# MODULE - 3

## *FINANCIAL (ECONOMIC ASPECTS TO WASTE COLLECTION SERVICES)*

**MODULE STRUCTURE:**

**SECTION 1: FINANCING OF MUNICIPAL WASTE MANAGEMENT**

**SECTION 2: HOW TO PLAN A SUSTAINABLE FINANCING WASTE MANAGEMENT SYSTEM**

**SECTION 3: HOW TO BUILD AN ANNUAL BUDGET**

**SECTION 4: OPTIONS FOR IMPROVED REVENUE COLLECTION**

# I. FINANCING OF MUNICIPAL WASTE MANAGEMENT

## *1.1 THE ISSUE OF COST RECOVERY*

One of the most important issues facing municipalities in the provision of waste/resource management services is the issue of cost recovery. From the perspective of the municipality the recovery of costs represents a key budgetary aim.

The coverage of costs through direct fees helps the municipality to:

- Configure the service to a desired level according to the public expectations
- Raise public responsibility and its involvement
- Set incentives through pricing differentials designed to achieve specific (environmental) objectives;

Direct charging also carries with it important democratic principles- cost recovery through direct billing enables citizens to adjudge whether their service represents value for money, and equally importantly, it enables them to understand how revenues are spent on other services.

Even though, “direct charging” remains the preferable option comparing to “indirect charging” still local authorities in Albania and abroad are aware that they cannot cover the full cost of municipal services only from tariffs and the system needs to be resources by other municipal funds.

Furthermore the level and the structure (proportion direct/indirect charging, proportion paid by household and professionals, etc.) of waste tariffs is a political decision of municipal council which sometimes differs from the policy of municipality itself. Sometimes local authorities are unable to raise waste tariffs at a desirable level (aiming cost coverage) because they are incapable to collect these tariffs or because they are aware that increased tariffs will discourage the public to pay (some Albanian municipalities are recently facing this situation).

But at the end, the total annual cost of the recollection and treatment of the waste has to be covered by the incomes as a basis for the sustainability of the public service.

On the other hand, the pressure of keeping the most reduced taxes needs to work permanently to optimize the costs/quality ratio of the service. This needs to give objectives, responsibility and authority to the service manager.

## *1.2 GENERAL FINANCING OPTIONS IN MUNICIPAL WASTE MANAGEMENT*

To meet the demand for financing the municipal waste management services within the compliance schedules, it is necessary to combine all available sources, both internal and external sources.

Furthermore it is necessary to combine different types of financing: Foreign/National grants, soft loans, market based loans, bilateral donor contributions, own sources etc. Anyway it is worth to mention that financial tools for funding operational, maintenance and capital expenses sometimes differs from those tools for financing physical investments, or programs or different projects.

In general the various financing sources are:

### a) State Budget

Funding may come from the general budget or from earmarked extra-budgetary accounts, most often from environmental charges (earmarked for environmental expenditure) and fines (for non-compliance), or from a share of ordinary fees. Both direct and earmarked funds are generally channeled, managed and disbursed via special environmental funds or via municipal budgets.

### b) Municipal Budgets

Municipal funding may be in the form of grants and direct cash transfer from the municipal budgets, or – more common – as grant or loans from municipal (environment) funds, accrued from municipal tax income, unconditional transfers from the State budget to municipalities and/or charges, fines and user fees collected by municipality.

### c) User fees

The principal source of revenue for municipal infrastructure projects is user fees on drinking water, sanitation services and waste disposal. In the past, the direct fees have been relatively low and the services were paid via public taxes. However, in line with the “polluter-pays-principle”, the actual consumers of the services shall gradually bear the full cost of the services. This does not only include operation and maintenance cost but also amortization of investments to cover future replacements and reinvestments.

### d) Pollution charges and fines

Pollution charges and non-compliance fees are primarily for educational purposes but can represent important sources of funding. The types of revenues, which are generally collected by government agencies or by municipal authorities, can subsequently being transferred to and disbursed via an environmental fund. This environmental fund should be used only for environmental purposes.

