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Dealing with the Economic Consequences of Regional Landfills: Issues for Inter-municipal Agreements

Presentation for the Roundtable on
Intermunicipal Cooperation in Regional Waste Management
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1. Introduction: Purpose and Scope

The modernization of waste management - in compliance with the EU's landfill Directive – requires the construction of large landfills which normally serve several hundred thousand people.

This is recognized in Serbia's Waste Management Plan. This Plan stipulates the number of regional landfills to be constructed (29 landfills, with their approximate locations given).

Whether such a detailed prescription of numbers and locations is a sound or realistic approach is debatable. Be that as it may, municipalities will have to cooperate in the joint use of regional landfills. The cooperation can take different forms, ranging from mere consultative arrangements to formal and binding agreements on decision-making in matters of common interest.

In addition to the joint use of the landfill, the regionalization of transport system also raises issues of common concern which are best resolved in cooperation between municipalities. Substantial investment is required for setting up a regional transport system (see Box 1). It is a matter of common interest that this regional system be cost effective.

Interrelated Elements of Modernizing Waste Management

In a nutshell, the modernization of MSWM has three closely interrelated physical[1] elements: the (1) construction of sanitary landfills (which have to meet European Union standards), the (2) regionalization of the collection and transport service centered around regional landfills and (3) modernization of vehicles and equipment. The interdependence between these three elements is crucial. An outcome with only two elements in place but the third one missing is incomplete and eventually unviable. The interdependence is sometimes overlooked. For example there are cases when landfills intended to be regional are built at public expense but the communities in the potential service area continue to use deliver waste to local dumps because they lack the resources to pay for higher transport costs. In other cases modernization is confined to big towns without bringing outlying suburbs or nearby towns into the fold.

In traditional MSWM each settlement has its own dump, and the local municipal service provider carries waste five to ten trips per day to a nearby dump, using low capacity transport vehicles which do not compact waste. This method of waste transport becomes prohibitively expensive once waste is transported over longer distances to a central landfill. Hence the old vehicle fleet must be replaced with higher capacity compactor trucks.

The evolution to the present systems of waste management, which use high capacity compactor trucks that make at most two trips a day to a central regional landfill, took a long time to evolve in Western Europe. MSWM in transition economies is now required to catch up with this evolution, largely because of European Union regulations stipulate high standards of landfill design and operation that are unaffordable at the local level and reinforce the economies of scale in MSWM.

Feasibility studies for two regional landfills have been prepared under the MIASP Project: in Duboko (Užice Čačak) region and in Muntina Padina (Pirot Region). The Duboko landfill will serve nine municipalities, the Muntina Padina landfill four. Both landfills are expected to be commissioned within about two years. The success of both projects hinges on effective intermunicipal cooperation for their joint use. MISP will be actively engaged in fostering such cooperation. This roundtable discussion (June 18 2008) organized in collaboration with SCTM and GtZ, relates to that effort.

This paper addresses alternatives and regarding two key issues for regional cooperation concerning:

- Options for the regional collection and transport of waste and

[1] There are of course managerial and political elements as well

- Tariff policy: issues in setting the tipping fee

The purpose of presenting alternatives is to engage in a dialogue between municipalities on the way forward for inter-municipal cooperation, ultimately resulting in formal inter-municipal agreements.

This proposal is limited to the above two key aspects of inter-municipal cooperation (i) in the belief that once the municipalities find an agreement on these central issues, tackling other issues will be that much easier to resolve, and because (ii) other sources of technical assistance are expected to support comprehensive regional waste management planning, dealing with such issues as recycling, composting, and other activities which also relate to regionalization inter-municipal cooperation.

2. Alternatives in Regionalizing the Transport of Waste

Alternatives for the regionalization of waste transport include

- One company handling the entire collection and transport of the region
- Each municipality keeping its collection and transport service and transporting waste directly to the landfill
- Each municipality keeping its local collection system, but delivering waste to a local collection point whence a regional transport operator takes the waste to the landfill

Option 1

There are significant economies of scale if the transport system is consolidated into one operation:

- Management and overheads are reduced (one head office instead of several)
- The number of spare vehicles is smaller (an operation with three vehicles needs a spare vehicle just the same as an operation with ten vehicles)
- Maintenance and repair are concentrated in one workshop
- Least-cost routing of vehicles leads to economies in transport.

