IPA Energy + Water Consulting

Solid Waste Collection: A Summary of European Good Practice with recommendations for Kosovo

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ACRONYMS AND ABBREVIATIONS

EAR	European Agency for Reconstruction
KTA	Kosovo Trust Agency
MESP	Ministry of Environment and Spatial Planning
TOR	Terms of Reference
WWRO	Water and Waste Regulatory Office
PSP	Private Sector Participation
KEPA	Kosovo Environmental Protection Agency
KLMC	Kosovo Land Management Company
MSW	Municipal Solid Waste
PPP	Public-Private Partnership

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1 EXECUTIVE SUMMARY

1.1Terms of Reference for Report

Currently, in accordance with UNMIK Regulation 2004/49 the Water and Waste Regulatory Office (WWRO) are responsible, *inter alia*, for the economic regulation of the activities of the licensed waste collection and disposal service providers.

Assuming that WWRO no longer regulate the waste collection service providers after July 2008 in accordance with the latest provisions of the draft WWRO law, Municipalities will be fully responsible (in accordance with the Waste law 2006/31) for managing waste collection (and disposal) services.

The purpose of this Report is to summarise waste collection good practice in Europe in order to inform the discussions over the future of waste collection service provision and management in Kosovo.

1.2Recommendations

It is recommended the principles and practices outlined so far in this report, in particular in Kosovo are implemented in the near future:

1. **Municipalities must take on their responsibilities in accordance with the Waste Law** -see sketch on the next page. Setting and collecting fees, creating and maintaining public awareness, monitoring of service performance and complaint management should all be the responsibility of each of the Municipalities of Kosovo.

2. **The waste collectors should be relieved of the responsibility of collecting the disposal fee on behalf of the disposal (= landfill) operators.**

3. **Service fees which reflect "The User Pays principle"** should be introduce in the future but only at a later stage (priority should be given to adopt the institutional arrangements as above)

   Preference in the future should be given to **simple volume-based fees**, *i.e.* the litre container volume should have a certain price. This type of fee should replace the present "household tariff" which contains no incentive for a "waste behaviour" supporting the entire system.

4. **The private sector should be involved** by tendering out Municipal collection services where the Municipality decides not to perform waste collection services by its own means or where PSP in the waste collection sector is stated Government Policy.

5. The decision to outsource waste collection services should apply either:

   - **To the entire area of the Municipality** (applicable for population sizes below the range of 100,000), or

   - **To particular waste fractions and/or waste generators** (recyclables as waste paper and scrap metal, commercial and institutional waste producers).

   In the latter case the differentiation between "household waste" (served by the Municipality) and "commercial waste" (let to the private operator) should be done according to the amount produced by the single waste generator. Supermarkets would typically turn

into “commercial waste producers” when applying such a rule, but not the hairdresser, coffee shop or grocery shop. By such a principle areas with purely “commercial and institutional character” (e.g. the airport, supermarket areas…) will be ruled out by itself.

6. **The monitoring of minimum service standards** should be matter for the Ministry of Environment and Spatial Planning (MESP) where there is an environmental dimension (e.g frequency of collection) and the Municipality where it reflects other more general aspects (e.g. operating hours).

2 INTRODUCTION

2.1 Background

Currently, in accordance with UNMIK Regulation 2004/49 the Water and Waste Regulatory Office (WWRO) are responsible, inter alia, for the economic regulation of the activities of the licensed waste collection and disposal service providers.

Assuming that WWRO no longer regulate the waste collection service providers after July 2008 in accordance with the latest provisions of the draft WWRO law, Municipalities will be fully responsible (in accordance with the Waste law 2006/31) for managing waste collection (and disposal) services.

The purpose of this Report is to summarise waste collection good practice in Europe in order to inform the discussions over the future of waste collection service provision and management in Kosovo.

It is not the purpose of this report to cover waste disposal practice in any detail although references are made to waste disposal where appropriate in this report but without any specific recommendations for Kosovo.

2.2 Ahtisaari Final Settlement Proposals

The Ahtisaari package of proposals under the section "Municipal Competencies" (Annex III-Decentralisation, Article 3.1) states "Municipalities in Kosovo shall have full and exclusive powers, in so far as they concern the local interest, whilst respecting the standards set forth in the applicable legislation in the following areas"

The list of areas include section f as follows:

> f. provision and maintenance of public services and utilities, including water supply, sewers and drains, sewage treatment, **waste management**, local roads and transport, and local heating schemes

2.3Optional Further Deliverables

The opportunity to develop this Report arose from the re-allocation of resources approved by EAR through Addendum No 1 which resulted in 6 days remaining for the short term technical specialist (Martin Steiner). Two waste-related options were discussed with EAR and the agreed terms of reference for this Study and Report are summarised below.

This report is characterised as Further Optional Deliverable No 18 in the Interim Report No 2 and in Monthly Reports. It is not a contractual deliverable but considered an important activity by the WWRO Director and approved by EAR-see EM dated 26th September 2007.

2.4 Terms of Reference

The following main components of the study covering good European practice in waste collection were agreed with EAR in September 2007.

- A summary of main conclusions from the July workshops on European good practice in waste collection

- A brief review of Waste Law provisions for waste management plans in connection with waste collection and transfer performance monitoring and tariff setting
- A brief review of good European practice on monitoring and annual reporting of relative performance/tariffs of municipal waste collection (covering publicly owned and private waste collection sector activities)
- Specific recommendations on which Kosovo body should undertake this future monitoring and reporting (of tariffs and performance)
- Typical simple model contracts for PSP for waste collection, applicable to Kosovo
- Recommendations for Kosovo situation.

Many of these issues have already been comprehensively or at least partly covered in the two recent project workshops held in Pristina in July 2007 as part of the original TOR (deliverable No 5b-Solid waste handling technical workshops).

2.5 Design of Waste Collection Systems

Some basic criteria for designing waste collection systems are provided in this Report in **Annex A.** This information is derived from a more technical point of view and represents a comprehensive overview and brief description of elements and functions which characterize **advanced waste collection systems** as they are installed in many European countries.

2.6 Consultation Meeting

As part of the consultation process in the preparation of this report a meeting was held on October 11th 2007 in Pristina in the premises of WWRO with the following organisations:

- PAMKOS (Association of Public Waste utilities in Kosovo, Mr. Përparim Radoniqi),
- EPTISA (Mr. Andrè Karutz).

Note: KTA waste sector representatives were also formally invited to the meeting and they responded positively to the invite. Unfortunately WWRO suffered severe EM interruptions over this period and the KTA response was not received until after the meeting took place and therefore KTAS did not attend the meeting.

3 GOOD EUROPEAN PRACTICE IN INSTITUTIONAL TERMS

3.1 Introduction

In any waste management system the proper allocation of certain roles and functions to the various partners is of crucial importance. All European countries with even partly developed systems show certain principles the adoption of which is relevant to Kosovo.

Before starting with a description of these key principles, it is necessary to refer to the **"Minimum European Standard on Solid Waste Handling"** which was issued recently (March 2007) by the Council of Europe (not to be confused with the European Commission, or European Union[1]). The resolution (N° 1543, in full length quoted in **Annex B**) asks for most of the principle issues given below including the first one on responsibility (*i.e.* Who is responsible for municipal waste issues?). This issue is considered to be the key issue for Kosovo; for which § 6 of the resolution says:

> **"… responsibility for managing waste from households, businesses, institutions and construction and demolition activities [should be assigned to municipalities] within their territory …"**

This is where the description of principles to be considered for Kosovo starts from.

The responsibility for municipal waste issues – collection, and disposal – is generally **with the Municipality.**

It is the Municipality's responsibility to:

Provide the relevant services on its own (*i.e.* "in house") (called **Option A** in this Report), or,

Contract it out (to the private sector) (called **Option B** in this Report).

Between the two main functions comprising collection and disposal, there are slight differences in the extent the private sector usually gets involved, and which models are applied. This report focuses on waste collection as the issue which is of first priority in Kosovo; however the recommendations in **Chapter 7** highlight some aspects and gives a few recommendations for waste disposal.

[1] The Council of Europe (CoE) was founded in 1949. Today, the organization comprises 47 Member States in the European region (with Azerbaijan, Armenia, Georgia and Turkey also extending into Western Asia and Russia into North Asia). With the exception of Belarus, all European states have acceded to the Council of Europe. It can be seen as the political representative of Europe beyond the European Union (which currently includes 27 Member States) and represents also Kosovo.

The two alternative approaches are summarised below:

Option A: Collection services operated by the Municipality[2]
This arrangement is usually applied in larger urban areas.

