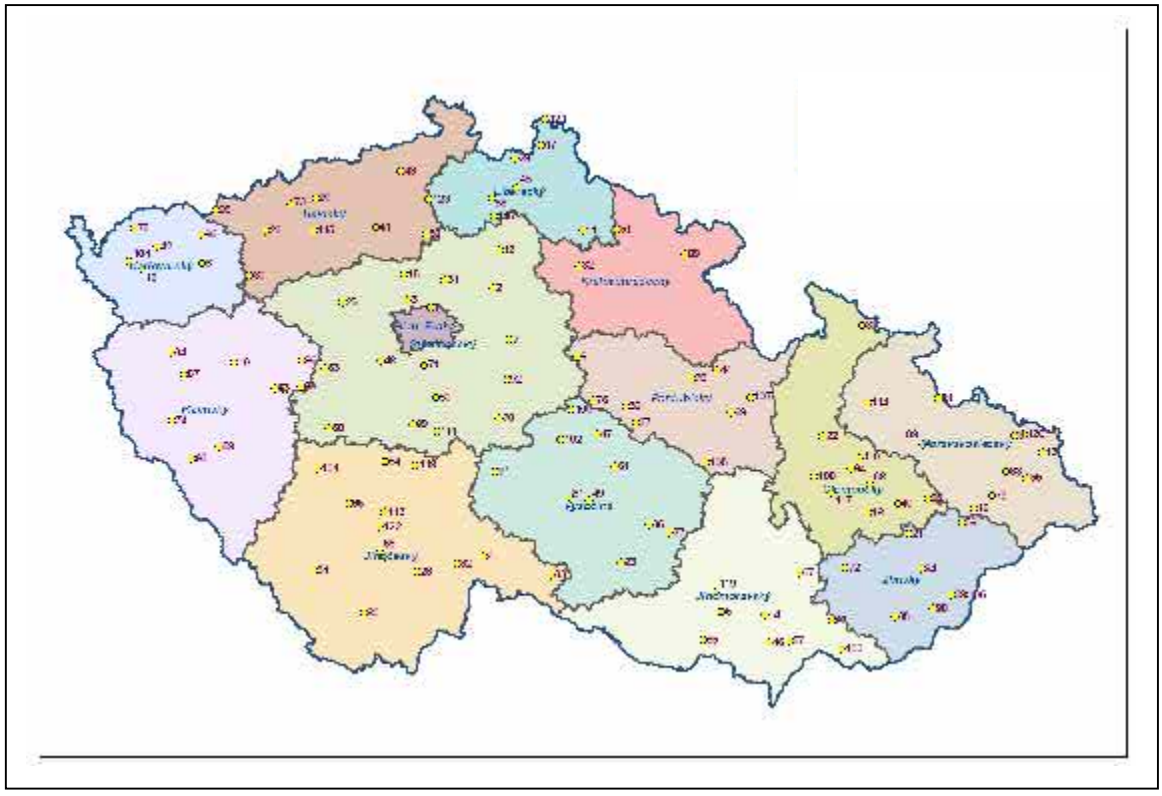

Figure 4-1: Distribution of landfills for non-hazardous waste in the Czech Republic with total planned capacity higher than 25000 m^3 (VÚV-CeHO, 2005)

Figure 4-2: Distribution of all hazardous waste landfills in the Czech Republic (VÚV-CeHO, 2005)

Information on closed landfills and contaminated sites is centrally stored in a national database. Information on illegal landfills however, is not available at national level.

The height of waste fees has been specified in *Act 185/2001*. There is a stepwise increase until 2011. Part of the fee is directed into Environmental Funds in order to promote the development of the waste management system as well as the development of new technologies. Environmental funding is seen as important instrument and a large number of projects has been supported or is planned by the *State Environmental Fund*.[1]

Future Planning of the Czech Republic

Primary selection and pre-processing are major priorities in Czech waste management with a strong focus on biowaste.

Description of landfill visited

The excursion during the event in the Czech Republic had to be changed at short notice due to a heavy storm the night before. So the visit was realized to the Benatky landfill, a hazardous waste landfill opened in 1999 on the territory of a former military camp. The site covers 40 ha and has a total capacity of 4 million m³ divided into 24 sections. Currently one third of the landfill is under exploitation. Annually 150 to 200 kt of waste is disposed off.

[1] Presentation Jan Plavec, Ministry of Environment, Department of Waste; for additional information see presentations of Mr Leos Krenek, Director of Waste Management Department, Ministry of Environment and Věra Havránková, Waste Management Department, Ministry of Environment

Exploitation is planned until 2021. The site is used for MSW (S-OO3) and industrial waste (S-NO). However, the whole installation is designed for hazardous waste management. Leachate water is collected separately for MSW and industrial waste sections. It is recycled into the landfill body. Excessive water is treated with reverse osmosis (2 m³/h for 24h/d). Gas is not yet used for energy recovery. A section for treatment of biodegradable waste (biodegradation and composting) is in place in the industrial waste area. Compost and C&D waste is used for engineering purposes within the landfill site.

The technical standard of the site seemed to correspond to EU requirements. The following possible deficits of the landfill could be identified:

- Deficits in on-site control of incoming waste;
- Waste tyres are used for the drainage layer for purposes of its protection. It is forbidden to put any waste tyre to the landfill in the Czech Republic, these obligations are met by the operator of the landfill.

Major problems and deficits identified by the workshop participants of the Czech Republic

(1) The rate of landfilling is still too high (around 70%).

(2) The ratio of landfill of organic waste (agriculture, forestry) and the biodegradable fraction in landfilled waste (e.g. mixed MSW) is still high for the landfill type S-OO3, and it seems difficult to achieve the targets given in the Landfill Directive by the deadlines set.

(3) No data compilation exists about illegal dumpsites at national level, as illegal dumpsites are currently managed under responsibility of municipalities.

(4) Energy recovery from landfill gases is not economically viable in case of smaller landfills.

(5) The “treatment prior landfilling” principle is not implemented and there are open questions concerning the interpretation of this provision.

(6) The requirement for separate cells for gypsum and biodegradable waste is discussed.

(7) Waste tyres are used for engineering measures within landfills to a high extend.

(8) Representativity of samples, qualification and independency of analysing laboratory may be difficult to achieve and further specification in legal document might be needed.

(9) Alternative treatment and recovery methods has to be further investigated and promoted as waste incineration still has a low acceptance, MBT seems to be economically not interesting and the quality of compost is still a problem.

(10) DOC limit values set in Decision 2003/33/EC are regularly exceeded significantly by a number of wastes including inert, non-hazardous and hazardous waste fractions. In this context alternative analysis methods as listed in the Decision (at wastes own pH, at a pH of 7,5-8) do not consistently provide different results, but result in either higher or lower levels depending on the type of waste investigated.

(11) Leaching limits values for heavy metals in landfills according to CZ waste legislation are stricter than leaching limits set to classify waste as hazardous according to H13 criterion.

Examples of good practice identified as potential tools to improve the implementation and enforcement the Czech Republic

(1) A low DOC limit has been transposed in Czech legislation although transposition period could have been used until 2020.

(2) Standardised documents and guideline for basic characterisation were established at national level.

(3) Training of regional authorities has been performed and regular meetings with central authorities has been realised.

(4) Evaluation of waste management on a yearly basis by means of indicators (enables quick reaction)

(5) The number of landfills has been continuously decreased since 2001.

(6) Combined control activities of environmental inspectorates and polices are planned in near future.

(7) Fines in case of violation of the waste management legislation and illegal dumping are planned to be reviewed.

(8) Records on landfilled waste have to be kept for 30 years.

Priority activities for implementation of landfill directive requirements in the Czech Republic

(1) Further efforts to reduce landfill of waste and organic fractions with priority on improved separation at source and expansion of alternative treatment methods have to be made.

(2) Permit requirements have to be applied thoroughly by regional and local authorities.

(3) Rated weight dependent waste management fees have to be implemented for citizens.

Suggestions addressing the European Commission for supporting the implementation

(1) Guidance on what is meant exactly by treatment prior to landfill is needed and should be prepared on a European basis commonly for all MS.

(2) The Decision on acceptance criteria should be revised to enable the implementation of the Decision, e.g. as regards the requirements on basic characterisation.

(3) Clarification has to be made for specific waste streams not meeting the DOC and TOC (including stabilised waste by the solidification process), limit values and requirements for separate cells e.g. for gypsum and biodegradable wastes.

4.2 Slovenia: Minutes and outcome

Date	Slovenia
31.01.-01.02.2007	**Venue:** Ljubljana / Ministry of Environment and Spatial Planning **Participants:** 32 (10 from authorities, 5 from organisations, 7 from municipalities, 6 from enterprises, 3 from laboratories) **Agenda:** 12 presentations (including EC and BiPRO) **Excursion:** Barje landfill for non-hazardous waste

The information exchange and awareness raising event in Ljubljana has been organised with support of the Ministry of Environment and Spatial Planning. The 32 **participants** comprised representatives of both national and local authorities as well as representatives of laboratories for sampling and testing, waste managers and landfill operators (participation list see chapter 6.2)

The workshop in Ljubljana was planned as a two days event. In total, 12 **presentations** were held (including BiPRO and EC). An excursion to the Barje Landfill for non-hazardous waste was realized the second day.

Presentations held addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in Slovenia stressing aspects such as statistical data, administrative infrastructure, landfill tax, cooperation and permitting. The Ministry of Environment and Spatial Planning, the Environmental Agency, the Environmental Inspectorate and the Statistical Office each gave presentations. Representatives from a municipality presented the status quo of waste management in their municipality. In addition practical experiences with landfilling and its technical requirements were presented from waste operators. Representatives from an NGO were not present at the event.

The excursion to the Barje landfill for non-hazardous waste covering the Ljubljana region provided valuable insight into technical standards and a technically well adapted landfill in Slovenia (agenda see chapter 7.2).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in Slovenia:

Legal framework in Slovenia

The European legal requirements of Directive 2006/12/EC, 1999/31/EC and Decision 2003/33/EC have been well transposed into national legislation. The basic strategy for waste management in Slovenia is set in the *Resolution on National Environmental Action Plan 2005-2012* and in the *Operational Programmes* for the management of certain waste streams. The basic strategy for waste disposal is set in the *Operational Programme on waste disposal* which aims at waste prevention, reduction of biodegradable waste landfilled and a high ratio of material recovery and recycling of waste material. *The Rules on the Landfill of Waste* from the year 2000 were repealed by the *Decree on the Landfill of Waste* in 2006. The criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC were fully met herein.

In 1999 an *Inventory of the landfills in the Republic of Slovenia* (Project No. 57-ID/99) has taken place. In this study 58 municipal landfills and 23 industrial landfills were documented. After the inventory all landfill operators had to decide between the following two options:

(1) To continue the operation until 2008 or after 2009 by the means of accepting the criteria and carrying out a *Technical Adjustment Programme* to get a permit issued in line with national legislation (valid until 31 October 2007 for IPPC installations and until 31 December 2008 for others). There is a possibility of permit prolongation until 16 July 2009, if the landfill fulfils the requirements and deadlines stated in the adjustment program, which has been confirmed by the Ministry. The program of adjustments should be completed in practical adaptations until the 31 December 2008.

(2) To accept *Minimal Technical Adjustment Programme* to get a closure decision for the closure until 31 December 2008. Those minimal technical requirements are laid down in the *Guidelines for arrangement of landfills that will stop operation until the 31. December 2003*.[2]

Additionally a landfill tax is set in place on the basis of the *Environmental Protection Act* for the operator of landfills based on units for soil and water pollution. The calculation system considers the severeness of the environmental effect. For inert waste landfills the coefficient introduced is 1, for non-hazardous waste landfill 2 and for hazardous landfills 10. In 2002 around 13 million € of tax were received in the waste management sector. This amount decreased slightly until 2005 (12 million €) for the reason of a decreasing amount of biowaste landfilled. Until 31.12.2006 the operator could apply for an exception of the landfill tax. From this year on exceptions are not given anymore. Instead the municipality can apply for funding.[3]

The Acceptance Criteria Decisions opens the MS the possibility to decide if only independent authorised laboratories can do the sampling and testing for a landfill or if operators are allowed to do so. According to Slovenian legislation sampling and testing as required by the Acceptance Criteria Decisions by the landfill operators is not allowed. Sampling and testing has to be carried out by the authorised laboratories only (exception is gas monitoring, if allowed by the Ministry in the permit). In this case the Slovenian legislation has chosen the stricter of the two possibilities given in Annex III of the Acceptance Criteria Decision.

For testing the leachate limit values standards EN12457-4 was chosen, requiring the testing of the leachate performance out of 10L/s.

Facts and Figures of Slovenia

83 landfills exist in Slovenia, of which are 7 landfills for inert waste, 74 landfills for non-hazardous and 2 landfills for hazardous waste. Out of the total number, 60 landfills are municipal landfills, while another 23 are operated by the industry. The decision for continuing operation after 2009 yet has not been completed. 17 landfills in former operation do not receive waste anymore and 20 landfills have closed down. 38 existing landfills received a

[2] Presentation of Radovan Tavzes, Ministry of Environment and Spatial Planning, Environmental Directorate
[3] Presentation of Marjanaa Ulrich-Supovec, Environmental Agency, Waste Management Section

permit including the requirements for the conditioning plan. 8 new landfills have received a permit including the requirements on the conditioning plan and another 22 are waiting for an IPPC permit. Temporary permits are given to 38 landfills until 31.12.2007. They are following a conditioning plan set in cooperation with the Environmental Agency, who is responsible for the permits. After 2009 it is planned to operate 13 municipal landfills only, one for each region. The Environmental Agency is giving the permits, but the municipalities in the end decide which landfill will be kept.[4]

A survey about the amounts of waste brought to landfills was conducted on a 3 yearly basis until 2001. Since then it is carried out on a yearly basis. Considering this data the amount of waste landfilled in both non-hazardous and hazardous waste landfills has been significantly increased between 2002 and 2005 (see Table 4-1).

Year	2002	2003	2004	2005
Amount of waste brought to landfill (kt)	849	850	750	1,028
Amount of waste landfilled (kt)	821	820	727	752
Amount of waste disposed of in hazardous landfills (kt)	0.33	1.25	1.90	4.22

Table 4-1: Amount of waste brought and landfilled in Slovenia (2002 to 2005)

The share of waste brought directly by citizens was 265 kt in 2005. The other 763 kt were collected by the public service. 86% of waste landfilled is mixed MSW. Other relevant waste fractions are C&D waste, waste from purifying plants and packaging waste. 97% of the landfilled hazardous wastes belong to the waste type EWC 170605, construction materials that include asbestos.[5]

At the Ministry of Environment and Spatial Planning exist some records of illegal dumping actions. Furthermore a couple of studies have been conducted regarding wild dump sites. A complete register of such dumping places does not exist. It has been stated, that almost no municipal waste is dumped illegal, it is rather waste from small companies (SMEs) or from construction and demolition.

Description of landfill visited

The Barje landfill for non-hazardous waste is situated south of Ljubljana and mainly serves the region of the capital. The major part receiving the landfill is mixed MSW. It consists of a civic amenity site, a landfill for non-hazardous waste, a storage site for waste tyres and an environmental laboratory. The landfill is divided into cells and will have a maximum height of 24 m.

The requirements of the Waste Acceptance Criteria Decision are well implemented. Loads coming in are visually checked and weighted. Regular samples are taken from the loads coming in, which are analysed in the laboratory.

[4] Presentation of Irena Koželj, Environmental Agency, Waste Management Section
[5] Presentation of Mojca Žitnik, Statistical Office of the Republic of Slovenia, Department for Environmental and Engineering Statistics

A leachate drainage system is installed leading to water reservoirs partly formed as ponds. The collected water is released in a nearby water stream if not exceeding the given limit values. 128,000 m^3 of leachate is collected daily. A leachate treatment plant is planned. Landfill gas is collected and energy is produced within two energy generators producing 20 million kW. The technology for reusing the gas will be replaced by newer technology in near future.[6]

The technical standard of the site seemed to correspond to EU requirements. The following possible deficits of the landfill could be identified:

- A pre-treatment of the mixed municipal waste disposed of at the landfill is not carried out, but is planned for the year 2009.
- Waste tyres are stored in large quantities on the premises of the landfill.
- A daily cover is not in place. Thus, the protection of the landfill against flies, birds etc. seems to be low and the vicinity of the landfill is not protected against odour.

Major problems and deficits identified by the workshop participants in Slovenia

The following topics have been identified as major points of interest by the workshop participants

(1) The amount of mixed MSW landfilled is with 86% still high. Therefore the biodegradable fraction landfilled is too high as well.

(2) Separate collection system is installed. Some municipalities have established central collection points. However the “polluter pays principles” is not implemented sufficiently and the financial incentives for the inhabitants to use this collection points are low. The saving would account for up to around 12 €/household/month only.

(3) Separate collection of waste is not very lucrative for a landfill operator, because of the low income gained from the waste tariff system. A moderate landfill tax is not stimulating increased separation.

(4) The illegal dumping of waste is still a problem in Slovenia. In past, a common practice was especially the illegal dumping of waste into the karst caves.

(5) Even if some numbers exist of illegal dumpsites, a comprehensive study about the problem has not been carried out.

(6) Several authorities are involved in detection and deletion of the dump sites and responsibilities are not always clear (inspectorate, police, municipalities, MoE). The success rate of detecting the originator of the waste is very low.

(7) The existing sanction system is not often applied yet and experiences with the efficiency of the sanction system are rare. Sanctions range from 4,000 to 40,000 €.

[6] Guided tour at Barje landfill

(8) The "treatment prior landfill" principle is not implemented sufficiently and mixed MSW is mostly landfilled without further treatment at the landfills.

(9) Waste is stored on a long time range, e.g. in the municipality of Maribor, as no sufficient landfill capacity is available.

(10) The system of renewable permits and shared responsibility between the Environmental Agency and the regional authorities causes conflicts and a uncertainty on the side of the operators preventing them from investing in their landfills, as the Environmental Agency has to wait for issuing the permits until the the municipalities have agreed upon which landfill they want to operate in each region.

(11) There exist problems with the classification of certain waste streams as waste or as secondary raw material (e.g. construction and demolition waste). Even if the definition within EU legislation should not lead to misunderstandings, there exist waste streams which can be seen as secondary raw material as long as they undergo a certain treatment.

Examples of good practice identified as potential tools to improve the implementation and enforcement in Slovenia

(1) International, European and national law is basis for deciding whether to give a permit to a landfill operator or not. The BREF documents defining on the Best Available Techniques (BAT) in particular are considered when making the decision.

(2) The Ministry of Environment and Spatial Planning is cooperating with NGOs whenever possible. NGOs have not really been active on state level in the field of landfills and waste management. On regional level there exist occasional actions, e.g. resisting towards new landfills.

(3) The Environmental Inspectorate is in charge of enforcement the legislation. Controls of the landfills are made at least once a year.

(4) The Ministry of Environment and Spatial Planning and the Chamber of Commerce carry out training courses concerning the legal and technical requirements addressed to the landfill operator. Qualification standards for landfill operators and the working staff do exist and the operators as well as the municipalities have to ensure these standards.

(5) According to Slovenian legislation sampling and testing as required by the Acceptance Criteria Decisions by the landfill operators is not allowed. Sampling and testing has to be carried out by the authorised laboratories only (exception is gas monitoring, if allowed by the Ministry in the permit).

(6) Data from landfill operators are still gathered in paper form due to the fact of data protection and cannot be used for other purposes (e.g. estimation of landfill tax).

(7) Information material, visits and open days are organised by some landfills for

informing the public. However awareness raising amongst the public should more focus on the avoidance of waste and separate collection.

Priority activities for implementation of Landfill Directive requirements in Slovenia

(1) A revised tariff system covering all costs of collection, transport, separation and recovery / disposal should be introduced to the citizen.

(2) The landfill tax has to be increased. It is assumed that the raised landfill tax (by 1.1.2007) will stimulate more separation and recovery.

(3) To conduct controls at operating landfills more frequently and effective, more staff would be needed at the side of the Environmental Inspectorate.

(4) The systems of fines and penalties for illegal dumping and the non-fulfilment of set requirements at landfills have to be revised and implemented strictly.

(5) Quick decision would be needed for the question which landfills will be operated after 2009. A moderation of this decision process at national level would be supportive.

(6) An electronically data gathering of permitting and landfill data would be more effective and less time consuming.

Suggestions addressing the European Commission for supporting the implementation

(1) The European Commission should support further cooperation with the IMPEL Network, which conducts special projects for a better implementation.

(2) A better and more uniform definition of biodegradable waste is needed. A calculation basis should be defined uniformly for all MS and introduced into the EUROSTAT system.

(3) A procedure for the classification of re-categorising certain waste-streams such as C&D waste, used oils and biowaste as secondary products should be defined and implemented by the EC. For biowaste such a procedure is under discussion already in the revision process of Directive 12/2006/EC and would be needed for other waste streams as well.

4.3 Baltic States: Minutes and outcome

Date	Baltic States (Estonia, Latvia, Lithuania)
12.-14.02.2007	**Venue:** Riga / Ministry of Environment **Participants:** 20 (5 from authorities EE, 6 from authorities LV, 4 from organisation/association LV, 1 from enterprises LV, 3 from authorities LT) **Agenda**: 11 presentations (including EC and BiPRO)**Excursion:** North-Vidzeme landfill for non-hazardous waste

The information exchange and awareness raising event for Estonia, Latvia and Lithuania was held in Riga with support of the Ministry of Environment of Latvia. The 11 Latvian, 5 Estonian and 3 Lithuanian **participants** comprised representatives only from national and regional authorities. Besides the Green Dot Associations Latvia and one landfill operator from Latvia, no representatives from an NGO and companies were present (participation list see chapter 6.3).

The workshop in Riga was planned as a three days event. In total, 11 **presentations** were held (including BiPRO and EC). An excursion to the North-Vidzeme landfill for non-hazardous waste was realized the second day.

Presentations held addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in the three Baltic States stressing aspects such as regional waste management, separate collections systems and funding options.

The excursion to the North-Vidzeme landfill provided valuable insight into the technical standard of the particular landfill mainly used for municipal waste and into the organisation of the waste collection system in Latvia (agenda see chapter 7.3).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in the three Baltic States:

ESTONIA

Legal framework in Estonia

The *First Waste Act* was approved in 1992 already including an obligation for permitting landfills, supervising the waste management, demanding licenses for hazardous waste producers, strengthening the obligations for specialists and companies responsible for waste management and requiring the closure of old landfills harming the environment. The act was renewed by the *Second Waste Act* in 1998 which adopted the European legislation. Regarding this Act the procedure of closure and recultivation of old landfill was intensified and at the same time regional landfills were built and the infrastructure according to the European requirements was set into place. The *Third Waste Act* came into force in 2004 including the development of a package waste collection system and obligations for package enterprises to provide 50% of their markets packaging to waste recycling, the implementation of the WEEE Directive and the development of a waste related database. Furthermore the *Packaging and Packaging Waste Act* from 2004 and 35 different decrees are regulating the

waste management regime in Estonia. On basis of the Third Waste Act the reuse of materials is constantly growing.[7]

Due to the special situation with the production of oil-shale for energy production the transition periods for the implementation of the Landfill Directive was extended to 5 years until 2009.

Facts and Figures of Estonia

The average waste production within the European Union is around 3.5 t/year and capita, with 3% being hazardous waste. Due to the production of large amounts of oil-shale for energy production especially in the north-eastern region of Estonia 13 t/year and capita of waste are generated of which about 60% is hazardous waste. The generation of municipal waste with 380 kg/year and capita lies below the European average (450 kg/year and capita). The total waste production steadily increased over the last years, even if the production of municipal waste decreased (see Table 4-2). The per capita waste production though is increasing as the population is going down.

The reduction of the residues arising from the oil-shale production therefore in Estonia is given high priority.

Year	Municipal waste (t)	Municipal waste landfilled (t)	Total production of Waste (t)	Total landfilled (t)
1995	522,097	518,520	13,405973	10,620,612
1996	564,704	563,688	14,686,724	11,305,,620
1997	593,258	591,991	14,398,096	11,619,026
1998	557,157	556,000	12,984,219	10,090,004
1999	568,694	568,622	10,847,989	9,810,660
2000	544,194	543,874	11,615,849	9,452,892
2001	376,100	375,734	12,838,765	9,510,703
2002	396,743	381,579	14,409,521	9,875,964
2003	444,892	400,000	18,396,511	11,950,220

Table 4-2: Amount of waste produced and landfilled in Estonia (1995-2003)

The number of landfills could be reduced from 425 in 1990 to 30 in 2007. Looking at the area used, the 10 hazardous waste landfills existing in 2007 are covering with a total area of 1,372 ha, 85% of the total landfill area. This is mainly due to the waste generated during the oil-shale production. The 3 inert waste landfills have a total size of 193 ha and the 17 municipal landfills of only 48 ha. From the 17 municipal landfills 5 landfills are new, while another 12 are not ruled under the Landfill Directive. Two of the new landfills are conform to the requirements of the European legislation so far (see Table 4-3). Figure 4-3 shows the distribution of the mentioned landfill in Estonia in 1999 and Figure 4-4 shows the current situation with the distribution of new and old landfills and planned facilities.

[7] Presentation of Robert Kiviselg, Ministry of Environment and Kristo Keevend, Environmental Department of Järva County

Year	Non-hazardous waste landfill	Inert waste landfill	Hazardous waste landfill
1990	350	75	
1999	221	47	
2007	17 (5 new)	3	10

Table 4-3: Numbers of landfills divided by classes in Estonia (1990, 1999, 2007)

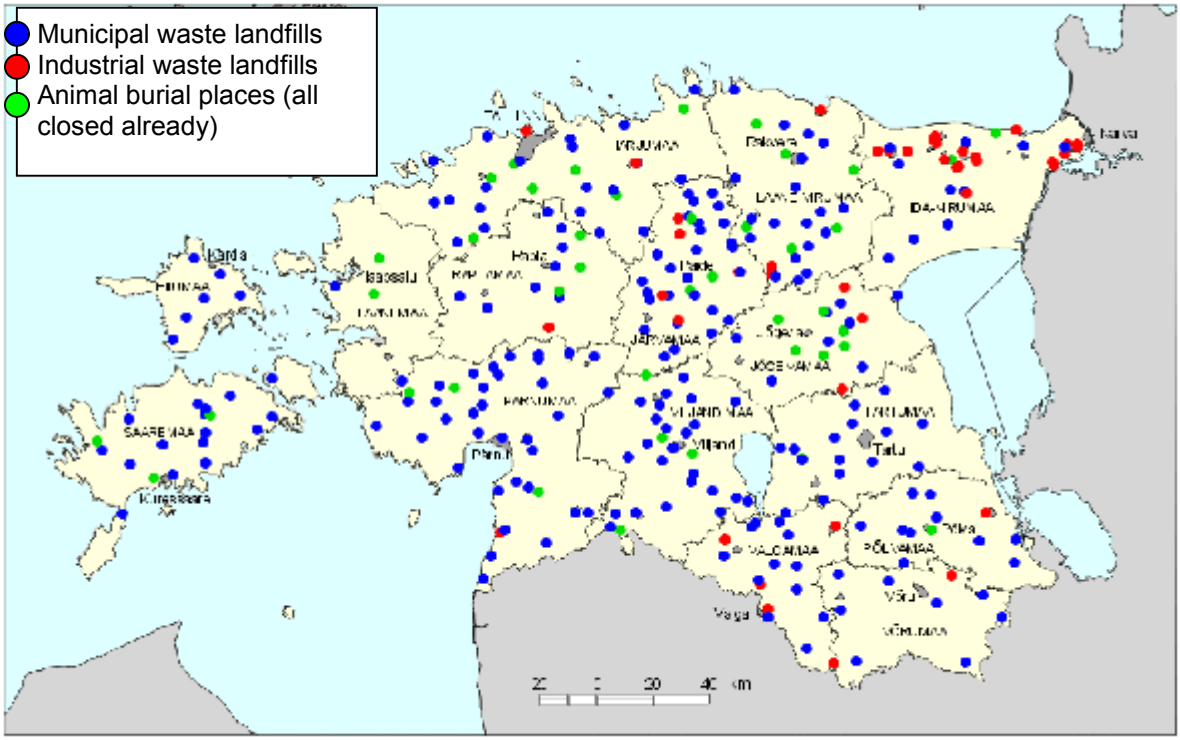

Figure 4-3: Distribution of landfills in Estonia (1999)

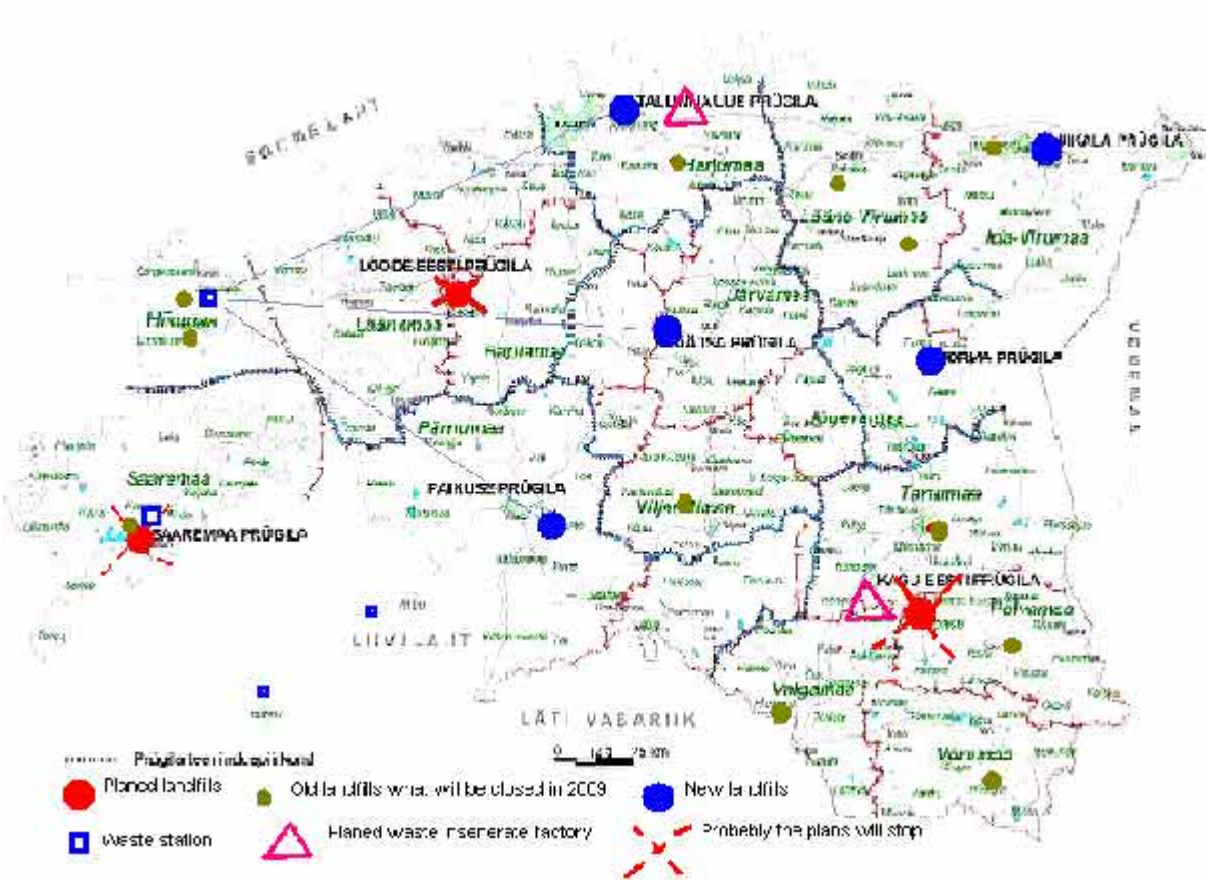

Figure 4-4: Current situation of old, new and planned landfills in Estonia (2007)

The problems with old landfills are severe. Locations were often chosen badly, separate collection did not exist and the waste landfilled was hardly compacted. Uncontrolled landfilling was widely spread, monitoring systems were lacking. 24 non-hazardous waste landfills at the moment covering an area 79 ha are closed but not recultivated yet. This counts for around 60% of all landfill area for non-hazardous waste. For old hazardous waste landfills the 1,361 ha are closed but not recultivated yet, counting for 76% of the total size of landfills for hazardous waste. Concerning the inert waste landfills, 188 ha are still in use but have to be closed in 2009, which is more than 90% of the area currently used for landfilling inert waste.