### e) Environmental Funds

As previous mentioned, both state and municipal funds for environmental purposes may be accrued in special funds, earmarked for environmental investments, in the form of grants or guarantees. By nature the funds are public, in most cases organized as independent legal entities, with the purpose of managing and allocating the fund’s capital according to set priorities and rules, on behalf of the central government- and/or municipalities.

In addition to channeling funds transferred from National and Municipal budgets, environmental funds are often instrumental in mobilizing and providing funds from foreign International Financing Institutions (IFI's) (e.g. the World Bank (WB)) and bilateral donors.

Most foreign investors and donors generally require co-financing as a mechanism or condition to actively involve local authorities and make them more aware on maintenance of these investments. Such funds will, therefore, be vital partners in any investment programme or project.

### f) Commercial capital and leasing markets

Three potential sources of financing for environmental and waste management projects are capital that can be mobilized by the banking sector, through the stock market, and by leasing companies.

#### (i) Commercial Banks

The willingness of the commercial banks to finance environmental and waste management investments is directly related to the creditworthiness and repayment ability of local governments. In the actual situation of the communes the possibilities of co-financing by domestic banks is low but may increase slightly in the future due to fact that foreign donors and IFI's most often require their funds to be channelled via and managed by a local (domestic) bank, likely to motivate the local bank also to participate with funds.

#### (ii) Leasing Market

Presently leasing is generally limited to vehicles and mobile equipment type investments. However, the leasing products are developing rapidly and are likely to extent into full-scale environmental facilities. This may be in the form of sell/lease back arrangements or arrangements more corresponding to concessions.

### g) Concessions and other Private/Public Partnerships

Concession arrangements may take many forms as arranged and agreed from case to case. However, in terms of financing it generally refers to arrangements by which the concession holder finance the investments (in part or full) against a concession period during which he can recover his initial investment. During the concession period he is also responsible for operations, to be covered from service revenues (fees).

The concept of concessions within environmental and waste management facility management appears to be growing rapidly and will definitely become a method to limit Municipalities' own funding needs. Also the concept of concessions is more in line with market economy and represents a move towards private/public partnership.

### h) Own Sources

Existing waste processing companies including sanitary landfills are generally owned by municipalities which have had limited possibilities to generate surplus capital. In many CEE countries[1] the fees do often not cover depreciation of existing assets.

Considering the problems of raising fees, it is not likely, therefore, that the companies –being private or still municipal owned – can build up any significant capital for new investments. Investments from own sources will thus be raised indirectly through loans. The servicing of these loans over the period of maturity – repayments and interest – should subsequently be covered by user fees.

## *1.3 PRINCIPLES ON WASTE MANAGEMENT FINANCING AND TARIFFS SETTING*

The following principles should be considered when planning to establish a sustainable waste management financing system.

a) *Efficient allocation of resources*: the efficient allocation of available municipal resources between users should be fostered;

b) *Efficient supply of services*: incentives should be created to provide services at the lowest cost;

c) *Efficient use of natural resources:* the efficient use of resources should be encouraged. This includes the meeting of environmental or recycling objectives.

d) *Cost recovery:* tariffs must reflect the costs associated with providing the service, including operating and maintenance, capital, replacement and financing costs;

e) *Financial viability:* tariffs should allow for the financial sustainability of the service, taking any other subsidies into account;

*f) Horizontal equity:* users of services of the same category should be treated equitably and should pay the same amount for the same level of service; this also means that all should pay even public services or institutions (hospitals, army, administration, etc.) for the waste they produce.

g) *Vertical equity and poverty alleviation:* poor consumers should pay proportionally less for services. Poor households must pay tariffs that only cover operating and maintenance costs, or have special lifeline tariffs or be subsidized in such a way as to allow access to basic services;

[1] Central and eastern European countries

h) *Administrative and technical feasibility:* any tariff should be administratively and technically feasible to implement. The implementation process should be less costly than the benefits of implementation itself;

*i)* *Polluter pays:* those responsible for waste generation and externalities from waste generation or disposal should pay for the social costs of this waste;

j) *Avoiding illegal dumping:* the tariff should not provide incentives for tariff avoidance through illegal dumping;

k) *Proportionality:* the amount the user pays should be in proportion to the use of the service;

l) *Transparency:* tariffs should be understandable and any subsidies which exist must be visible and understood by all those affected;

m) *Promotion of local economic development:* local economic development should not be harmed by the tariff approach and special provisions can be made for commercial and industrial tariffs to encourage local economic activity.