Consolidation of the transport system can be carried out by a merger of the transport services into one company. Several PUC's can form a joint venture dealing exclusively with the collection and transport of waste (but excluding related services such as street cleaning, park maintenance, cemetery management, which have no regional dimension.) Such a joint venture may then team up with a private operator, e.g. by forming another joint venture. (There is already one pioneering case of such a joint venture in Serbia.)

Alternately, smaller municipalities can contract out the service to larger companies (which can be a public PUC or a private operator). As a recent development, several private companies from abroad have concluded contracts to take over the service from local PUC's. Private operators are always interested to gain a foothold in a whole region and not just one municipality. This is already happening in some areas of Serbia.

Option 2: each municipality keeps its own collection service and transports the waste directly to the regional landfill. The immediate effect is higher transport cost as vehicles have to travel a longer distance. Vehicles have to be replaced as the transport of uncompacted waste in small capacity trucks becomes prohibitively expensive (see Box 1).

While market forces favor consolidation, at the time when a new regional landfill is commissioned each municipality has its own service. Thus Option 2 is likely to be the prevalent "model" for the short run.

Option 3

Municipalities sometimes opt to keep their own collection service to delivering waste to local collection points or a transfer station. The transport from the collection point to the landfill is then carried out by a regional company. This company may be the same as the landfill operator (e.g.

this is the current plan under the Duboko project). In this way municipalities can avoid having to invest in new vehicles, which is one of the reasons they may prefer this solution. However on close inspection in most cases this is the most costly solution as it involves a large investment in transfer station and as the operation cost of transshipping is also high. Analyses confirm that only in sizable municipalities and with relatively long hauls can such a system be cost-effective.

The transformation from local to a regional can be the achieved at one stroke by an inter-municipal agreement, for example by a merger setting up a joint company, or jointly engaging a private company. However more often the transformation is an evolutionary process responding to market forces. The above three modes may coexist during the process. Some municipalities may merge their operations others may keep their independent operations. Some may transport waste directly to the landfill, while others opt for a transfer station and enter a contract for the long haul to the landfill. Small municipalities may contract out the service to the service provider of the larger town or to the landfill operators.

Local politics as well as economics impinge on the transformation process, and the outcomes are likely to vary from place to place.

3. Issues in Tariff Policy and Options for the Cooperative Decision-making

While the regionalization of the transport system can be left to evolution, the joint use of the landfill poses immediate questions which are best be resolved by the time the regional landfill opens its gate. The most immediate concern to the user municipalities is the tipping fee: how much will they have to pay for disposal at the new regional landfill?
Full cost recovery is often taken as the right objective of tariff policy. Estimating full cost is not a simple or uncontroversial matter: Appendix 1 to this presentation addresses some of the issues.

"Full cost" is a useful yardstick against which to gauge the tipping fee. A proper forecast of costs is an essential input for setting the tipping fee. However, the decision on the tipping fee responds to a set of policy objectives, not just one. Policy objectives may conflict with each other. Further, different local interests are at stake. An example of the former is the conflict between the objectives of cost recovery against affordability. An example of the latter is the potential conflict of interest between the host municipality and the other municipalities. These two conflicts are discussed below as they lie at the heart of issues that inter-municipal agreements need to resolve.

Cost Recovery versus Affordability

The user pays principle – tantamount to the polluter pays principle in the case of environmental projects – asks that users of a service pay a fee which ensures the financial viability of the activity. Full application of the user pays principle would ensure that costs are fully recovered and that the services are financially self-sustaining. However the "ability and willingness to pay criterion" often counters the polluter pays principle.

Criteria of affordability that are by the EU and by IFI's in project analyze are expressed as a percentage of household income. Usual yardsticks are that the waste fee should not exceed, say, 2% of household income and the combined fee for water services 4% of household income. These yardsticks are applied in EU and IFI project finance to justify grant funding. For example, under the ISPA instrument the percentage of grant funding was directly linked to affordability by calculating the "financial gap", i.e. the percentage of project cost that the population cannot afford (see Appendix 2).