The co-incineration of waste is still possible within some cement kilns in different counties of Estonia. Animal wastes are as well burned at specific incineration sites.

The separate waste collection systems have rapidly developed in Estonia caused by legislative changes, changes of attitude and the rising of prices. As a result the amounts of waste landfilled could be decreased from around 600,000 t in 1997 to 370,000 in 2007.

The connection rate in towns is estimated to be 80%. In rural areas it lies between 50 and 60%. In some regions however, only 15% of the households are connected to a waste collection system. Collection points for hazardous waste were set into operation. The delivery of separated waste fractions and hazardous waste is free of charge. Anyway especially the biowaste fraction which is landfilled is far too high. The biowaste collection and composting systems need big investments. The effort by the local governments to handle with the local

waste management structure is still low. Therefore some times very small communities have other priorities or are overstrained with the task. From 2005 the local governments should overtake the waste management issues. Only 40 municipalities (1/3) did adapt to this obligation so far.

Disposal prices at landfills lie between 25 and 32 €/t and a landfill tax of 8 €/t for new landfills and 16 €/t for old landfill are imposed. Transport and collection costs furthermore are summing up to an amount between 20 and 30 €/t. From the landfill tax paid, the municipalities are getting currently 7 €/t back, thus giving incentive for using landfilling as an option as much as they can.

The households have to pay between 60 and 70 €/t, which is equal to around 4-6 € per household and month.

Concerning the oil-shale production problems are severe and special technical solutions have to be found. The mining and using of oil-shale is generating a huge amount of residues, especially which are piled to semi-coke and ash mountains, polluting the environment directly and visually. Problems connected to this issue are as well:

- The transport on oil-shale ashes, currently organised as water transport, is only allowed until 15 June 2009.
- Regarding the conditions of the Accession Treaty, landfilling of the oil-shale ashes as liquid waste has to be stopped until 16 July 2009. This will generate costs of estimated 65 million €.
- The content of organic substances within the semi-coke has to be reduced from 12% to 6% by 2008.
- The recovery amounts of oil-shale ashes are too low.
- New landfills especially in the south-east region and at the island of Saaremaa have to be built before the old ones have to close until 2009.[8]

A register and a precise number for illegal dump sites do not exist. According to information from the municipalities and Environmental Inspectorates such illegal dumping sites do still exists.

Future Planning in Estonia

For the region of Tallinn a waste incineration plant covering about 500,000 inhabitants is planned. It is discussed to build two other incineration plants within the country.

The planning for 2007 foresees that 5 of the non-hazardous, 2 of the hazardous and one inert landfill will be adopted to fulfil the requirements set by the Landfill Directive (see Table 4-4).

[8] Presentation of Robert Kiviselg, Ministry of Environment and Kristo Keevend, Environmental Department of Järva County

Number of Landfill (year 2007)	According to Landfill Directive	Working until 16.07.2009	Closed, must be recultivated
Non-hazardous waste landfill	5	12	24
Hazardous waste landfill	2	8	3
Inert waste landfill	1	2	1
Total	**8**	**22**	**28**

Table 4-4: Numbers of landfills in Estonia planned for 2007

The *Regulation on Organised Waste Collection Systems* foresees that all households have to be connected with a waste collection and transport system. This regulation still has to be approved by the local governments.

It was discussed whether a separate collection system at household level should be preferred to a fully after-sorting system within special facilities. The Ministry of Environment decided in 2005 with a *Draft Ordinance for Household Waste Sorting* to follow a strategy of sorting at household level starting with the separate collection of paper and cardboard and other packaging material. The biodegradable waste fraction will only be considered if the first step is well implemented. The discussion of the Draft Ordinance was followed up in 2006 with the aim of enforcement in 2007.

Estimation for the year 2013 foresees an increase of the composting facilities. At that estimation 650,000 t of municipal waste would be generated at that time of which only 279,000 can be disposed of within landfills. Therefore an amount of about 255,000 t (40%) should be composted and another 100,000 (15%) should be treated with other methods than landfilling and composting. The necessary size of the composting fields would sum up to around 50 ha and an investment sum of 14.8 million € would be needed.[9]

LATVIA

Legal framework in Latvia

The *Cabinet of Ministers Regulation No.474 on Establishment of Landfills and on Management, Closure and Recultivation of Landfills and Dumpsites* from 13 June 2006 transposes the requirements set in the EU Landfill Directive into national law.

The *Latvian Waste Management Law* was approved in 2001 and includes issues like the distribution of competences and all requirements regarding the establishment, management, closure and recultivation of landfills and dumps. It includes the prohibition of illegal dumping. It was amended in February and April 2004. The Latvian Waste Management Law is distinguishing between landfills and dumps.

Landfill sites are defined being specially constructed and equipped sites for the disposal of waste in which all the measures for environmental protections prescribed in the regulatory enactments are ensured. A waste dump, in contrary, is described as a site for the disposal of waste which is not conform with the requirements regarding landfill sites. Dumps have only

[9] Presentation of Robert Kiviselg, Ministry of Environment and Kristo Keevend, Environmental Department of Järva County

received permits until the year 2002 and all dumps are closed by now. In addition to the Landfill Directive, the Latvian Waste Management Law prohibits the disposing of sludge of waste water treatment plants with water content above 80% and waste of the food and timber industry if not intended for composting or the generation of biogas.

In 1998 the Cabinet of Ministers approved the *National Municipal Waste Management Strategy* for Latvia (programme 500-) covering the years 1998 until 2010. One main target of the strategy is to transpose the waste management issue from municipal to regional level with an optimal number of inhabitants covered by a region being > 100,000. As a result 11 waste management regions have been designated. *The Regional Waste Management Plans* are not finished for all of the regions. The objective of the strategy is to reduce the number of old landfills and to construct new landfills for each region. The strategy is forming part of the *State Waste Management Plan* 2006-2012.[10]

Institutional framework in Latvia

Various national and regional authorities are involved in the waste management process. The *Environmental State Survey* controls and supervises the implementation of waste related legislation on a national level. The *Regional Environmental Boards* (8 units) are subordinated to the Environmental State Survey, are in charge for the practical implementation and enforcement of waste management legislation in particular issuing permits, defining the technical requirements for a certain landfill, carrying out inspections of waste management practices and facilities. If waste within the on-site verification testing procedure does not correspond to the description of the basic characterisation, the transporting company and the Regional Environmental Board has to be informed about the inconvenience. The *Latvian Geological and Hydrometeorolical Agency* is compiling and processing the waste management data and collection. The *Environmental State Bureau* is in charge for preparing the programs for environmental impact assessments on waste management projects.

The *Ministry of Environment* is coordinating the implementation of national and regional Waste Management Plans. Furthermore it is in charge for coordinating and organizing the collection and appropriate recovery and disposal of hazardous waste.

Municipalities can cooperate at the preparation of the *Regional Waste Management Plan*. If they decide not to take part in the preparation of the regional plans, they ought to prepare a *Local Waste Management Plan.* 548 cities, towns and parishes exists which have to supervise transportation and disposal of municipal and industrial waste, issue local regulations on municipal waste management services and take decision of location of new waste recovery and disposal facilities. It is recommended that especially small municipalities are cooperating in order to prepare Local Waste Management Plans and handle the mentioned tasks in a most efficient way.[11]

[10] Presentations of Ilze Donina, Latvian Ministry of Environment
[11] Presentations of Ilze Donina, Latvian Ministry of Environment

Facts and Figures of Latvia

Annually about 1 Mt of municipal waste including non-hazardous waste from industry is produced yearly of which the fraction of biodegradable waste is more than 50%. The production of hazardous waste is approximately 27,000 t/year.

The waste collection system is served either by privately owned companies or by the municipalities, both serving around 50% of the population. Private companies are working for financial reasons especially within the bigger cities and higher concentrated areas. The private companies have to receive special permits for the collection and transportation of hazardous waste.

80% of the urban population is connected to the collection system, while in rural areas only up to 20% of the inhabitants are provided with service.

The development of landfills is historically linked to the development of towns and cities. During the Soviet Union time dumps were mainly placed in quarries. Existing standards were not observed at that time. After Latvia gained independence the first priority was to solve the problems of waste management within the Riga area. Figure 4-5 shows the distribution of the landfills in 1996 in accordance with the waste disposal area.

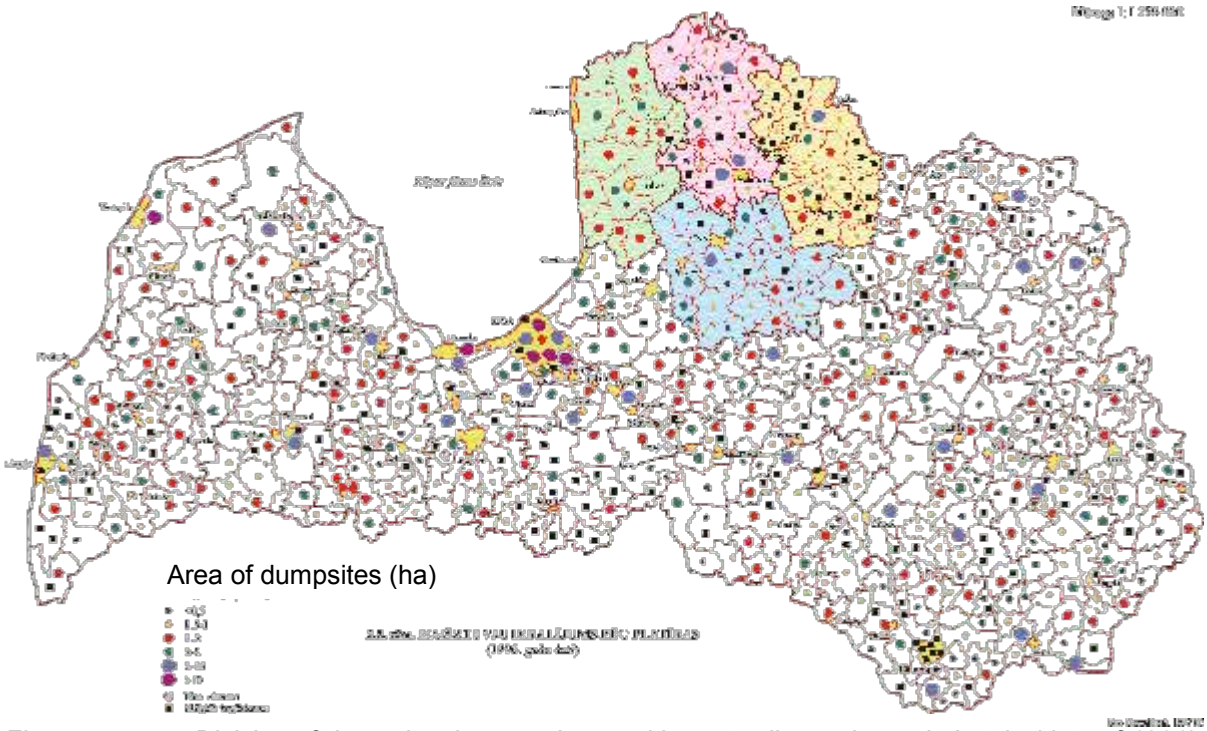

Figure 4-5: Division of dumpsites in accordance with waste disposal area in Latvia (data of 1996)

The number of dumps in operation could be reduced from, 558 in 1998 to 148 in 2005 (see Table 4-5). In 2005 waste disposal at 4 newly constructed landfill was started. A landfill for hazardous waste does not exist yet but will be constructed by 2008. Until the start of operation of the hazardous landfill, waste has to be stored at enterprises premises.[12]

[12] Presentations of Ilze Donina, Latvian Ministry of Environment

	1998	2001	2005
Number of counted dump sites and landfills	558	252	148

Table 4-5: Number of existing dumpsites in Latvia

The separated collection system and the reuse and recycling especially of packaging are promoted by the *Green Dot Latvia*. The (joint stock) company was founded in 2000 and reorganized in 2005. It is working as a joint stock company with non-profit business principles and is the leading producer's responsibility organisation in Latvia, dealing with packaging, electronics and hazardous goods. The Green Dot is cooperating with policy makers in Latvia and within the EU to promote the development of collection and recycling capacities especially for paper and cardboard, glass, and plastics (PET, PTE). Within 2005, 137,000 t of packaging waste and approximately 350 t of electrical and electronic equipment (EEE) were collected under Green Dot Latvia. The number of licensed partners increased steadily during the last years. In 2007 1,500 partners having packaging waste, 750 partners producing EEE and 200 companies dealing with goods harmful to the environment (oil, batteries, tires, accumulators) are licensed to use the Green Dot Label. In the Riga city area around 60% of the inhabitants have access to the separate collection system of the Green Dot. Green Dot Latvia is facing one major problem connected to the municipal waste fee system: municipalities get a financial refund taking into account to the amount of waste generated, thus hindering initiatives to reduce the generation of mixed MSW.[13]

Future Planning in Latvia

The process of building new landfills and re-cultivating old dump sites is described in the *National Waste Management Plan* until the year 2012. Until then the plan predicts the recultivation of all old dump sites, the installation of another 6 new landfills and a remarkable increase of waste collection points. Furthermore it is planned to increase the connection rate of inhabitants to a waste collection system from about 60% in 2005 to 90% in 2013 (see Table 4-6).[14]

	2005	2009	2013
Number of recultivated dumps	160	446	526
Number of established landfills	4	10	10
Number of waste collection points	900	2,000	5,000
Population having access to waste management service	60%	80%	90%

Table 4-6: Envisaged number of landfills and dumpsites in landfills in Latvia

[13] Presentations of Māris Simanovičs, Green Dot Latvia
[14] Presentations of Ilze Donina, Latvian Ministry of Environment

Description of landfill visited in Latvia

Within the *National Municipal Waste Management Strategy* pilot projects were carried out to support the development of new regional waste management systems and the construction of landfills. One of the projects was carried out in the North Vidzeme region. Within the project 81 municipalities were cooperating by setting up a company owned by the municipalities. A seperate collection system was installed within the communities in 2001, a landfill operates since 2004. The landfill was supported by the cohesion fund with 70%.

The landfill for non-hazardous waste in Daibe has a total size of 50 ha and consists of 4 cells with a size of 12 ha each. It is a modern landfill including a separation line, a composting plant and a leachate treatment. The waste will be compiled up to 20 m and the capacity of the first cell will be 385,000 m^3. Exploitation time of the landfill will be at least 28 years. In 2005 around 44,000 t of solid waste were landfilled, in 2006 this figure was increased to 55,000 t. The rate of composted waste could be increased from 190 t in 2005 to 3,100 t in 2006. Within the same time the amount of sorted and recycled waste could be increased from 45,000 t to 61,000 t.

The Daibe landfill is the only operating landfill in the North Vidzeme region. During the years 2005 until 2007, 66 old dumpsites in the region were closed and another 59 dumpsites were closed and recultivated.

The separate collection system of waste in the North Vidzeme region is organised by means of 9 collection points (ECO-fields), where the inhabitants can bring bulky waste, hazardous waste or separated waste as green waste, glass etc. Furthermore different collection tours are established, where household collection is performed in regular intervals. To support the separate collection amongst the inhabitants, a stamp system was introduced giving discount prices to household waste after delivering a certain amount of separated waste to the ECO fields.

The landfill management conducts a lot of educational projects to address the public. Beside waste collection campaigns, seminars, excursion for schools and preschools, they are working closely together with the Green Dot Association, with TV stations and newspapers.[15]

The technical standard of the site seemed to correspond to EU requirements. The following possible deficits of the landfill could be identified:

- A pre-treatment of the mixed municipal waste disposed of at the landfill is not carried out.
- The visual onsite verification with visual checks is not carried out concisely and is not documented.
- A daily covering layer (e.g. removable foil) does not exist at the landfill.

[15] Presentation of Kaspars Paberzs, North Vidzeme Waste Management Organisation

LITHANIA

Legal framework in Lithuania

The *Law on Waste Management* (1998 with amendments) sets the framework for Lithuanian waste legislation. Management activities regarding hazardous waste and non-hazardous industrial waste are regulated by the *Waste Management Regulations* approved in 1999, containing provisions on Waste Management Plan, the registration of waste managers, waste statistics, hazardous waste management and documentation of waste management activities.

Institutional framework in Lithuania

The Ministry of Environment is the main institution responsible for legislation and administration in the field of waste management, coordinating the activities of the State, regional and local institutions and preparing the *National Strategy Waste Management Plan*.

The *State Environment Protection Inspectorate* (SEPI) and the subordinated 8 *Regional Environment Protection Departments* (REPDs) carry out enforcement and control of waste management legislation. The Regional Departments are responsible for permits, environmental impact assessment, laboratory control and enforcement of environmental regulations. To carry out these functions, they have a centrally based core staff and agencies at the district or city level. The agencies are responsible for environmental inspections. The *Environmental Protection Agency* (EPA) has been founded only recently by merging the former Joint Research Centre and the Department of Management of Water Resources. The EPA is subordinated to the MoE. The latter has taken over the responsibility for environmental monitoring in general and for waste data collection in particular from the Joint Research Centre. The EPA is also involved in the preparation of legal acts.[16]

Facts and Figures of Lithuania

The average mixed municipal waste production in Lithuania is below 300 kg per inhabitant yearly. Between the years 2000 and 2004 this number was rather stable. Beside the mixed MSW secondary raw material collected at household level counts for 15 up to 75 kg per inhabitant and year (see Table 4-7).

Generation of waste (kg/ capity and year)	Mixed municipal waste	Secondary raw materials	Others	Total
2000	310	15	40	365
2001	300	35	40	375
2002	285	70	45	400
2003	260	75	40	375
2004	300	45	40	385

Table 4-7: Generation of Municipal Waste within Lithuania (2000-2004)

[16] Article by Jurgita Ulinskaitė, Jurgis Kazimieras Staniškis, Kaunas University of Technology, Institute of Environmental Engineering and Jonas Motiejūnas, "Ekobaltas" Ltd: ".Analysis and Improvement Possibilities of Hazardous Waste Management System in Lithuania" Environmental research, engineering and management, (LT) 2006, No.4(38), P.40-50

Around 90% of the municipal waste is still landfilled. Another smaller fraction is exported and recycled. Again the amount of municipal waste landfilled was rather stable between the years 2000 and 2004 (see Table 4-8).

Management of Municipal Waste (tons/year)	Landfills	Export	Recycling	Total
2000	1,200,000	19,000	38,000	1,290,000
2001	1,170,000	75,000	47,000	1,320,000
2002	1,110,000	75,000	200,000	1,400,000
2003	1,100,000	95,000	200,000	1,300,000
2004	1,150,000	95,000	57,000	1,320,000

Table 4-8: Management of Municipal Waste within Lithuania (2000-2004)

It is estimated that more than 40% of the municipal waste is biodegradable and a further 35% are recyclables as plastic, glass, metal and cardboard. Only a fraction of 10% would be non-recoverable. The left over fraction of 15% is not defined.

More than 800 landfills exist in Lithuania of which more than 300 are in operation. About 680 of those landfills have a size below 1 ha serving on average 10,000 inhabitants (see Table 4-9). Most of the landfills are poorly designed and constructed.

Size	< 1 ha	1-5 ha	> 5 ha	Total
Number of landfills with municipal waste	680	120	35	835

Table 4-9: Number of landfills divided by area in Lithuania

For Lithuania 10 different *Regional Waste Management Systems* were established and the development of waste management infrastructure is foreseen in steps. The first step (until 2007) included the construction of new and the closure of old landfills and the development of a waste collection infrastructure. To realise the projects at a regional level, funds of 145 million € have been approved. Within the next step, biodegradable waste collection and recovery systems and incinerators will be installed and a budged of about 260 million € will be funded between 2007 and 2013.

Currently 11 projects are under implementation coordinated by the *Environmental Projects Management Agency.* Two of them are Regional Waste Management Systems currently under finalisation, 1 new landfill was constructed and opened in spring 2007, two composting sites are constructed and 6 bulky waste collections sites are established in 3 different regions. 4 new landfills will be constructed and opened in the end of 2007. Furthermore public relations programs are currently running within six regions.

For funding different European funds were used between 2000 and 2006 (ISPA Fund, Cohesion Fund, Structural Funds). The ISPA fund (Instrument for Structural Policies for Pre-Accession) mainly supporting the construction of regional landfills, composting sites, transfer stations, the closure of old landfills and dumpsites and the development of hazardous waste management infrastructure was used to finance 8 projects with a total value of 97 million € between 2000 and 2003. The Cohesion Fund was used to support 3 projects with a total

value of 51 million €. On top the Structural Fund supported education and information projects, the creations of an environmental management information system and training programs.

By implementing waste management projects the Environmental Projects Management Agency draws the following conclusions concerning the organisation of projects:

- Signing a contract with beneficiary before starting the project and making the beneficiary responsible for the projects financial implementation and eligibility is definitely recommended for the success of a project.
- Good geological and topographical surveys are crucial for keeping the contracts budget.
- "If a contract goes smoothly, it means that nothing really happens".
- Public relations makes impossible possible.

A complete register for illegal dump-sites does not exist. Anyway it is estimated that around 500 illegal tipping and small scale dumpsites do exist.[17]

Future Planning in Lithuania

The *Strategic Plan* foresees the following steps:

- The disposal of municipal waste only in controlled landfills from 2009 on.
- The recovery of biodegradable municipal waste is envisaged starting from the year 2010.
- Existing landfills will be closed from 2012.
- Energy production from mixed municipal waste (incineration) is planned starting from 2013 on.
- From 2013 on the recovery rate from municipal rate should be increased to 50%.
- The disposal of treated mixed MSW only in is envisaged for the year 2020.

The European support via funding is concentrating in the years 2007 to 2013 on the finalisation of the Regional Waste Management Systems especially the closure of landfills and dumpsites and the development of incineration and composting facilities.[18]

[17] Presentation Žygamantas Vaitkus, Environmental Projects Management Agency and Dalia Židonyté, Ministry of Environment, Department of Contaminated Areas and Waste Division and Laura Mačiulyté, Ministry of Environment, EU Funds Management Division

[18] Presentation Žygamantas Vaitkus, Environmental Projects Management Agency and Dalia Židonyté, Ministry of Environment, Department of Contaminated Areas and Waste Division and Laura Mačiulyté, Ministry of Environment, EU Funds Management Division

Common major problems and deficits identified by the workshop participants in the Baltic States

(1) Landfilling is still the preferred option. The rate of landfilling in all three Baltic States is very high (up to 90%).

(2) A huge number of old and low standard or completely uncontrolled dump sites exist in all three States.

(3) A recent survey of illegal dump sites does no exist.

(4) The rate of biodegradables within the waste fraction which is disposed of in landfills is with more than 50% still very high in all three countries. First steps for separate collection are made, but still a high amount of untreated mixed MSW is disposed of in landfills. A market for compost is missing yet in all three Baltic States due to the existence of large amount of peat and other soil-improving material. For that reason the composting of biowaste is not economical yet.

(5) Technical measures for the treatment of mixed MSW prior to landfilling, required in the Landfill Directive, are usually not taken.

(6) There are deficits especially covering the rural areas with collection system. Free market for waste collectors results in the situation that private companies prefer most lucrative parts of the collection system (e.g. towns) whereas “expensive” collection in rural areas, education, separation etc. is left to the municipal waste management bodies.

(7) The required financial reserve for aftercare and for protection against environmental impacts is often not sufficient and not clearly defined in landfill permits, as many landfills have been built with foreign money. The current gate fees are by far not sufficient to cover those costs nor do they allow making savings.

(8) The polluter pays principle is not implemented sufficiently. Even if waste fees are implemented in all three countries, the level is too low to stimulate separate collection at the households.

(9) Illegal dumping of waste is still a problem and inspections and sanctions are not sufficient to avoid the habit.

(10) Accomplishment of recultivation measures are only foreseen for 2012 in *Latvia* and *Lithuania* although no extended deadlines are granted in the Accession Treaty. Following the Landfill Directive landfills should be closed at the latest until 2009 and recultivation measures should be taken within 3 years after closure.

(11) The definition on biodegradable waste / biowaste is not uniform and can be interpreted in different means.

(12) There are deficits in applying the Waste Acceptance Criteria Decision, especially with the realisation of a visual control during on-site verification and sampling for mixed MSW. The capacity of technical and laboratory equipment is too low.

(13) The understanding and acceptance of the importance of waste management is low within the population.

(14) The definition of pre-treatment prior to disposal at landfills is not quite clear of misinterpreted. Separate collection systems at households do not substitute a pre-treatment of the remaining mixed municipal waste.

(15) Waste Management Plans are only conducted at a national level in *Estonia* to avoid regional conflicts. In *Lithuania* and *Latvia* the Waste Management Plans are still conducted at a national and regional level, as otherwise the regional knowledge, priorities and concerns cannot be addressed sufficiently.

Major problems and deficits identified in Estonia

(1) Municipalities are responsible for the implementation of waste management infrastructure since 2005. So far only 1/3 of the municipalities achieved the aim to install a sufficient collection and treatment system. Problems occur due to many small sized of the municipalities (240) and the resulting low power of the local governments, a lack of interest and low environmental knowledge. To solve the problem, Estonia is undergoing a reform in that area with the aim to join several small communities.

(2) The share of hazardous waste is, due to the oil shale production, very high (>60%). Most of the related landfills are still operating although they are not compliant with EU requirements. If they are closed, in the most cases they are not yet recultivated.

(3) The current financial model for support of municipalities (5,8 €/t for each t household waste landfilled) is not sufficient and not promoting recovery.

(4) Shredded waste tyres are planned to be used as engineering material within the drainage layer of a landfill. For that purpose the Ministry of Environment has been in contact with authorities from Germany, Finland and Sweden.