Option B: Outsourcing to the private sector
This arrangement is generally applied in smaller urban areas where it would not be economically feasible to e.g. maintain a system with special vehicles that could be used only a few days during the week[3]. (In many cases the "too small for a certain service" problem is resolved by forming inter-municipal consortia to which it is referred below.)

However the task of both setting and collecting fees remains in any case with a municipal body.

When introducing first principles of "Good European Practice" in dealing with municipal waste it should be emphasized that in many cases smaller structures (typically municipalities with less than 10,000 population) join with a larger institutional body that can undertake certain features and services in a much more effective and professional way, *i.e.* the creation of public awareness in respect to waste handling, and/or the operation of a technically complex structure like a sanitary landfill. This practice **to delegate certain tasks to an administrational and/or operational unit acting on a regional level** can be taken from some examples described in **section 3.2**.

In the Kosovo context it would be achieved through a regional Waste Management Board of Municipality representatives who would take decisions on behalf of all the municipalities represented on the Board regarding waste collection (and disposal).

It should be mentioned that the above quoted Council of Europe resolution also includes in the same paragraph 6:

> "… responsibility for managing waste from households, businesses, institutions and construction & demolition activities [should be assigned to municipalities] within their territory and enabling municipalities which are too small to provide the relevant services to set up inter-municipal consortia for solid waste management …"

3.2 Examples from some European countries

The following sections provide some "good practice[4]" examples from some European countries relevant to Kosovo:

3.2.1 Italy:

- In areas with lower population density the (smaller sized) municipalities group together in "United communities" (in Italian Comunità Comprensoriale), very often including provision of water services, local transport

[2] In practical terms there is not much difference if this is organized as an own municipal department, or "at arm length" within a semi-autonomous company fully owned and controlled by the Municipality.

[3] The lowest size in terms of economical operation for a collection service can be provided with a minimum served population of 150,000 (representing a vehicle park of 6 to 8 in number which makes the management of a workshop, spare parts etc., viable).

[4] "Good"practice is used throughout this report not "best" practice since no solutions are necessarily transferable to other situations and often there is more than one answer.

and certain social affairs as municipal tasks which can be more effectively organized in a larger administration unit. A typical Comunità Comprensoriale represents 50 municipalities, 50,000 population and is operated separately from waste collection (which is usually contracted out to the private sector, either a private company or a cooperative)

- In major cities, waste collection and disposal is executed by "Municipal Environmental Companies".
  - Rome: AMA (Azienda Municipale Ambiente [5])
  - Milan: AMSA (Azienda Municipale Servizi Ambientali).

Note: In Italy in general there is limited involvement of the private sector, compared to e.g. England.

3.2.2 Germany:

- Areas with lower population density are organized for waste services typically in a "Gemeindeverband" or "Zweckverband" (best to be translated as Waste Management Council). Waste collection services are contracted out in most cases, whilst treatment and disposal facilities are usually operated by the Municipality/Council itself (with certain sub-services contracted to private bodies, similar as the relationship KLMC ⇔ landfill operation companies, however usually with more operational tasks for the Council).
- Cities maintain their waste collection departments, organized in the form of semi-autonomous companies. Berlin, Hamburg, Bremen, Cologne, Hanover, Dresden, Stuttgart and Munich etc perform most of the services related to collection "by their own means", with the collection of recyclables to a various extent done by private companies. In urban areas the private sector focuses on commercial waste generators (with little and less left to do for the municipal operator). The operation of waste treatment facilities[6] increasingly involves private companies, here with a strong market concentration (>> 1,000 employees) to be observed. A current trend to form PPP´s (Public Private Partnerships) with municipal entities, also in the area of water services, deserves deeper attention beyond the remit of this Report.

3.2.3 Austria:

- Areas with lower population density are organized generally the same way as in Germany, the typical Waste Management Council is named "Abfallwirtschaftsverband" (Waste Management Association, in brief AWV) including the name of the political district, e.g. *AWV Osttirol* (Eastern Tyrol).
- Cities maintain their own waste collection departments, organized usually as simple administration unit ("Magistratsabteilung" = town council department, e.g. Vienna, Graz, Klagenfurt) or as joint-stock companies owned and thus controlled by the Municipality.

[5] http://www.amaroma.it/ provides relevant information to the issue in question also in English.

[6] Germany is – like Austria – one of the European countries where it is obligatory to treat municipal solid waste prior to disposal.

3.3 England

- Municipalities are responsible for organising the waste collection and disposal services in their area and crecovering the cost of this service through the local “Council tax”.
- Municipalities can decide whether to undertake the domestic waste collection service through their own in-house collection services or to outsource the work to the private sector through competitive bidding (typically for a 3-5 year period).
- Commercial and Industrial waste collection is almost universally undertaken by the private sector who negotiate contracts with each customer reflecting the type and volume of waste and frequency of collection.
- Waste disposal landfill sites are owned and operated by the private sector but overseen by regional (County Council) bodies in cooperation with the Municipalities and the Environment Agency. There are many licensed landfill sites in England and these must be licensed by the Environment Agency. The sites operate in competition with each other and receive various types of waste e.g. construction waste, hazardous waste and domestic waste for which different charges apply. Landfill environmental standards (eg leachate quality) are monitored by the Environment Agency against National standards.
- Charges for each property’s domestic waste collection and disposal service are separated-out from other local services in each Municipality’s Council tax bill to local residents and can be examined by residents and compared with costs for the same service in other Municipalities.
- Residents who refuse to pay their council tax bill are taken to court by the Municipality and may be fined or sent to prison for non payment of the “council tax”.
- The cost of waste collection and disposal service for local residents is based on the value of the property
- The UK Government has recently introduced a volume-based charge option for use by Municipalities in determining charges for collecting and disposal of domestic waste (mainly to try to reduce the amount of domestic waste disposed to landfill) but this has resulted in considerable resistance from residents.

3.4 Further Key Financial Principles in Waste Management

3.4.1 Introduction

After having shown some examples how some European countries organize their waste systems (mainly in respect to the issue how & to what extent the private sector is involved), this report now considers how the systems are financed.

3.4.2 The User Pays

The user pays is a principle that can be seen as the first principle of any system managing public services as e.g. supply and disposal of water, public transport, lightning, and similar.

So the next question is:

Whom does the user actually pay, or: from whom does the provider of the service receive the cost occurred by his service, directly by the user, or via another route?

Systems where the waste collection service provider (either a public or private company) has the responsibility of collecting not only the solid waste but also the fee for the service (as si the case currently in Kosovo) usually demonstrate major problems in the collection efficiency because the "power" of a waste collection company (whether it is public or private) to recover the charges is much less compared to a public body like a municipal administration. Particularly in economically weaker regions and countries like Kosovo "affordability" of a waste service fee in social terms is often is mixed up with "willingness to pay" which understandably is limited when the service as provided is not meeting the expectations of the user (as in Kosovo).

Therefore the user of the service (household, commercial premise, etc) owes the cost for the service (as a fee) to the Municipality. This principle is visualized in **Fig. 1.**

3.4.3 Affordability and willingness to pay issues

The decision on affordability issues is up to the Municipality to resolve, more precisely it is the right of the Municipality to waive the fee to debtors (e.g. social cases in Kosovo) who are socially and economically in need of it, but it is not up to the debtor to make such decision and refuse to pay.

Note: Certain commercial and institutional waste generators may take back the responsibility for collection and disposal from the Municipality. They turn into "self-disposers".

3.4.4 Household vs. Commercial waste

The differentiation between the two major types of waste is usually carried out according to quality and/or amount:

- household waste (which remains under the Municipality's responsibility in any case) and
- commercial waste (which might be disposed of under the self-responsibility of the relevant generator, e.g. a supermarket chain)