As a rule municipalities want to keep user fees low. If they can argue that full cost coverage through the tipping fee exceeds what is taken to be affordable, they have a respectable argument to charge less.

Municipalities pay the tipping fee to the landfill operator, and they pass on the cost to their population through a charge, so far usually expressed as a monthly charge on residential area[2].

[2] This waste fee tends to differ markedly between municipalities, even in the same region.

This monthly charge needs to be raised to include the tipping fee. Municipalities may agree to fix the tipping fee below the full cost if they agree that the full cost fee is unacceptable to the population, based on their own criteria of affordability and willingness to pay. The consequence of such a decision is insufficient cash flow generation for the replacement of equipment future investments (such as the phased construction of new cells after the initial free space is exhausted).

Potential Conflicts between the Host Municipality and the Other Users

Local governments usually want to keep tariffs low, and so it is with the tipping fee. However there is an exception. When the host municipality owns and operates the landfill and is free to set the tipping fee it gains by keeping it high.

When the host municipality's PUC operates both the regional landfill and its local collection and transport service, it doesn't have to explicitly charge a tipping fee to its own company. The combined cost of the transport service and landfill operations can be charged to the local clientele without the trucks being invoiced at the landfill gate. However, the revenue from the tipping fees from other users is an income to the host PUC. Profits from the tipping fee can then be used to cross subsidize the local service, keeping the local fee low at the expense of the other municipalities.

The conflict is somewhat mitigated when the host municipality establishes a separate company (or a separate subsidiary of the PUC) for landfill operations with separate accounts, and when its transport and collection company of the host municipality pays a tipping fee to the landfill operator just like the other municipalities. This makes the financials of the landfill operation more transparent but doesn't resolve the basic conflict of interest. Assuming that all municipalities, including the host municipality, pay the same tipping fee, it is still in the interest of the host municipality to keep the tipping fee higher than necessary to meet costs. For the cost of the tipping fee which its own company pays is just money from the left pocket to the right pocket. The host municipality can still use excess profits from a tipping fee to subsidize other activities at home.

The Tipping Fee and the Use of Funds

All of the above underlines the need for (i) transparent cost accounting and (ii) joint decision-making on the tipping fee.

When the tipping fee is set just at the breakeven level so that it landfill does not generate a cash operating surplus there no obvious conflict as there is no money to share. However if the tipping fee includes a depreciation charge (as it should) it will generate a cash operating surplus.

To whom does the cash surplus belong? Who decides on the allocation of this surplus? For what may it be legitimately used for and what not?

When the host municipality is the unambiguous owner of the landfill, it will argue that it has the right to set the tipping fee and dispose of the cash generation as it sees fit. This is the case when a municipality constructs a landfill at its own expense (or in a joint venture with a private investor). As long as the contracts with other municipalities are voluntary[3], the host municipality is within its rights to exercise its ownership rights, including in setting the tipping fee. It can use the surplus to subsidize its own population, if that is what it wants to do. Fair this is not - because some may have to pay more than others for the same service- but the other municipalities really have no standing (except possibly to complain to the relevant government agency which is in charge of combating the abuse of monopoly powers, see footnote 3 below).

However when the landfill is financed by the government and/or by an international financial institution for the common benefit of several municipalities, the finances of the landfill should be ruled by the common interest of the users. This is the reason for collective decision making under inter-municipal agreements. Informed collective decisions however presuppose transparent cost accounting and financial planning. Proper cost accounting enables the decision makers to forecast revenues and cash generation. Business planning in turn is a tool for allocating the cash operating surpluses for agreed purposes.

When the landfill is partly financed by a loan, **loan service** has the prior claim on current operating surpluses. Most likely the municipalities will agree to set the tipping fee just high enough to meet loan service and not higher. (Once again, if they do so nothing will be left for equipment replacement and the construction of new landfill cells.)

However when the landfill is financed by a grant, the cash operating surplus generated by a depreciation charge belongs to all, and the decision on how to spend it should be made collectively. This calls for business planning. The business plan identifies on what the surplus is to be spent.