## II. HOW TO PLAN A SUSTAINABLE FINANCING WASTE MANAGEMENT SYSTEM AND TO SET MUNICIPAL WASTE TARIFFS

The process of financing waste management services and establishing tariffs for a municipal service is not only a financial procedure. Tariff setting involves understanding the service and service levels that are being offered; knowing who the customers of the service are and what they are willing and able to pay for the service; analyzing the costs of service provision; establishing the institutional conditions for service delivery and finally evaluating all sources of income, including tariffs.

### *STEP 1: UNDERSTAND CONSUMERS*

The municipality needs to firstly understand its consumer profile. An understanding of the number and type of consumers will enable the municipality to make accurate cost calculations, to estimate likely volumes of waste generated, how many consumers will pay, and to assess likely income from tariffs. Information on the following categories should be gathered:

**a) Residential Consumers:**

**(i) Population and households**

The municipality should gather data on the demographic characteristics of its area, specifically:

- Current number of households and average household size in the municipality;
- Income distribution;

- The distribution of households between “settlement types”, which can be broadly categorized into formal urban, informal urban and rural areas, or can be categorized in terms of household density;(dense or rare urban area);

- Current number of small business units- classified within the residential consumer category.

- Residential special producers: garden owners are often producing major quantity of waste generating high cost of collection from the collectivity. It can be analyzed if garden waste generator should be taxed with a special rate following the *Polluter pays* principle.

**(ii) Willingness to Pay**

- ‘Willingness to pay’ is an economic term which means the amount that a consumer is prepared to pay for a service which they desire. This assumes the ability to pay for the service. Higher income consumers will tend to have a higher willingness to pay for services.

- The level of service and its convenience to the user is a key factor affecting willingness to pay.

- Willingness to pay can be measured through a number of methods:

    - Comparison with current payment levels, for example payments from other communities with similar social, economic and service level profiles;

    - Special survey approaches which can be used to assess demand for services;

    - ‘Rules of thumb’ relating payments to household income, for example those payments for solid waste services should not exceed a set amount (no more than 1%) of average household income.

**(iii) Existing service provision**

The current levels of service and access to solid waste removal services needs to be clearly understood as a baseline for future solid waste services planning. The municipality should collate information on:

- Current levels of service in the different settlement types. From the service level information the number of households with acceptable levels of service and those with inadequate services can be seen. The tariff model is fairly flexible and allows for users to include the range of service levels used in the municipality.

- Service level information includes:

    - Method of collection (at source, curbside, communal or none)

    - Frequency of collection

- Waste storage (type and size of container)
- Once the municipality has collected the above information it should be able to fill in the blocks.

### b) Non-residential consumer

Commercial, administrative and industrial consumers can be an important customer category for many municipalities. There may also be big commercial and industrial waste generators whom the municipality does not collect waste from or offer a service on demand but whose waste will be disposed of in municipal landfills. The municipality is responsible to keep good records of the sources, types, volumes, and disposal destination of municipal and non-municipal waste produced within its own responsibility.

Markets are another type of non residential consumers. In certain places, there is a special fee for merchants to fund the service of waste elimination and other expenses of the market.

Information required includes:

- The numbers of commercial and institutional consumers who require waste to be collected on a regular basis by the municipality. The commercial category would include offices, shops and restaurants. Institutions would include schools, offices and hospitals;
- The numbers of industrial waste generators in the municipal area;
- The proportion of industrial consumers that are provided with solid waste collection services by the municipality versus those provided by the private sector.