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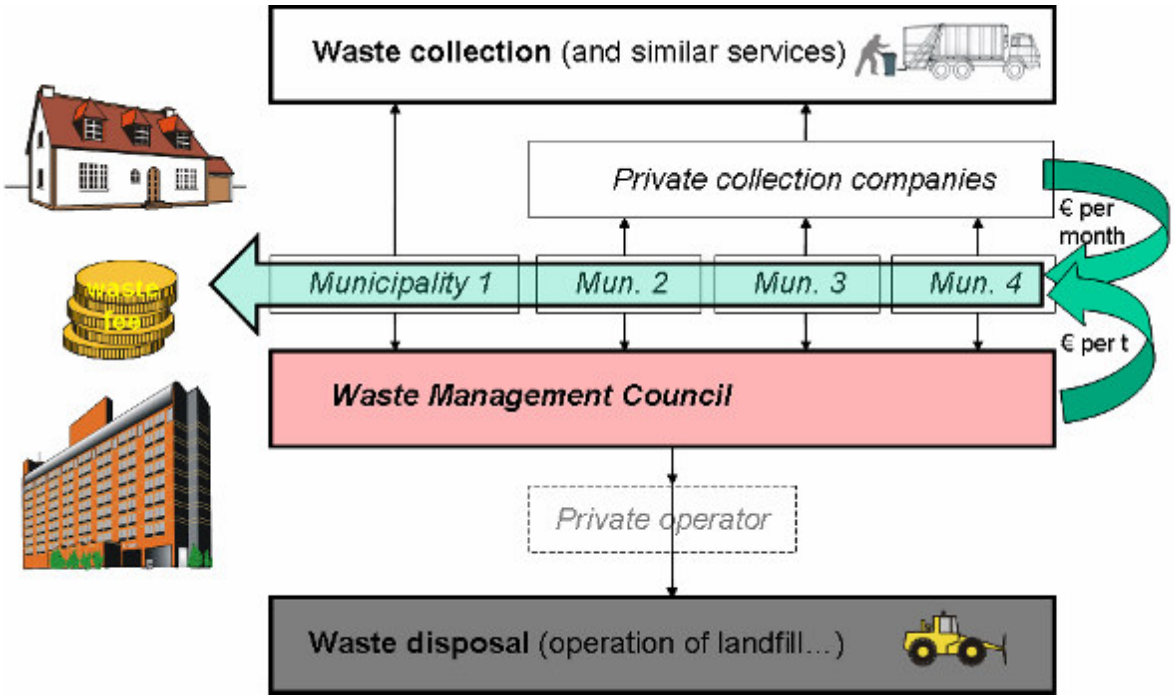


Fig. 1: "Who is doing what?"

Waste collection, disposal, fee management in an Austrian Province (Waste Management Council Western Tyrol, 50 municipalities with c. 70,000 inhabitants). In 2 larger municipalities (about 15,000 population each) collection services are provided by public utilities, the smaller municipalities have contracted out waste collection to altogether 4 private companies offering their services also to commercial / industrial waste generators.

3.4.5 Collection tariffs

Collection tariffs are determined either:

- by market conditions (where the decision was made to contract the services out to the private sector) or;
- by democratically legitimized municipal bodies (eg Municipality/ Town Councils)

3.4.6 Disposal tariffs

Disposal (landfill) tariffs are normally subject to the control / approval by local or regional Government because "landfill volume" can be considered as public good [7].

[7] This last principle can be seen as a basic rule for basic systems on lower development stages, in more complex systems more refined models may apply.

4 PERFORMANCE MONITORING & TARIFF SETTING

4.1 Introduction

In most European countries, performance monitoring requirements and tariff setting arrangements usually are not subject to Law or included in waste management plans.

Standards of performance are subject to municipal ordinances, and the same usually applies to tariffs which are usually decided annually and announced in the common municipal media (the Municipal Gazette or its website).

In those more advanced European countries with proper practices in dealing with solid waste the tasks of monitoring and control of both service quality and ensuring tariffs is undertaken "internally", ***i.e.*** **it is the Municipality that controls both the service quality and fee level.**

Note: The situation in Kosovo where a national regulator (WWRO) is responsible for performance monitoring and tariff setting is probably unique and not followed elsewhere in Europe (except in Portugal).

Where operators of landfills with defined service "catchment" areas (ie operating a monopoly service) have to submit their proposed tariffs for approval to an upper administration body (usually a regional Government) but this is not normally the case and tariffs are generally fixed at the Municipal level.

The appropriateness of fees for collection and disposal services is generally determined by the Municipality as the democratically legitimized local public body. Above that level, in Austria and Germany (and maybe also other European countries) the appropriateness of any public fee might be subject to an examination of a Court of Auditors. These bodies can be seen as "departments of internal review" of a province or a country and usually are reactive *i.e.* they only intervene when requested.

4.2 Benchmarking

Sometimes comparison of costs with other Municipalities is undertaken (as shown below in examples showing both technical and fee issues), but on a non compulsory basis only (in the form of a benchmarking). In Italy an incentive for "proper waste behaviour" to Municipalities is given by means of a well known and appreciated award, the "Riciclone" donated by LEGAAMBIENTE, a major national NGO. This practice dates back to the early nineties and was exported to Spain in 2000.

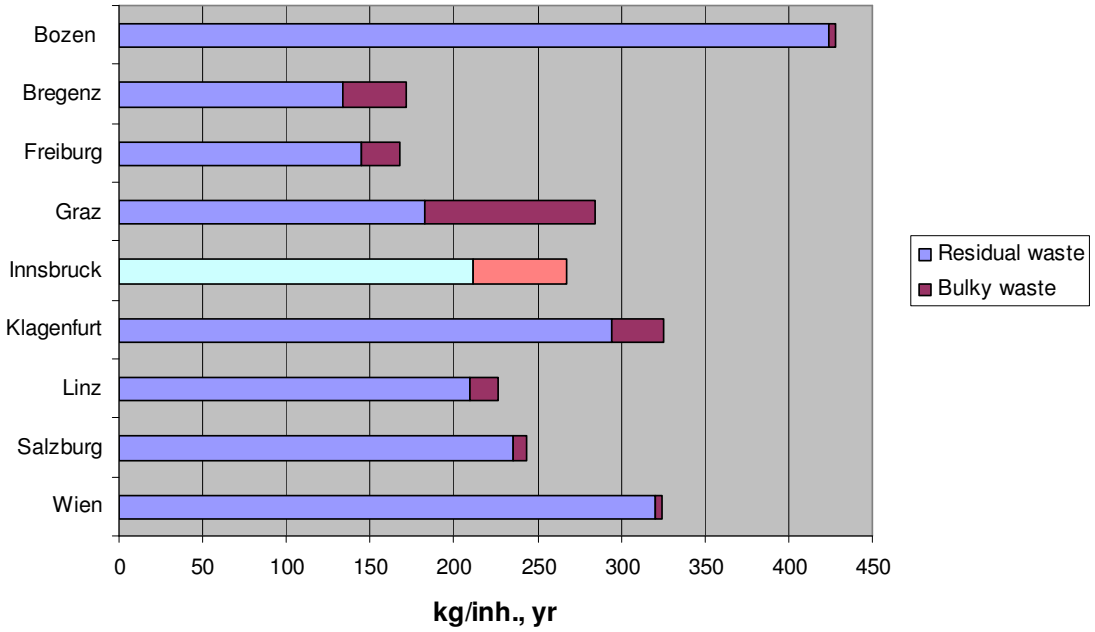


Fig. 2: Example of monitoring performance standards:

Comparison of specific waste generation data of 7 Austrian provincial capitals and a German (Freiburg) and an Italian city (Bozen). (Note that Freiburg is the twin town of the Municipality that prepared the comparison – Innsbruck – and Bozen a neighbouring city with common history). Source: Environmental Plan Innsbruck, data out of 2002.