A high priority for the use of funds is the **expansion of free space**: as cells get filled up new cells have to be built and lined. The cash generation from the depreciation charge is a proper use for the purpose.

The beneficiaries will probably agree that the use of funds should be restricted to **improvements of waste management in the common interest**. Investments for waste recovery and recycling as well as composting would extent the life of the landfill and therefore serve the common interest.

[3] They cease to be voluntary when the government enforces the closure of non-compliant landfills in the region: in this case the other municipalities have no option than to use the only “EU-conform” landfill in the neighbourhood - the case of Slovakia. In this case the authorities should also be responsible for competition legislation that prevents the abuse of monopoly pricing.

If cash is generated over and above all such needs, it can be kept in reserve for **aftercare** and/or for **investment in a new landfill** once the free space is exhausted. But that will be a rare case given the many urgent claims for funds (see Appendix 1).

Thus the business plan as agreed between the user municipalities, would establish how the cash generated by the tipping fee should be allocated. But also the other way around, if the municipalities agree on an investment program they can tailor the tipping fee to provide the funding for it. The tipping fee thus determined can be higher or lower than the notional "full cost" tariff. In effect, the tipping fee targets the agreed level of cash generation for expenditures in the common interest of the participating municipalities.

Institutional Options

While physical landfill site normally belongs to the host municipality[4], the ownership of the landfill operator can be shared between the participating municipalities. There are many ways to share the exercise of ownership rights. How exactly this sharing will be institutionalized is the challenge already facing the two groups of municipalities around the Duboko and Muntina Padina landfills. Suffice it to indicate three basic alternatives here.

Option 1. The host municipality operates the landfill and controls its finances. The landfill operation can be part of the host municipality's PUC, or a separate company or subsidiary (or at least a separate accounting unit.) In this option participating municipalities are by and large excluded from the decision on the tipping fee, though the host municipality may be required to render separate financial reports on the landfill operation and may be held to abide by agreed limits on profits. The problems with this options are evident on account of the conflicts of interest discussed above.

Option 2 The host municipality operates the landfill in consultation with municipalities. The tipping fee is set and adjusted from time to time in consultation with representatives of the user municipalities. This is a weak form of inter-municipal cooperation.

Option 3 The user municipalities establish a body (e.g. a limited liability company in which they all have shares) which exercises the ownership rights of the landfill operation. Formal processes for setting the tipping fee, including voting rights are adopted.

The challenge ahead is to choose well, and to deal with the "the devil in the detail".

In conclusion, it is instructive to consider the consequences of downplaying the importance of inter-municipal cooperation. Recent Bulgarian experience has a lesson to teach. A group of

[4] This is the usual case in transition economies, however under the current regime of property rights in Serbia it may well be that the landfill site is owned by the State.

three landfills, for the regions of Montana, Ruse, and Silistra regions respectively, were among the first landfills financed by the ISPA facility. The ISPA grants supported landfill construction, but no provision was made for the replacement/modernization of the vehicle fleet or for the closure of local dumps (see Box 1 in the Introduction). While ISPA required the municipalities in each region to signal their intention to use the new landfill, these agreements proved dysfunctional by the time the landfills were commissioned (see Box#2 below)

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Subsequently, a follow-up TA project was mandated to work on the regionalization of waste management in the three regions. The said TA concluded in hindsight that it would have been better for these landfills to be owned by an Association of municipalities.

> "….the preferred modality with respect to the Association /of municipalities/ and the regional landfills in each region would be for the Association to own the landfill. This results in the greatest range of benefits to the Association as a whole. However, while this modality may be achieved in the future, it does not correspond with the reality that: (i) the regional landfills are presently owned by an individual municipality in each region (ii) it is not clear if the EU would necessarily provide "ex-ante" approval for a change of ownership, or whether there might be conditions attached to such an approval, and (iii) it is not clear if municipalities are willing to transfer ownership, or what conditions they might attach to change of ownership."

What has happened Bulgaria is a cautionary tale to donors, financial institutions, and the "beneficiaries" alike. Serbia, just recently embarking on the regionalization of waste management, has the chance and the time to avoid similar pitfalls if learns from others' experience elsewhere.