### c) Public Services

The “public” can be seen as a consumer category as well. This refers to the general cleansing and litter/ rubbish collection in the municipal area as a whole. Information on the public services requirements, current service levels and adequacy of public cleansing is needed, including:

- Size and nature of public spaces to be cleaned
- The extent to which litter bins are available in public areas
- Number and size of ‘garden sites’ for domestic garden refuse
- Differences in service levels across the municipal area
- Nature and scale of illegal dumping

## STEP 2: ESTIMATE WASTE GENERATION

The municipality should also have an understanding of the amount of waste that is likely to be generated in the area, and which will therefore require collection and disposal. Total waste volumes are an important driver of current collection costs and of future costs of landfill space.

Waste generation will comprise waste produced from:

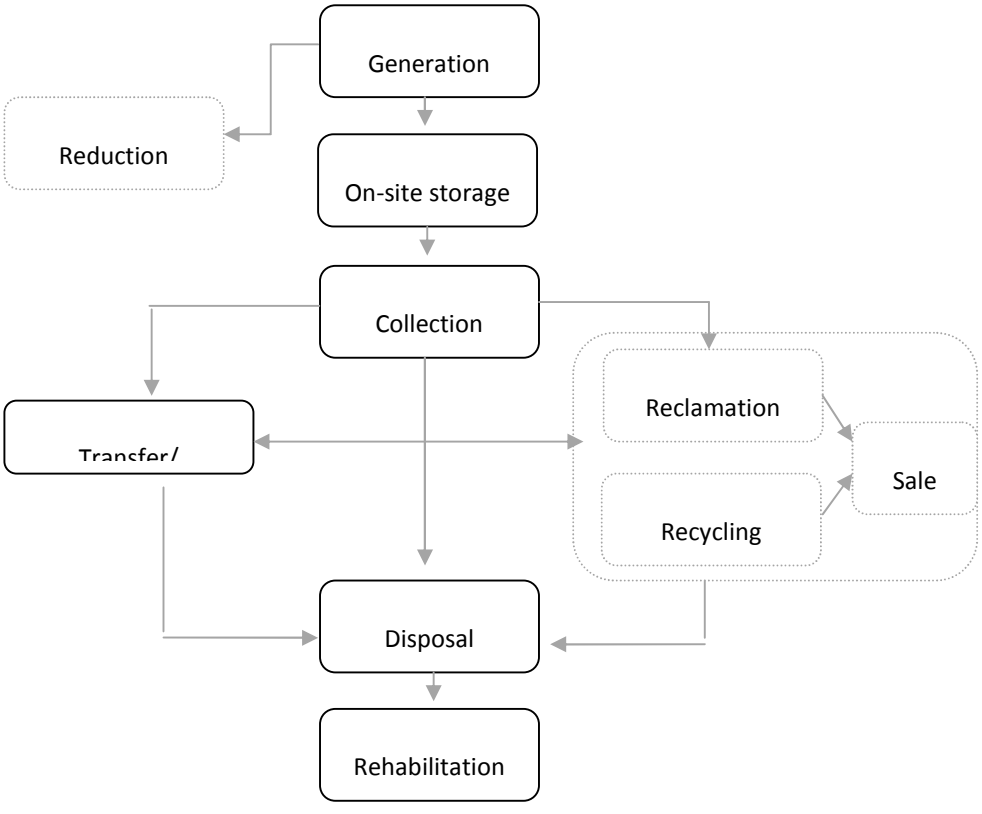
- *Residential consumers*: domestic (urban waste)/ garden waste/ bulky and C&D waste produced on household level and small commercial level;
- *Non-Residential:* Commercial waste/ industrial waste/ medical (hospital) waste and other non municipal waste produced by non residential activities;
- *Public services*: amounts of waste collected from street cleaning, litter picking and cleansing of facilities/ waste collected from illegally dumped waste/ or waste collected by public garden sites.

## STEP 3: ASSESS TECHNICAL OPTIONS

Solid waste services can be provided in a number of ways at different levels of service. The choice of service level, approach and technology will affect the cost, efficiency, sustainability and social acceptability of the service.