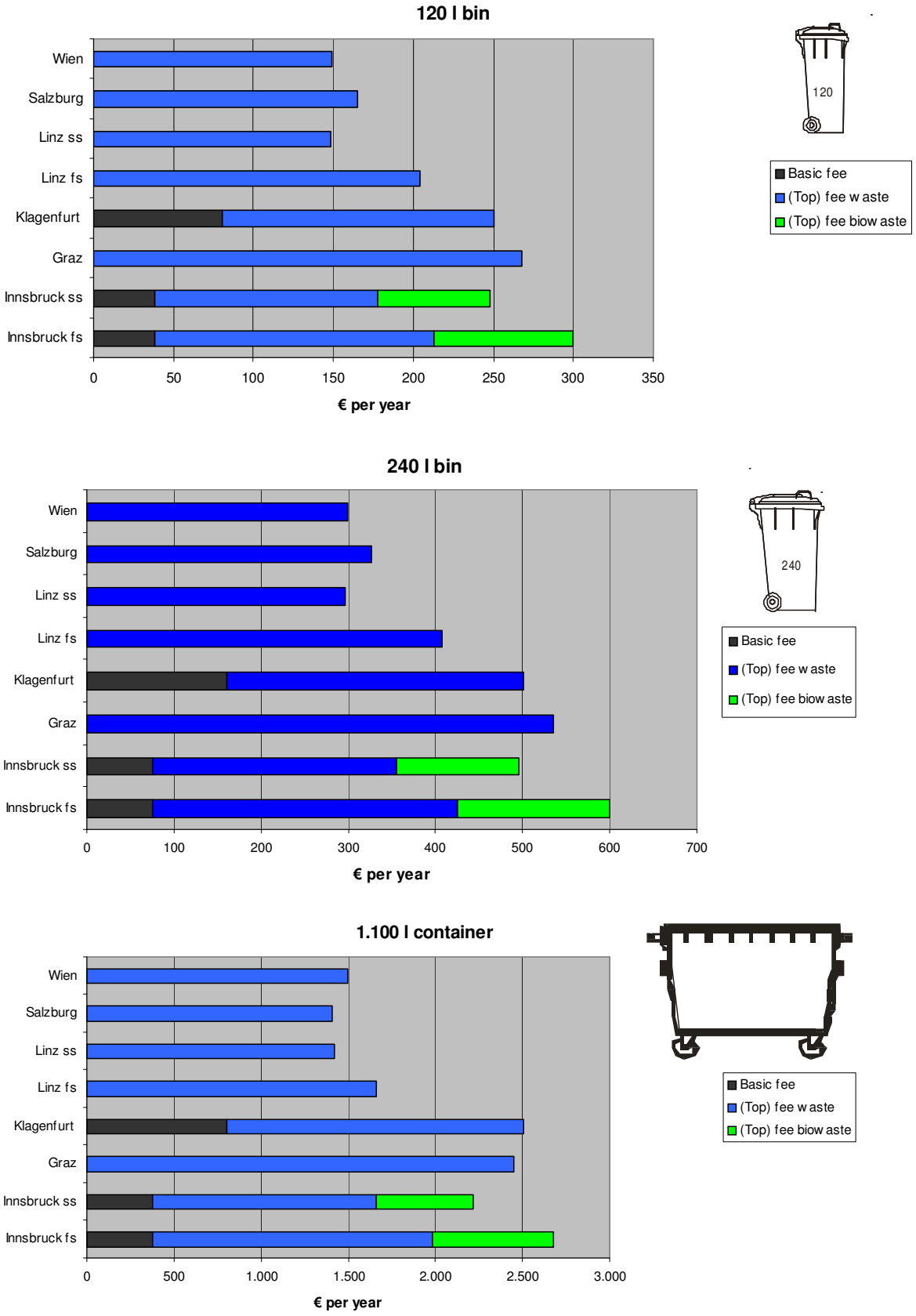


Fig. 3: Example of tariff monitoring: Comparison of waste fees of 6 Austrian provincial capitals. *ss … self service (customer puts bin/container out on street) fs … full service (service provider puts bin / container out on street).*Source: Environmental Plan Innsbruck, data out of 2002.

5 MUNICIPAL WASTE COLLECTION FEE DETERMINATION

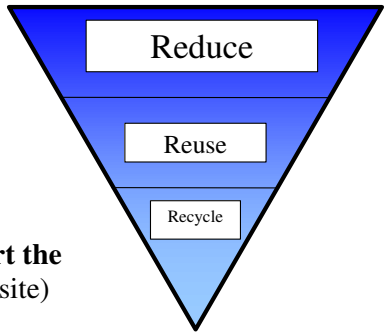
5.1 Introduction

This chapter contains some practical advice on one of the most important elements of a solid waste management system: How to implement the principle "The User Pays" in practical terms, i.e. how to bring the money from the pocket of the user of the system to the account of the system's operator.

Some principles are followed by some types of fees for domestic waste including recommendations, and examples from two Central European countries already representing "good waste management practice".

5.2 Principles

1. **The User Pays,** as a principle of "good European Practice" already mentioned previously represents a "fee design principle" in itself
2. **Simplicity is essential**
   - ➢ It reduces administration efforts
   - ➢ It reduces regulatory requirements
   - ➢ Transparency counts in the long turn.



3. Tariffs should incorporate / represent an **incentive to support the system's policy** – (in Europe: the "3 R's": see diagram opposite)
4. Tariffs are **due on a regular** (monthly to yearly) **basis**
5. **No differentiation is made between the collection and disposal costs in the tariff.**

5.3 Tariff types

The following options are available for determining tariffs and they refer specifically to domestic waste (households and small enterprises as waste generators):

1. Tariffs per household / commercial premise
2. Tariffs per household, considering also number of persons
3. Tariffs depending on floorspace
4. Tariffs depending on volume
5. Tariffs depending on weight
6. Tariffs depending on value of property
7. Tariffs depending on distance to disposal

…and combinations thereof (usually 1/2/3 combined with 4/5):

Tariff types 4 + 5 fulfil the request of providing an incentive to support the system's policy (i.e. to use recycling opportunities) but: a split-up of the fee in "basic (fixed)" & „top-up (variable) fee" is recommended, as shown in Fig. 4.

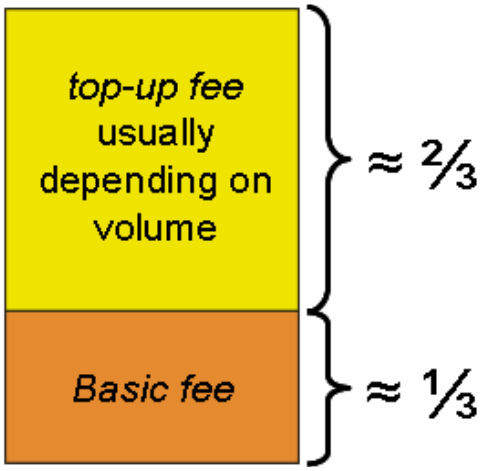


Fig. 4: How to design a fee for domestic waste: typical split-up of fixed & variable fee portion

5.4 Some practical hints & comments

1. Tariffs per household:

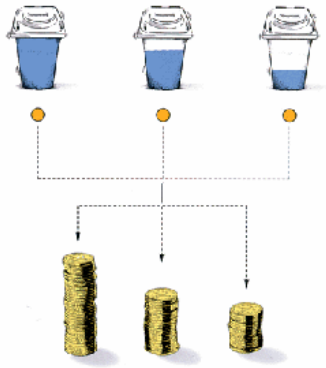
This arrangement (as is currently applied in Kosovo) is simple but give no incentive e.g. to recycle: a family of six produces more waste than a single-person household, requesting the same fee is not supposed to be fair.

2. Tariffs per household, considering also the number of persons, and
3. Tariffs depending on floorspace

are both difficult to administer (quality of data).

4. Tariffs depending on volume:

a) Measuring the produced waste volume (´real volume metering´)



b) Counting the emptying of bins (´identification´)

c) "1 litre volume of (whatever type of) bin/container, emptied regularly, costs x €-cent"

d) Pre-paid bags (a system widely spread in Switzerland and Austria)

2. Tariffs depending on weight:

Sophisticated systems (left) with a few practical problems (e.g. frozen waste in winter sticking to the bin and being weighed thus paid several times, friendly neighbour who puts a brick into your bin), however, where the weight of a single waste load can be taken easily (commercial !), weight should be taken as tariff basis !

Below two tariff examples – both based on volume – are shown, in the case of Vienna Municipality type 4 c according to the classification given earlier (a volume fee based on the allocated collection volume without basic fee), the example from Kilchberg, a small Municipality from the German speaking part of Switzerland represents type 4 d.