Major problems and deficits identified in Latvia

(1) As no hazardous landfill is operating yet, hazardous waste has to be stored over a long period of time at enterprises premises.

(2) Disposal of asbestos is an arising problem as houses are to be covered more and more with better materials.

(3) According to Green Dot Latvia, incentives arising from the new City Council Regulation (to be adopted in July 2007) and the planned reimbursement structure hinder the reduction of landfilled waste and landfills. Waste management companies entitled from the Riga City Council for the collection of waste will get a

reimbursement for their expenses derived from the waste fees collected by the municipality. The height of the reimbursement is directly connected to the amount of waste disposed of in landfills. This reimbursement system gives incentives to "landfill as much as they can".

(4) According the to further incentives to change the Waste Management Law entitling municipalities not only to organise waste management in their region, but also take care of the fee collection and distribution. Green Dot Latvia sees these tendencies as a matter with high concerns.

(5) Waste tyres are stored on landfills due to a lack of treatment options.

(6) The division into Waste Management Regions is causing problems in the case, that a municipality is closely located to a landfill not lying within the own region. The regional planning then should be more flexible to allow the disposing in the closer by landfill. The regional division is currently under revision.

(7) To reduce the amount of waste landfilled, the possibility of investing in an incineration plant was elaborated with the result that incineration will rather not be an option for Latvia.

Major problems and deficits identified in Lithuania

(1) The first landfill fulfilling the requirements of the Landfill Directive will be opened in spring 2007.

(2) Further cooperation amongst municipalities in order to find efficient solutions of waste handling on a local level is recommended. The MoE does already take action to moderate and support the process amongst municipalities providing all needed information and orders for efficient solutions of waste handling on a local level.

(3) The possibility of using incineration as treatment facility was discussed. Lithuania is currently conducting a study evaluating this possibility.

Examples of good practice identified as potential tools to improve the implementation and enforcement in the Baltic States

(1) Landfill taxes are introduced and considering the environmental standard of a landfill, e.g. in *Estonia* taxes for old landfills are higher than for new ones. The reimbursed to municipalities however, might be a wrong signal to increased landfilling.

(2) The number of landfills has been decreased in all countries. In *Latvia* the number could be reduced from 558 in 1998 to 148 in 2005, in *Estonia* from more than 400 in 1990 to existing 30 in 2007 and in *Lithuania* from more than 800 to around 300 currently in operation.

(3) Initiatives of closing dumpsites have been taken in all three countries. Securing the closed sites is a major priority to avoid further littering on those sites. Beside covering and fencing the sides, access roads are destroyed especially in *Estonia*.

(4) At the newly installed landfills, visual checks via a camera system can be carried out in *Estonia.* Closed trucks will be opened for visual checking.

(5) Waste Management Regions were established in all three countries. In *Latvia* 11 such regions exist, one covering on average 100.000 inhabitants. In *Estonia* 11 and in *Lithuania* 10 such waste management regions exists.

(6) Feasibility studies prior to selection and construction of landfill site are required in all cases where public money is involved.

(7) Producer responsibility organisation like the Green Dot *Latvia* are showing a lot of initiatives for reducing the packaging waste and educate people on waste issues.

(8) To support the separate collection amongst the inhabitants, a stamp system was introduced at North-Vizdeme region in *Latvia* giving discount prices to household waste after delivering a certain amount of separated waste to the ECO fields.

(9) The limit values for water monitoring in *Latvia* are stricter than in the EU Directive and general water limit values are used.

(10) *Latvia* installed at the level of Environmental Inspectorate a phone number where anonymous phone calls can be conducted concerning reporting on illegal dumping of waste.

(11) *Lithuania* is currently performing a study evaluating the possibility of installations for biogas production using mixed source, e.g. biowaste together with sewage sludge for that purpose.

Priority activities for implementation of Landfill Directive requirements in the Baltic States

(1) The process of closing, re-cultivating and aftercare of landfill sites not complying the European legislation has to be speeded up.

(2) Control and prosecution measures including penalties for littering and illegal dumping have to be established and enforced.

(3) The administrative capacity for dealing with the permitting and closure procedures and to enable regular controls and inspections has to be enhanced.

(4) The share of mixed MSW landfilled and the biodegradable fraction within the waste has to be decreased by especially promoting separate collection, by treatment prior to landfilling and by alternative treatment options (e.g. compost facilities, biogas production, promotion of self-composting). An improved cooperation amongst the Ministry of Agriculture, the Ministry of Environment, the Ministry of Trade and

education programs for citizens which currently are not prepared to pay for soil should be aspired.

(5) The efforts to increase the general standard of the existing landfills or to build new landfills have to be amplified.

(6) The implementation of the requirements of the Acceptance Criteria Decision has to be improved. Standard documents for waste transports and basic characterisation should be established.

(7) Both the awareness of the inhabitants and the financial incentives has to be raised in order to promote the use of the separate collection system. After covering the cities a system to cover smaller settlements with separation and collection systems have to be installed. The options of recycling and recovery have to be spotlighted at the political agenda and municipalities have to be supported to implement recycling and recovery facilities and enhance the provision of civic amenity sites, collection points, etc. to enable better separate collection.

(8) The basis of the reimbursement for waste management companies or municipalities currently being the amount of waste disposed of in landfills has to be changed, basis being e.g. a per capita rate instead of the amount of waste brought to landfills. The new system under implementation in the city of Riga has to be stopped according to Green Dot Latvia and the system should be based on principles, which motivate society, waste producers and management companies to sort waste, give incentives for take-back systems and landfill as little as possible. A local waste tax should be an option in Estonia, regardless that this option is still politically not supported.

Suggestions addressing the European Commission for supporting the implementation

(1) The European Commission should initiate funding not only on the national level, but as well directly on regional and municipal level for stimulating self-initiatives of regions and municipalities.

(2) The European Commission should provide guidance on principles of the Waste Acceptance Criteria Decision including the reasoning behind the need for specific information on production process, treatment prior to landfill, analyses etc.

(3) Guidance specifying the use of shredded used tyres as a drainage layer and whole waste tyres for engineering purposes in landfill construction would be needed.

(4) Initiative is taken by Estonia together with some other Member States to establish legislation on European level covering the topic of biodegradable waste (Biowaste Directive). Definition, treatment options and quality standards are poorly described within the given legislation and should be more specified in such a document.

4.4 Poland: Minutes and outcome

Date	Poland
27.-28.02.2007	**Venue:** Gdansk / Marshal Office of the Pomeranian Voivodeship **Participants:** 33 (3 from national authorities, 16 from regional authorities, 6 from universities, 7 from enterprises) **Agenda:** 9 presentations (including EC and BiPRO) **Excursion:** Two landfills in Gdynia and Gdansk

The information exchange and awareness raising event in Gdansk was organised with the support of the Ministry of Environment of Poland and the Marshal Office of the Pomeranian Voivodeship. The 33 **participants** comprised representatives from national and regional authorities, from universities and enterprises (participation list see chapter 6.4).

The workshop in Gdansk was planned as a two days event. In total, 9 **presentations** were held (including BiPRO and EC). An excursion to non-hazardous waste landfills in Gdynia and Gdansk was realized the second day.

Presentations held addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in Poland stressing aspects such as the waste management plans, technological requirements and financing.

The excursion to the two landfills provided valuable insight into technical standards of modern non-hazardous waste landfills in Poland (agenda see chapter 7.4).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in Poland:

Legal framework in Poland

The legal framework on landfilling of waste as well as the adoption of European legislation has been accomplished already prior to accession in 2001 by establishing the *National Act on waste*, the *Act on Environmental Protection* and the *Packaging and Packaging Waste Act*. Based on this background, permitting is mandatory for all landfills since 2001. The legal framework specifies legal landfills as sites which are subject to siting, technical standard requirements and permitting. There is a further differentiation into sites which correspond to European standards and those which are not yet technically adapted. Besides this, illegal landfills or uncontrolled dumpsites are specified. According to the national waste act (Article 33) minor adaptations of the technical standard of existing sites had to be accomplished by 2005. Major adaptations shall be finished by 2009. In case environmental impacts persist after accomplishment of minor adaptations the sites will have to be closed in 2009. Due to Article 54 of the national waste act however, closure of a non-compliant site can only be performed if requested by the landfill operator. An amendment of the law shall allow closing non-compliant sites from 2010 if decided necessary by the competent authorities.

A review on the number of illegal landfills is foreseen in the National Waste Act. Guidelines for this purpose are currently under development. Uncontrolled dumpsites are addressed in Article 35 of the National Waste Act. The closure of these sites is in the responsibility of local

authorities. A specific decision on elimination of illegal landfills and dumpsites is scheduled for the period 2007-2009.

Major priority is the implementation of the existing laws including the installation of regional recycling systems, the targets for biodegradable waste and the closure of landfills by 2009. Current Waste Management Plans are to be reviewed in 2007 giving the opportunity to adapt them to identified needs.[19]

Facts and Figures of Poland

Some facts have been presented for the Pomeranian region with focus on biodegradable waste and landfills for MSW. Basic figures for organic waste generation in 1995 have been reported as 263 kt/y. In accordance with EU targets this amount shall be reduced to 197 kt in 2010, 131 kt in 2013 and 92 kt in 2020. As concerns existing landfills, deadlines for minor and major adaptations of technical standards apply as in national legislation. 9 landfills will have to be closed by 2009 due to impossibility to meet standard requirements.

Based on reporting from landfill operators, 520 kt of MW have been generated in the Pomeranian region in 2005, out of which 208 kt have been biodegradable. The number of landfills has been reported as 61, of which 54 are classified as legal landfills and 17 as IPPC facilities.[20]

Future Planning in Poland

11 landfills are planned in the Pomeranian region. Installations compliant with EU requirements can be found in the Gdansk region, at Gilwa Mata (south-east region) and Stary Las (centre). Other sites are currently applying for Cohesion Funds in order to adapt the technical standard or allow the construction of a new facility. Only in the south-west region of the Pomeranian region, problems with siting due to strong opposition of the local population exist.

[19] Presentation of Piotr Szymański, Ministry of Environment, Department of Waste Management and Anna Korzeniowska, Marshal Office of the Pomeranian Voivodeship

[20] Presentation of Piotr Szymański, Ministry of Environment, Department of Waste Management and Anna Korzeniowska, Marshal Office of the Pomeranian Voivodeship

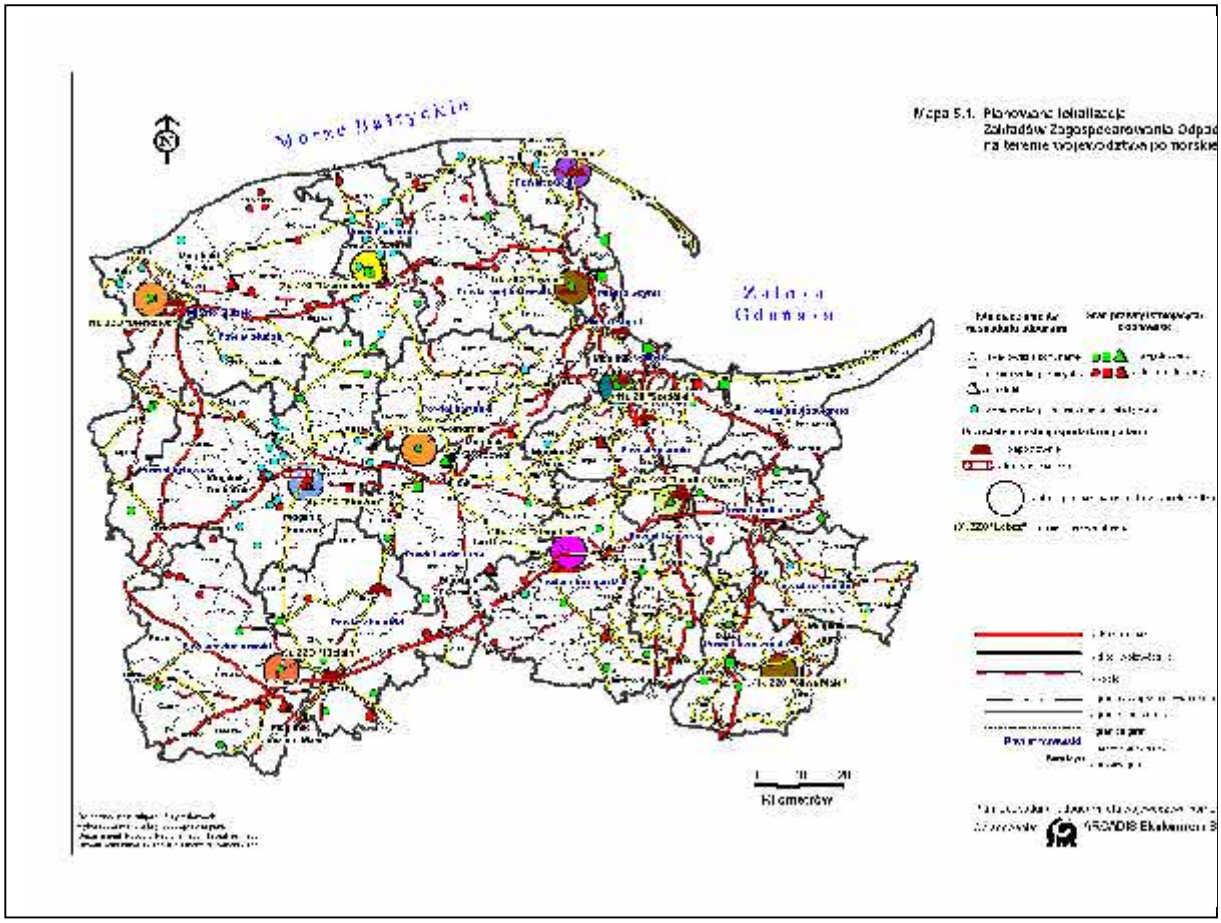

Figure 4-6: Distribution of landfills and planned landfills in the Pomeranian region, Poland

In order to improve the implementation, education and information of the public as well as better enforcement of the polluter-pays principle, besides installation of the waste management infrastructure are the priorities in waste management in the Pomeranian region.[21]

To support the implementation an *Operational Programme on Infrastructure and the Environment* has been started using funding of up to 85%. Environmental funds are seen as steering instruments to give incentives for selective collection, closure of landfills and construction of new treatment facilities.[22]

Description of the landfill visited

During the event in Poland two landfills in the Pomeranian region have been visited. The first landfill was the Eko Dolina landfill, the second was the Gdansk Szadołki landfill which is currently applying for funds for adaptation of its technical standard. The Eko Dolina landfill receives 170 kt of MSW annually and serves an area of 7 municipalities with 40,000 inhabitants. Due to its central location, largest transport distances are about 25 km. The site contains a sophisticated separation line for unsorted MSW as well as for separately collected waste fractions from commerce with a capacity of 45.7 kt/y. Besides plastics, paper and cardboard, metal and glass, the separation line allow to generate refused derived fuel (RDF)

[21] Presentation of Anna Korzeniowska, Marshal Office of the Pomeranian Region
[22] Presentation of Danuta Grodzicka-Kozak, Regional Fund of Environment and Water Protection in Gdańsk

and compost like organic fraction. A recover of these two latter fractions however, is not yet performed. The overall recover rate is 10-12%. The gate fee for mixed MSW is about 26 €/t.

WEEEs are collected every two months by means of separate collection tours and they are dismantled on the site. Correspondingly, there are separate collection tours and collection facilities for hazardous waste. The amount of hazardous waste collected is about 200 t/y. This number does by far not meet the estimated 1,300 t/y expected on the basis of 1% hazardous components in mixed MSW. Recovery of C&D waste for construction purposes was 14,000 t in 2006, composting of green waste about 5,500 t/y.

70 gas wells, mostly located on the territory of the neighbouring previous landfill provide gas for energy and heat production. In 2006 energy production was 5,800 MW. 80% of the outcome can be sold to the public electricity network. Leachate water is collected and treated with inverse osmosis prior to being fed into the municipal waste water treatment system.

Gdansk Szadołki receives about 290,000 t/y of waste from the Gdansk municipality. The landfill is mainly for mixed MSW. However, except from EWC 14 and 18 principally all waste types might be accepted. Waste with more than 25% of liquid content is only accepted in the case of sewage sludge. Asbestos waste is not accepted. Hazardous waste may be delivered only after prior information in specifically dedicated areas. The gate fee for mixed MSW is about 20 €/t.

Since May 2006 container for separate collection of plastics, paper and glass have been provided for residents by Zakład Utylizacyjny – operator of Szadółki landfill. Composting is performed by means of container composting (3,000 t/y) and open composting (5,000 t/y). A power station for energy recovery from landfill gas is in place producing energy for 200 households in exceedance to own needs. Leachate water is currently recycled to compost for better digestion. A treatment facility is planned in the framework of the adaptation project.

In the framework of the project the following priorities are set:

- Develop treatment capacity for asbestos,
- Enhance composting capacity implementing huge container,
- Enhance the separation line generating recoverables as well as RDF and compost like organic fraction from mixed MSW,
- Develop a waste treatment for C&D waste,
- Develop bulky waste dismantling facility including shredder,
- Implement a section for collection and temporary storage of hazardous waste.

Falcons are used at both landfills to expel rodents and birds. Monitoring of air, water and landfill structure is performed. Both landfills and especially Eko Dolina appear to use high level technical standard according to the European requirements. Only the recover of RDF and compost like organic fraction might need improvement.[23]

[23] Presentation at EKO Dolina landfill and Gdansk Szadołki landfill

Major problems and deficits identified by the workshop participants in Poland

(1) Most of established landfill sites do not meet EC standards. The traditional system of "municipal" waste management is still ongoing. The traditional dump sites in nearly every *Gmyna* are continuously operated. *Gmynas* often do not appreciate to collaborate among each other (for an example of good practice, see "Eko Dolina" example).

(2) Obligations for minor adaptations in landfills exist according to Polish legislation by 2005. Inspections showed that adaptations required are not accomplished at most landfills.

(3) According to the current Waste Act the closure of landfill are possible only on request of the landfill operator. The Ministry cannot execute closure in case of non-compliance due to provisions in national law which requires repeated "granting of transition periods" on request of landfill operator. The law shall be changed in 2010.

(4) There exist legal obstacles for the use of waste derived from compost. Polish legislation on fertilizers does not include compost and requires organic content which cannot be fulfilled by compost in most cases. Thus restricting the compost to the use as construction material in landfill.

(5) The existing capacity for recovery of glass and paper is exceeding the amount provided. The separation rate therefore has to be increased.

(6) The ratio of landfill and the biodegradable fraction in landfilled waste (e.g. mixed MSW) is still far too high, and it seems difficult to achieve the targets set in the Landfill Directive by the deadlines set.

(7) Presently, waste is not always treated in accordance with the requirements of the national or regional Waste Management Plans.

(8) Legal requirements concerning the acceptance criteria in Polish legislation are less strict than those of EU Directive. Consequently requirements of Acceptance Criteria Decision are not yet reachable. Adaptation of national law shifted to end of 2007.

(9) The established collection scheme for MSW with the *Gmynas* transferring responsibility to waste collectors, the free choice for citizens contracting with one of the competing waste collectors and waste collectors setting tariffs solely based on economic facts, is not appropriate to assure a sound waste management.

(10) Waste collectors are free to select a site where they deliver the waste they have collected, so waste collectors tend to ongoing use traditional dump sites, where gate fees are much lower than at modern sites (approximately factor 4 to 5). Simultaneously, fees for waste owners (e.g. households for MSW) are depending on type and location of dwelling, not on quantity of waste produced. There is no incentive for the separate collection of recoverables.

(11) The fees for waste owners are still too low to enable construction of modern environmental sound system of waste management including separate collection and recovery. Social protests are feared to arise if fees are increased.

(12) Sudden increase of waste fees will promote illegal dumping.

(13) There are legal obstacles as sidewalks may be private property and difficulties, e.g. protests from residents in obtaining permits to establish separate collection containers.

(14) The separate collection system is introduced but the quantity and the quality is not satisfying yet. Main stream of waste is delivered as mixed waste.

(15) The collection of hazardous fractions from MSW is organised by means of mobile collection once yearly and containers. In addition, hazardous waste can be delivered directly at the landfill sites. The effectiveness of this system is however low and it is estimated that only approximately 1% of the hazardous waste generated in household is collected so far.

(16) The collaboration between the State, the Voivodeship, the *Powiat* and the *Gmyna* level is not always frictionless. According to national authorities the Waste Management Act offers sufficient possibilities for enforcement authorities to execute decisions at local level (e.g. closure of illegal landfills, enforcement of adaptation of obligations, change in collection system). According to regional authorities and enforcing authorities these provisions however are not sufficient to enable enforcement of new rules towards local authorities.

(17) Administrative fees that can be imposed in case of violation and non-compliance are not high enough to act as effective tool for improving compliance from landfill operators, local authorities or citizens.

(18) Treated leachate water from landfill is often cleaner than municipal waste water with the consequence of legally required ineffective double treatment.

(19) Requirements on thickness and characteristics of geological barrier in the Landfill Directive do not always seem to be reasonable from a practical (engineering) point of view, e.g. inclusion of use of Bentonite and acceptance of natural layer thicker but with worse k-factor might need to be discussed.

Examples of good practice identified as potential tools to improve the implementation and enforcement in Poland

(1) The deadline for closure of non-compliant landfills is set by 2009, although there the requirements on water control, leachate management, protection of soil and water, gas control and stability will not apply to municipal landfills granted in accession treaty until 2012.

(2) Gate fees for landfills were recently increase by factor of 5 per ton.

(3) The Environmental Use Fee can be used as an instrument to promote the development of alternative treatment methods.

(4) On-site verification is performed at all types of landfill not only at new ones.

(5) Documents and guidance for the basis characterisation exist.

(6) Administrative fines in case of violation are planned to be review.

(7) A strategy determining targets to comply with the EU and the Polish law in are developed in the Pomeranian Voivodeship.

(8) Information and education campaigns are carried out to inform and educate the civil society on waste management topics.

(9) A municipal collection system, where container for re-coverables (paper, plastic, metal, glass) is provided to citizens is free of charge. The waste fees are calculated only based on mixed MSW container.

(10) A separation line exists at Eko Dolina landfill producing paper, plastics and glass for recycling, RDF fraction and small biodegradable. Furthermore a dismantling line for metals and WEEEs and a facility for energy recovery from a neighbouring closed landfill site, serving several hundred households, are installed.

(11) Modern landfills are constructed at or besides former landfill site. This enables highly cost effective recultivation and coverage of "old" parts and combined management of the sites including degassing and leachate management.

(12) Based on a risk assessment "old" landfills and dumpsites are categorised into three categories requiring different levels of recultivation efforts.

Priority activities for implementation of Landfill Directive requirements in Poland

(1) The "polluter pays principle" has to be considered more strictly.

(2) The waste collection system has to be changed by putting responsibility for waste management until final disposal on municipalities.

(3) Waste collectors have to be organised privately in order to become waste owners and for having a free choice for the place for disposal or recovery.

(4) National authorities recommend the establishment of Waste Management Regions within the Voivodeship legislation, which have to be respected and served by waste collectors.

(5) The system of waste fees for citizens has to be changed, moving from location based to weight based system.

(6) Collaboration between *Gmynas* has to be strengthened by setting incentives in cooperation e.g. in the field of collection schemes.

(7) Measures for awareness raising towards a sound public attitude towards a waste separation and waste collection have to been taken, e.g. in schools.

4.5 Hungary: Minutes and outcome

Date	Hungary
27.-28.03.2007	**Venue:** Budapest / Ministry of Environment and Water **Participants:** 25 (4 from national authorities, 10 from regional inspectorates, 3 from organisation/association, 1 from University, 6 from enterprises) **Agenda:** 11 presentations (including EC and BiPRO) **Excursion:** Waste Management Centre in Pusztazámor

The information exchange and awareness raising event in Budapest was organised with the support of the Ministry of Environment and Water. The 25 **participants** comprised representatives from national and regional authorities, from organisations, universities and enterprises (participation list see chapter 6.5).

The workshop in Budapest was planned as a two days event. In total, 11 **presentations** were held (including BiPRO and EC). An excursion to the Waste Management Centre in Pusztazámor (landfill for non-hazardous waste) was realized the second day.

Presentations held addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in Hungary stressing aspects such as regional planning, problems with the implementation and illegal dumping.

The excursion to the Waste Management Centre in Pusztazámor provided valuable insight into the technical standard of landfill mainly used for municipal waste (agenda see chapter 7.5).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in Hungary:

Legal framework in Hungary

The basic requirements of relevant the European legislation on waste has been transposed into national legislation in the *National Act XLIII of 2000 on waste management*. This has been further specified by two major ministerial decrees. *Decree KöM 22/2001* transposed the requirements of Directive 1999/31/EC. It contained provisions for location, technical standard, pre-treatment, acceptance of waste, monitoring of landfills, cost calculation, reporting and aftercare. The new regulation (*20/2006 KvVM Ministerial Decree on landfill and rules and criteria for landfill sites*) defines landfill classes as A (inert), B1b-B3 (non-hazardous) and C (hazardous). § 17 of 20/2006 KvVM contain the provision, that closure of an old dump site can be performed by means of digging out of the stored waste for disposal at a safe installation. *20/2006 KvVM Decree on rules and criteria for landfill sites* contains requirements of Directive 1999/31/EC and reflects the provisions of Decision 2003/33/EC.

As deadline for closure of old non-compliant landfills the year 2009 has been set. Timing for recultivation of old dumps are determined in the *National Recultivation Programme*. The issue of biodegradable waste is addressed in the national strategy on biodegradable waste. The reduction targets for biodegradable waste correspond to European legislation (65% reduction target to be achieved by 2016). Under current national legislation the 75% reduction target even had to be achieved already by 2004. This however, will be adapted to EU requirements. Up to now no transitional period and extension has been applied for.[24]

[24] Presentation of Szabolcs Horváth, Waste Prevention and Treatment Section of the Environmental Management Department, Ministry of Environment and Water

Facts and Figures of Hungary

Currently about 4.65 Mt of MSW are generated annually in Hungary. Average composition has been evaluated and major single compounds are organic waste (37.5%) and paper (14.5%).

In the framework of a PHARE project a review of the number of MSW landfills in Hungary has been prepared in 2002. Out of the total number of 2,670 landfills identified at that time, 2,435 landfills have already been closed down. It has, however, to be admitted that recultivation of these sites has largely not yet been performed in an adequate way. Currently 28 hazardous waste landfills corresponding to EU requirements are operating in Hungary. In addition 178 non-hazardous landfills are currently operated with an existing permit. 53 of these sites will be authorized to continue operation after 2009. The remaining sites will be closed by this date (see Table 4-10).