There are a number of stages in the municipal solid waste system where different technical options are available. Alternative methods and technologies are available for on-site storage, (containers and bins) collection, transfer and transport and disposal.

Municipal solid waste management system:



### a) Residential consumers

#### (i) Service levels

There are a range of service level options that the municipality can consider in providing solid waste services. Service levels are a key cost driver and need to be established prior to setting tariffs:

*Adequate service levels:* An important decision to be taken is the level of service regarded as adequate in the municipality. It is likely that this will be context specific and will depend on the settlement type and waste generation characteristics. In some areas, such as rural villages, where the waste content is largely organic and there is sufficient space, a communal controlled dump or compost may be deemed adequate. In dense rural settings a communal skip system (with short enough distances to the communal bin, frequent and regular bin removal and appropriate skip placement and hygiene) may be deemed an adequate service level. In many urban areas some form of curbside collection will be the minimum service level regarded as adequate.

#### (ii) Collection and transportation methods

The same level of service (for example, a weekly curbside collection) can be delivered using different methods and technologies (for example, more or less labour intensive approaches). The method used is impacts on the cost and efficiency of the service and on other municipal objectives such as local economic development and job creation.

Prior to setting tariffs the municipality should:

- Evaluate the appropriate collection and transportation methods for the different areas within the Municipality;
- Consider the appropriate technology for waste collection (appropriate type of vehicle chosen)

### b) Non-residential

Non residential consumers are typically serviced on a demand basis with their service levels determined by the amount and type of waste generated. The local authority needs to:

- Assess demand for non-residential waste collection services and assess whether there are adequate technical resources to service this demand;
- Evaluate the most appropriate and cost effective technology.

### c) Public cleansing

The standard (frequency, level/ quality) of cleansing of public spaces, and the technical approach used, should also be taken into account by the municipalities as it impacts on the cost effectiveness of the service and the amount of financing required.

### d) Waste treatment

Municipal solid waste is typically land-filled by local authorities at general waste disposal sites managed by the municipality. Another option may involve private contractors that managing waste disposal sites on behalf of local authorities through municipal service partnership arrangements.

They are mainly 2 different models:

1. Classical Build and operate: the contractors have financed the development of the disposal sites in exchange for a long-term exclusive concession. This model is often difficult to build, because the contractor has high investments in the beginning: he needs high tariffs to cover his operational and financial costs and most of all a high confidence in the ability to pay and regularity of payment by the collectivity.

2. Build by public funds, operate by private operator. As the operator has limited investments, its risks and costs are lower, but he can operate on a professional way.

The main technical options relate to:

- Type of landfill

- Alternative disposal options:

The choice of option will have long term impacts on the costs of service delivery and environmental impacts of disposal. The municipality should be aware of the long term financial and environmental costs of alternative landfill or other disposal choices.

### e) Waste minimization and recycling

The reduction in the volumes of waste generated and the volumes of waste being disposed of are important environmental objectives of local authorities. The technical options in this regard should be investigated, as well as other approaches such as education and awareness programmes and the use of economic incentives. The aim is to encourage waste reduction, reuse and recycling of wastes by using lower waste tariffs for consumers already involved in municipal waste minimization programs or initiatives.

## *STEP 4: UNDERSTAND COSTS*

In order to set proper tariffs for consumers, all the costs associated with providing the solid waste service should be reflected as accurately as possible. This will help in the design of appropriate tariffs that will ensure that the revenue required to cover these costs is generated.

### a) Full cost accounting (FCA) vs. Cash Flow Basis (CF)

Most municipal accounts have historically been prepared on a cash-flow basis. This approach focuses on cash outlays when they occur and not on actual costs as they are incurred (i.e., when the resource is used).

For example, in cash flow accounting systems, capital expenditures for collection vehicles are recorded entirely in the year of purchase, while FCA spreads the expenditures over the useful life of the item. For these reasons, cash flow accounting can give a distorted picture of the actual costs of MSW management and must absolutely be avoided for calculating the annual cost of waste collection.