Montana Region
"Municipalities are continuing to manage waste with a primary emphasis on disposal; most municipalities continue to use local dumps for disposal notwithstanding a regional agreement that provides for all municipalities to use the regional landfill. …..Several municipalities have scheduled the closure of waste dumps but implementation of closure is generally contingent on provision of State funds.
…..
The regional agreement regarding the use of the regional landfill provides …. for the regional landfill to be operated by BKS Ltd Montana (a municipal company owned by Montana) and provides for company to submit to the municipalities a pre-calculation of the necessary operation and management costs which the municipalities are then obliged to pay; the agreement specifies that collection and transportation costs are the responsibility of each of the municipalities for their waste"[5].
…..
P28 "There is no provision for the municipalities to participate in decision-making, no provision for municipalities to have access to information related to the operation of the landfill, and no provision for municipalities to monitor or in any way participate in the operation of the landfill."[6]
……
"In the region of Montana the leading municipality and operator of the landfill have developed increased tariff schedules for use of the regional landfill without putting forward reasons for the increase. The proposal has provoked indignation among other municipalities in the region."[7] (p26)

Ruse Region
"As in the Montana region, municipalities are continuing to manage waste with a primary emphasis on disposal. The municipalities of Ruse and Ivanovo are using the regional landfill for disposal, but other municipalities are continuing to use local dumps, notwithstanding a regional agreement that provides for all municipalities to use the regional landfill. …. The municipality of Ruse has submitted plans …/to the Ministry of Environment/ …for the closure of waste dumps, but other municipalities has not developed plans for the closure of their dumps. ….

The /regional/ agreement establishes that Ruse is the lead municipality and that Ruse is authorized by other municipalities to (i) chose the landfill operator according to the law and (ii) take decisions regarding the facility's operation. Ruse is required by the agreement to keep the municipalities informed and provides all municipalities with access to information, the right to participate in financial decision-making, and to discuss matters relating to the landfill's operation. …."[8]

Silistra Region
"Notwithstanding an agreement between all municipalities in the region to use the regional landfill for waste disposal, only Silistra municipality in fact uses it. Other municipalities continue to use local dumps. …. All municipalities have developed plans do close dumps but none has taken action to date pending provision of funds from the State."[9]

[5] Institutional Analysis, Implementation of the Environmental Acquis at Regional and Local Level Europeaid 12061/D/SV/BG, Assistance in Regional and Municipal Waste Management Planning, Implementation, and Enforcement of Legal Requirement in the Waste Management Sector, Legislation, October 2007, p22
[6] Ibid, p 28
[7] Ibid, p26

[8] Ibid, p22-23
[9] Ibid, p23

Appendix 1

Full Costing and the Tipping Fee

Introduction

While the regionalization of the transport system can be left to evolutionary processes, the joint use of the landfill poses immediate questions which are best resolved by the time the regional landfill opens its gates. The most important question of immediate concern to the user municipalities is the tipping fee.

The tipping fee is the fee that user municipalities pays to the landfill operator. It is assumed here that the landfill operator is a separate accounting unit (i.e. either a separate company, jointly owned by the participating municipalities, or, if owned by the host municipality, at least a separate accounting unit of the host PUC).

The landfill operator obtains its revenues from the tipping fee. It is assumed that all municipalities, including the host municipality, pays the same tipping fee. (These are just assumptions to be tested, for the actual practices in regional waste management vary. For example, there are examples where the host municipality doesn't pay a tipping fee but "hides" the tipping fee in the tariff charged to the populace. This is to be avoided as it leads to lack of transparency and may result price discrimination in favor of the host municipality.)

The tipping fee is expressed as price /ton of waste delivered. A modern landfill is equipped with a weighing bridge. Each incoming truck is weighed and the landfill operator invoices each municipality for the amount of waste it delivers. This is at least how things might work in a transparent non-discriminatory setting.