Landfill category	Current state	Planned to operate after 2009
Hazardous	28	28
Non-hazardous	178	53
Inert	13	13

Table 4-10: Number of landfills operating and planned for operation after 2009 in Hungary (2002)

The distribution of the identified 2,414 landfills where measures have to be taken according to the national review is illustrated in figure 6-1. 57 sites (*blue dots*) are corresponding to EU requirements and will continue operation after 2009. 125 (*red dots*) will have to be closed by 2009. 328 closed sites are currently under recultivation in the framework of ISPA projects (*green dots*). Remaining 1,904 sites (*black dots*) represent closed landfills where correct recultivation has not yet been accomplished. These sites (mainly small dumps) shall be recultivated until 2016 (data of 2005) (see Figure 4-7).[25]

[25] Presentation of Csaba Markó, Waste Prevention and Treatment Section of the Environmental Management Department, Ministry of Environment and Water

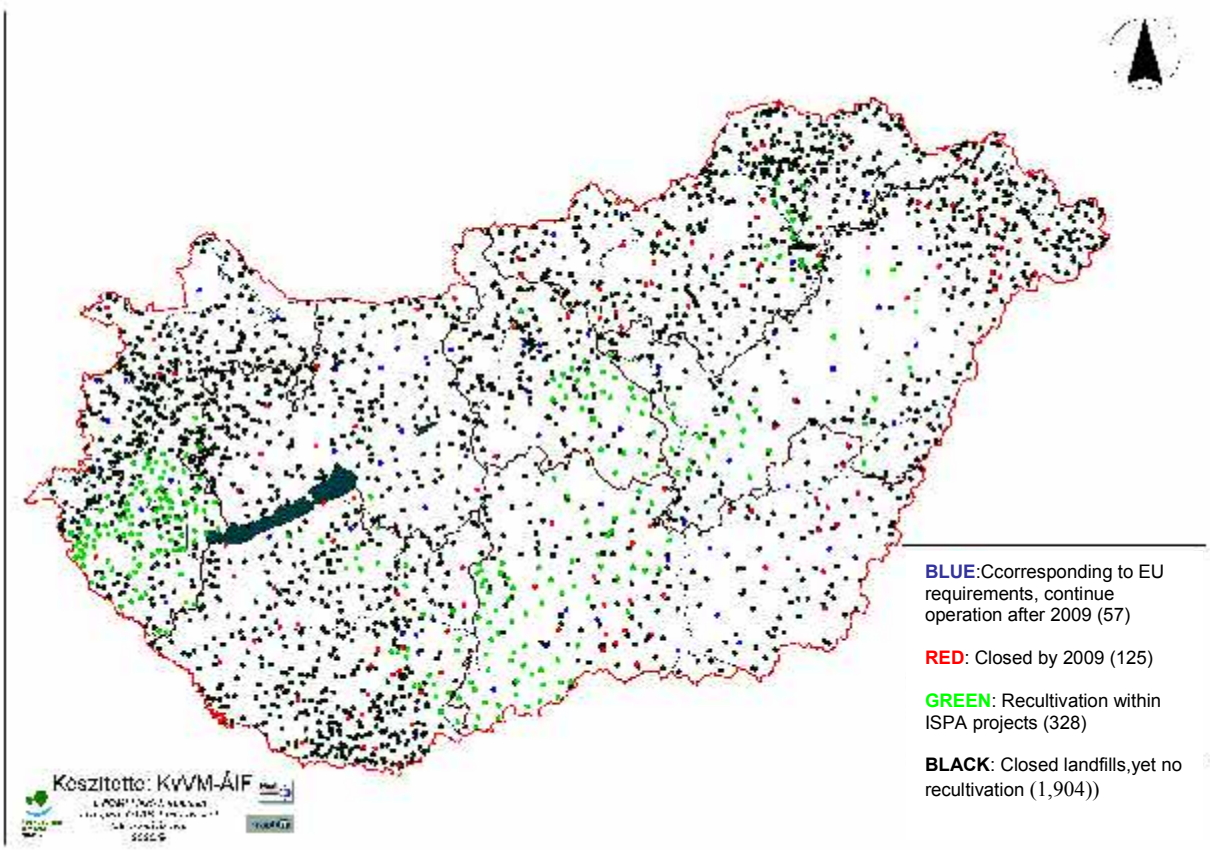

Figure 4-7: Distribution and state of the art of landfills in Hungary (2005)

The issue of biowaste has been addressed by the *Hungarian Compost Association*. According to estimations about 3.5 Mt of biowaste are generated annually in Hungary. Currently more than 85% of this amount is destined to landfill. The composting capacity in Hungary has been approximately 300 kt/y in 2005, however, only 120 kt/y of biowaste have been treated. From the existing composting installations in 2005 only 5 could market produced compost (4,500 t), as licenses have only restrictedly been provided. Assumed the estimated 2-2.5 Mt of compost, which could be generated annually in Hungary (if all biowaste was used for recovery) would be completely used on agricultural soils only 10% of the agriculturally used areas would be needed. Currently a number of composting facilities and MBTs are established in the framework of ISPA and cohesion fund projects.[26]

Future Planning in Hungary

Waste Management Plans have been elaborated at national and regional level. For organisational purposes, waste management has been allocated to 12 waste management regions. To make waste management planning compatible with European funding periods and deadlines for biodegradable waste, national planning which is scheduled until 2008 will be extended until 2013-2016. The *National Strategy on Waste Management* until 2016 contains besides the planning for landfilling, objectives regarding prevention and separate collection of especially packaging waste. According to the strategy, landfilling of waste shall drop from current 80% to 50% in 2016, with a reuse/recovery rate doubled by 2009 (see Table 4-11).

[26] Presentation of Beáta Bagi, Hungarian Compost Society

Treatment Option (capacity used in kt)	2004	2009	2016
Thermal Treatment	155	420	918
Recycling/Recovery	540	1,114	1,860
Landfill	3,904	3,293	2,520

Table 4-11: Development of incineration, recovery and landfilling in Hungary (2004-2016)

Even under these assumptions free landfill capacity will drop from 45 Mt in 2004 to below 5 Mt in 2013. Consequently new capacity has to be installed to avoid short comings. The decrease in free capacity is illustrated in Table 4-12. The regional distribution of annual landfilling and free capacity is presented in Table 4-13.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Capacity (Mt)	43	40.5	34	21	17.5	14.5	10.1	6	3.4

Table 4-12: Decrease of free landfill capacity in Mt in Hungary (2004-2013)

Region	Ny-Dunántúl	Kö-Dunántúl	È-Mo	É-Alföld	D-Alföld	D-Dunántúl	Kö-Mo
Distribution of annual landfilling (kt)	346	479	480	466	513	310	822
Free capacity (kt)	1,225	1,445	4,457	4,731	6,609	4,720	2,767

Table 4-13: Regional distribution of annual landfill and free capacity in Hungary in 2008

To achieve the set targets for landfilling and biodegradable content composting capacity, paper recovery, home composting, MBT and incineration shall stepwise be increased until 2016. Separation capacity shall be extended to 373 kt. MBT capacity is envisaged to be 1,120 kt. Composting capacity shall be expanded to 750 kt/y. Two installations (150 kt) for energy recovery from refused derived fuel (RDF) shall be installed. By this means, landfilling shall be reduced to 44%. At the end of a number of ISPA and cohesion fund projects related to biowaste management, the overall composting capacity (composting and MBT) shall amount for 1,900 kt/y.[27]

The Ministry of Environment stressed the need for amendment of the legal framework on waste management to better meet the needs in the country. Planned amendments comprise the definition of landfill in order to include old dumpsites without protection devices, detailed conditions of closure and recultivation, the division of responsibilities for decisions on landfill categories, acceptance and closure (currently environmental inspectorates) and the liquidation of old dump sites (digging out waste). Furthermore the amendments will address the artificial barrier (no provision in Hungarian legislation concerning artificial sealing liner/geo-membrane), the requirements for the basic characterisation and acceptance of stable, non-reactive hazardous waste as well as the acceptance of asbestos waste.[28]

[27] Presentation of Csaba Markó, Waste Prevention and Treatment Section of the Environmental Management Department, Ministry of Environment and Water

[28] Presentation of Szabolcs Horváth, Waste Prevention and Treatment Section of the Environmental Management Department, Ministry of Environment and Water

Description of landfill visited in Hungary

The Waste Management Centre of Pustazámor is located 23 km from Budapest and serves mainly the Budapest region. It includes a civic amenity site for the separate collection of waste, hazardous waste and WEEE and a landfill for non-hazardous waste. A treatment facility for the preparation of composting material is planned.

Construction started in 1999, operation in 2000. The total area of the site includes 91 ha and the construction is planned within 3 phases. Phase I includes an area of 18 ha, phase II and III are meant as enlargement with an area of 56 ha. It is planned that the area of phase I will be completely filled within 13 years and then phase II and III are going into operation. The landfill will reach a total volume of 20 Mm^3 and a high of 51 m. For covering the landfill, excavation material is used, which is derived from the construction work of the other parts of the landfill. After compacting the waste, the covering with inorganic material is carried out daily in the afternoon. For protecting the area, where waste is actually uploaded, a mobile fence is used to avoid the flying away of waste in the period of unloading.

The provisions of the Acceptance Criteria Decision seem to be well implemented. Visual inspections are made if a load arrives at the entrance. As well the load is weighted. Samples of waste, leachate, gas and soil can be analysed in an environmental laboratory included in the centre. A gas collection system is installed containing of 109 vertical wells in the landfill body. The gas is currently burned, but will be treated as soon as the content of Methane is higher than 20%.

Leachate is collected in basins which are provided with oxygen and reused for the landfill. 4 groundwater and 4 surface water wells are constructed for monitoring of the leachate. As limit values for groundwater, samples were taken before the operation time, which should not bee exceeded. Below the bottom liner an early warning system (DDS system) is installed to monitor if the bottom liner is intact and no leachate is going through. Monitoring of air and soil quality as well as noises and topography are carried out regularly.

Gate fees for disposing of waste are 30 €/t for mixed MSW and 5 €/t for inert waste.

Major problems and deficits identified by the workshop participants in Hungary

(1) Landfilling is still the preferred option and the rate of landfilling in Hungary is high, even if steps have to been taken to reduce the amount of waste landfilled.

(2) Efforts have been taken to close landfills and to start with recultivation in the last years. Anyhow about 2,000 old and low standard landfills, yet not monitored and recultivated exist in Hungary.

(3) The rate of biodegradables within the waste fraction disposed of in landfills is around 37% and has to be reduced. The capacity for composting is too low and there are problems with the acceptance in the population and with legal requirements which hamper the use of compost.

(4) Separation at source has started especially in bigger towns, but action has to be concentrated to avoidance of waste and further separate collection. Although there

is considerable separate collection capacity, the corresponding processing capacity is not in place.

(5) The “treatment prior landfilling principle” is not implemented sufficiently.

(6) There exist inconsistencies in licencing landfills at regional inspectorates.

(7) According to HuMuSz over 15,000 illegal dump sites are spread all over the country.

(8) Problems occur with certain materials excluded from certain type of landfills by EU legislation, as the acceptance of gypsum for road construction within MSW landfills and the acceptance of C&D waste delivered from private persons (EWC 170904) which could be accepted without testing.

Examples of good practice identified as potential tools to improve the implementation and enforcement in Hungary

(1) A graded waste fees system for citizens based on generation of waste is implemented.

(2) A national study on potential sites for construction of new landfills (negative list of sensitive areas) was carried out.

(3) Measures for the control of illegal dump sites are taken especially by the police and the allocation of 1% of national taxes are used for elimination illegal dumps.

(4) Municipalities are responsible for waste management including the calculation of fees for citizens, contracting collectors and the bondage to serve specific landfills.

(5) An annual collection of bulky waste and separate collection tours for hazardous waste are regularly carried out at household level.

(6) HuMuSz initiated a project to publish data on illegal dumps at the internet to support actions from the civil society.

Priority activities for implementation of Landfill Directive requirements in Hungary

(1) The process of closure and recultivation of non-compliant landfills have to be speeded up.

(2) More measures have to be taken to avoid waste. According to HuMuSz 10-15% of the wastes could be prevented by a “zero waste project”. The separation at source collection has to be enhanced and the treatment capacity for such separated waste streams has to be increased.

(3) The composting capacity and the capacity of MBTs have to be increased. Quality standards would be an important tool to increase confidence. Home composting should be strongly enhanced as more than 50% of the population in Hungary lives in private houses with gardens.

(4) Activities for the elimination of illegal dumpsites have to be increased.

(5) The management of biowaste and sewage sludge treatment especially recycling has to be enhanced in order to reduce the fraction of biodegradables landfilled.

(6) The national legislation has to be amended to fully meet the requirements of the Landfill Directive and the Acceptance Criteria Decision. The process of amendment is under way.

Suggestions addressing the European Commission for supporting the implementation

(1) A possibility for combined landfill/IPPC permits for larger landfills subject to IPPC requirements should be promoted.

(2) Further clarification of definition of the “treatment prior to landfill principle” is needed.

(3) A system for reclassification of waste and clarification when wastes become product is needed.

4.6 Slovak Republic: Minutes and outcome

Date	Slovak Republic
29.-30.03.2007	**Venue:** Bratislava / Slovak Environmental Agency (support from Ministry of Environment) **Participants:** 23 (10 from national authorities, 4 from regional authorities, 2 institution, 6 from enterprises) **Agenda:** 12 presentations (including EC and BiPRO) **Excursion:** A.S.A. landfill of the municipality of Zohor

The information exchange and awareness raising event in Bratislava has been organised with support of the Ministry of Environment. Beside the Ministry of Environment the 23 **participants** comprised especially representatives from the Slovak Environmental Agency and the Environmental Inspectorates as well as from regional authorities. Some companies working in the field of waste management and landfill operators were also attending the workshop (participation list see chapter 6.6).

The workshop in Bratislava was planned as a two days event. In total, 12 **presentations** were held (including BiPRO and EC). An excursion to the A.S.A. landfill in the municipality of Zohor was realized the second day.

Presentations held, addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in the Slovak Republic. Presentations stressed the ongoing procedure of closing landfills, the possibility of financial support and the view of the landfill operators.

The excursion to the landfill in the municipality of Zohor, one of the biggest landfills in the Bratislava region, provided a valuable insight into the technical standards of landfills in the country (agenda see chapter 7.6).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in the Slovak Republic:

Legal framework in the Slovak Republic

The European legal requirements of Directive 2006/12/EC, 1999/31/EC and Decision 2003/33/EC have been well transposed into national legislation. The *Act No 223/2001* transposes the European law at national level. Furthermore the *Decree of the Ministry No. 283/2001 Col.* is implementing certain provisions of the *Act of Waste* as amended. The technical standards for waste landfilling are set in the *Slovak Standards No. 830101 to 830108*. Key elements of the Landfill Directive like definition of landfills and the differentiation into three landfill classes have been incorporated by the exact wording into national law. *Act No 17/2004 Col. on fees for depositing the waste* implements a fee system to the municipalities. The amount of fees is depending of how many fractions are getting separated (up to 5 fractions). Further Decrees set requirements on other specific topics of waste management, e.g. the *Decree 126/2004 about authorisation and professionally qualified persons* and *Decree 127/2004 on rates for the calculation of the fees to Recycling Fund*.

Regarding the national determination, landfills which did not get a permit for continuing operation after 2009 have to be closed already by 31.12.2008 (end of 2009 by the Landfill Directive). Furthermore the national legislation requires that landfills which were in operation before 1.9.2002 have the obligation to supplement the geological barrier with a HDPE foil by 1.1.2009. The obligation to include a HDPE foil is as well obligatory for newly installed landfills. The requirement for including such a foil in any case (even the geological barrier is thick enough) was taken over from the stricter legislation in Austria and Germany. [29]

The Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills was transposed into the *Decree 599/2005*. This implies all three steps of waste checking (basic characterisation, compliance testing and on-site verification). By now only the first step, especially the testing of leachate performance and other required tests, is well implemented into practice. It needs clarification on national level or further guidance on how the other steps should be applied in practice.

For testing the leachate limit values standard EN12457-4 was chosen, requiring the testing of the leachate performance out of 10L/s. Additionally a national standard (JMAKO 21) is used for testing the leachate performance of monolithic waste.[30]

The municipality is responsible for the waste collection system. Companies are applying to provide the collection, transport and treatment infrastructure to the municipalities. Households are obliged to connect to the collection system. A construction acceptance under the planning and building law is given by the authority only if a contract with the disposal company is presented.

Facts and figures of the Slovak Republic

In 2005, 14% of the total waste generated was municipal waste and 81% other non-hazardous waste. The fraction of hazardous waste accounted for only 5% (see Table 4-14).

Total Waste	Municipal	Non-hazardous	Hazardous
100%	14%	81%	5%

Table 4-14: Waste production in the Slovak Republic (2005)

47% of the total waste generated was recovered in the year 2005, 44% was disposed of and 9% was treated with other options (see Table 4-15).

Total Waste	Recovered	Disposed	Other treatment
100%	47%	44%	9%

Table 4-15: Waste handling options in the Slovak Republic (2005)

The major fraction of the total waste which was disposed of was delivered to landfills (89%). Beside incineration (6% in the year 2005) other waste disposal methods had only marginal relevance (see Table 4-16).

[29] Presentations of Maroš Záhorsky and František Šopinec, Ministry of Environment, Waste Management Department
[30] Presentation of Jarmila Hrabinová, Slovak Environmental Agency, Waste Management Centre (COHEM)

Total Disposal	Landfilling	Incineration	Physico-chemical	Biological treatment	Land treatment
100%	89%	6%	2%	1%	1%

Table 4-16: Waste disposal methods in the Slovak Republic (2005)

When it comes to municipal waste, still 79% are disposed of in landfills, 12% are incinerated and 1% is composted. The disposal option of the remaining 8% is not specified. The fraction of incineration increased during the last years, as two incineration facilities were built. Cement kilns are also use for of energy recovery from waste (see Table 4-17).

Total Municipal Waste	Landfilling	Incineration	Composting	Other
100%	79%	12%	1%	8%

Table 4-17: Waste disposal methods in the Slovak Republic (2005)

In 2005, 70% of the inhabitants were involved into the separate collection system. Looking at waste recovery methods, recycling of metals with 30% represents the major fraction. Beside, composting, the recycling of inorganic materials and the use as secondary fuel or other means of energy recovery (biodigestion) are the main recovery options (see Table 4-18).

Total Recovery	Recycling of metals	Composting	Recycling of inorganic	Fuel/Energy	Other
100%	30%	12%	8%	6%	44%

Table 4-18: Waste recovery methods in the Slovak Republic (2005)

In the year 2006, 161 landfills exist in total, whereas 19 were landfills for inert waste, 130 for non-hazardous waste and 12 for hazardous waste (see Table 4-19 and Table 4-20).[31]

Landfill total	Inert	Non-hazardous	Hazardous	Incineration
161	19	130	12	2

Table 4-19: Number of landfills by landfill classes (2006) and incineration facilities (2007) in the Slovak Republic

Region	Number of landfills	Region	Number of landfills
Bratislava region	10	Žilinský region	20
Trnava region	22	Banská Bystrica	24
Nitra region	24	Prešov region	24
Trenčin region	19	Košice region	18

Table 4-20: Number of landfills in the Slovak Republic divided by region (2005)

The existing landfills are rather small. From 121 landfills open for municipal waste in the year 2005, 65 had a capacity of less than 10,000 t/y. 48 landfills had a capacity between 10,000 and 50,000 t/y. Only 8 landfills were larger (see Table 4-21).

[31] Presentations of Eleonóra Šuplatová, Ministry of Environment, Waste Management Department

Yearly capacity	< 10,000 t/y	10,000-50,000 t/y	50,00-100,000 t/y	100,000-5200,000 t/y
Number of landfills for municipal waste	65	48	4	4

Table 4-21: Number of landfills by capacity in the Slovak Republic (2005)

During the years 2001 and 2002 the *Slovak Environmental Inspectorate* checked the permits for all existing landfills and their accordance with the new national legislation. 21 landfills were closed in this time. Within the last 4 years the number of landfills was rather increasing than decreasing, especially concerning the landfills for non-hazardous waste. New landfills are often built just aside the closed ones. Anyhow, the planning concerning the remaining landfills foresees that more than 50 landfills will be closed until 31.12.2008 (see Table 4-22).

Year	Landfill total	Inert	Non-hazardous	Hazardous
2002	154	19	119	16
2003	160	21	124	15
2004	165	21	131	13
2005	161	19	130	12
2006	161	17	131	13
Estimation 2007	149	14	122	13
Estimation 2009	91	9	72	10

Table 4-22: Number of landfills by landfill classes in the Slovak Republic (2002 to 2009)

The built and planned capacity on landfills at beginning of 2006 was about 40,000,000 m^3. According to data of the *Slovak Environmental Agency* in 2005, 2,888,360 t of waste was landfilled of which approximately more than one third (1,226,570 t) was municipal waste. If the amount of municipal waste landfilled is not lowered, the landfill capacity for non-hazardous waste will be sufficient only for another 10 years (see Table 4-23).

Total free capacity (m^3)	Free capacity of inert waste landfills (m^3)	Free capacity of non-hazardous landfills (m^3)	Free capacity for hazardous waste landfills (m^3)
11,784,366	25,015,103	3,540,020	40,339,489

Table 4-23: Free built and planned capacities of landfills in the Slovak Republic on 1.1.2006 (expert estimation)

A register containing up-to-date information on illegal landfills could not be presented. 8,000 illegal dumpsites were counted within a survey in 1991 and the number could be decreased to an estimated 300 dump sites during the last years. The problem is not ruled under the national waste law, but will be ruled under the *Law of Environmental Burden* which is expected to be adopted by the end of 2007. [32]

An *Environmental Fund* has been created supporting all kinds of environmental infrastructure and measures having a total budget of around 150 million € for the years 2004-2006. The fund is based on the *European Regional Development Fund* and on a state budget gathered

[32] Presentation of Milena Okoličányiová, Slovak Environmental Agency, Waste Management Centre (COHEM)

from fees and fines, sanctions and penalties for environmental offences. Municipalities, institutions and the private sector can apply for funding. 23% of the budget was used for waste management projects in the year 2004-2006 supporting 39 projects, mainly for the construction or improvement of landfills and collection systems. Support is given either by means of loans, direct financial subsidies or a combination of both. Subsidies are given under the condition that 5% of own capital is provided by the applicant. Loans are given by 1% interest rate.

For evaluating the application aiming at measures for recultivation the following criteria are used:

- The level of risks to the environment and humans,
- The necessity of rehabilitation,
- The status quo of controlling and monitoring systems,
- The feasibility and efficiency of the proposed technical option, and
- The availability of the technology at local / regional level.

A system for supporting the process of application and announcing the Environmental Fund and Structural Funds of EU amongst the relevant people is implemented. Anyhow the implementation of the approved projects do in some cases fail, need a higher budget as originally planned or need to be prolonged. Reasons for the failure are in particular:

- Inconsistency of control and performance during the construction period;
- Technical changes in projects with direct financial consequences for the contractually agreed prices;
- Periods of obligatory quarterly invoicing are frequently breached;
- Frequent rejections of payment requirements mainly due to insufficient knowledge of the final beneficiaries in the field of financial management, tax issues, etc. [33]

[33] Presentations of Peter Kuna, Ministry of the Environment, Environmental Programme Section and Ingrid Lipovská, Environmental Fund

Future planning in the Slovak Republic

The plan does not foresee more incineration within the next years.

The *Waste Management Plan* stresses especially the aim of separate collection and the reduction of the biowaste fraction. Until 2010, 50% of the biodegradable municipal waste shall be material recovered. At the same time the amount of biodegradable municipal waste disposed of in landfills shall be reduced by 20% of the amount in 2005. Therefore separation and recovery methods shall be supported at all levels (households, community, industrial). For bigger towns like Bratislava and Košice industrial composting plants shall be built. The amount of separately collected biowaste from all sources and its recovery by aerobic and anaerobic methods shall be increased.

The Waste Management Plan foresees an increase from 40 kg/inhabitant separately collected waste to 50 kg/inhabitant separately collected waste in 2010. At the same time the ratio of inhabitant involved into separate collection systems shall increase from 70% in 2005 to 80% in 2010. [34]

The closing procedure of landfills will be a major focus of waste management within the next year. An estimated amount of more than 50 landfills will be closed until the end of 2008. It is planned to operate around 71 landfills (one per district).

The elaboration of a register of Environmental burdens, including as a priority hazardous industrial waste sites and old landfills, is foreseen for the end of the year 2008. A *State Decontamination Plan* for a five year period will be adopted and areas with the highest environmental risks will be decontaminated.[35]

The *Environmental Operational Programme* for the year 2007-2013 approved by the Government in Decree No.1015/2006 on 6.12.2006 states that the waste management sector will be given the second highest priority after the water sector. The authorities within the waste management sector are following a five year plan, foreseeing an increase of separate collection, more recovery and treatment facilities and the closure of landfills. An estimated budget of 485 million € (app. 27% of the whole budget) will be spent on the waste management sector within the next six years. The operational goals are in particular the support of activities in the field of separate waste collection, waste recovery and environmentally friendly treatment of hazardous waste, as well as the closure, removal and recultivation of landfills. [36]

Description of the landfill visited in the Slovak Republic

The landfill visited is a landfill for non-hazardous and hazardous waste in the municipality of Zohor and is mainly serving the Bratislava region. The landfill is owned by the international company A.S.A. which is working in the field of waste management, e.g. collection and transport systems, municipal and industrial waste concepts etc. In addition to the visited

[34] Presentations of Maroš Záhorsky and Eleonóra Šuplatová, Ministry of Environment, Waste Management Department
[35] Presentation of Milena Okoličányiová, Slovak Environmental Agency, Waste Management Centre (COHEM)
[36] Presentation of Peter Kuna, Ministry of the Environment, Environmental Programme Section

landfill, A.S.A operates two other landfills for non-hazardous waste in the western region of the Slovak Republic.

The landfill consists of a hazardous and a non-hazardous waste section, a biodegradation field, a reprocessing hall for recyclable materials, a hazardous waste store, a solidification line and an alternative fuel production line. Construction and demolition waste is also accepted at the landfill. The planning foresees to include at the premises a composting unit and a mechanical biological treatment unit (MBT). The non-hazardous landfill section has a capacity of about 1,000,000 m^3 and a size of 6.7 ha, of which 3.1 ha is a rehabilitated area from the former existing landfill. Around 126,000 t of non-hazardous waste are disposed of. The hazardous section has a capacity of 225,000 m^3, covers an area of 3.37 ha and around 12,000 t of hazardous waste are disposed of. The landfill applied for an IPPC permit.

The visited landfill rejects transports containing loads which cannot be accepted at the landfills but giving recommendation about feasible disposing facilities, where the cargo can be disposed of properly. The Ministry of Environment is informed immediately about the occurrence. Individuals bringing hazardous waste are not sent away.[37]

The technical standard of the site seemed to correspond to EU requirements. The following possible deficits of the landfill could be identified:

- A gas treatment does not exist and is not foreseen. Regarding the operator the landfilled waste has a high content of construction and demolition waste and therefore gas production is considered to be low.

- A leachate drainage system exists and the water is collected in ponds and re-circulated to the landfill. If the ponds are full, the leachate water is pipelined to a nearby waste water treatment plant. An own system for leachate water treatment does not exist.

- Whole used tyres are used for engineering purposes within the landfill. Tyres were seen as well at the landfill bodies which seemed not to be foreseen for such purposes.

- A pre-treatment of the mixed MSW disposed of at the landfill is not carried out.

Major problems and deficits identified by the workshop participants in the Slovak Republic

(1) Landfilling is still the favoured treatment option. 79% of mixed MSW are disposed of in landfills. Even if steps towards other treatment options (incineration) and separate collection are made, the waste hierarchy is not implemented sufficiently and more attention has to be paid on avoidance, reuse, recycling and recovery.

(2) A diversion strategy for the separate collection of biodegradable waste was not yet delivered to the European Commission, despite first steps have been taken towards separation of biowaste and other waste fraction. A working group preparing a

[37] Presentation of Peter Krasnec, A.S.A. Slovensko spol. s r.o

stepwise programme to achieve the reduction targets exists at the Ministry of Environment.

(3) 8,000 illegal dumpsites were counted by a survey in 1991. The number decreased to around 300 dump sites during the last years. However, the problem of old and illegal dump sites still exists and has not been adequately addressed yet. It will be ruled under the law of Environmental Burden expected to be adopted at the end of 2007. A register of contaminated areas including closed landfills is expected for 2008 being the basis for a decontamination plan. The currently existing conditioning plan for closed landfills only includes very low requirements, like fencing the area.

(4) The administrative capacity for a sufficient implementation of the Landfill Directive within the given timeframe seems to be too low both on the sides of permitting as well as on the side of controlling.

(5) The principle of treatment of waste before landfilling is not strictly implemented.

(6) The Acceptance Criteria Decision is transposed within a national decree. Nevertheless in practice only the first step, the basic characterisation, is well implemented into practice.

(7) The “treatment prior landfilling” principle is not implemented sufficiently.

(8) Waste tyres are used for engineering purposes in landfills. The differentiation between these purposes and the purpose of disposal is not always clear.

(9) The permission procedure for landfills, especially for landfills under the IPPC Directive is very time-consuming, as the opinions of layers, constructors and engineers are differing in a lot of cases and the permitting process is interrupted by juridical disputes. On top of that the personnel of the Environmental Inspectorate being in charge of the permission process seems to change a lot hindering steadiness in the permission giving process.

(10) The disposal of ashes from waste incineration is not solved at the moment. The ashes were disposed at a landfill close to Bratislava, but this option is no longer suitable. Other disposal options have to be found.

Examples of good practice identified as potential tools to improve the implementation and enforcement in the Slovak Republic

(1) The connection rate of both rural and urban municipals is high and estimated at around 95%. The inhabitants are obliged to connect to the provided collection service which in addition prevents illegal dumping.

(2) In 2005, 70% of the inhabitants were involved in the separate collection systems provided either at household level or with collective.

(3) A landfill tax is in place ranging between 14 and 35 € at the moment. The tax will be steadily increased and aims at full coverage of costs.

(4) The municipalities' waste fees depend on how many fractions are collected. The more fractions are separated (up to 5 parts) the lower is the fee. The fees are being increased.

(5) A system of sanctions and penalties for illegal dumping is in place and illegal dumping of waste is not happening in a big scale. Fines lie between 100 € and 300 € for illegal littering. For severe cases of environmental harming fines can go up to 150,000 €. The Ministry of Environment is in negotiation with the Police Services to improve the success rate of environmental crime prosecution.

(6) A ban on landfilling of biowaste including biowaste from parks, garden and cemeteries entered into force at 1.1.2006 and was well announced in the media. It is planned to separate 5 different fractions (plastics, glass, tins, paper, and remainders) from household waste and prohibit stepwise the disposing of this kind of waste in landfills until 2010.

(7) A National Environmental Fund is implemented based on penalties and fees from environmental crimes supporting projects in the field of waste management. The Environmental Fund takes measures to train potential applicants and to inform about the funding options.

(8) A recovery plant for used tyres is situated in the Slovak Republic producing flooring for playgrounds and sporting fields and granulate used e.g. as liner in road construction and milestones.