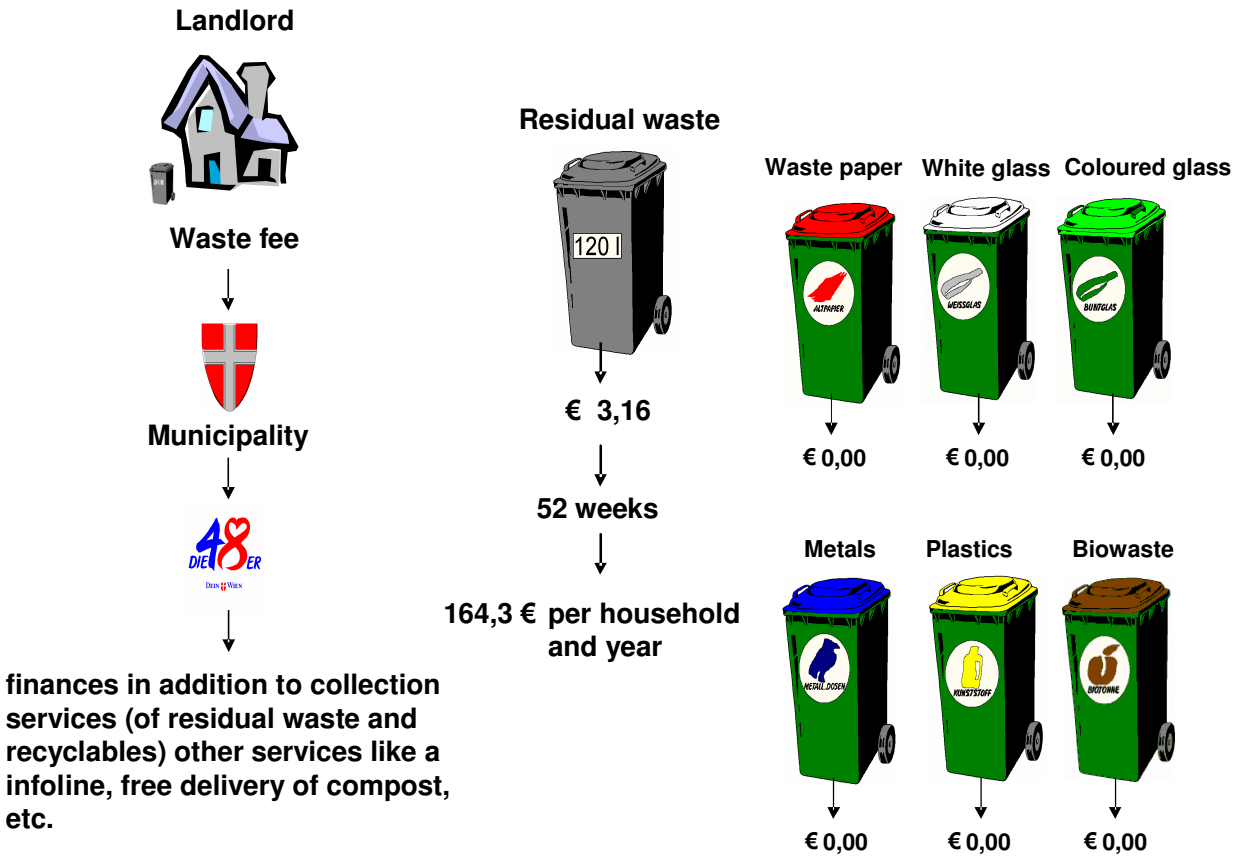


Fig. 5: Fee system for domestic waste – example Vienna

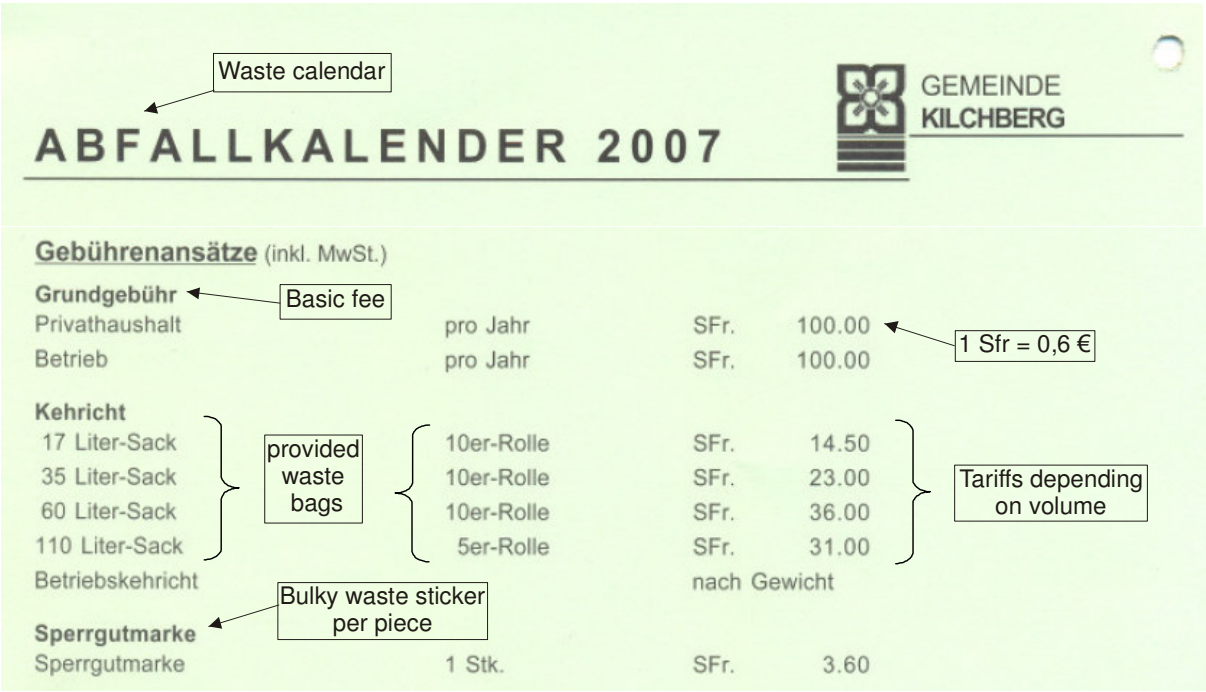


Fig. 6: Example of a pre-paid bag waste fee system of a Swiss municipality

6 TYPICAL WASTE COLLECTION SERVICE CONTRACTS: FEATURES & ELEMENTS

6.1 Introduction

A typical service contract for solid waste collection issued by a Municipality to a service provider (waste collection company), usual as result of a competitive tender process, is generally very simple and comprises less than 10 pages. Some key features and elements to be elaborated according to the relevant conditions are listed below:

6.2 Key Features

- **Contract period:**
  Five years with yearly extension is a typical contract time, or "5 + 3 + 1" (contract is valid for 5 years and automatically gets extended by 3 years, then by 1 year and another year… unless the contract is not cancelled 6 months prior to the end of the contract period). Note that contract periods less than 5 years do not reflect a reasonable minimum depreciation period for a waste collection truck (typically 5-8 years depending on the quality and frequency of maintenance)

- **Extraordinary cancellation causes:**
  Contractor goes bankrupt, or does not perform.

- **Subject matter of contract:**
  Municipality transfers to contractor the duty of regular collection of such or such waste fraction[8].

- **Amendments** only in written form.

6.3 Elements

The following aspects are recommended as a minimum:

- **Service area:**
  "…This contract comprises all settled areas within Municipality X". A certain collection route may be predetermined as well. Collection points (e.g. 5 or 7 m^3 skip containers serving group of buildings in lower densely populated areas) to be fixed in a map. Extensions of service areas (e.g. new development areas) to be communicated by Municipality to the contractor in written, and to be confirmed by the contractor.

- **Service time:**
  Definition of collection frequency (e.g. weekly, twice a week… this parameter depends on the provision of collection volume which is to be set as a minimum by Municipality) and working time / collection days, example: "Monday – Saturday 7 a.m – 10 p.m". Main traffic routes might be excluded in rush hours.

[8] for Kosovo something like "municipal waste" according to the prevailing definition in a Municipal or "National" Waste Law to be inserted, as in the mid term no differentiation into *biowaste, bulky waste, residual waste, recyclables…* thus different (specialized) contractors in one service area are to expected.

- **Duties of the contractor:**
  The contractor is obliged to provide the necessary technical means for ensuring a "dust-free waste collection"[9] including the respective special vehicles with a driver[10]. He is obliged to provide suitable replacement in case of breakdown of these special vehicles. He is also obliged to collect regularly the waste disposed of at the plots of land within the defined service area, to transport the collected waste to the disposal site indicated below and to empty it on this site according to the regulations there.

- **Collection crew:**
  Some municipalities might provide their own staff (with related functions as street sweepers etc.) for picking up and loading waste containers. Such ´staff splitting models´ which are quite common in rural areas have the advantage of integrating the local workforce a) knowing one´s way around and b) costing significantly less as the staff leaves the truck after having done its job and do not travel to the regional landfill and then on to the contractor´s garage).

- **Technical performance of waste loading:**
  Definition of "receptacles" to be emptied by the contractor (e.g. "60 litre bags 120 and 240 litre bins, 1,1 m^3 containers, 7 m^3 skips…"). Municipalities with a volume based fee system (as in the example given in Fig. 5) should oblige the contractor not to empty "unlicensed" bins or – in a softer version – at least to report them to the Municipality. Garbage outside of bins/containers should be part of the contractor´s responsibility[11]. Also a maximum. weight per type of bin/container might be stipulated in this part of the contract[12].

- **Disposal direction:**
  i.e where to transport the waste to.

- **Payment:**
  Lump sum[13] for the defined service (in practice a certain amount per contract, paid 12 times a year). Monthly payment (ex post) is the standard case. Escalation clauses are linked to a transport price index or a consumer price index or a combination of both. The disposal fee gets invoiced to the Municipality directly by the operator of the disposal service. Weighing or transfer fees, if applied, get also transferred to the Municipality (in some cases directly, in some via the collection company).

[9] this term is a standard (avoiding e.g. that a contractor performs the service with horse and cart and shovel and broom)

[10] Note that *collection receptacles* (bins, containers) are owned either by the Municipality or by the user of the system (household, commercial enterprise), but not by the collection company – the latter is only the case with purely commercial customers (usually paying to the contractor a rent for the container).

[11] that is a recommendation for Kosovo in realistic view of the present system status, the typical e.g. Austrian waste collection service contract says "garbage outside of receptacles / cleaning of collection points is within the responsibility of the Municipality" which maintains better levers to "educate" its citizens and again may contract out this additional service – if needed – to a contractor, usually the one who runs the collection service.