For simplicity it is assumed that there is only one tipping fee, i.e. the tipping fee for municipal household waste. The reality is more complicated, as landfills also receive waste from generators other than the municipality: industrial clients may bring non-hazardous waste, construction companies or individual builders may bring construction waste, agriculturalists may bring in green wastes, etc. These all contribute to the revenues of the landfill operator. Landfill operators not only accept waste from different types of clients but will normally differentiate the tipping fee between different types of waste. For example, the fee is usually relatively low for construction waste which can be used for contouring the landfill. Earth and green cuttings are often received free as they can be used, respectively, for covering layers and for producing compost. These complications are ignored here. The most important tipping fee which accounts for the bulk of the landfill operator's revenues is the tipping fee for household waste which the user municipalities' vehicles dispose at the landfill.

Elements of the Tipping Fee and Full Costing

Agreement on the tipping fee is not a simple matter, as it involves a number of issues such as affordability, cost recovery, and liability for aftercare. .

It is useful to start with the concept of full costing

The "full-cost" of landfilling may be broken down into the following components:

Full Cost = Operating Cost + {Depreciation, Provision for Loan Service}
+ Provision for Aftercare + "Normal" Profit

Full cost is a yardstick against which the degree of compliance with the principle of cost recovery – the "user pays / polluter pays principle" can be measured. If the tipping fee covers "full cost" the principle is fully complied with. However, opinions may legitimately differ on how to measure the full cost of a landfill operation.

Operating cost is relatively easy to estimate and forecast. It is generally recognized that at the very least the operating cost of the landfill must be recovered by the tipping fee. However if only operating cost is recovered the landfill only breaks even on current expenditures. No cash is generated for replacement of assets and other investments.

Depreciation and provision for loan service are bracketed together in the above formula since the depreciation charge is a source of cash generation to service debt. When the landfill is financed as a loan, the depreciation charge is a source of cash from which the loan can be serviced.

In principle the depreciation charge should be set at a level to recoup the capital expenditure of an asset over its life time. It is however difficult to estimate the "right" depreciation charge (see Box). The proceeds from depreciation charge is rarely kept in reserve for the replacement of the asset. It is sometimes tailored to meet loan service requirement and and/or used for other capital expenditures.

Uncertainties make it Difficult to Estimate the "Right" Depreciation Charge

Many factors influence the speed at which the "free space" of the landfill is used up. Waste generation by the population changes over time. Legislative changes can safely be expected to have a major impact on the quantity and quality of waste disposed on landfills. In particular, once in the course of "approximation" to EU policies and directives (i) an increasing fraction of waste is recovered for recycling and (ii) the portion of biodegradable waste which is much is reduced, the landfill's will live longer. As the economic life of the landfill is difficult to predict so is the depreciation charge. Assuming simple straight line depreciation, the depreciation charge would decrease proportionally with the projected life of the landfill.

If the landfill is financed by a loan, it is **not** correct to argue, as it is sometimes done, that the full cost should cover **both** a depreciation charge that recoups the capital cost of the landfill and a component to service the loan. If that were done, the capital cost of the landfill would be recovered twice during the life of the landfill: once by repaying it to the lender and for the second time by generating cash for its replacement through the depreciation charge. Apart from being a kind of double-counting, such a practice would result in an unacceptably high tipping fee (and an unnecessary accumulation of cash generation from the depreciation charge. (There is no rule that the cash generated by the depreciation charge should be kept in reserve for replacement of the landfill, though sometimes the argument is made that it should be. But that is neither how private or public companies do or should behave.)

Should the tipping fee be higher in a project financed by a loan than a grant?

In theory no
In practice it usually is

DISCUSS!

The costs of after-care extend for a long time after the closure of the landfill. In some legislations landfill operator is obliged to incorporate a provision for aftercare in their fee structure, and must set the proceeds aside for future use (e.g. in an escrow account). One justification for such an arrangement is to prevent a private operator from escaping the liability for aftercare by declaring bankruptcy just as the landfill closes (and thereby leaving the liability for after care to the host municipality, to whose ownership the landfill site reverts). In publicly owned landfills this argument carries less weight. The argument is sometimes made that that

aftercare is best financed from local taxes once the time arrives. Be that as it may, there is a case for user municipalities to jointly shoulder the liability for aftercare, rather than let the host municipality hold the bag. This is achieved if the tipping fee, which all municipalities pay, contains an element for aftercare, which is then held in escrow during the lifetime of the project.