(9) National legislation obliges landfill operators to supplement an artificial plastic foil (HDPE) to prevent groundwater contamination through leachate from old landfills (landfills which have been in operation before 1.9.2002) by 1.1.2009. A specific HDPE foil is required with specific thickness and quality and a guarantee for 50 years. Additionally the hydraulic conductivity given in the national legislation with $K \leq 10^{-10}$ l/s is stricter than the value demanded in the Landfill Directive. The main propose of such obligation is the high level of environmental protection. The landfill operators has to prepare for this obligation continuously since year 2002. If the landfill do not have such plastic foil, the operator has to close the landfill.

(10) A market for composting material has recently started to develop. Some composting plants already sell certified compost based on national standards. The market for compost will be more promoted.

(11) A subsidy of 30 €/t is given to support the recycling of waste. The subsidy will be increased to around 60 €/t within the near future.

(12) Initiatives educate about waste concerns especially addressing the stage of early childhood like schools and kindergartens. An example is the realisation of the "Ecologic Olympics".

Priority activities for implementation of Landfill Directive requirements in the Slovak Republic

(1) The administrative capacities within the waste management sector and the priority of environmental concerns on the political agenda must be increased in general. The budget of the Ministry of Environment was shortened substantially by about 50% for the year 2007 compared to 2006. The budget is the lowest of all Ministries.

(2) It is considered that 30-40 landfills within the Slovak Republic do comply with the European Standards. Especially the standards of landfills owned by foreign companies usually are compliant. However, especially small landfills are not compliant and have to be closed, and the process has to be speeded up in order not to miss the deadlines.

(3) An expert's estimation on the remaining capacity of landfills shows, that if the amount of waste landfilled is not lowered in the next years, the existing capacity is only sufficient for ten years. Especially the fraction of mixed MSW has to be further reduced.

(4) First steps have been taken to reduce the amount of biodegradable waste, e.g. with prohibiting the landfilling of green waste from gardens and parks. Anyhow it is still unclear how to handle the separated green waste fraction as compost treatment facilities are still rare. Investment into such technologies and the market potential for produced compost has to be stimulated.

(5) A fee system for waste collection and treatment has been implemented. However, the economic incentive for using the separate collection system adequately is still low for the inhabitants. Fees have to be raised and emphasis has to be put on information campaigns.

(6) The implementation of the required steps of compliance testing and on-site verification is still unclear and need further specifications and guidance at national level. Specific, testing and sampling methods and the use of criteria within the compliance testing need specification. The testing should not be possible on a voluntarily basis, but should be carried out by accredited laboratories on a regularly basis. For that purpose more educated laboratory staff is need to carry out the tests. The national requirements should allow private companies to provide that training.

(7) Bratislava as the leading region in the Slovak Republic should focus more on measures for separate collection, reuse and recycling and should promote e.g. the use of compost for public green areas.

(8) 1,500 municipalities were given support from the Environmental Fund. However, especially the mayors of small communities are not well informed about the funding options in the waste management field. Information campaigns should focus at authorities at the municipal level to support the installation of separate collection systems.

(9) A system of sanctions and penalties like those for littering is set in place. However, the laws are still leaving gaps for perpetrators to escape from sanctions. The environmental law has to be concise strict to avoid such gaps.

(10) The success rate of prosecuting illegal littering has to be increased. For that reason information and educational programs for the Police Service is necessary. The Environmental Fund should be opened to support such programs.

Suggestions addressing the European Commission for supporting the implementation

(1) The European Commission should give specification within the legislation or guidance on the artificial layer for groundwater protection, as a whole variety of materials with differing characteristics and thickness exists and decision are mainly driven by the cost factor.

(2) It is suggested that more guidance is given on the sampling and testing procurers required in the Waste Acceptance Criteria Decision.

4.7 Cyprus: Minutes and outcome

Date	Cyprus
25.-26.04.2007	**Venue:** Nicosia / Cyprus International Conference Centre (with support of Ministry of Agriculture, Natural Resources and Environment) **Participants:** 36 (14 from authorities, 11 from associations/NGOs, 10 from enterprises) **Agenda:** 9 presentations (including EC and BiPRO) **Excursion:** Paphos landfill for non-hazardous waste and Ayia Marinouda landfill (closed landfill)

The information exchange and awareness raising event in Nicosia has been organised with support of the Ministry of Agriculture, Natural Resources and Environment (Environment Service) and the Ministry of Interior. The 37 **participants** comprised especially representatives from the both Ministries, the Ministry of Health as well as from environmental NGOs and municipalities and community associations. The interest of enterprises working in the field of waste management and landfills was also high (participation list see chapter 6.7).

The workshop in Nicosia was planned as a two days event. In total, 12 **presentations** were held (including BiPRO and EC). An excursion to the Paphos landfill and the closed landfill of Ayia Marinouda was realized the second day.

Presentations held, addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in Cyprus. Presentations stressed the strategic plan for waste separation management, landfilling and specific waste streams. A study about risk assessment of uncontrolled landfills, examples for the planning of a closure and recultivation of landfills and geotechnical criteria for the selection of a landfill site were also highlighted within the presentation.

The excursion to the landfill in the municipality of Paphos and Ayia Marinouda provided valuable insight into the technical standards of a newly built landfill and of a landfill which is closed but not recultivated yet (agenda see chapter 7.7).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in Cyprus:

Legal framework in Cyprus

The European legal requirements of Directive 2006/12/EC and 1999/31/EC have been well transposed into national legislation, especially within the *Solid and Hazardous Waste Law*. For the transposing of Decision 2003/33/EC into national legislation no information had been given. Furthermore the requirements on the Law on Packaging and Packaging Waste, End-of-Life Vehicles, IPPC, Asbestos, Municipal Waste Incineration and Shipment of Waste are adopted to national law. Already in place are regulations covering used oils, the use of sludge, batteries and accumulators, PCB´s/PCT´s and landfill sites. There exist a *Ministerial Order on a waste list*, requirements of waste registration, identification of dangerous waste and on application for waste management licenses.

The competences for permitting and controlling of landfills are divided between the *Ministry of Agriculture, Natural Resources and Environment* (Environment Service), which is responsible for specific waste streams and hazardous waste and the *Ministry of Interior*, which is in charge for the organisation of the municipal waste.

The municipal waste management is organised under the *Municipal Law*. The *Strategic Plan for the Management of Solid and Hazardous Waste* has been approved by the Council Ministers. It provides all the tools for an integrated management of all waste streams. The plan considers amongst others:

- Classification of solid waste according to the European waste list;
- Definition of targets;
- Comprehensive evaluation of the existing situation;
- Technologies, methods and procedures to be applied;
- Sources of waste and description of special waste;
- Analysis of targets concerning reuse, recycling and recovery.

The concept of landfills is translated into Cyprus legislation into *sanitary landfills*. A sanitary landfill comprises of a sorting line and treatment plants for specific waste streams, e.g. composting facilities. Considering the concept of sanitary landfills, only waste which cannot be further recycled or treated, should be landfilled at the end counting for 20 to 30% of the total waste amount.

4 Districts have been divided by the *Strategic Plan for the Management of Solid and Hazardous Waste*, being the Paphos District, the Larnaca/Ammohostos District, the Lefosia District and the Limassol Distric.[38]

Facts and figures of Cyprus

The Cyprus citizen show a very high consumption pattern and production of waste is around 700 kg/year per capita. The Recycling rate still is very low and lies at about 20%. Especially the recycling of waste package has been started since 2006. [39]

In Cyprus, municipal solid waste is currently collected by either the local authorities or individual companies. Until 2005, officially there were in operation 7 disposal sites. However, only one of the 7 sites are fulfilled the requirements of the Directive 99/31/EC on the landfill of waste. Particularly 2 out of the 7 official disposal sites were operated under controlled disposal procedures (Kotsiatis site at Nicosia Region and Vati at Lemesos Region), while the remaining 4 sites were operated under semi-controlled disposal procedures. Beyond these 7

[38] Presentation of Dr Costas Papastavros (Ministry of Agriculture, Natural Resources and Environment (Environment Service))
[39] Presentation of Dr Costas Papastavros (Ministry of Agriculture, Natural Resources and Environment (Environment Service))

official disposal sites, there were identified and recorded 113 unofficial and uncontrolled disposal areas in operation during the elaboration of the current study (see Figure 4-8) .

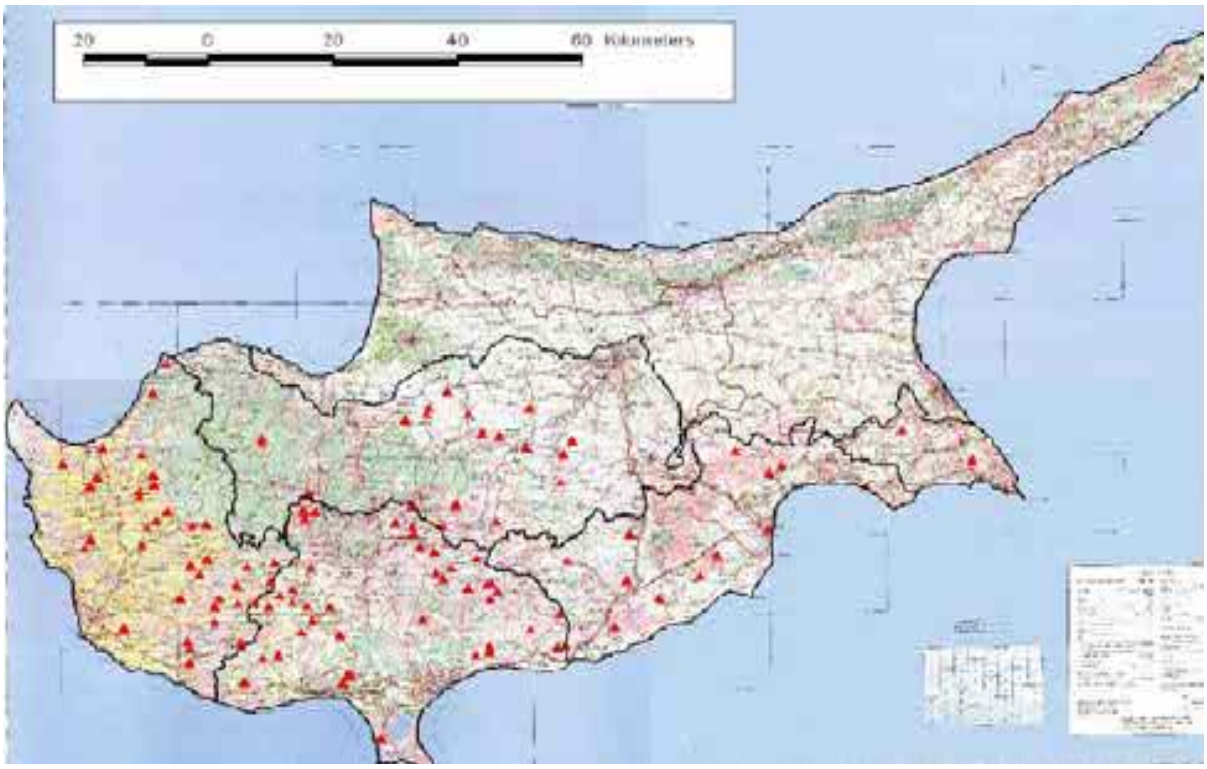

Figure 4-8: Distribution of uncontrolled landfills in Cyprus (2007)

A very detailed study was undertaken to evaluate the number, location and size of those existing uncontrolled landfills, to evaluate the environmental risk and to prioritise the closure and recultivation measures for the identified landfills. Once the sites have been identified, a GIS (Geographic Information System) database was developed with complete information for each site. Risk assessment of the sites was carried out using a method of multiple criteria decision analysis. The method was based on the highest scores achieved for each criterion. The 10 sites that have the highest scores are the ones prior to immediate restoration.

As measures for recultivation especially the isolation of the landfill body due to covering with foils and semi-permeable systems are suggested. Landfill gas treatment and leachate treatment systems are not foreseen to be included. The financial burden to carry out the recultivation measures will sum up in the next years, e.g. being estimated to 2.5 million € for one landfill only. For smaller sites the waste shall be excavated and disposed of in properly designed landfills. [40]

[40] Presentation of Alexios Panagoulopoulos (ENVIROPLAN S.A.) and Abstract: Lolos T. et al “Risk assessment and evaluation of uncontrolled landfill sites in Cyprus”.

In 2006, 626 kt/y of C&D waste were produced. It is still a used practice to disposed of C&D waste in an uncontrolled manner. The MoE and Ministry of Interior started recently a cleaning up program, cleaning especially very small dumping sites (e.g. along roads) accompanied by the installation of civic amenity sites, where C&D waste will be collected.[41]

Future planning in Cyprus

The *Strategic Plan for the Management of Solid and Hazardous Waste* foresees 4 Regional Centres for the organisation Municipal Solid Waste Management. A priority is to reduce the waste produced and the separate collection. In each Regional Centre, the following actions will be accordingly made:

- Installation of a landfill site with biogas collection and energy recovery;
- Disposal sites for specific waste streams, e.g. C&D waste;
- Installation of a sorting plant and a plant for biodegradable waste treatment.

In one region only a landfill complying with the Landfill Directive exists. The other three landfills are only planned to start operation in 2010. A further priority will be the closure down and restoration of more than 100 uncontrolled landfills (see Table 4-24).

Paphos District	Larnaca/Ammohostos District	Lefkosia District	Limassol District
1. The organisation of the Regional Centre for Waste Management is under way. 2. The landfill is already in operation. 3. A transfer station is under construction. 4. Tender procedures are in progress for a sorting plant and treatment of the biodegradable fraction, expected to operate by 2010.	1. The construction of the landfill, two transfer stations, a sorting plant, and treatment of the biodegradable fraction (composting) is expected to start this summer 2007 and operate by 2009.	1. Upgrade of the major existing landfill of Kotsiatis serving almost 275,000 inhabitants 2. Main target is to have a state of the art organised Regional Centre, comprising of a landfill, a sorting plan, and treatment of the biodegradable fraction. The project is expected to operate by 2010	1. Upgrade of the major existing landfill of Vati serving almost 250,000 inhabitants. 2. Main target is to have a state of the art organised Regional Centre, comprising of a landfill, a sorting plan, and treatment of the biodegradable fraction. The works are expected to operate by 2010

Table 4-24: Status quo and ongoing measure for 4 Regional Waste Districts in Cyprus

Waste will be collected basically in civic amenity sites (*Green Points*). The community themselves decide on the places, where this sites will be installed. An area of 800 to 1,200 m^2 are needed for each site. The decision is time-consuming, as spare places are rare and expensive. Planned are a number of 280 to 300 Green Points thorough the country. Citizen can bring up to 50 kg of C&D waste, glass, plastic, cooking oils, toxic waste, drugs and chemical etc.. The process of tendering for companies has been started recently and the first Green Points will be installed 2007. The *Green Dot Society Cyprus* has plans for install separate collection systems at household level.

Concerning the hazardous waste treatment, a treatment unit is proposed, covering the needs for storage, sorting, classification, neutralisation, controlled disposal of sludge and exporting.

[41] Presentation of Georgios Koullapis, Ministry of Interior

The designed study for that purpose is under execution and a decision for a specific side has been taken. Another threatening waste stream is asbestos waste and ways for proper disposal are still under investigation.

On the side of administrative capacities, the establishment of an *Environment Agency* and *Environment Inspectorate* as well as an *Research Institute* dealing with environmental technologies are expected to be founded in the future.[42]

Description of landfill visited in Cyprus

The landfill for non-hazardous waste in the municipality of Paphos has started operation in 2005. The total capacity of the landfill is 1,363,000 m^3 with a yearly capacity of 60,000 t and an envisaged lifetime of 20 years. The landfill body consists of 4 cells, of which one cell in currently in operation.

A bottom liner and a leachate collection system is introduced. The leachate is treated within a waste water treatment plant using diverse osmosis together with other waste waters, e.g. from oil tank cleaning. The facility has a treatment capacity of 30-40 m^3/day. The treated water is reused for irrigation. A collection system for landfill gas is introduced and a biogas plant with a capacity of 2,000 kW/d is planned.

The Acceptance Criteria Decision is implemented and the steps of basic characterisation, on-site verification and visual inspections seems to be implemented. Visual checks are weekly carried out by emptying a lorry load.

The technical standard of the site seemed to correspond to EU requirements. The following possible deficits of the landfill could be identified:

- No measures are taken to treat the mixed MSW prior to landfilling. The waste is solely compacted at the side. A MBA is planned and construction will start in 2008.
- Waste tyres are stored in as whole or shredded on the premises of the landfill.
- No control activities are carried out on behalf of the competent authorities as administrative capacities are low and administrative structures for conducting controls are missing (no existence of Environmental Inspectorate).

The old landfill mainly used for mixed MSW in Ayia Marinouda has been closed but not recultivated. Measures are proposed including a top covering with an artificial liner to stop the infiltration of precipitation water. It is proposed to collect and treat the surface water, to introduce a monitoring programme and to collect the landfill body gas for further treatment. Furthermore a park and environmental centre are foreseen to be constructed on top of the landfill. The necessary financial volume is estimated at 2,5 million €.[43]

[42] Presentation of Dr Costas Papastavros (Ministry of Agriculture, Natural Resources and Environment (Environment Service)) and Georgios Koullapis, Ministry of Interior
[43] Guided tour at Paphos landfill and presentation of Nikos Gargoulas and Andreas Mentzis, EPEM SA

Major problems and deficits identified by the workshop participants in the Cyprus

(1) Waste Management in general is given a low political priority in Cyprus. The human resources at the competent governmental level is very limited and local administration is low.

(2) Only one landfill opened in 2006 is complying with the technical standards of the Landfill Directive. The opening of other landfills considering such requirements is only planned for 2010.

(3) The institutional conditions for enforcement and control are not set into place. An Environmental Agency and Environmental Inspectorates do not exist yet

(4) There exists 130 landfills uncontrolled or only poorly managed in Cyprus.

(5) Prices of land are very high and finding space for either collection yards or landfills is difficult and longsome, especially because municipalities have to agree on the site chosen for those purposes.

(6) Separated collection systems either on household or on community level are not in place. The Strategic Plan foresees for mid 2007 the installation of the first civic amenity sites (Green Points). The Strategy Plan does not foreseen measures for the separate collection of waste at household level.

(7) The separate collection site for biowaste is only planned to operate in 2 to 3 years, until then separate collection will only be conducted within the civic amenity sites. Sufficient capacity for composting and bio-waste production is not in place.

(8) For some recyclables economic ways for recycling has to be found as the amounts are comparable low and at the moment export is more sufficient than treating the waste within Cyprus.

(9) Announcement of the installation of separate collection system, as the Green Dot Association Cyprus, using day media and press are insufficient. Citizens are not informed and aware that such systems are starting operation.

(10) Due to the low amounts of specific waste streams collected amongst the citizen of the Island, waste recycling can often not carried out in a economical feasible way. Paper e.g. can only be recycled for the costs of 90 to 100 €/t. Techniques are not sufficient adapted. Even export is expensive as well; it seems to be the more economic option.

(11) The selection of sites and the awarding of license and contracts are not always done by transparent criteria and corruption and bribing is seldom, but still a used practice.

(12) The public resistance against new collection and landfill sites is high and the public is very aware of the issue. Especially the distance of landfills from residential areas seems to be a matter of concern.

Examples of good practice identified as potential tools to improve the implementation and enforcement in Cyprus

(1) A very detailed survey for uncontrolled landfills was conducted using a GIS database and questionnaires. The study as well includes a risk assessment for the existing landfills resulting in a list of priority landfills for closure and recultivation measures.

(2) The cleaning up of very small fly tipping sites (e.g. single refrigerators, old cars etc.) started in April this year following a plan by the Ministry of Interior.

(3) Combined permits for landfills addressing together the IPPC and the Landfill Directive are issued to reduce administrative burdens.

Priority activities for implementation of Landfill Directive requirements in Cyprus

(1) The level of planning is encouraging, anyhow the level of implementation, especially the installation of recycling and treatment facilities and the closure and recultivation process has to speed up to meet the given deadlines.

(2) Environmental issues in general and waste management in particular has to be given a higher priority at the political agenda.

(3) Enforcement structure, as Environment Inspectorates or an Environmental Agency have to be set into place.

(4) The process of implementation of the “polluter pays principle”, the separate collection and the avoidance of waste have to be speed up. Furthermore the treatment capacity for separated waste streams has to be increased.

(5) An active information policy and education projects have to be carried out to support the avoidance of waste and the separate collection amongst the society.

(6) To increase the rate of separated waste streams, the separate collection systems have to include the household level collecting the major waste streams (e.g. biowaste and paper) directly at source.

4.8 Malta: Minutes and outcome

Date	Malta
07.05.2007	**Venue:** St. Julian´s / Dragonara Hotel with support of the Malta Environment and Planning Agency (MEPA) **Participants:** 20 (14 from authorities, 1 from NGO, 4 from enterprises) **Agenda:** 7 presentations (including EC and BiPRO) **Excursion**: Landfill for hazardous and non hazardous waste (Ghallis), closed landfill and civic amenity site (Maghtab)

The information exchange and awareness raising event in St. Julian's has been organised with support of the Malta Environment and Planning Authority (MEPA). The 20 **participants** comprised especially representatives from the MEPA including Environment Inspectorates. Representatives from the Malta Resources Authority (MRA) and the Food & Veterinary Regulation Division participated as well. Besides, a representative from an NGO and representatives from waste management companies have been present (participation list see chapter 6.8).

The workshop in St. Julian's was planned as a one day event. In total, 7 **presentations** were held (including BiPRO and EC). An excursion to the a landfill was realized in the afternoon.

Presentations held, addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in Malta, the situation of three specific closed landfills and the connection between landfills and groundwater vulnerability.

The excursion to the landfill for non-hazardous waste provided valuable insight into the technical standards of firstly an old and closed landfill (Maghtab) and secondly a newly built landfill (Ghallis). It also gave an insight into the future planning of a hazardous waste landfill for Malta and the organisation of civic amenity sites (agenda see chapter 7.8).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in Malta:

Legal framework in Malta

The European legal requirements of Directive 2006/12/EC and 1999/31/EC have been well transposed into national legislation, especially in the *Act XX of 2001 on Environment Protection* replacing the similar Act from 1991. Additionally there are supplementary regulations (Legal Notices, L.N.), especially *L.N. 128 of 1997 – Deposit of Wastes and Rubble (Fees) Regulations* from 1997 and its amendments, *L.N. 337 of 2001 on Waste Management (Permit and Control) Regulations* from 2002*, L.N. 165 on the IPPC Regulations* from 2002 and amendments, *L.N. 168 of 2002 on Waste Management (Landfill) Regulations* from 2002 and amendments and *L.N. 106 on Waste Management (Activity Registration) Regulations of 2007*, yet not in force. The three landfill classes have been adopted with no further specification from the Landfill Directive.[44]

[44] Presentation of Mark O'Neill, Malta Environment and Planning Authority (MEPA)

Facts and figures of Malta

Because of the tourist industry, the per capita generation of MSW is with 480 kg/inhabitant yearly very high, compared with the other EU Member States.

In the past waste disposal sites in Malta were developed without any environmental controls, a leachate and gas collection and the presence of fires was a common occurrence. These sites received all kinds of waste for a number of years. The lack of engineering and controls lead to serious concerns over the potential human health and environmental impacts of these sites and there is a need to raise the environmental standards associated with the management of waste in Malta .

Prior to Malta's accession to the EU in 2004, various old or just closed landfills exist. The Wied Fulija and Luqa landfill were already closed in 1996 and in 1970.

The Maghtab landfill stopped accepting inert waste in 2003 and was closed down in April 2004 since it was not in accordance with the EU standards. At the same time the Qortin landfill in Gozo stopped operation. The inert waste is now used for the restoration of disused quarries. The Maghtab, Qortin and Wied Fulija sites were rehabilitated through an EU co-financed project. The main target is the physical stabilisation of the landfills. Leachate and gas are not considered to be big problems because of the arid climate and the high amount of inert waste stored in the landfills.

2 non-hazardous waste landfills have been permitted recently, both IPPC landfills. The Ta' Zwejra landfill opended in November 2005 and the Ghallis landfill opened in April 2007, which is located just adjacent to the old Maghtab landfill. The given permits are in line with the European legislation and include the information required. Both landfills are using geo-synthetic liner as bottom liner. The Ta' Zwejra landfill site has received about 700,000 t of waste and has now reached its maximum capacity after only 3 years. The site will now be capped and a gas collection system will be installed. The landfill gas will be extracted with the objective of generating power. The Ghallis landfill consists of an engineered landfill facility for non-inert, non-hazardous wastes and for hazardous wastes. Furthermore it will include a storage and treatment facility for hazardous wastes. All waste from Gozo is shipped to Malta. [45]

All landfills for non-hazardous waste are constructed outside of the groundwater zone (at least 300 m away). Leachate and groundwater vulnerability is not stated as big problem.[46]

Regarding inert landfills, licenses have been issued by the former *Environment Protection Department for Deposit of Inert Waste and Recycling* before 2001. More than 10 such licences were issued. The *Waste Management Permits* are now issued under L.N. 337 of 2001 and include a financial guarantee, a working plan of intended operations and

information about the quantities and types of waste and an emergency contingency plan. Problems with inert landfills reported, are:

[45] Presentation of Mark O'Neill, Malta Environment and Planning Authority (MEPA) and Henrietta Putzulu Caruana, WasteServ Malta Limited
[46] Presentation of Claudine Cardona (Malta Resources Authority (MRA))

- Separation at source of inert waste still has to be improved,
- Rate of infilling of disused quarries is quite high and therefore a more long term solution is to be found.
- Currently all permitted quarries being infilled in Gozo have been restored. Therefore alternatives must be sought.

Quarries are used for the deposition of clean excavation inert waste. It is estimated that approx. 2 Mt are generated and disposed of annually. Between May 2003 and December 2006, over 5 Mt of inert waste have been deposited in public inert waste sites managed by WasteServ. Other sites are operated by the private sector.

Currently no hazardous landfills are permitted. One application for a hazardous landfill under construction (aside Maghtab) is pending and follows the usual IPPC procedures. One small incinerator is planned, currently pending for permission and treating selected hazardous waste streams. Furthermore installations for treatment of hazardous waste prior to landfilling are planned.

Separate collection exists only in schools and public buildings. Furthermore 170 bring-in sites (4 containers) are installed, separating glass, paper, metals and plastics. 200 more such bring-in sites should be set in place in the near future. Bulky waste can be brought to civic amenity sites.[47]

Future planning in Malta

The *Waste Management Strategy Plan* (2001) foresees the further development of the waste management sector, including avoidance strategies and separate collection systems.

The MEPA sees the following points as crucial for the future:

- Public information is essential and education is to change mentality;
- Forward planning for waste management sites;
- Consideration of alternative options to landfilling;
- Stronger Workforce on enforcement (due to fly tipping) and permitting;
- Having chances to share past experiences gained by other Member States. [48]

[47] Presentation of Mark O'Neill, Malta Environment and Planning Authority (MEPA) and Henrietta Putzulu Caruana, WasteServ Malta Limited
[48] Presentation of Mark O'Neill (Malta Environment and Planning Authority (MEPA))

Description of landfill visited in Malta

The Maghtab landfill had started operation in the 1970's being a valley at this time. It continued operation until April 2004. The project started as an agricultural activity. However filling continued and a hill was gradually formed, mainly containing inert waste from construction and demolition and municipal waste.

In April 2007 the Ghallis landfill, built adjacent to the old premises of Maghtab has received an IPPC permit including the allowance to operate a landfill for non-inert, non-hazardous waste and one for hazardous waste as well as a storage and a treatment facility for hazardous waste.

The closed area of Maghtab includes several works carried out for rehabilitation. 13 boreholes for monitoring purposes are installed at and around the landfills. The drilling and installation of 43 wells and the construction of 6 collection manifolds are completed. The equipment to treat extracted gas is installed and trials are currently on going with the objective of fine tuning subsequent phases of the project. A regular monitoring of surface gases and groundwater is also conducted. As the main receiving waste category is C&D waste (80%) and because of the arid climate a very small amount of leachate is expected.

The Ghallis landfill for non-hazardous waste has an estimated void space of 1.7 million m^3 to be filled at a rate of 250,000 t/year. The facility is being developed in phases and phase 1 of 3 is completed. It is expected that the capacity is reached within a minimum period of 7 years.

The conditions set in the IPPC permit include operational conditions, for the acceptance, placement and compaction of waste and monitoring conditions for nuisance e.g. rodents, odour, noise, record keeping and reporting.

The Ghallis landfill for hazardous waste has an estimated void space of 100,000 m^3 to be filled at a rate of 5,000 t/year. It is expected to last for a minimum period of 20 years. The application for the IPPC permit for this part of the landfill has been submitted but has not been approved yet and construction works are ongoing.[49]

The technical standard of the site seems to correspond to EU requirements. The following points are being suggested for further consideration:

- Treatment prior landfilling is not always carried out. Only very specific waste streams, e.g. wood is separated and shredded.
- Gate fees are comparable low. Only 1 €/t is charged for non-hazardous waste and 4€/t for inert waste.