The FCA must be used, considering operation costs and capital annual cost of the different investments, based on the estimated life time of the item.

Anyway, FCA does not take into account environmental, health, and social costs. These costs cannot be measured easily or valued readily in the marketplace. Consideration of the full spectrum of costs is often called “true cost accounting” or “environmental accounting,” which is beyond the scope of FCA, but which may be needed in some circumstance where there are significant external costs or benefits of MSW operations.

### b) Typical Cost drivers

With regard to the different components of service provision in the municipal solid waste system, there are various factors that drive the cost of provision. An analysis of these factors is necessary to assist the municipalities in determining the relative impact on expenditure of different elements of the waste management system.

**Typical cost drivers of MSW provision:**

| Service provision component | Typical cost drivers |
|---|---|
| **Collection** | Settlement types – distance and density and road conditions<br>Levels of service – frequency of collection, type of collection approach<br>Collection method – vehicle technology and bins used - labour intensity of method used<br>Composition of waste – determined by household characteristics<br>Distance from disposal site – need for transfer stations, fuel costs |
| **Street and public area cleansing** | Settlement types – population density and through-flow of people<br>Levels of service – frequency of cleansing<br>Collection method – labour intensity of method used<br>Levels of littering – public education |
| **Disposal** | Land costs<br>Planning and sitting costs<br>Construction costs – environmental constraints<br>Regulatory compliance, operation costs including water and gas treatment<br>Closure and rehabilitation costs |
| **Administrative** | Finance<br>Billing |

| | |
|---|---|
| | Administrative |
| **Future costs (of policies or legislation that may need to be met)** | Upgrading waste sites to meet permitting standards<br>Formalization of salvaging on waste sites<br>Development of waste management plans<br>Waste information system data collection<br>Financial provision for closure of disposal sites |

### c) Cost apportionment

For effective tariff setting a municipality will need to understand its costs of operation according to different components.

(i) **Collection vs. disposal:** the costs of disposal are discrete costs that should be understood separately from waste collection costs. The municipality should be able to separate the operating and maintenance costs of disposal sites from other operational costs and should understand the capital costs associated with current and future solid waste disposal.

(ii) **Public vs. private:** the municipality may want to fund private and public solid waste services differently from each other; reflect these services separately in the tariff structure; or contract out one or the other of these services. For these reasons it should be able to separate the costs of public cleansing from those of private refuse collection (from residential and non-residential points).

(iii) **Size and cost apportionment:** typically larger municipalities should be able to apportion their costs at a greater level of detail than small municipalities. This is partly because small municipalities will tend to share costs across different services, for example the same truck may be used for solid waste and general parks and gardens services and it may be difficult to apportion costs between the services. Small municipalities may also not organize their solid waste services into discrete delivery components, such as public space cleansing versus household refuse collection.

(iv) **Typical Breakdown of Capital -Operating Costs? :** For a perspective of how capital and operating costs break-down by solid waste activity, the following ranges are observed to be common ranges for well managed solid waste services in developing countries[2], as noted below:

[2] Sandra Cointreau, "Solid Waste Management: Conceptual Issues on Cost Recovery, Financial Incentives, and Intergovernmental Transfers"

For solid waste collection, capital costs range from 20-40%, labor costs range from 20-60%, and consumables and maintenance costs range from 10-30%.

For sweeping, capital costs range from 20 to 30 %, labor costs range from 50-70%, and consumables and maintenance costs range from 10-20%.