No matter how sound the principle, municipalities would generally rather prefer to ignore the costs of after care in setting the tipping fee. But should they agree in principle, the magnitude of the fee would leave enough to argue about. Uncertainties include the economic life of the landfill and the preferred technology for after-care – which may also change during the long life of the landfill.

The temptation is anyway strong to postpone the day of reckoning and not to incorporate a provision for aftercare into the fee. An alternative would be a binding agreement between municipalities to somehow share the cost of aftercare after the landfill is closed. Sharing the cost in proportion to the quantity of waste delivered during the lifetime of the landfill makes common sense, however it relies on accurate measurement and records. Alternately municipalities could agree to share aftercare base on their population size, or some other more or less complex formula. At any rate, the issue should not be swept under the rug when municipalities frame their agreement on the joint use of the landfill.

Finally, most would argue that utilities should earn a "**normal profit".** A normal profit is usually expressed as a rate of return assets equal to the "cost of capital to the economy". The cost of capital is often interpreted as the lowest interest rate at which a strong private company can obtain a loan. Publicly owned companies should also earn a return on the capital that they employ and thus recoup their capital contribution. If they don't this discriminates against the private sector which cannot invest without the expectation of a fair return of investment – which is part of the justification for PUC's to generate normal profits.

Appendix 2

The Calculation of the "Financial Gap"

While the EU on the one hand espouses the user pays/polluter pays principle, on the other hand it must justify the subsidies and grants it dispenses. This is explicitly done in the name of having to subsidize low income beneficiaries who cannot afford full cost tariffs. The EU aims to tailor the amount of grant funding to the ability of the population to pay for the service. Thus two contradictory principles are at war in applying for grant support: on the one hand the polluter pays principle is to be observed, on the other hand the grant element must be justified in terms of the inability to comply with the same principle. This inability is to be shown in the analysis of the "ability and willingness to pay".

The dilemma is best understood from the EC's instructions on how to justify the level of grant funding. Under the ISPA program, the justification had to be made in feasibility studies on the basis of the "Financing Gap". The financial gap is the amount of grant funding which is to be justified on the grounds of the low ability to pay for the service.

A (simplified[10]) ISPA instruction for the calculation of the financial gap is

$$\text{(1) Financial Gap} = 1 - \frac{\text{PV (income - O/M costs)}}{\text{PV (initial investment)}}$$

$$\text{(2) Rate of Assistance}^{11} = \text{fingap x eligible costs for ISPA financing}$$

The implication of this formula is that the less financially viable a project is, the greater the proportion of financial assistance it merits. A quick glance at the border values will illustrate the point.

If the fraction in the first formula (nominator/denominator) is 1, the project is breaking even in the sense that the present value of cash generation (read: income minus O&M cost) equals the present value of the investment, discounted at the cost of capital. Such a scenario can be denoted as a full cost recovery scenario: fees and revenues collected enable the project to recoup the full investment, at the cost of capital employed in the present value (PV) calculation.

[10] The full formula includes residual value of investments after the period under consideration but this complicating factor may be ignored in the initial calculations for the long term financial gap.
[11] Subject to the constraint that the ceiling for ISPA support was 75%, in some exceptional cases 85%.

According to the formula, in such a scenario the project is not eligible to any EU support at all, as the financial gap is zero.

If on the other hand the project doesn't generate a net income, so that the fraction of the two present values is zero, the project would appear to merit full 100% support. Putting aside for the moment residual value and replacement value, if revenues merely meet operating costs, the Project would be eligible, in theory, to 100% ISPA support; except that this would then bump into the 75% ceiling for EU grant funding.

In short, the worse the financial prospects of the project, the greater the financing gap, and the greater the proportion of prospective ISPA financing.

The outcome of the calculation all depends on the tariff which is used in the calculation.
The commonly accepted yardstick of affordability is that the fee should not exceed 2% of household income. In theory at least, if the project proponent can demonstrate that the maximum tariff that the population can afford results in a 75% financial gap, the justification for the maximum ISPA grant support is made. It remains to be seen what criteria IPA prescribes for determining the proportion of grant funding.