[49] Presentation of Henrietta Putzulu Caruana, WasteServ Malta Limited

Major problems and deficits identified by the workshop participants in Malta

(1) A very high percentage of waste is still landfilled, probably about 80 to 90%. Landfilling is the primary option when it comes to inert waste and non-hazardous waste. Landfilling appears to be the most accepted kind of disposal operation by public.

(2) The biowaste fraction is not separated at all. Separate collection has been started over bring-in containers.

(3) Mixed MSW is not usually treated prior to landfill. Usually it is only compacted. In some landfills specific waste streams are taken out to be treated (mattresses, wood).

(4) Malta has not yet delivered a strategy on biodegradable waste to the European Commission.

(5) The polluter pays principle is not fully implemented and direct waste fees are not implemented on households, meaning that waste collection service is free of charge for the inhabitants. Gate fees for non-hazardous waste are far too low (around 1 €/t) and also for inert waste (4€/t).

(6) The Acceptance Criteria Decision is used as a guideline for technical and monitoring requirements but is not transposed into national law listing national specifics, like which sample method should be used throughout the country.

(7) The amount of separated waste (e.g. tyres) is too low to make reusing / recycling economically feasible. Even if certain waste streams are separated, they have to be exported.

(8) Malta is highly dependent to export of waste when it comes to separate collected waste streams (metal, paper, glass, tyres, batteries, waste tyres etc.) as the economies of scale do not permit economic recycling of such fractions.

(9) Malta does not feel that the Landfill Directive adequately addresses the peculiarities of this small island State, as e.g. leachate seems not to be a problematic issue, due to the arid climate. As rainfalls are short and heavy, it is unlikely that water will drain, but likely that there will be a surface runoff, which has to be collected and treated. Dust in opposite is a problem and no requirements are set in the directive.

(10) It was discussed whether geosynthetic liner (GSL) or clay is the better option for capping an old landfill, as clay may crack due to temperature differences, while GSL will be harmed due to inside fires of the old landfill and due to setting and slippage. Experiments with other natural materials are under way.

(11) Space is a limiting factor for further siting of landfills. The reluctance of the public against such new sites is quite high (“not in my backyard”).

(12) A relatively high amount of C&D waste is produced, as construction is a flourishing industry in Malta. C&D waste is landfilled to a high amount.

Examples of good practice identified as potential tools to improve the implementation and enforcement in Malta

(1) It is forbidden since 2003 to landfill any kind of tyres. Part of the tyres is exported and a part is shredded and reused for sport grounds etc.

(2) Fly tipping is a controlled by several authorities (e.g. police, armed forces, inspectorates and municipalities) and often detected by citizens. The fines for fly tipping are comparably high and small fly tips are removed immediately.

(3) The Waste Acceptance Criteria Decision is applied in practice to a certain extend. The waste is weighted when incoming, it is inspected visually with cameras and it is inspected visually again on the side.

Priority activities for implementation of Landfill Directive requirements in Malta

(1) Environmental concerns must remain high on the political agenda as a priority topic in general and waste management in specific. Actions toward waste prevention have to be taken.

(2) More measures have to be taken to avoid waste and to separate collection as well as the investment in treatment facilities dealing with the separated waste streams. Financial incentives have to be set for the inhabitants to increase the rate of separate collection and to decrease the amount of waste landfilled.

(3) Alternatives for landfilling have to be created taking in mind techniques for the reduction of specific fractions (MBA, composting) and other methods (incineration).

(4) Incentives have to be set to avoid the production of high amount of C&D waste.

(5) An increased demand for secondary raw material has to be supported.

(6) The closure and recultivation activities for the remaining landfills not fulfilling the European requirements have to be speeded up.

Suggestions addressing the European Commission for supporting the implementation

The “one size fits all” approach in the Landfill Directive does not seem to be a good solution, as the requirements are not addressing adequately the specific situations, e.g. of countries like Malta with a more arid climate (e.g. more dust pollution, low quantity of leachate).

5 Recommendations

Based on the experiences from the organisation of the workshops and the outcome of the events it can be concluded that the awareness raising workshops have been a valuable tool to inform the involved authorities, to raise the knowledge of the participants and to stipulate cooperation amongst the involved authorities and between authorities and other interested circles (NGOs, companies, associations, scientific institutions). This type of workshop has been beneficial for both sides; the Member State authorities and the Commission Services. Participation of a Commission representative has in general been highly appreciated and honoured by Member State authorities.

The project provided a more comprehensive insight into national characteristics and problems with the implementation of the Landfill Directive and related regulations as well as a horizontal overview on the situation and common aspects. Finally the project contributed to an information exchange between the involved Member States.

Based on these conclusions the following recommendations may be suggested.

5.1 Recommended priority activities for Member States

In order to improve implementation of the European Landfill Directive 1999/31/EC and to meet the intention of related European legislation on waste (Directive 12/2006 and Decision 2003/33/EC) the following priority activities have been identified, which should be taken by the EU-10 Member States to different extent:

(1) Significantly reduce waste amount landfilled

(2) Significantly reduce organic and combustible fractions in landfilled waste

(3) Speed up closure, recultivation and aftercare of “old” and illegal dumpsites

(4) Strictly implement the provisions of the Acceptance Criteria Decision both in legal documents and in practice

(5) Build up administrative capacity and enhance monitoring, control and inspection measures

These priority activities may be supported by the following specific measures

(1) Establish a thorough strategy plan on the long term run considering the waste hierarchy

(2) Setting up a national register of illegal landfills

(3) Implementing an electronic system for data collection from landfill operators

(4) Establish markets for recoverables and compost

(5) Thoroughly implement the permit requirements by regional and local authorities

(6) Introduction of sanctions and fines for illegal dumping

To achieve the objectives identified via the priority measures listed above, the following measures are regarded as highly important and are strongly recommended to Member States

(1) Improve guidance for local and regional cooperation

(2) Increase awareness and cooperation of citizens

(3) Speed up process of complete coverage of population

(4) Introduce the polluter pays principle by raising sufficient waste fees to enhance separate collection

(5) Introduce a landfill tax

(6) Speed up the decision process for permitting to allow early investments at the landfills

The process of local and regional cooperation has to be more in the focus of the national authorities, e.g. by providing administrative guidance and support with the moderation process. The responsibility to build up an appropriate waste collection, reuse, recycling and treatment system according to European requirements is in the responsibility of the national authorities, although the practical execution is in the responsibility of the municipalities. Especially small municipalities should be supported with the process.

As active participation of citizens is a major prerequisite of effective separation and prevention of illegal dumping, rising of knowledge and awareness on negative impacts of waste amongst the civil society should be addressed as priority issue even if success can not be expected to be observed in the short term. Current education and training programs starting at early childhood stage are recommended to be continued and further expanded.

Complete coverage of the population by public waste services is closely related to awareness and cooperation of the general population and a second prerequisite for effective implementation of the landfill directive. As long as adequate infrastructure for separation and waste collection is not provided to citizens at reasonable costs, a good cooperation and effective separation at source can not be expected.

Financial incentives to increase separate collection systems could be provided by weight dependent graded service fees for citizens and changes in the current contracting system. In addition existing reimbursement systems for municipalities based on waste amounts landfilled should be changed to e.g. per capita based reimbursement schemes to give incentives for better development of take-back systems, separation and collection.

5.2 Recommended activities for European Commission Services

In order to **support improvement of implementation** of European landfill legal requirements the following activities have been identified that could be taken by the European Commission:

(1) Promote corresponding awareness raising events in other Member States or on related topics

(2) Enhance cooperation and information exchange within the IMPEL Network

(3) Provide financial support to infrastructural or educational projects via the Cohesion fund or other financial sources

(4) Promote the possibility for combined landfill/IPPC permits for larger landfills subject to IPPC to reduce administrative burden

Financial limitations are an important obstacle for the effective implementation of legal requirements. In this context financial support from the European Community can play an important role. However it is recommended to reflect and review the existing funding system. Increased support of reuse/recovery and preventive projects as well as establishment of processing capacity might be needed to balance and limit the construction of high technology landfills. The European Commission should initiate funding not only on national level, but as well directly on regional and municipal level to stimulate self-initiatives of regions and municipalities.

Considering the **requirements and definitions**, it would be supportive to provide material on clarification and guidance at a European level for the following topics:

(1) Artificial layer for groundwater protection, as a whole variety of materials with differing characteristics and thickness exists and decisions are mainly driven by the cost factor;

(2) Sampling and testing procurers required as well as the steps of basic characterisation and on-site verification in the Waste Acceptance Criteria Decision;

(3) “treatment prior to landfill” principle;

(4) Specifying the use of shredded used tyres as a drainage layer and whole waste tyres for engineering purposes in landfill construction;

(5) Establish legislation on European level covering the topic of biodegradable waste (Biowaste Directive);

(6) Uniform calculation basis for the calculation of the share of biodegradable waste and the reduction targets to be introduced into the EUROSTAT system;

(7) Specific waste streams regularly not meeting the DOC limit values;

(8) Best Available Technology for landfills and other treatment options, e.g. within a BREF document

Guidance on legal requirements of European legislation may range from written documents, as well as short interpretations uploaded to a specific Commission website to oral explanations in the framework of TAC or corresponding expert meetings at European level.

5.3 Recommendations for future awareness raising events

Concerning the **organisation the future events**, the following recommendation can be made:

(1) Focus on single country events

For events directed to various levels of national authorities focus on single country events is recommended, as the national language can be used, travel distances are not too far and the specific situation within the country can be adequately addressed.

(2) Promote two days or one and a half day events

In general the conception as a two days event allowed reflection of information provided on day one, compilation of conclusions and resulted in a more open and constructive discussion at day two. At a one day event time for detailed discussions may not been sufficient and personal contacts are difficult to establish. Three days on the other hand require excessive time from participants and may lead to significant fluctuation.

(3) Realize the events in a rather narrow timeframe

For enabling the prompt passing of information and exchange of experience from one to another country the realization of the events in a rather narrow timeframe was advantageous.

(4) Provide oral interpretation

The provision of interpretation has been crucial. Being able to express themselves in their mother tongue has been a crucial factor for participation for many of the participants. Although costly, the translation proved to be an important factor for addressing more than the national level of authorities. A budget for translation should be included in future calculations.

(5) Provide written translation

Requiring English presentations would hinder a number of participants to contribute. On the other hand hand-outs and online versions in English language would significantly facilitate the post processing and would increase the information exchange value of the documents, therefore a translation of the written documents should be provided whenever necessary. A budget for translation should be included in future calculations.

(6) Include a site visit wherever possible

The inclusion of an excursion was very valuable as it showed the level of implementation or problematic points at practical level.

(7) Ensure cooperation with the competent national authority.

The support of the national competent authority within the preparation process is crucial for provision of contacts to relevant authorities, covering relevant national topics and contributing presentations.

(8) Attendance of a representative from the European Commission

The participation of a Commission representative has been highly appreciated and honoured by the Member State authorities and is important as it lends the necessary political weight to the discussions, in particular for stressing Commission implementation priorities and need for concrete follow-up measures for improving implementation as well as giving possibilities to national authorities for direct questions to the Commission representative.

(9) Make use of a website as information platform

The use of the webpage for organisational purposes (travel information, agenda, list of participants, contacts, registration forms, background documents) and specifically for the post processing (all presentations, additional material mentioned at the workshop) is very useful, and even if time-consuming could be highly recommended. A specific project webpage provides additional benefit as it represents an information platform and provides direct links between different countries as well as between different waste related topics (shipment and landfill).

As concerns **future awareness raising events** in the field of implementation of waste legislation the following procedure could be considered:

(1) Organise related follow-up workshops

Follow up workshops could be organised in the countries which have been involved in this round of workshops could be considered in a 1-2 years period from today. These events could enable a renewed discussion on the state of landfilling and achieved developments in the broader scope of waste management.

(2) Organise training workshops on Waste Management Plans

Similar workshops on the preparation and implementation of Waste Management Plans could be organised especially for EU-10, Romania, Bulgaria and the Accession Countries as this is a crucial topic needing training and clarification in the waste management sector.

(3) *Extend workshops to Member States not yet covered*

Similar workshops on implementation of the Landfill Directive could be considered for the old Member States, where difficulties with meeting legal requirements and deadlines are known or where information on waste management is scarce.

(4) *Organise regional workshops covering neighbouring countries*

Organise regional workshops on the topic could enhance the experts exchange especially from authorities of neighbouring countries, where the exchange on written material only is insufficient.

6 Annex I: Lists of participants

6.1 Participation List Czech Republic / Prague // 18.-19.01.2007

	Name	Institution EN	Institution CZ	Adress	Phone	E-Mail
	European Commission					
1	Helmut Maurer	European Commission / DG Environment		European Commission - Avenue de Beaulieu 5, 1049 Brussels	+32 2 2964599	helmut.maurer@ec.europa.eu
	National Authorities					
2	Leoš Krenek	Ministry of Environment, Department of Waste	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 26712 2216	leos_krenek@env.cz
3	Jan Plavec	Ministry of Environment, Department of Waste	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 26712 2227	jan_plavec@env.cz
4	Vera Havránková	Ministry of Environment, Department of Waste	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2208	vera_havrankova@env.cz
5	Jaromir Manhart	Ministry of Environment, Department of Waste	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 26712 2895	jaromir_manhart@env.cz
6	Karel Bláha, CSc.	Ministry of Environment, Head of Section of Technical Protection of Environment	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2535	karel_blaha@env.cz
7	Jiri Lautner	Ministry of Environment, Department of Waste	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2687	jiri_lautner@env.cz
8	Viktor Škarda	Ministry of Environment, Department of Waste	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2093	viktor_skarda@env.cz
9	Karel Kovařík	Ministry of Environment, Department of EIA and IPPC	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2711	karel_kovarik@env.cz
10	Jan Marsak	Ministry of the Environment	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2711	jan_marsak@env.cz
11	Jana Fridrichová	Ministry of the Environment	Ministerstvo Životního Prostředí	Vršovická 65, Praha 10, 100 10	+420 267 12 2114	jana_fridrichova@env.cz
12	Petr Havelka	Czech Environment Inspection	Ceska inspekce zivotniho prostredi	Na Brehu 267/1a , 190 00 Praha 9	+420 283 890 570	havelka@cizp.cz
13	Ivana Svobodová	Czech Environment Inspection	Ceska inspekce zivotniho prostredi	Na Brehu 267/1a, 190 00 Praha 9	+420 222 860 230	svobodova@ph.cizp.cz

	Name	Institution EN	Institution CZ	Adress	Phone	E-Mail
14	Pavlína Dvořáková	Czech Environment Inspection	Ceska inspekce zivotniho prostredi	Na Brehu 267/1a, 190 00 Praha 9	+420 283 893 573	dvorakovap@cizp.cz
15	Petr Stejskal	State Environmental Fund	SFŽP ČR	Kaplanova 1931/1, Praha 1, 148 00	+420 267 994 363	pstejskal@sfzp.cz
	Regional Offices - Heads of the Units of the Environment and Protection of the Environment					
16	Hana Pacáková	Jihoceskeho Regional Office	Krajsky urad Jihoceskeho kraje, Odbor zivotniho prostredi, zemedelstvi a lesnictvi	U zimniho stadionu 1952/2 370 76 Ceske Budejovice	+420 386720 744	pacakova@kraj-jihocesky.cz
17	Eva Janoušková	Jihoceskeho Regional Office	Krajsky urad Jihoceskeho kraje, Odbor zivotniho prostredi, zemedelstvi a lesnictvi	U zimniho stadionu 1952/2 370 76 Ceske Budejovice	+420 386720 420	janouskovae@kraj-jihocesky.cz
18	Josef Klečanský	Vysocina Regional Office	Krajsky urad kraje Vysocina, Odbor zuvotniho prostredi	Žižkova 57, 587 33 Jihlava	+420 564 602 525	klecansky.j@kr-vysocina.cz
19	Kateřina Kozová	Moravskoslezsky Regional Office	Krajsky urad - Moravskoslezsky kraj, Odbor zivotniho prostredí a zemedelstvi	28. rijna 117 702 18 Ostrava	+420 59 56 22 375	katerina.kozova@kr-moravskoslezsky.cz
20	Jarmila Plašilová	Karlovarskeho Regional Office	Krajsky urad Karlovarskeho kraje, Odbor zivotniho prostredi a zemedelství	Zavodni 353/88 360 21 Karlovy Vary	+420 3535 02 503	jarmila.plasilova@kr-karlovarsky.cz
21	Markéta Miklasová	Libereckeho Regional Office	Krajsky urad Libereckeho kraje, Odbor rozvoje venkova, zemedelstvi a zivotniho prostredí	U Jezu 642/2a 461 80 Liberec 2	+420 485 226 424	marketa.miklasova@kraj-lbc.cz
22	Robert Bláha	Libereckeho Regional Office	Krajsky urad Libereckeho kraje, Odbor rozvoje venkova, zemedelstvi a zivotniho prostredí	U Jezu 642/2a 461 80 Liberec 2	+420 485 226 388	robert.blaha@kraj-lbc.cz
23	Petr Březina	Olomouckeho Regional Office	Krajsky urad Olomouckeho kraje Odbor zivotniho prostredi a zemedelství	Jeremenkova 40a 779 11 Olomouc	+420 585 508 647	p.brezina@kr-olomoucky.cz

	Name	Institution EN	Institution CZ	Adress	Phone	E-Mail
24	Dobroslav Filipi	Pardubickeho Regional Office	Krajsky urad Pardubickeho kraje, Odbor zivotniho prostredi a zemedelstvi	Komenskeho nam. 125 532 11 Pardubice	+420 466 026 519	dobroslav.filipi@pardubickykraj.cz
25	Jaroslav Nálevka	Plzensky Regional Office	Krajsky urad Plzenskeho kraje, Odbor zivotniho prostredi	Skroupova 18 306 13 Pilsen	+420 37719 5338	jaroslav.nalevka@plzensky-kraj.cz
26	Jiří Chramosta	Stredoceskeho Regional Office	Krajsky urad Stredoceskeho kraje Odbor zivotniho prostredi a zemedelstvi	Zborovska 11 150 21 Praha 5	+420 257 280 135	chramosta@kr-s.cz
27	Táòa Krydlová	Usteckeho Regional Office	Krajsky urad Usteckeho kraje, Odbor zivotniho prostredi a zemedelstvi	Velka Hradebni 3118/48 40002 Usti nad Labem	+420 475 657 163	krydlova.t@kr-ustecky.cz
28	Miloš Šťastný	Zlinskeho Regional Office	Krajsky urad Zlinskeho kraje, Odbor zivotniho prostredi a zemedelstvi	trida Tomase Bati 21 761 90 Zlín	+420 577 043 384	milos.stastny@kr-zlinsky.cz
29	Jaroslav Fiala	Magistrate Prague	Magistrat hl. m. Prahy, Odbor ochrany prostredi	Rasnovka 8/770 110 00 Praha 1	+420 236 00 4228	jaroslav.fiala@cityofprague.cz
	Organisations/ Associations					
30	Dagmar Sirotková	Center for Waste Management, Masaryk Water Research Institute	Centrum pro hospodareni s odpady (CeHO) pri VUV T.G.M.	Podbabska 30 160 62 Praha 6	+420 220197 270	Dagmar_Sirotkova@vuv.cz
31	Jan Buda	Center for Waste Management, Masaryk Water Research Institute	Centrum pro hospodareni s odpady (CeHO) pri VUV T.G.M.	Podbabska 30 160 62 Praha 6	+420 220197385	Jan_buda@vuv.cz
32	Milan Havel	Arnika Association, Toxics and Waste Program		Chlumova 17, 130 00, Prague	+420 222 781 471	milan.havel@arnika.org
33	Ivo Kropáček	Friends of the Earth Czech Republic	Hnutí DUHA	Hnutí DUHA, Dolní nám. 38, 772 00 Olomouc	+420 604 207 302	ivo.kropacek@hnutiduha.cz
	Enterprises					
34	Dana Nováková	Waste Management Company	A.S.A., spol. s r.o., provozovna Ďáblice	Ďáblická 791/89, 182 00 Praha 8	+ 420 283 061 301	praha@asa-cz.cz, hh@asa-cz.cz
35	Milena Veverková	Disposal Company	Univerza SoP – Stredisko odpadu Praha, s.r.o.	Střekovska 1345 182 00 Praha 8	+420 28658 7946	milena.veverkova@seznam.cz univerza@univerza.cz

	Name	Institution EN	Institution CZ	Adress	Phone	E-Mail
36	Jiří Čenský	Disposal Company	AVE CZ odpadove hospodarstvi, spol. S r.o.	Rumunská 1 120 00 Praha 2	+420 222 074 407	jiri.censky@avecz.cz
37	Petr Marek	Waste Management Company	Marius Pedersen a.s.	Malé náměstí 124, Hradec Králové	+420 602626840	petr.marek@mariuspedersen.cz
38	Jaroslav Kabele	Hydroprojekt CZ, a.s.	Hydroprojekt CZ, a.s.	Taborska 31 140 16 Praha 4	+420 261 102 441	jaroslav.kabele@hydroprojekt.cz
39	Petr Špičák	Waste Management Company	SITA CZ a.s.	Holzova 14/730, 628 00 Brno	+420 60277 6579	petr.spicak@sita.cz

6.2 Participation List Slovenia / Ljubljana // 31.01.-01.02.2007

	Name	Institution EN	Institution SI	Adress	Phone	E-Mail
	European Commission					
1	Helmut MAURER	European Commission / DG Environment		European Commission - Avenue de Beaulieu 5, 1049 Brussels	+32 2 2964 599	helmut.maurer@ec.europa.eu
	National Authorities					
2	Radovan TAVZES	Environment Directorate, Ministry for Environment and Spatial Planning	Ministrstvo za okolje in prostor Direktorat za okolje	Dunajska cesta 48, 1000 Ljubljana	+386 1 4787 310	radovan.tavzes@gov.si
3	Lucija JUKIĆ SORŠAK	Ministry of Environment and Spatial Planning, Environment Directorate, Department for Prevention of Environmental Pollution	Ministrstvo za okolje in prostor Direktorat za okolje	Dunajska 48, SI-1000 Ljubljana	+32 2 2964 599	lucija.jukic-sorsak@gov.si
4	Peter TOMŠE	Environment Directorate, Ministry for Environment and Spatial Planning	Ministrstvo za okolje in prostor Direktorat za okolje	Dunajska cesta 48, 1000 Ljubljana	+386 1 487 73 62	peter.tomse@gov.si
5	Janko ŽERJAV	Environment Directorate/Ministry of Environment and Spatial Planning	Ministrstvo za okolje in prostor Direktorat za okolje	Dunajska 48, 1000 Ljubljana	+386 1 478 73 53	janko.zerjav@gov.si
6	Irena KOŽELJ	Environmental Agency, Waste Management Section	Agencijfa Republike Slovenije za okolje	Vojkova 1a, SI-1001 Ljubljana	+386 1 4784 514	irena.kozelj@gov.si
7	Brigita ŠARC	Environmental Agency, Waste Management Section	Agencijfa Republike Slovenije za okolje	Vojkova 1a, SI-1001 Ljubljana	+386 1 4784 523	brigita.sarc@gov.si
8	Marija ULRICH-SUPOVEC	Environmental Agency, Waste Management Section	Agencijfa Republike Slovenije za okolje	Vojkova 1a, SI-1001 Ljubljana	+386 1 478 4559	marija.ulrich-supovec@gov.si
9	Ana KEZELE ABRAMOVIĆ	Environmental Agency	Agencijfa Republike Slovenije za okolje	1000 Ljubljana	+386 1 478 4155	ana.kezele-abramovic@gov.si
10	Tatjana BERNIK	Inspectorate of RS for Environment and Spatial Planning	Inspektorat Republike Slovenije Za okolje in prostor	Dunajska cesta 47, 1000 Ljubljana	+386 1 420 44 73	tatjana.bernik@gov.si
11	Jana MIKLAVČIČ	Inspectorate of RS for Environment and Spatial Planning	Inspektorat Republike Slovenije Za okolje in prostor	Vilharjeva 33, 1000 Ljubljana	+386 1 420 44 54	jana.miklavčič@gov.si
	Institutions / Organisations					

	Name	Institution EN	Institution SI	Adress	Phone	E-Mail
12	Mojca ZITNIK	Statistical Office of the Republic of Slovenia	Statistični Urad Republike Slovenije	1000 Ljubljana	+386 1 2340 740	mojca.zitnik@gov.si
13	Matej MLAKAR	Statistical Office of the Republic of Slovenia	Statistični Urad Republike Slovenije	Vozarski pot 12 SI-1000 Slovenia	+386 12340 780	matej.mlakar@gov.si
14	Viktor GRILC	Nationale Institute of Chemistry	Kemijske Institut Slovenija	Hajdrikova 19, 1000 Ljubljana	+386 1 4760 258	viktor.grilc@ki.si
15	Matevž GOBEL	Institute for Public Health	Zovod za Zdravstveno Varstvo Celje	Ipavečava 18, 3000 Celje	+368 34 2511 200	matevz-gobec@zzv-ce.si
16	Edis GRCIČ	Institute for Public Health	Zovod za Zdravstveno Varstvo Celje	Ipavečava 18, 3000 Celje	+368 34 2511 200	edis.grcic@zzv-ce.si
	Municipalities					
17	Izidor JERALA	Municipality of Tržič	Občina Tržič	Trg svobode 18, 4290 Tržič	+386 4 597 15 30	izidor.jerala@trzic.si
18	Alenka MAROŠA	Municipality of Beltinci	Občina Beltinci	Mladinska ul. 2	+386 2 541 35 64	obcina@beltinci.si
19	Vesna SMAKA KINCL	Municipality of Maribor, Agency for the Protection of the Environment	Mestna obcina Maribor, Agencijfa za okolje	Ul. Heroja Staneta 1, 2000 Maribor	+386 2 220 14 45	vesna.smaka-kincl@maribor.si
20	Ljubomir KNEZ	City of Maribor, Communal Directorate	Komunalna direkcija MOM	Slovenska ul. 40 2000 Maribor Slovenija	+386 2 220 1 450	ljubomir.knez@maribor.si
21	Alenka KORPAR	Joint Municipal Administration of Municipalities Ptuj	Občina Ptuj	2250 Ptuj	+386 2 748 29 90	alenka.korpar@ptuj.si
22	Rok PENEC	Municipality of Moravče	Občina Moravče	1251 Moravče	+386 1 723 10 98	rok.penec@moravce.si
23	Damjan KONČNIK	ERICo Velenje Environmental Research & Industrial Co-operation Institute	ERICo Velenje Inštitut za ekološke raziskave	Koroška 58, SI-3322 Velenje, p.p. 22	+386 898 19 85	damjan.koncnik@erico.si
	Enterprises					
24	Matej KOVAČIČ	Landfill Operator	Javno komunalno podjetje Prodnik d.o.o.	Savska cesta 34, SI 1230 Domžale	+386 1 7295 438	matej.kovacic@jkp-prodnik.si
25	Igor MADON	Landfill Operator	Komunalno stanovanjska družba Ajdovščina d.o.o., Slovenia	Goriška cesta 23B, 5270 Ajdovščina	+386 5 3659738	ksda.igor@siol.net
25	Andrej MISKA	Waste Management Company	Komunala d.d. Nova Gorica	Cesta 25, junija 1	+386 31 698 554	andrej.miska@komunala-ng.si
26	Dario ROLIH	Waste Management Company	Komunala d.d. Nova Gorica	Cesta 25, junija 1	+386 31 698 554	dario.rolih@komunala-ng.si
26	Mitja PRAZNIK	Landfill Operator	SNAGA d.o.o.	Povsetova 6, 1000 Ljubljana	+386 1 477 9617	mitja.Praznik@snaga.si
27	Jorg HODALIČ	Waste Management Consultant	E-NET OKOLJE	Kajuhova ulica 17, 1000 Ljubljana	+386 41 516 715	jorg.hodalic@e-net-okolje.si

	Name	Institution EN	Institution SI	Adress	Phone	E-Mail
	Authorised Laboratories for Sampling					
28	Andreja PURKAT	Sampling Laboratory	Acroni, d.o.o.	Cesta Borisa Kidriča 44, 4270 Jesenice	+386 4 584 1010	andreja.purkat@acroni.si
29	Sabina ŠKRJANC	Sampling Laboratory	Acroni, d.o.o.	Cesta Borisa Kidriča 44, 4270 Jesenice	+386 4 584 1131	sabina.skrjanc@acroni.si
30	Danijela HERZOG	Sampling Laboratory	TAB-IPM d.o.o.	Žerjav 79, 2393 Črna na Koroškem	+386 2 870 02 61	danijela.herzog@siol.net