[12] not only following World Health Standards (WHS) standards, also in order to "educate" final service users not to load e.g. construction debris into containers designed for municipal waste.

[13] Basis for this lump sum is usually the serviced stock of receptacles on the beginning of the contract period. Number of inhabitants (or even inhabitant equivalents) are also practiced.

7 RECOMMENDATIONS FOR KOSOVO

It is recommended to implement the principles and practices outlined so far in this report, in particular:

7. **Municipalities must take on their responsibilities in accordance with the Waste Law** -see sketch on the next page. Setting and collecting fees, creating and maintaining public awareness, monitoring of service performance and complaint management should all be the responsibility of each of the Municipalities of Kosovo.

8. **The waste collectors should be relieved of the responsibility of collecting the disposal fee on behalf of the disposal (= landfill) operators.**

9. **Service fees which reflect "The User Pays principle"** should be introduce in the future but only at a later stage (priority should be given to adopt the institutional arrangements as above)

   Preference in the future should be given to **simple volume-based fees**, i.e. the litre container volume should have a certain price[14]. This type of fee should replace the present "household tariff" which contains no incentive for a "waste behaviour" supporting the entire system[15].

10. **The private sector should be involved** by tendering out Municipal collection services where the Municipality decides not to perform waste collection services by its own means or where PSP in the waste collection sector is stated Government Policy.

11. The decision to outsource waste collection services should apply either:

    - **To the entire area of the Municipality** (applicable for population sizes below the range of 100,000), or

    - **To particular waste fractions and/or waste generators** (recyclables as waste paper and scrap metal, commercial and institutional waste producers).

    In the latter case the differentiation between "household waste" (served by the Municipality) and "commercial waste" (let to the private operator) should be done according to the amount produced by the single waste generator[16]. Supermarkets would typically turn into "commercial waste producers" when applying such a rule, but not the hairdresser, coffee shop or grocery shop. By such a principle areas with purely "commercial and institutional character" (e.g. the airport, supermarket areas…) will be ruled out by itself.

[14] type 4 c of the waste fee types described in chapter 6.2.

[15] This fee type is the "logical" system for Municipalities with predominantly detached dwelling structure ("one container per premise") and can be introduced also into anonymous structures (in Prishtina e.g. Ulpiana or Dardania) by allocating a certain minimum volume per inhabitant (say 5 litre per day) that results in a certain number of containers per collection point serving a certain area (to be identified by addresses). Municipality issues fee statements to the system users (household, commercial enterprise) based upon the individual collection volume the system user is connected to (i.e. number of containers multiplied by container volume divided by number of households).

[16] for the conditions observed in Kosovo *1 m^3 waste per day and generator* seems to be a reasonable figure to start with.

12. **The monitoring of minimum service standards** should be matter for the Ministry of Environment and Spatial Planning (MESP) where there is an environmental dimension (e.g frequency of collection) and the Municipality where it reflects other more general aspects (e.g. operating hours).

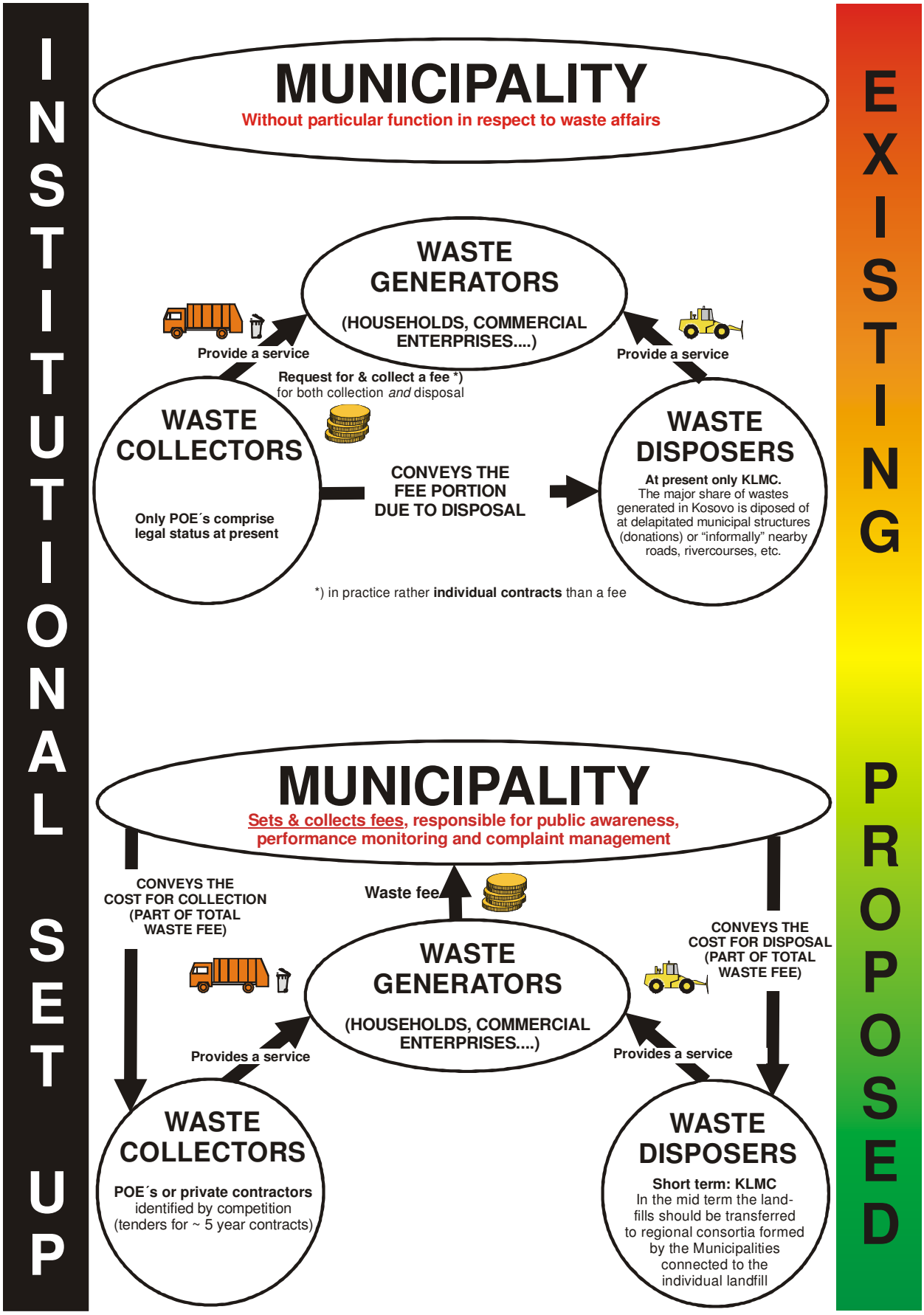


Fig. 7: Overview on existing & proposed institutional set-up of solid waste management in Kosovo

8 ACKNOWLEDGEMENTS

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ANNEX A

WASTE COLLECTION BASICS

Rather than an *introduction* this chapter also can be seen as a *stand-alone chapter* – should the occasion arise – *for the reader who is not too familiar with solid waste collection issues,* a *brief manual* so to say. It comes from a more technical point of view and represents a comprehensive overview and brief description of elements and functions which characterize advanced systems as they are installed in many European countries.

Some of the described elements are not introduced in Kosovo at present and even will not be – from some realistic viewpoint – introduced in the near future at al broader scale (e.g. recovery at source i.e. separate collection), thus the provided information might be dispensable for the supposed recipients of the present document (decision makers at the POE´s, KTA, EAR), however may represent a reference basis as well as an information source (which is intended to be supplemented by a resource database as another project deliverable).

In the subsequent chapters aspects of particular relevance for the situation in Kosovo are dealt with, and there the focus is put more on *institutional aspects.*

Regular waste collection systems are needed for three main reasons:

Measure	Objective
The extraction of hygienic critical material from settled areas based on the experience that the spread out of diseases (cholera, typhus) was proposed by the presence of organic wastes in the streets and thereby non hygienic conditions for the citizens.	Provision of public health and increase of common welfare.
Avoiding of littering and illegal dumping.	Provision of an aesthetic appearance of the cityscape.
Only with a *regular and complete collection system* it is possible for the municipality to keep the further disposal of the waste under control.	Provision of controlled disposal.

Table 1: Reasons for establishing regular waste collection systems

These objectives are to be fulfilled which kind of waste is ever collected.

Therefore at least in many of the bigger cities of Europe a regular waste collection was established in the end of the 19th century.

Fig. 8: System-free collection in a German city around 1900 [Müll-Handbuch, Nr. 2101 p. 6]

For a systematical classification of waste collection systems four characteristic features are relevant.