6.3 Participation List the Baltic States / Riga // 12.-14.02.2007

	Name	Institution	Adress	Phone	E-Mail
	European Commission				
1	Helmut MAURER	European Commission / DG Environment	European Commission - Avenue de Beaulieu 5, 1049 Brussels	+32 2 2964 599	helmut.maurer@ec.europa.eu
	National Authorities ESTONIA				
2	Robert KIVISELG	Ministry of the Environment Estonia, Waste Department	Narva mnt. 7a, 15172 Tallinn, Estonia	+372 626 2867	robert.kiviselg@envir.ee
3	Ulvi-Karmen MÖLLER	Ministry of the Environment Estonia, Waste Department	Narva mnt. 7a, 15172 Tallinn, Estonia	+372 626 2999	ulvi-karmen.moller@envir.ee
4	Kristo KEEVEND	Ministry of Environment Estonia, Järva County	Wiedemanni 13, Türi, 72213 Järvamaa, Estonia	+372 384 8684	kristo.keevend@jarva.envir.ee
5	Helen EDASI	Ministry of the Environment Estonia, Läänemaa County	Kiltsi tee 10, 90403 Haapsalu, LÄÄNEMAA, Estonia	+372 472 4729	helen.edasi@laane.envir.ee
6	Tiit KAASIK	Ministry of the Environment Estonia, Viljandi County	Paala tee 4, 71014 Viljandi Estonia	+372 435 5620	tiit.kaasik@viljandi.envir.ee
	National Authorities LATVIA				
7	Ilze DONINA	Ministry of the Environment Latvia, Waste Division	Peldu street 25, Riga, LV-1494, Latvia	+371 702 6515	ilze.donina@vidm.gov.lv
8	Madata BRIEDE	State Environmental Service Latvia, European Fund Management Division	Rupniecibas iela 23, LV-1045, Riga, Latvia	+371 708 4223	madata.briede@vidm.gov.lv
9	Zinta LACE	State Environmental Service Latvia, Department of Permits and Specifications	Rupniecibas iela 23, LV-1045, Riga, Latvia	+371 708 4223	zinta.lace@vvd.gov.lv
10	Maris BREMSS	State Agency for Management of Hazardous Waste Latvia	Miera iela 31, Salaspils 1, LV-2169, Latvija	+ 371 702 6569	madaza.briede@vidm.gov.lv
11	Vladislavs BELSKIS	State Agency for Management of Hazardous Waste Latvia	Miera iela 31, Salaspils 1, LV-2169, Latvija	+371 794 5857	ladislavs.belskis@bapa.gov.lv
12	Peteris ZARINS	Riga City Council, Waste Management Department	Boulevard Basteja 1, Riga, LV-1-12, Latvia	+371 701 2958	peteris.zarins@riga.lv

	Name	Institution	Adress	Phone	E-Mail
	Organisation/Association LATVIA				
13	Aldis VIDUZS	Waste Management Association of Latvia	Kursu str. 9-2, Riga, LV-1006, Latvia	+371 755 1381	lasa@edi.lv
14	Māris SIMANOVIČS	Green Dot Latvia	Baznīcas str. 20/22, Rīga, LV1010, Latvia	+ 371 703 9812	maris@zalais.lv
15	Valters TOROPOVS	Latvian Packaging Certification Centre	Gertrudes St. 3-6, Riga, LV-1010, Latvia	+371 781 3929	valters@esi.lv
16	Dace LODZINA	Latvian Packaging Certification Centre	Gertrudes St. 3-6, Riga, LV-1010, Latvia	+371 781 3931	dace@lisc.lv
	Enterprises LATVIA				
17	Kaspars PABERZS	North Vidzeme Waste Management Organisation Latvia	32 Rigas street, Valmiera, Latvia	+371 428 1250	kaspars.paberzs@zaao.lv
	National Authorities LITHUANIA				
18	Dalia ZIDONYTE	Ministry of Environment Lithuania, Contaminated Areas and Waste Division	A.Jaksto 4/9, LT – 01105 Vilnius, Lithuania	+370 5 266 3514	d.zidonyte@am.lt
19	Laura MACIULYTE	Ministry of Environment Lithuania, EU funds management Division	A.Jaksto 4/9, LT – 01105 Vilnius, Lithuania	+370 5 266 3531	l.maciulyte@am.lt
20	Zygimantas VAITKUS	Environmental Projects Management Agency Lithuania	Juozapaviciaus 9-610, Vilnius, Lithuania	+370 5272 5758	zygis@apva.lt

6.4 Participation List Poland / Gdansk // 27.-28.02.2007

	Name	Institution	Adress	Phone	E-Mail
	European Commission				
1	Helmut MAURER	European Commission, DG Environment	Avenue de Beaulieu 5, 1049 B-Brussels	+32 2 296 4599	helmut.maurer@ec.europa.eu
	National Authorities				
2	Beate KLOPOTEK	Ministry of Environment, Department of Waste Management	Wawelska St 52/54, 00-922 Warsaw	+48 22 57 92 798	Beata.Klopotek@mos.gov.pl
3	Piotr SZYMAŃSKI	Ministry of Environment, Department of Waste Management	Wawelska St 52/54, 00-922 Warsaw	+48 22 57 92 692	Piotr.Szymanski@mos.gov.pl
4	Beata SASINOWSKA	Department of European Law / Office of the Committee for European Integration	Al Szucha 23, 00-580 Warsaw.	+48 22 455 53 22	Beata_Sasinowska@mail.ukie.gov.pl
	Regional Authorities				
5	Diana FRASUNKIEWICZ	Marshal Office of the Pomeranian Voivodeship	ul. Okopowa 21/27, 80-810 Gdańsk	+48 58 32 61 769	d.frasunkiewicz@woj-pomorskie.pl
6	Anna KORZENIOWSKA	Marshal Office of the Pomeranian Voivodeship	Okopowa 21/27, 81- 810 Gdańsk	+48 58 32 61 661	a.korzeniowska@woj-pomorskie.pl
7	Agnieszka ORŁOWSKA	Marshal Office of the Pomeranian Voivodeship	Okopowa 21/27, 81- 810 Gdańsk	+48 58 32 61 652	a.orlowska@woj-pomorskie.pl
8	Kazimierz SUMISŁAWSKI	Marshal Office of the Pomeranian Voivodeship	Okopowa 21/27, 81- 810 Gdańsk	+48 58 32 61 660	k.sumislawski@woj-pomorskie.pl
9	Aleksandra WIATR	Marshal Office of the Pomeranian Voivodeship	Okopowa 21/27, 81- 810 Gdańsk	+48 58 32 61 709	a.wiatr@woj-pomoskie.pl
10	Sławomira PLICHTA	Marshal Office of the Pomeranian Voivodeship	Okopowa 21/27, 81- 810 Gdańsk	+48 58 32 61 668	s.plichta@woj-pomorskie.pl
11	Izabela BORKOWSKA	City of Gdańsk	Nowe Ogrody 8/12, 80- 803 Gdańsk	+48 58 32 36 423	rwpe@gdansk.gda.pl
12	Hanna KOLASINSKA	City Hall of Gdynia	52/54 Marsz. Piłsudskiego Av. 81-382 Gdynia	+48 58 66 20 217	e.rybicka@gdynia.pl
13	Tomas KWIATKOWSKI	Marshal Office of the Swietokrzyskie Voivodeship	Al. IX Wieków Kielc 3 25-516 Kielce	+48 41 342 13 87	tomasz.kwiatkowski@sejmik.kielce.pl
14	Aneta TOLLOCZKA	Marshal Office of the Masovian Voivodeship	Marshali 5 Ul Jogielkoviska 74, 03-301 Warsaw	+48 22 33 31 925	a.tolloczko@mazovie.pl

	Name	Institution	Adress	Phone	E-Mail
15	Renata STONECKA	Marshal Office of the Masovian Voivodeship	Marshali 5 Office of Mazoweckie Voivodoshipe Ul Jogielkoviska 74, 03-301 Warsaw	+48 22 33 31 925	r.stonecka@mazovie.pl
16	Aleksandra WOZNIAK-FIGURSKA	Marshal Office of the Lublin Voivodeship	Spokojna 4, 20-914 Lublin	+48 81 74 24 247	olafig@lublin.uw.gov.pl
17	Danuta GRODZICKA-KOZAK	Regional Fund of Environment and Water Protection in Gdańsk	Ul Straganiarska 24-27, 80-837 Gdańsk	+48 58 301 91 92	dkozak@wfosigw-gda.pl
18	Helena OKUNIESKA	Regional Fund of Environment and Water Protection in Gdańsk	Ul Straganiarska 24-27, 80-837 Gdańsk	+48 58 301 91 92	hokuniewska@wfosigw-gda.pl
19	Grażyna DRAGAN	City of Sopot	Ul. Kościuszki 25/27, 81-704 Sopot	+48 58 52 13 788	gradra@wp.pl
20	Hanna DZIKOWSKA	Voivodeship Gdansk		+48 58 301 1871	wsr@gdansk.nw.gov.pl
	Universities				
21	Maria PERTKIEWICZ-PISZCZ	Gdansk University of Technology, Faculty of Chemistry	Ul. G. Narutowicka 11/12, 80-952 Gdańsk	+48 58 48 347 1365	ktch@chem.pg.gda.pl
22	Jan HUPKA	Gdansk University of Technology, Faculty of Chemistry	Ul. G. Narutowicka 11/12, 80-952 Gdańsk	+48 58 48 347 2065	ktch@chem.pg.gda.pl
23	Andrzej TONDERSKI	Pomeranian Centre for Environmental Research and Technology		+48 58 622 90 11	pomcert@univ.gda.pl
24	Piotr MANCZARSKI	Warsaw Technical University, Dept. of Environmental Engineering	Ul. Nowowiejska 20, 00-653 Warsaw	+48 22 234 5306	piotr.manczarski@is.pw.edu.pl
25	Małgorzata MAKOWIECKA	Gdańsk University of Technology	Ul. G. Narutowicza 11/12 80-952 Gdańsk	+48 58 347 22 73	mm_pomreco@tlen.pl
26	Joanna BOROWSKA	Gdańsk University of Technology	Ul. G. Narutowicza 11/12 80-952 Gdańsk	+48 58 347 22 73	jb_pomcert@tlen.pl
	Enterprises				
27	Marek KUNDEGORSKI	Grontmij Polska Sp. z o.o.	ul. Ziębicka 35, 60-164 Poznań	+48 61 864 93 73	marek.kundegorski@grontmij.pl
28	Maria KOWALEWSKA KOSKA	Waste and Packaging Recovery Org. EKOLA S.A.	Straganiarska 24-27, 80-837 Gdańsk,	+48 58 3059 275	mkk@ekola.pl
29	Katarzyna WALC	Zaklad Utylizacyjny Sp. z o.o. , [Treatment Plant Co. Ltd.]	St. Jabloniowa 55, 80-180 Gdańsk	+48 58 326 01 00	kwalc@zut.com.pl
30	Patrycja PAWIK	Zaklad Utylizacyjny Sp. z o.o. , [Treatment Plant Co. Ltd.]	St. Jabloniowa 55, 80-180 Gdańsk	+48 58 326 01 00	ppawik@zut.com.pl

	Name	Institution	Adress	Phone	E-Mail
31	Hanna WIELIECKA	Project & Consultancy Service EKO-KONSULT	Ul. Kościerska 5, 80-328 Gdańsk	+48 58 554 31 38	hwielicka@interia.pl
32	Magdalena KIEJZIK-GLOWINSKA	Project & Consultancy Service EKO-KONSULT	Ul. Kościerska 5, 80-328 Gdańsk	+48 58 554 31 38	mglowinska@ekokonsult.pl
33	Blanca DUTKOWSKA			+48 58 509 978 206	blankadutkowska@wp.pl

6.5 Participation List Hungary / Budapest // 27.-28.03.2007

	Name	Institution EN	Institution HU	Adress	Phone	E-Mail
	European Commission					
1	Michaïl Papadoyannakis	European Commission, DG Environment		Avenue de Beaulieu 5, 1049 B-Brussels	+32 2 296 3914	michail.papadoyannakis@ec.europa.eu
	National Authorities					
2	Szabolcs Horváth	Ministry of Environment and Water, Environmental Management Department, Waste Prevention and Treatment Section	Környezetvédelmi és Vízügyi Miniszterium (KvVM)	Fo utca 44-50, H-1011. Budapest	+36 1 457 3443	horvathsz@mail.kvvm.hu
3	Csaba Markó	Ministry of Environment and Water, Environmental Management Department, Waste Prevention and Treatment Section	Környezetvédelmi és Vízügyi Minisztérium (KvVM) Környezetgazdasági Főosztály	Fo utca 44-50, H-1011. Budapest	+36 1 457 3570	marko@mail.kvvm.hu
4	Réka Herczeg dr.	Ministry of Environment and Water, Legislation Development Department	Környezetvédelmi és Vízügyi Minisztérium (KvVM) Törvényelőkészítési Főosztály	Fo utca 44-50, H-1011. Budapest	+36 1 457 3332	herczegr@mail.kvvm.hu
5	Horváth Zsolt	National Inspectorate for Environment, Nature and Water		Mészáros u. 58/a, H-1016 BUDAPEST	+36 1 2249 213	horvathzs@mail.kvvm.hu
	Regional Authorities					
6	Zsuzsanna Radányi	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Nyugat-Dunántúli Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	9700 Szombathely, Vörösmarty u. 2., 9701 Szombathely Pf. 183.	+36 94 328 188	nyugatdunantuli@zoldhatosag.hu
7	Judit Hajdu	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Észak-Dunántúli Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	9021 Győr Árpád u. 28-32., 9002 Győr Pf. 471	+36 96 524 000	eszakdunantuli@zoldhatosag.hu

	Name	Institution EN	Institution HU	Adress	Phone	E-Mail
8	Csilla Pádár	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Alsó-Tisza-völgyi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	6720 Szeged Felső-Tiszapart u. 17., 6712 Szeged Pf. 1048	+36 62 553 030	alsotiszavideki@zoldhatosag.hu
9	Gyula Kovács	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Észak-Magyarországi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	Észak-magyarországi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség, H-3501 Miskolc, Pf.: 379	+36 46 517 334	
10	Krisztián Koleszár	Inspectorate for Environmental Protection, Nature Conservation and Water Management (Middle - Danube - Valley)	Észak-Magyarországi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	Észak-magyarországi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség, H-3501 Miskolc, Pf.: 379	+36 46 517 334	
11	Dóra Kálmán	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Közép-Duna-völgyi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	1072 Budapest, Nagydiófa utca 10-12., 1447 Budapest, Pf. 541	+36 1 478 4400	kozepdunavolgyi@zoldhatosag.hu
12	Enikő Szónok	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Közép-Duna-völgyi Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	1072 Budapest, Nagydiófa utca 10-12., 1447 Budapest, Pf. 541	+36 1 478 4400	kozepdunavolgyi@zoldhatosag.hu
13	Ferenc Lévai	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Közép-Tisza-vidéki Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	5000 Szolnok Ságvári krt. 4., 5001 Szolnok Pf. 25.	+36 56 375 111	kozeptiszavideki@zoldhatosag.hu
14	Antal Szalai	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Közép-Tisza-vidéki Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	5000 Szolnok Ságvári krt. 4., 5001 Szolnok Pf. 25.	+36 56 375 111	kozeptiszavideki@zoldhatosag.hu
15	Rita Farkas	Inspectorate for Environmental Protection, Nature Conservation and Water Management	Felső-Tisza-vidéki Környezetvédelmi, Természetvédelmi és Vízügyi Felügyelőség (KTVF)	4400 Nyíregyháza, Kölcsey u. 12-14., 4401 Nyíregyháza, Pf. 246	+36 42 598 931	felsotiszavideki@zoldhatosag.hu

	Name	Institution EN	Institution HU	Adress	Phone	E-Mail
	Organisations/ Associations					
16	Beáta Bagi	Hungarian Compost Society	Magyar Minösegi Komposzt Társaság	H-2100 Gödölló, Postbox 330	+36 28 512 490	alexa@komposzt.hu info@profikomp.hu
17	Csaba Kiss	Environmental Management and Law Association (EMLA)		1076 Budapest Garay utca 29-31 I/1. Hungary	+36 1) 322-8462 15 ext, 352-9925	emla@emla.hu drkiss@emla.hu
18	László Szilágyi	Waste Prevention Alliance Hungary (HuMuSz)	Hulladék Munkaszövetség (HuMuSz)	1111 Budapest Saru u. 11. Hungary	+36 1386 2648	szili@humusz.hu
	Institutions					
19	Imre Szabó	University of Miskolc, Institute of Environmental Management Department of Hydrogeology and Engineering Geology		H-3515 MISKOLC-EGYETEMVAROS	003646-565076	hgszabo@uni-miskolc.hu
	Enterprises					
20	Zsolt Szamek	A.S.A. Magyarország Ltd.	A.S.A. Magyarország Ltd.	Kőrösi út 53, H-2360 Gyál	+36 29 540-250	szamek.zsolt@asa-hu.hu
21	Jmre Reith	A.S.A. Vöztiszdasao	A.S.A. Vöztiszdasao		+36 62535780	
22	Judit Forian	Municipal Public Services Co., Budapest			+36-23-560-501	forianj@fkf.hu
23	Peter Szanto	Municipal Public Services Co., Budapest			+36-23-560-501	scantop@fkf.hu
24	Tamás Dudás	Technoplus Environmental Technology Development Ltd.	Technoplus Kft.	H-1142 Budapest Ráskay Lea Str. 77	36-1-2510823	dudas.tamas@technoplus.t-online.hu
25	Gabor Mile	Waste Management Centre of Pusztazámor				fkfzrt@fkf.hu

6.6 Participation List Slovak Republic / Bratislava // 29.-30.03.2007

	Name	Institution EN	Institution SK	Adress	Phone	E-Mail
	European Commission					
1	Helmut Maurer	European Commission, DG Environment		Avenue de Beaulieu 5, 1049 B-Brussels	+32 2 296 4599	helmut.maurer@ec.europa.eu
	National Authorities					
2	Maroš Záhorský	Ministry of the Environment, Waste Management Department	Ministersvo životného prostredia Slovenskej republiky, Odbor odpadového hospodárstva	Nam. L. Stura 1, 812 35 Bratislava	+421 2 5956 2386	maros.zahorsky@enviro.gov.sk
3	Eleonóra Šuplatová	Ministry of the Environment, Waste Management Department	Ministersvo životného prostredia Slovenskej republiky, Odbor odpadového hospodárstva	Nam. L. Stura 1, 812 35 Bratislava	+421 2 5956 2244	eleonora.suplatova@enviro.gov.sk
4	Peter Kuna	Ministry of the Environment, Environmental Programme Section	Ministersvo životného prostredia Slovenskej republiky, Sekcia environmentálnych programov a projektov	Nam. L. Stura 1, 812 35 Bratislava	+421 2 5956 2188	kuna.peter@enviro.gov.sk
5	Zuzana Luptáková	Ministry of the Environment, Environmental Programme Section	Ministerstvo životného prostredia Slovenskej republiky, Sekcia environmentálnych programov a projektov	Nam. L. Stura 1, 812 35 Bratislava	+421 2 59 56 2188	luptakova.zuzana@enviro.gov.sk
6	Peter Gallovič	Ministry of the Environment, Environmental Programme Section	Ministerstvo životného prostredia Slovenskej republiky, Sekcia environmentálnych programov a projektov	Nam. L. Stura 1, 812 35 Bratislava	+421 2 5956 2386	gallovic@orangemail.sk
7	Katarína Jankovičová	Ministry of the Environment, IPPC Department	Ministerstvo životného prostredia SR, odbor environmentálnych rizík ŽP, oddelenie IPKZ	Nam. L. Stura 1, 812 35 Bratislava	+421 2 59 56 2388	katarina.jankovicova@enviro.gov.sk
8	František Šopinec	Slovak Environmental Inspection, Central Waste Managemet Inspection	Slovenská inšpekcia životného prostredia, Ústredie inšpekcie odpadového hospodárstva	Karloveská 2, 842 22 Bratislava 4	+421 2 602 92 436	sopinec@sizp.sk
9	Jarmila Hrabinová	Slovak Environmental Agency, Waste Management Centre (COHEM)	Slovenská agentúra životného prostredia, Centrum odpadového hospodárstva	Nobelova 34, 831 02 Bratislava	+421 2 4463 4352 3	labor@sazp.sk

	Name	Institution EN	Institution SK	Adress	Phone	E-Mail
10	Elena Bodíková	Slovak Environmental Agency, Waste Management Centre (COHEM)	Slovenská agentúra životného prostredia, Centrum odpadového hospodárstva	Hanulova 5/D 844 40 Bratislava	+4212 6020 1611	Elena.bodikova@sazp.sk
11	Milena Okoličányiová	Slovak Environmental Agency, Waste Management Centre (COHEM)	Slovenská agentúra životného prostredia, Centrum odpadového hospodárstva	Hanulova 5/D 844 40 Bratislava	+421 2 6020 1629	milena.okolicanyiova@sazp.sk
	Regional Authorities					
12	Miroslav Held	Regional Authority for Environment Bratislava, Waste Management Department	Krajský úrad životného prostredia, Oddelenie odpadového hospodárstva	Karloveská 2, 842 19 Bratislava 4	+421 2 60 301 734	held.miroslav@ba.kuzp.sk
13	Emília Prerovská	Regional Authority for Environment Bratislava, Waste Management Department	Obvodný úrad životného prostredia, Oddelenie odpadového hospodárstva	Karloveská 2, 842 22 Bratislava 4	+421 2 603 01 740	prerovska.emilia@ba.ouzp.sk
14	Belovičová Mária,	Town Council of the City of Bratislava	Magistrát hlavného mesta SR Bratislava	Primaciálne nám. č.1, P.O.BOX 192, 814 99 Bratislava 1	+421 2 59356 444	belovicova@bratislava.sk
15	Krištínová Anna	Town Council of the City of Bratislava	Magistrát hlavného mesta SR Bratislava	Primaciálne nám. č.1, P.O.BOX 192, 814 99 Bratislava 1	+421 2 5935 544	kristnova@bratislava.sk
	Institutions					
16	Klára Kohútová	State Geological Institute of Dionyz Stur	Štátny geologický ústav Dinonýza Štúra	Mlynská Dolina 1, 81704 Bratsialsva 11	+421 2 5937 5312	kohutova@gssr.sk
17	Ingrid Lipovská	Environmental Fund	Environmentálny fond	Bukurestska 4, 81326 Bratislava	+421 2 5778 3118	lipovskai@envirofond.sk
	Companies					
18	Uršula Pomfyová	V.O.D.S. Košice, a.s.	V.O.D.S. Košice, a.s.	Podnikateľská 2, 040 17 Košice-Barca	+421 55 670310	ursula.pomfyova@vods.sk
19	Mária Dekaiova	SITA Slovensko, a.s.	SITA Slovensko, a.s.	Mochovce 1/1, 935 32 Kalná nad Hronom	+421 36 6391 271	maria.dekaiova@sitaslovensko.sk
20	Juraj Farkas	Integrated Skills Ltd UK	Integrated Skills Ltd UK	Sasinkova 7 Svaty Jur	+421 903 419 229	jfarkas@integrated-skills.com
21	Ján Lehotay	Marius Pedersen	Marius Pedersen	Súvoz 1, areál Trens a.s., 912 50 Trenčín	+421 32 743 75 434	lehotay.j@mariuspedersen.sk
22	Aneta Bíková	A.S.A. SLOVENSKO spol. s r.o. headquarters Bratislava	A.S.A. Slovensko, spol. s.r.o., centrála Bratislava	P.O.Box 8, 820 04 Bratislava 24	+4212 5020 6811	sekretariat@asa.sk
23	Peter Krasnec	A.S.A. SLOVENSKO spol. s r.o. headquarters Bratislava	A.S.A. Slovensko, spol. s.r.o., centrála Bratislava	P.O.Box 8, 820 04 Bratislava 24	+4212 5020 6820	krasnec@asa.sk

6.7 Participation List Cyprus / Nicosia // 25.-26.04.2007

	Name	Institution	Address	Phone	E-Mail
	European Commission				
1	Helmut Maruer	EU Commission, DG Environment	European Commission - Avenue de Beaulieu 5, 1049 Brüssel	+32 2 296 4599	helmut.maurer@ec.europa.eu
	Key Authorities				
2	Costas Papastavros	Ministry of Agriculture, Natural Resources and Environment; Environment Service	20-22 28th October Str, 2414, Nicosia, Cyprus	+357 - 2230 3886	cpapastavros@environment.moa.gov.cy
3	Demetris Demetriou	Ministry of Agriculture, Natural Resources and Environment; Environment Service	20-22 28th October Str, 2414, Nicosia, Cyprus	+357 2230 3857	ddemetriou@environment.moa.gov.cy
4	Nicoletta Kythreotou	Ministry of Agriculture, Natural Resources and Environment; Environment Service	20-22 28th October Str, 2414, Nicosia, Cyprus		nkythreotou@environment.moa.gov.cy
5	Elena Christodoulidou	Ministry of Agriculture, Natural Resources and Environment; Environment Service	20-22 28th October Str, 2414, Nicosia, Cyprus	+357 2230 3857	echristodoulidou@environment.moa.gov.cy
6	Polys Michaelides	Ministry of Agriculture, Natural Resources and Environment, Geological Survey	CY-1411 Nicosia	+357 22 40 9213	director@gsd.moa.gov.cy
7	Tiotus Mixkutisus	Ministry of Agriculture, Natural Resources and Environment, Geological Survey	CY-1411 Nicosia	+357 22 40 9213	director@gsd.moa.gov.cy
8	Eleni Gegious Morisseau	Ministry of Agriculture, Natural Resources and Environment, Geological Survey	CY-1411 Nicosia	+357 22 40 9217	emorisseau@gsd.moa.gov.cy
9	Georgios Koullapis	Ministry of the Interior	Dimostheni Severi, 1453, Nicosia Cyprus	+357 2286 7858	gkoullapis@moi.gov.cy
10	Stergios Polpanis	Ministry of the Interior	Dimostheni Severi, 1453, Nicosia Cyprus	+357 2286 7658	gkoullapis@moi.gov.cy
11	Antonis Kourouzides	Ministry of the Interior	Dimostheni Severi, 1453, Nicosia Cyprus		akourouzides@moi.gov.cy
12	Solomos Solomou	Ministry of Health, Public Health Services	Kinyras 6, 1450 Nicosia, CYPRUS	+357 22 303182	akaris@mphs.moh.gov.cy
13	Philippos Georgiades	Public Health Services, Ministry of Health	Kinyras 6, 1450 Nicosia, CYPRUS	+357 22 303182	akaris@mphs.moh.gov.cy; filgeo@cytanet.com.cy
14	Areti Pantelidou	Pharmaceutical Services, Pharmaceutical Inspection	Pharmaceutical Services 1475 Lefkosia	+ 357 22 40 71 27	apantelidou@phs.moh.gov.cy
15	Georghia Solomonidou-Christofidou	Planning Bureau	29 Vyronos St., 1409, Nicosia, Cyprus.	+357 22 602 841	gchristofidou@planning.gov.cy

	Name	Institution	Address	Phone	E-Mail
	Association / NGOs				
16	Costas Skoufaris	Refuse Collection Association	Sina Oros, Solea, Nicosia, Cyprus	+357 9965 7707	
17	Lena Machlovzarides	Union of Cyprus Municipalities	78 Rigainas Str, 1010, Nicosia, Cyprus	+357 224 45240	machlovzarides@ucm.org.cy
18	Savvol Savvas	Union of Cyprus Communities	P.O. Box 25466, 1310 Strovolos	+357 226 725 76	cuc@cytanet.com.cy
19	Athos Agapitos	Cyprus Green Party	169, Athalassas Ave., 2024 Srovolos	+357 22 51 87 87	chrisemily@gmail.com
20	Achilleas Achilleos	Association for the Protection of Animals and Birds of Larnaca and Famagusta		+357 7000 3030	chrisemily@gmail.com
21	Maria Monou	University of Cyprus			Monou@ucy.ac.cy
22	Laxis Demetriades	Cyprus Environmental Movement			eka.agroton@cynet.com.cy
23	Minas Mina	Cyprus Recyclers Association and Cooperators			recycl@cytanet.com.cy
24	Athanasiov Thanos	Minas Recycling Group			Dir@cytanet.com.cy
25	Pierantonios Papazoglov	Unit of Environmental Shedies			papazoglou.p@intercollege.ac.cy
26	Vassilis Vassiliades	Cyprus Chamber of Commerce			vasukus@ccci.org.cy
	Enterprises				
27	Michael Michaelidis	Barracuda Intertrade Ltd.	Kirzis Center D34, PO Box 54448, Street Emmanuel Rhoide, City 3724 Limassol	+357 2 587 11 11	Barracud@spidernet.com.cy
28	Ayis Iacovides	Iacovides & Associates, Environmental and Water Consultant Ltd.	3 Stavrou Avenue, 2035, Strovolos, Cyprus	+357 2242 9444	iaco@cytanet.com.cy
29	Yiannis Fessas	PROPLAN Ltd	P.O. Box 25672, 1311, Nicosia, Cyprus	+357 2262 4374	proplan@spidernet.com.cy
30	Theofanis Lolos	ENVIROPLAN S.A.	Ag. Konstantinou 40	+30 210 610 51278	fl@enviroplan.gr
31	Alexior Panagoulopoulos	ENVIROPLAN S.A.	Ag. Konstantinou 40	+30 210 610 51278	A.Panagoulopoulos@enviroplan.gr
32	Andreas Mentzis	EPEM S.A.	141b ACHARNON STR. 104 46, ATHENS GREECE	+30 210 8627598	amentzis@epem.gr
33	Nikos Gargoulas	EPEM S.A.	141b ACHARNON STR. 104 46, ATHENS GREECE	+30 210 8627598	ngargoulas@epem.gr
34	Christoferou Christothea	Qualitylink			kristia@qualitylink.com.cy
35	Yolanda Koullais	Private Consultant			yolandas@cytanet.com.cy
36	Kyriacos Papakyriacou	Hippocompus Inv. and Consultantd Ltd.			tcharly@cytanet.com.cy