8.1 The *place of provision* of the waste to be collected

- *Pick up system:* The provider of the refuse collection service picks up the waste on the property of the waste generator. It does not make any difference if the waste is separated into fractions or not.
- *Bring system:* The waste generator has to bring the waste to a central collection point.

Both systems can be applied parallel (e.g. for certain waste fractions).

Pick up system	
Advantages	*Disadvantages*
+ High capture rate	- High investment costs for containers
+ High comfort for the user	- Low secondary resource quality
+ Availability of well-engineered containers	- Limiting on few relevant waste fractions
	- High space requirements

Table 2: Advantages and disadvantages of the pick up system

Bring system	
Advantages	*Disadvantages*
+ Low investment costs for containers	- Low capture rate for secondary resources
+ High secondary resource quality	- High staff costs at central collection points
+ High motivation of the participants	- Limited number of collection points

+ Separation in many fractions possible	- Mess at central collection points possible

Table 3: Advantages and disadvantages of the bring system

Fig. 9: Central collection point for the main waste streams in Vienna / Austria

8.2 The *point in time* of separation of waste

The waste can be separated into recoverable components, in non-recoverable residual waste and in polluted products either before collection on the side of the waste generator or after the collection in a sorting plant. These two different possibilities can also be combined with each other so that some parts of the secondary resources can be separated from the residual waste before and other parts after the collection.

Separation before collection	
Advantages	*Disadvantages*
+ Less sorting work after collection	- High efforts on the side of the waste generator
+ Less investment costs in sorting plants	- Expenses for collection devices
+ High secondary resource quality	- Limiting on few relevant waste fractions
+ Good marketability	- The use of several containers requires a lot of space

Table 4: Advantages and disadvantages of separation before collection

Separation after collection	
Advantages	*Disadvantages*
+ Less expense on the side of the waste generator	- High sorting expense
+ Less expense at the acquisition	- Low secondary resource quality
+ High capture rate	- Limited marketability

+ Possibility of recovery of numerous waste fractions	– High investment cost in sorting plants

Table 5: Advantages and disadvantages of separation after collection

8.3 Technical systems for removal

These comprise special designed collection containers and collection vehicles. For waste removal "empty the bin" systems, "change the bin" systems and one-way receptacles (usually bags) are applied. Thereby bins for one fraction (mono-containers) or for several fractions (multi-compartment container) can be used. Another possibility is the collection of waste without any technical system. This is called *system-free collection*.

System-free collection

As the system-free collection requires that the waste has to be picked up on the ground and lifted up into the vehicle by hand high physical strains for the personnel are the result. The collection without any system is generally used for waste paper, scrap metal and bulky waste. For residual waste, biowaste, waste glass and light packaging it is not practicable because of the difficult handling and the inadequate hygienic and aesthetic conditions caused by access of vermin.

System-free collection	
Advantages	*Disadvantages*
+ No investments in containers	– Inadequate hygienic conditions at the collection of residual waste, biowaste and light packaging
+ No special vehicles are required	– High physical expenses for the collection personnel
	– Low collection rate
	– Difficult handling of loosely waste

Table 6: Advantages and disadvantages of system-free collection

Fig. 10: Examples of bins [http://www.atg-rosendahl.de/dienst/pics/umleer_kl.jpg]

"Empty the bin" system

Standardised containers are lifted up and emptied automatically in the collection vehicle. For the collection of municipal solid waste and a high percentage of commercial waste with properties similar to MSW the "empty the bin" system is of high relevance. This is caused in the high profitability and the fact that bins are available in every form and size so that they fulfil all requirements of operational safety, hygienic aspects and the ease of use for both user and collection personnel.

"Empty the bin" system	
Advantages	Disadvantages
+ High profitability	– Actually none, but in certain particular cases safety concerns apply (hiding place for explosives)
+ High ease of use	
+ High operational safety	
+ Good hygienic conditions	
+ Offer of a variety of containers	
+ Suitable for various intended uses	

Table 7: Advantages and disadvantages of the "Empty the bin" system

Fig. 11: Example of a bin emptying vehicle [http://www.faun.com/faunkat/dbimg/x112_L.jpg]

"Change the bin" system

This system looks similar to the "empty the bin "-system, but it is technically different. It means that smaller bins as described above are emptied at the waste generator into a larger container with a volume up to 40 m^3. If this container is full of waste or secondary resource it is replaced at the waste treatment plant by an empty one. Fig. 12 gives an example.

"Change the bin" system	
Advantages	*Disadvantages*
+ Suitable for high volumes of waste	– Bad ease of use for the user
+ Suitable for waste with high specific gravity	– High required space for pick up and drop off
+ High profitability	– High logistic expense
+ Offer of a variety of containers for various intended uses	
+ Possibility of flexible collection according to requirements	

Table 8: Advantages and disadvantages of the "Change the bin" system

Fig. 12: Example of a "change the container" vehicle

One-way bag system

The one-way bag system refers to a collection where the residual waste or the secondary resources are acquired in paper or primary in plastic bags and provided for the refuse collection service in front of the property. Then the service personnel have to pick up the plastic bags by hand and put it into the vehicle. In some special cases one-way containers are used, e.g. for pathogen hospital waste.

An advantage of the bag collection is the high collection capacity with say 1.500 bags per day and loader. This is caused by the fact that the bag as lost wrapping has not been brought back to its stand so that there are only half as much ways compared to the "empty the bin" system.

One-way container/bag system	
Advantage	*Disadvantage*
+ High collection capacity	- Low ease of use
+ No special vehicles required	- High material consumption
	- High expense at the sorting plant to open the bags
	- High physical strain of the personnel

Table 9: Advantages and disadvantages of the one-way container/bag system

Transfer stations

The various collection devices show various "action radii" (i.e. medium distance collection area ⇨ disposal site not to be exceeded under economical conditions): a small tractor (Fig. 13) 2 kilometres, a compaction truck as Fig. 11 shows say 20 km. If the disposal site is far from the collection areas a transfer station (where smaller quantities get transferred to larger transport units) should be located in between. Some examples are shown below.

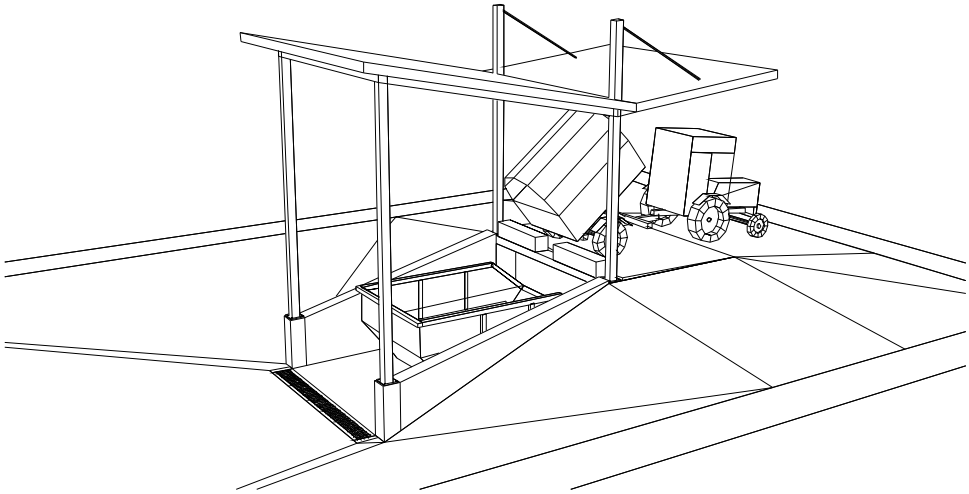

Fig. 13: Example of a simple transfer station (investment about 5.000 € at current prices)

Fig. 14: Example of a medium sized transfer station (Ferizaj / Kosovo)

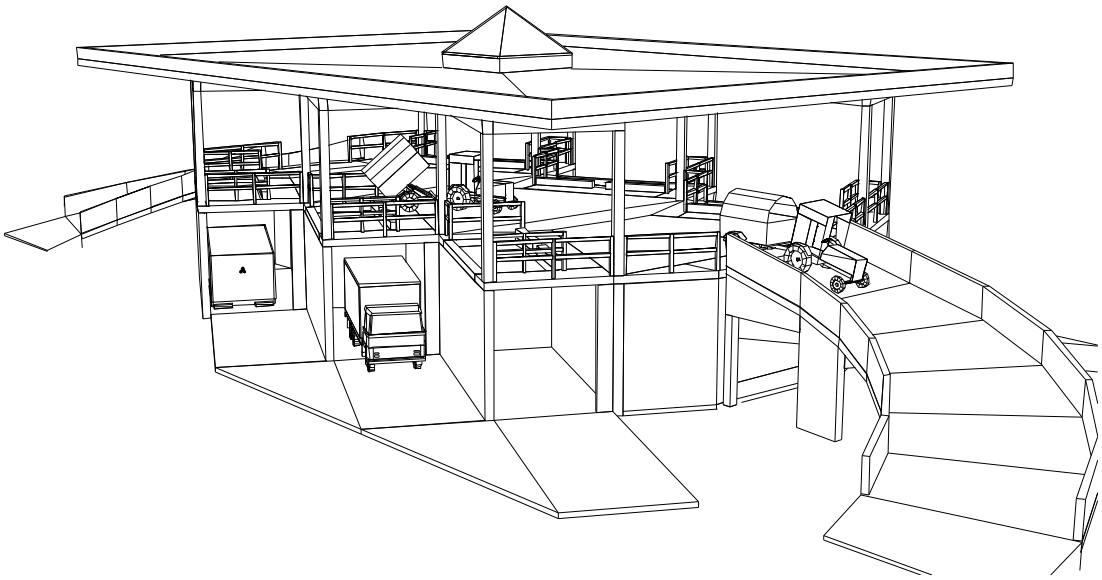

Fig. 15: Example of a more complex transfer station (investment about 150.000 € at current prices)

8.4 Organisation of collection

The organisation of collection of waste has some significant differentiation attributes:

- Separated or combined collection of the different containers
- Intervals of emptying of the containers
- Initialisation of containers for emptying by waste collectors or users
- The staffing of the vehicles.

Tour arrangement
The different containers can be collected in separate tours or together in one tour. That depends on the form and size of the containers and how many containers have to be collected. The tour arrangement for the collection of residual waste and secondary resources is predominantly made manual based on experience values.

If the waste was separated before the collection it has to be differentiated if the fractions are collected

- organisational separated (additive)
- alternating in temporal intervals (alternating) or
- at the same time, the same tour and in the same vehicle (integrated).

Additive collection
If at the separation before collection the fractions residual waste, biowaste, waste paper, glass etc. are totally independent collected from each other, this collection is called *additive*. The additive organisation of collection is needed if the residual waste is picked up

by a municipal company and the secondary resources by one or more private companies. In consequence the expense and the costs for the collection are considerably higher. In addition the traffic burden caused by the collection vehicles is significantly higher than with an alternating or integrated collection organisation.

Additive collection	
Advantages	*Disadvantages*
+ Independence between residual waste collection and secondary resource collection	- High costs
+ Existing containers can be used	- High traffic burden
+ Existing vehicles can be used	
+ Possibility of collection of many different fractions	

Table 10: Advantages and disadvantages of additive collection

Alternating collection

At the alternating collection the residual wastes and specific secondary resources are picked up according to a fixed timetable in specific intervals. Normally for both fractions the same vehicle is used. This procedure requires technical changes at the vehicles.

Alternating collection	
Advantages	Disadvantages
+ Low traffic burden	- Emptying intervals are depending on each other
+ Existing vehicles can be used	- Limited number of fractions

Table 11: Advantages and disadvantages of alternating collection

Integrated collection

Integrated collection of different waste fractions at the same time and in one tour with the same vehicle requires multi compartment collection vehicles. The practice has shown that more than two compartments cannot to be realised with a reasonable technical expense.

Integrated collection	
Advantages	*Disadvantages*
+ Low traffic burden	- Specific multi-compartment collection vehicles are required
	- High investment costs
	- Limited on two fractions
	- Emptying intervals are depending on each other
	- Unfeasible if disposal sites of the two fractions are in certain distance to each other

Table 12: Advantages and disadvantages of integrated collection

Intervals of emptying of the containers

The intervals of emptying waste and secondary resource containers depend on the share of organics, and climate. In Central to Northern Europe the containers are collected weekly or every two weeks, especially in winter. In a Southern European area like Kosovo the bins have to be emptied more often, at least in summer. Depending on the share of biowaste the interval should be twice a week or actually daily (as currently practiced).

The above-mentioned characteristic features to classify the different collection systems can theoretically be arranged any way. The practice has shown that from the technical and economical point of view some combinations are better than others. These are marked in Fig. 16 by green arrows.

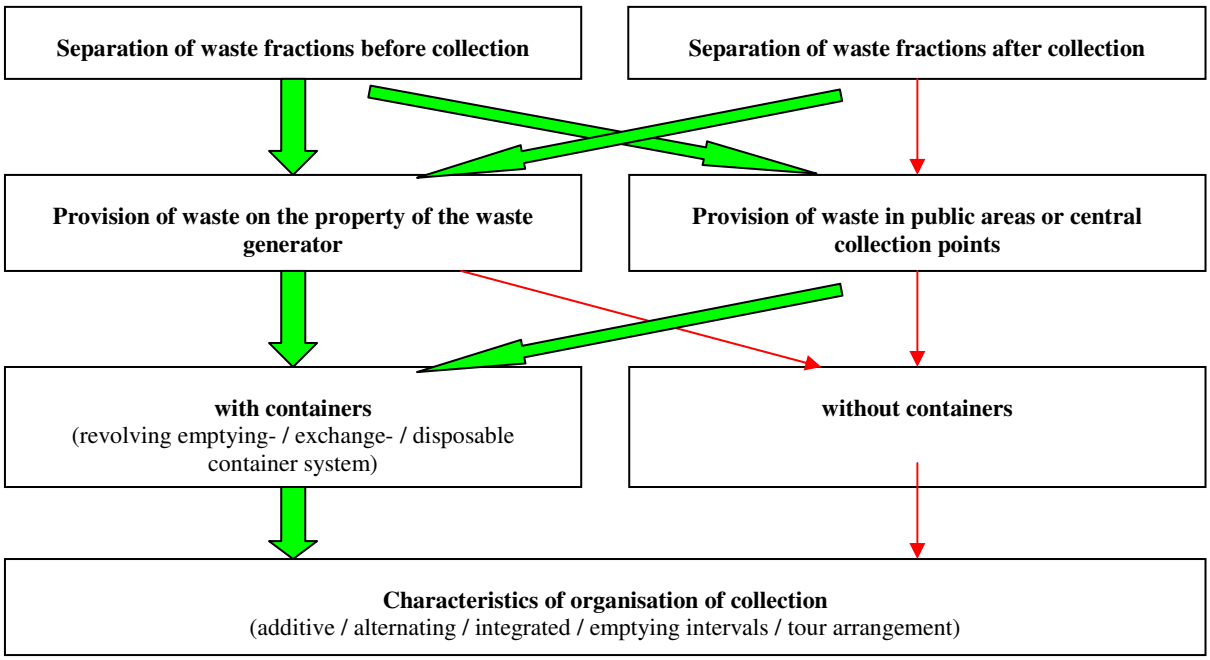

Fig. 16: Classification of the methods of collection of waste

ANNEX B

Essential content of Resolution 1543, adopted by the Standing Committee, acting on behalf of the Parliamentary Assembly of the Council of Europe, on March 16, 2007

[…] There are significant differences between Council of Europe member states regarding solid waste management standards and practices. […] The Assembly therefore urges member states to develop an integrated approach to municipal solid waste management in order to contribute to sustainable urban development in Europe, in particular by:

1. ensuring compliance with occupational health and safety standards during the collection, processing and landfilling of all types of waste, in particular by banning any bare-handed operations and any recovery of waste from landfills without proper protection and regular health checks for the persons involved;

2. establishing regular waste collection systems for all urban, suburban and rural areas (exceptions should only be granted for remote locations with approved, safe individual waste disposal facilities) and including in the relevant legislation phased targets for the provision of municipal solid waste collection systems in accordance with the requirements of European Union Directive No 1999/31/EC on the landfill of waste;

3. enforcing compliance with strict standards for landfilling, for instance:
   - landfills must be fenced and patrolled;
   - waste accepted at landfills must be recorded;
   - waste placed in landfills must regularly be covered with suitable material (eg construction debris) in order to reduce odour, windblown litter and vermin;
   - adjacent groundwater must be monitored;

4. depending on local hydrogeology, suitable measures for groundwater protection (such as landfill liners and leachate collection, etc) must be put in place;

5. planning waste management through the development of strategies including the gradual reduction / phasing out of the landfilling of specific waste streams, given their recyclability and/or the impacts related to their disposal (eg biodegradable waste);

6. assigning municipalities responsibility for managing waste from households, businesses, institutions and construction and demolition activities within their territory and enabling municipalities which are too small to provide the relevant services to set up inter-municipal consortia for solid waste management;

7. facilitating co-operation between European towns and cities to allow information exchanges so that the best solutions in terms both of administrative management of municipal solid waste and of processing technologies are disseminated and used Europe-wide;

8. encouraging R&D in the field of solid waste processing and recycling.