6.8 Participation List Malta / La Valetta // 07.05.2007

	Name	Institution	Address	Phone	E-mail
European Commission					
1	Helmut Maurer	EU Commission, DG Environment	European Commission - Avenue de Beaulieu 5, 1049 Brussels	+32 2 296 4599	helmut.maurer@ec.europa.eu
	Key Authorities				
2	Vincent Gauci	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 4106	vincent.gauci@mepa.org.mt
3	Kevin Sciberras	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 5013	kevin.sciberras@mepa.org.mt
4	Kevin Mercieca	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 1535	kevin.mercieca@mepa.org.mt
5	Franck Lauwers	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 5004	franck.lauwers@mepa.org.mt
6	Mark O'Neill	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 5006	mark.oneill@mepa.org.mt
7	Denise Attard	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 5009	denise.attard@mepa.org.mt
8	Louis Vella	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 3519	louis.vella@mepa.org.mt
9	Pauline Farrugia	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 3506	pauline.farrugia@mepa.org.mt
10	Elysia Bugeja	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 350	elysia.bugeja@mepa.org.mt
11	Alfred Sharples	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 5005	alfred.sharples@mepa.org.mt
12	Charmaine Ajao	Malta Environment and Planning Authority (MEPA), Environment Protection Directorate, Pollution Prevention and Control Unit,	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 3500	charmaine.vassallo@mepa.org.mt
13	Dimitrio Duca	Malta Environment and Planning Authority (MEPA)	P.O. Box 200, Marsa GPO 01, Malta	+356 2290 1531	dimitrio.duca@mepa.org.mt
14	Claudine Cardona	Malta Resources Authority (MRA)	MRA, 2nd floor, Millennia, Complex, Alto, Moro Road, Marsa , Malta	+356 2295 5153	claudine.cardona@mra.org.mt
15	Duncan Chetcuti Ganado	Food & Veterinary Regulation Division	The Abattoir, Albert Town, Marsa CMR 02, Malta	+356 2590 5305	duncan.chetcuti.ganado@gov.mt
	Association / NGO				
16	Marco Cremona	Friends of the Earth	P.O. Box 13, Valletta , Malta	+356 7926 1562	info@sustechconsulting.com

	Name	Institution	Address	Phone	E-mail
	Enterprises				
17	Henrietta Putzulu Caruana	WasteServ Malta Limited + Maghtab Landfill	Phoenix Building, Old Railway Track, Santa Venera HMR 16, Malta	+356 2385 8120	hdebono@wasteservmalta.com
18	Daniel Bowes	WasteServ Malta Limited + Maghtab Landfill	Phoenix Building, Old Railway Track, Santa Venera HMR 16, Malta	+356 2385 8000	dbowes@wasteservmalta.com
19	Simon Borg	WasteServ Malta Limited	Phoenix Building, Old Railway Track, Santa Venera HMR 16, Malta	+356 2385 8000	sborg@wasteservmalta.com
20	Boris Farrugia	Polidano Group, Eco Ways	Hal-Harua Rd, LVQA	+356 21 244 241	befarr@maltanet.net

7 Annex II: Agendas

7.1 Agenda Czech Republic / Prague // 18.-19.01.2007

Thursday, 18 January 2007

9:00	Registration, Come together, including Coffee
Chairperson: Karel Bláha/Leoš Křenek, Ministry of the Environment, Czech Republic	
10:00	Karel Bláha / Leoš Křenek (Deputy Minister Head of Section TOZP/ Director of Waste Management Dpt, MoE) *Opening of the Workshop*
10:05	Anke Joas (BiPRO GmbH, Munich) *Welcoming of participants and introduction of the EU Project*
I. RELEVANT LEGISLATION AND STATUS QUO	
10:15	Anke Joas (BiPRO GmbH, Munich) *Overview on relevant European legislation – The Landfill Directive*
10:50	Helmut Maurer (EU Commission, DG Environment, Brussels) *Status and problems with the implementation of European legislation for landfills - An European perspective*
11:25	Leoš Křenek (Director of Waste Management Department, MoE, Prague) *Current situation of the waste management in the Czech Republic*
11:45	Věra Havránková (Waste Management Department, MoE, Prague) *Waste Management Plan of the Czech Republic connected with the landfilling and the Operational Programme - Environment*
12:00	Viktor Škarda (Waste Management Department, MoE, Prague) *Cooperation between organisations of the Ministry of the Environment and their responsibility*
12:15	Petr Stejskal (State Environmental Fund, Prague) *The role of State Environmental Fund of the Czech Republic and Landfilling of Waste*
12:30	Jan Plavec (Waste Management Department, MoE, Prague) *Landfilling of Waste according to the Act on Waste*
12:45	Questions and Discussions
13:00	LUNCH BREAK
Chairperson: Anke Joas / Elisabeth Müller, BiPRO GmbH, Munich, Germany	
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
14:30	Karel Kovařík (EIA and IPPC Department., MoE, Prague) *Procedures for permitting of landfills according to the IPPC process*
14:45	Elisabeth Müller (BiPRO GmbH, Munich) *Legal requirements for acceptance and control during operation of landfills*
15:05	Milena Veverková (Univerza SoP, s.r.o., Praha) *Practical aspects of acceptance criteria and operation of landfills in the Czech Republic*
15:20	Petr Havelka (Czech Environmental Inspection, Prague) *Czech Environmental Inspection and landfilling in the Czech Republic*
15:50	Questions and Discussions
16:00	COFFEE BREAK

16:15	Jan Buda (Center for Waste Management, Prague) *Statistical data and operators in the field of landfilling*
16:30	Hana Pacáková (Jihočeský Regional Office) *Landfilling experience in the Jihočeský Region*
16:45	Questions and Discussion
18:00	END OF THE FIRST WORKSHOP DAY

Friday, 19 January 2007

III. EXCURSION	
8:30	Excursion to the AVE CZ, a.s., Praha , Benatky nad Jizerou landfill
11:30	LUNCH BREAK
Chairperson: Anke Joas, BiPRO GmbH, Munich / Leoš Křenek, Ministry of the Environment, Czech Republic	
IV. SPECIFIC LANDFILLING PROBLEMS AND CONCLUSIONS OF THE WORKSHOP	
13:00	Dagmar Sirotková (Center for Waste Management, Prague) *Waste acceptance criteria for landfilling – determination of acid- and base-neutralizing capacities and the DOC*
13:20	Jiří Čenský (AVE CZ, a.s., Praha) *Practical experience with landfilling in AVE CZ*
13:40	Ivo Kropáček (Friends of the Earth, Olomouc) *Biowaste management – a crucial problem for EU countries*
14:00	Questions, open discussion, final conclusions
15:00	END OF THE WORKSHOP

7.2 Agenda Slovenia / Ljubljana // 31.01.-01.02.2007

Wednesday, 31 January 2007

9:00	Registration, Come together, including Coffee
Chairperson: Lucija Jukić Soršak, Ministry of Environment and Spatial Planning, Slovenia / Nicole Seyring, BiPRO GmbH, Munich, Germany	
10:00	Radovan Tavzes (Director General of Environment Directorate, Ministry of Environment and Spatial Planning) *Opening of the Workshop*
10:05	Nicole Seyring (BiPRO GmbH, Munich) *Welcoming of participants and introduction of the EU Project*
I. RELEVANT legislation AND STATUS QUO	
10:15	Nicole Seyring (BiPRO GmbH, Munich) *Overview on relevant European legislation – The Landfill Directive*
10:50	Helmut Maurer (EU Commission, DG Environment, Brussels) *Status and problems with the implementation of European legislation for landfills - An European perspective*
11:25	Radovan Tavzes (Director General of Environmental Directorate, Ministry of Environment and Spatial planning) *Transposition of EU Landfill legislation into the legislation of the Republic of Slovenia*
12:00	Irena Koželj (Environmental Agency, Waste Management Section) *Permiting procedures for landfills*
12:20	Marija Ulrich-Supovec (Environmental Agency, Waste Management Section) *Landfill tax in Slovenia in the period 2001-2005*
12:45	Tatjana Bernik (Inspectorate for the Environment and Spatial Planning) *Landfill inspection and enforcement in 2006*
13:10	Vesna Smaka Kincl (Municipality of Maribor, Agency for the Protection of the Environment) *Obligations of slovenian and municipal regulations regarding waste management with actual cases of the city of Maribor*
Chairperson: Radovan Tavzes, Ministry of Environment and Spatial Planning, Solvenia / Nicole Seyring, BiPRO GmbH, Munich, Germany	
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
14:30	Elisabeth Müller (BiPRO GmbH, Munich) *Legal requirements for acceptance and control during operation of landfills*
15:00	Janko Žerjav (Environment Directorate, Ministry of Environment and Spatial Planning) *The revision of IPPC Directive and inclusion of recovery and landfill of waste*
15:35	Mojca Žitnik (Statistical office of the Republic of Slovenia) (enquired) *State of the art of current landfill situation - Statistical data*
16:00	Questions and Discussions

16:15	COFFEE BREAK
16:30	Mitja Praznik (SNAGA d.o.o Landfill) *Non-hazardous waste landfill, Barje, Ljubljana*
16:55	Igor Madon (Komunalno stanovanjska družba Ajdovščina d.o.o.) *Potential deviations implementing the European Landfill Directive and derived national regulations into the practice - A perspective of landfill operator*
17:20	Questions and Discussion
18:00	END OF THE FIRST WORKSHOP DAY

Thursday, 1 February 2007

III. EXCURSION	
9:30	Excursion to the BARJE landfill for non-hazardous waste in Ljubljana
Chairperson: Nicole Seyring, BiPRO GmbH, Munich/ Helmut Maurer, European Commission, Brussels	
IV. SPECIFIC LANDFILLING PROBLEMS AND CONCLUSIONS OF THE WORKSHOP	
12:30	Questions, open discussion, final conclusions
14:00	END OF THE WORKSHOP

7.3 Agenda the Baltic States / Riga // 12.-14.02.2007

Monday, 12 February 2007

from 13:30	Registration, Come together, including Coffee (room 409, 4th floor of Ministry)
Chairperson: Anke Joas, Nicole Seyring (BiPRO GmbH, Germany)	
14:00	Ilze Donina (MoE Latvia, Head of Waste Division) *Opening of the Workshop*
14:05	Nicole Seyring (BiPRO GmbH, Munich) *Welcoming of participants and introduction of the EU Project*
I. RELEVANT LEGISLATION AND STATUS QUO	
14:15	Anke Joas (BiPRO GmbH, Munich) *Overview on relevant European legislation – The Landfill Directive*
14:50	Helmut Maurer (EU Commission, DG Environment, Brussels) *Status and problems with the implementation of European legislation for landfills – An European perspective*
15:25	Ilze Donina (MoE Latvia, Head of Waste Division) *Overview of landfilling in Latvia*
15:55	Nicole Seyring (BiPRO GmbH, Munich) *Legal requirements for acceptance and control during operation of landfills*
16:20	Questions and Discussions
17:15	END OF DAY ONE

Tuesday, 13 February 2007

II. EXCURSION	
7:45	Excursion to North-Vidzeme Landfill
13:30	LUNCH BREAK
Chairperson: Anke Joas, Nicole Seyring (BiPRO GmbH, Germany)	
III. STATUS OF IMPLEMENTATION IN LATVIA	
14:30	Ilze Donina (MoE Latvia, Environmental Protection Department) *Landfilling as part of regional waste management plans*
14:55	Kaspars Paberzs, Girts Kuplais (North Vidzeme waste management organisation, Latvia) *Waste disposal in North Vidzeme*
15:20	Māris Simanovičs (Green Dot Latvia) *Separate collection of waste in Latvia: a prerequisite for reduction of municipal solid waste land-filling and prevention of its negative effects on environment*
15:45	COFFEE BREAK
16:00	Questions and Discussions
16:30	END OF DAY TWO

Wednesday, 14 February 2007

Chairperson: Anke Joas, Nicole Seyring (BiPRO GmbH, Germany) (Room 409, 4th floor of Ministry)	
IV. STATUS OF IMPLEMENTATION IN ESTONIA	
9:00	Robert Kiviselg (MoE Estonia, Waste Department) Overview of Estonian landfills – Development, building, closure and recultivation
9:30	Kristo Keevend (Järva County Department, Estonia) *Changes in municipal solid waste landfilling in Estonia*
10:00	Questions and Discussion
10:30	COFFEE BREAK
V. STATUS OF IMPLEMENTATION IN LITHUANIA	
10:45	Dalia Zidonyte (MoE Lithuania, Contaminated Areas and Waste Division) *Lithuanian policy in waste management sector*
11:10	Zygimantas Vaitkus (Environmental Projects Management Agency) *Funding in the waste management sector in Lithuania - The cohesion fund*
11:30	Questions and Discussion
12:30	LUNCH BREAK
V. FINAL SESSION	
13:30	Final Discussion, Conclusions
15:00	END OF THE WORKSHOP

7.4 Agenda Poland / Gdansk // 27.-28.02.2007

Tuesday, 27 February 2007

9:00	Registration, Come together, including Coffee (Sala Herbowa, ground floor)
Chairperson: Anke Joas, Ferdinand Zotz (BiPRO GmbH)	
10:00	Jan Kozłowski (Marshal of the Pomorskie Voivodeship) *Opening of the Workshop*
10:05	Anke Joas (BiPRO GmbH, Munich) *Welcoming of participants and introduction of the EU Project*
I. RELEVANT LEGISLATION AND STATUS QUO	
10:15	Anke Joas (BiPRO GmbH, Munich) *Overview on relevant European legislation – The Landfill Directive*
10:50	Helmut Maurer (EU Commission, DG Environment, Brussels) *Status and problems with the implementation of European legislation for landfills – An European perspective*
11:30	Piotr Szymański (Ministry of Environment, Department of Waste Management, Warsaw) *Waste landfills. Procedure methods, tasks arising from the National waste management plan 2010*
12:00	Anna Korzeniowska (Marshall Office Gdansk) *Overview of Status of landfills in the Pomorskie Voivodeship*
12:30	Question and Discussion
13:00	LUNCH BREAK
II. TECHNICAL REQUIREMENTS	
Chairperson: Anke Joas, Ferdinand Zotz (BiPRO GmbH)	
14:00	Marek Kundegorski (Grontmij Polska Sp. z o.o.) *Development of municipal solid waste (MSW) landfilling in Poland during the last 10 years – legal and technical aspects*
14:30	Piotr Manczarski (Warsaw Technical University, Dept. of Environmental Engineering) *Technological requirements for different type of landfills*
15:00	Ferdinand Zotz (BiPRO GmbH, Munich) *Legal requirements for acceptance and control during operation of landfills*
15:25	COFFEE BREAK
15:40	Danuta Grodzicka-Kozak (Regional Fund of Environment and Water Protection, Gdansk) *Finance sources for the waste management in Poland*
16:00	Anke Joas (BiPRO GmbH, Munich) *Experiences with the implementation of the Landfill Directive from the previous project events*
16:15	Question and Discussion
17:00	END OF DAY ONE

Wednesday, 28 February 2007

III. EXCURSION	
8:00	Excursion to the landfills of Gdynia and Gdansk
IV. CLOSING SESSION (Meeting room landfill Gdansk)	
Chairperson: Anke Joas, Ferdinand Zotz (BiPRO GmbH)	
12:00	Final Discussion, Conclusions
13:00	END OF THE WORKSHOP

7.5 Agenda Hungary / Budapest // 27.-28.03.2007

Tuesday, 27 March 2007

9:00	Registration, Come together, including Coffee
Chairperson: Anke Joas, BiPRO GmbH, Munich, Germany	
10:00	Erdős Péterné (KvVM Environment Management Department, Head of Department) *Opening of the Workshop*
10:05	Anke Joas, Elisabeth Müller (BiPRO GmbH, Munich) *Welcoming of Participants and Introduction of the EU Project*
I. RELEVANT legislation AND STATUS QUO	
10:15	Anke Joas (BiPRO GmbH, Munich) *Overview on Relevant European Legislation – The Landfill Directive*
10:50	Michaïl Papadoyannakis (EU Commission, DG Environment, Brussels) *Status and Problems with the Implementation of European Legislation for Landfills – A European Perspective*
11:25	Csaba Markó (KvVM Environment Management Department, Deputy Head of Department) *Status and Development Plans for Implementation of Landfill Directive in Hungary*
12:00	Szabolcs Horvath (KvVM Environment Management Department) *Overview of Hungarian Legislation – Ministerial Decree on Landfill*
12:20	Elisabeth Müller (BiPRO GmbH, Munich) *Legal Requirements for Acceptance and Control During Operation of Landfills*
12:45	Questions and Discussion
13:00	LUNCH BREAK
Chairperson: Anke Joas, BiPRO GmbH, Munich, Germany	
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
14:30	Barnabás Bese (North Hungarian Environmental Inspectorate) *Problems with the Implementation of Legislation in Aspect of a Regional Authority*
14:55	Csaba Kiss (Environmental Management and Law Association, Hungary) *2 Case Studies – 2 Permitting Processes of a New Landfill in Szentgál and an Existing Landfill in Csörög*
15:15	Szilágyi László (Waste Reduction Alliance Hungary) *Landfills and Illegal Waste Dumps – A Civil Point of View*
15:45	Questions and Discussions
15:55	COFFEE BREAK
16:05	László Alexa (Hungarian Compost Society) *Reduction of Biodegradable Waste in Hungary – Targets, Strategy, Difficulties*
16:30	Tamás Dudás (Technoplus Lt) *Landfill on the Top of a Landfill – Some Aspects of the Szeged Regional Waste Management Project*
16:50	Elisabeth Müller (BiPRO GmbH, Munich) *Experiences with the Implementation of the Landfill Directive from the Previous Project Events*
17:10	Questions and Discussion
17:30	END OF THE FIRST WORKSHOP DAY

Wednesday, 28 March 2007

III. EXCURSION	
9:30	Excursion to the Waste Management Centre Pusztazámor
Chairperson: Anke Joas, Elisabeth Müller BiPRO GmbH, Munich	
IV. SPECIFIC LANDFILLING PROBLEMS AND CONCLUSIONS OF THE WORKSHOP	
12:30	Questions, Open Discussion, Final Conclusions
14:00	END OF THE WORKSHOP

7.6 Agenda Slovak Republic / Bratislava // 29.-30.03.2007

Thursday, 29 March 2007

10:00	Registration, Come together, including Coffee
Chairperson: Eleonóra Šuplatová, Ministry of the Environment, Slovak Republic; Nicole Seyring (BiPRO GmbH)	
10:30	Eleonóra Šuplatová - Head of Waste Management Department (Ministry of the Environment, Slovak Republic) *Opening of the Workshop*
10:40	Elisabeth Müller /(BiPRO GmbH, Munich) *Welcoming of Participants and Introduction of the EU Project* *Privítanie účastníkov a predstavenie projektu Európskej únie*
I. RELEVANT LEGISLATION AND STATUS QUO	
10:50	Nicole Seyring (BiPRO GmbH, Munich) *Overview on Relevant European Legislation – The Landfill Directive* *Prehľad relevantnej európskej legislatívy – Smernica o skládkach odpadu*
11:20	Helmut Maurer (EU Commission, DG Environment, Brussels) *Status and Problems with the Implementation of European Legislation for Landfills – A European perspective* *Stav a problémy s implementáciou európskej legislatívy o skládkach odpadov – Európska perspektíva*
11:50	Maroš Záhorský, (MoE, Waste Management Department, Bratislava) *Landfilling in Slovak Republic – Legislation and Actual State* *Skládkovanie odpadov v Slovenskej republike – legislatíva a súčasný stav*
12:15	Eleonóra Šuplatová (MoE, Waste Management Department, Bratislava) *Actual State of Waste Management in the Slovak Republic* *Aktuálny stav odpadového hospodárstva v Slovenskej republike*
12:40	Jarmila Hrabinová (Slovak Environmental Agency, Waste Management Centre (COHEM) *Standards for Wastes Analytic Control Dedicated to Landfilling and the Application in Practice* *Požiadavky na analytickú kontrolu odpadov určených na skládkovanie a ich aplikácia v praxi*
13:00	Questions and Discussions
13:15	LUNCH BREAK
Chairperson: Elisabeth Müller (BiPRO GmbH)	
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
14:15	Milena Okoličányiová (Slovak Environmental Agency, Waste Management Centre (COHEM)) *Decrease in the Number of Operated Landfills and Upgrading of their Technical Level in Years 1991-2009* *Pokles počtu prevádzkovaných skládok odpadov a zvyšovanie ich technickej úrovne v období od roku 1991 do roku 2009*
14:30	František Šopinec (Slovak Environmental Inspection, Centre of Waste Management Inspection) *Comparison of Legal Provisions Concerning Landfills* *Porovnanie niektorých častí právnych predpisov o skládkach odpadov*

15:20	COFFEE BREAK
15:35	Peter Kuna (MoE, Waste Management Department, Bratislava) *Overview of Projects Co-financed from Structural Funds within Priority 2.3. „Improvement and Development of the Waste Management Infrastructure“ in the Slovak Republic in the Programming Period 2004-2006* *Prehľad projektov podporených zo štrukturálnych fondov v rámci Opatrenia 2.3. Zlepšenie a rozvoj infraštruktúry odpadového hospodárstva v rámci Operačného programu Základná infraštruktúra v programovom období 2004-2006*
16:00	Ingrid Lipovská (Environmental Fund, Bratislava) *Present State in Obtaining Financial Resources for Rehabilitation and Recultivation of Old Landfills from Environmental Fund* *Súčasný stav v získavaní finančných prostriedkov na sanáciu a rekultiváciu starých skládok z Environmentálneho fondu*
16:25	Question and Discussions
17:30	END OF THE FIRST WORKSHOP DAY

Friday, 30 March 2007

Chairperson: Nicole Seyring (BiPRO GmbH)	
IV. SPECIFIC LANDFILLING PROBLEMS AND CONCLUSIONS OF THE WORKSHOP	
9:00	Miroslav Held (Regional Authority for Environment Bratislava, Waste Management Department) *Perspective of Municipal Waste Disposal on Landfills in the Bratislava Region* *Perspektíva zneškodňovania komunálnych odpadov na skládkach odpadov v Bratislavskom kraji*
9:25	Uršula Pomfyová (V.O.D.S. Košice, a.s.) *Information of the Operator of Landfill for Hazardous Waste -Observations from Practice* *Informácia prevádzkovateľa skládky na nebezpečné odpady - postrehy z praxe*
9:50	Nicole Seyring (BiPRO GmbH, Munich) *Experiences with the Implementation of the Landfill Directive from the Previous Project Events* *Skúsenosti s implementáciou smernice o skládkach odpadu z predchádzajúcich podujatí*
10:15	Questions, Final Discussions
11:30	LUNCH BREAK
V. EXCURSION	
12:30	*Visit to a A.S.A. landfill in the municipality of Zohor*
15:00	END OF THE WORKSHOP

7.7 Agenda Cyprus / Nicosia // 25.-26.04.2007

Wednesday, 25 April 2007

9:30	Registration, Come together, including Coffee
Chairpersons: Demetris Demetriou (Ministry of Agriculture, Natural Resources and Environment); Nicole Seyring (BiPRO GmbH)	
10:00	Dr Lazaros S. Savides (Permanent Secretary, Ministry of the Interior) *Opening of the Workshop*
10:10	Elisabeth Müller / Nicole Seyring (BiPRO GmbH, Munich) *Welcoming of Participants and Introduction of the EU Project*
I. RELEVANT legislation AND STATUS QUO	
10:20	Nicole Seyring (BiPRO GmbH) *Overview on Relevant European Legislation – The Landfill Directive*
10:50	Helmut Maurer (EU Commission, DG Environment) *Status and Problems with the Implementation of European Legislation for Landfills – A European Perspective*
11:20	Dr Costas Papastavros (Chief Inspector, Environment Service Cyprus) *Waste Management Strategic Plan of Cyprus*
12:00	Dr Georghios Koullapis, (Chief Inspector, Ministry of the Interior) *Domestic, Construction & Demolition Solid Waste Management in Cyprus*
12:30	Questions and Discussions
13:00	LUNCH BREAK
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
14:00	Alexios Panagoulopoulos (ENVIROPLAN S.A.) *Risk Assessment and Evaluation of Uncontrolled Landfill Sites in Cyprus*
14:40	Dr Georghios Koullapis, (Chief Inspector, Ministry of the Interior) *Strategic Plan for the Green Points Collection in Cyprus*
15:10	Theofanis Lolos (ENVIROPLAN S.A.) *Integrated Waste Management Facilities, Treatment and Disposal at Larnaka and Ammochostos Regions – Case Studies for the Application of the EU Landfill Directive*
16:00	COFFEE BREAK
15:30	Nikos Gargoulas (EPEM S.A.) *IPPC and Waste Management: The Case Study of the Pafos Sanitary Landfill*
16:15	Polys Michaelides (Ministry of Agriculture, Natural Resources and Environment, Geological Survey) *Geological-Geotechnical Criteria for the Selection of Waste Disposal Sites*
17:00	Question and Discussions, Final Conclusion
17:30	END OF THE FIRST WORKSHOP DAY

Thursday, 26 April 2007

Chairpersons: Demetris Demetriou (Ministry of Agriculture, Natural Resources and Environment); Nicole Seyring (BiPRO GmbH)	
III. EXCURSION	
10:00	*Visit to Paphos Landfill for non-hazardous waste*
12:00	*Visit to Ayia Marinouda Landfill (closed landfill)*
13:00	END OF THE WORKSHOP

7.8 Agenda Malta / La Valetta // 07.05.2007

Monday, 7 May

9:00	Registration, Come together
Panel: Kevin Mercieca (MEPA), Vincent Gauci (MEPA), Nicole Seyring (BiPRO GmbH)	
9:30	*Opening of Workshop by MEPA Representative*
9:40	Nicole Seyring / Elisabeth Müller (BiPRO GmbH, Munich) *Welcoming of Participants and Introduction of the EU Project*
RELEVANT LEGISLATION AND STATUS QUO	
9:50	Nicole Seyring (BiPRO GmbH) *Overview on Relevant European Legislation – The Landfill Directive*
10:20	Helmut Maurer (EU Commission, DG Environment, Brussels) *Status and Problems with the Implementation of European Legislation for Landfills – A European Perspective*
10:50	COFFEE BREAK
11:10	Mark O`Neill (Malta Environment and Planning Authority (MEPA) *National Legislation and Permitting of Landfills*
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
11:40	Henrietta Putzulu Caruana (WasteServ Malta Limited) *The Development and Operation of Engineered Landfills in Malta*
12:00	Questions and Discussions
12:30	LUNCH BREAK
Panel: Kevin Mercieca (MEPA); Vincent Gauci (MEPA), Nicole Seyring (BiPRO GmbH)	
13:30	Elisabeth Müller (BiPRO GmbH) *Legal Requirements for Acceptance and Control During Operation of Landfills*
13:50	Claudine Cardona *(*Malta Resources Authority) *Landfills and Groundwater Vulnerability*
14:10	Nicole Seyring (BiPRO GmbH) *Experiences with the Implementation of the Landfill Directive from the Previous Project Events*
14:30	Questions, Final Discussions
15:30	COFFEE BREAK
III. EXCURSION	
15:45	Excursion to Ghallis Landfill, Maghtab
18:00	END OF THE WORKSHOP

8 Annex: Summary of project homepage

The project homepage **www.bipro.de/waste-events/** includes the relevant material and background information for supporting the workshops.

In particular the homepage has the following objectives:

(1) Announcing the events for a wider circle of participants

(2) Providing a platform for the preparation of the event (providing background information, downloads of European and national legislation, links)

(3) Providing the material for a specific event (location, participant lists, agenda of workshop, travel information, contacts, etc.)

(4) Post-processing the events (Download of all presentation and further documents mentioned during the event, participants lists including contact data)

After an entrance portal for both projects (shipment and landfill) the homepage is divided into the following sections:

(1) Events (specific homepage for each country covered by the project)

(2) Background / Objectives (containing the scope of the project)

(3) EU legislation/Legal cases (downloads and short explanation of relevant European legislation)

(4) Links (linking to relevant European and International institutions)

Figure 8-1 show the first page of the shipment homepage with the described sections.

Figure 8-1: Capture of Shipment Homepage (Entrance page)