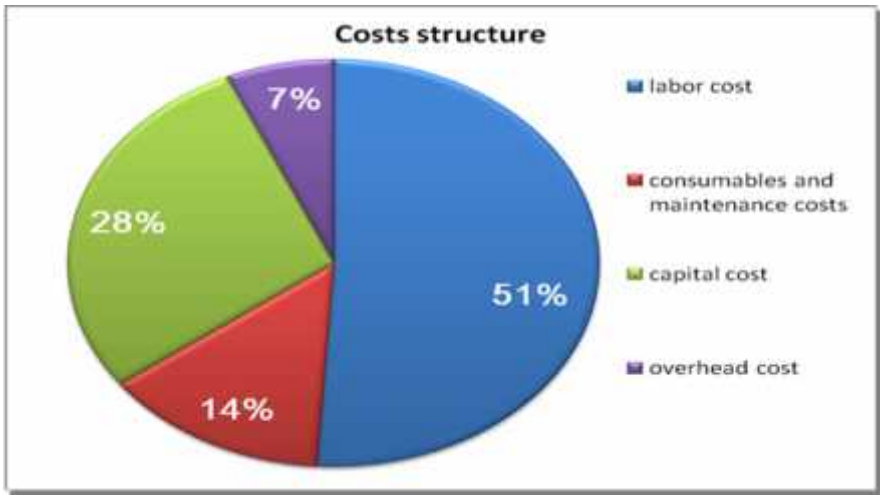
For transfer, capital costs range from 50-65%, labor costs range from 10-15%, and consumables and maintenance range from 20-30%.

For composting, capital costs range from 40-60%, labor costs range from 15-30%, and consumables and maintenance range from 10-20%.

For high-tech treatment, such as anaerobic digestion or incineration, capital costs range from 60-85%, labor costs range from 5-10%, and consumables and maintenance range from 10-30%.

For sanitary landfill, capital costs range from 40-70% percent, labor costs range from 10-20%, and consumables and maintenance costs range from 20-30%.

Referring to the costs structure analysis developed in purpose of Solid Waste management for the Commune of Velipoje (2011), the composition of cost components of the entire waste management service is illustrated by the following graph:




**d) Determining waste removal costs**

The best way to understand the costs of each component of the solid waste system is to determine these costs on the basis of the main cost items for each component. For solid waste services the main costs items are typically vehicles and plant, personnel and expenses (materials).

**(i) Relevant information regarding vehicles, plant and equipment**: to understand vehicle, plant and equipment costs the municipality should have:

- Assets register of all major equipment and vehicles;

- Information on the date purchased and therefore age of the items;
- The cost price and estimated useful life of the items, which can be used to determine the depreciation and hence book value of the asset;
- The total monthly operating and maintenance costs of the item, including fixed costs such as insurance, and variable costs such as fuel use and maintenance and repairs;
- Usage parameters relating to the item. For vehicles the municipality should know the typical kilometers travelled per month and the expected fuel consumption.

**(ii) Information regarding waste management personnel**: details of all personnel should be collected. As salaries and other personnel payment information is generally maintained in a systematic manner, it may be possible to obtain totals per waste management activity relatively easily. As with vehicles and equipment, the objective here is to accurately allocate all costs to the various waste-management activities.

**(iii) Other costs associated with provision of the various services:** there are other costs that contribute to the total costs of municipal solid waste services. The following should be understood and recorded as far as possible including:

- **Consumables and related costs:** the cost of the purchasing of the tools and equipment and other costs, such as protective clothing, should be recorded in a similar manner to which such items are accounted for by the local authority;
- **Interest and capital charges:** the costs of borrowing funds for capital purchases will differ between municipalities. These costs need to be recorded and allocated as far as possible to the relevant component of the waste management service.
- **Overhead costs:** the true overhead costs of the service, such as management costs, should be relatively easy to determine once the other costs have been recorded. Overheads can then be apportioned to the various waste management activities on a sensible basis.

**e) Determining waste disposal costs to landfills**

The following costs associated with waste disposal to landfill sites should be calculated:

**(i) Operational costs**: the operational costs associated with landfill operation are relatively easy to identify. These include vehicles, plant, equipment, personnel, and consumables such as cover material (e.g. soil);

***Composition of common operational annual expenses:***

***Fix Components:***

- Personal costs
- Amortization and renewal of material
- Insurances

***Variable costs (Depending of waste quantity):***

- Hours of using the machines for compacting and covering of wastes
- Treatment of waste (landfill, dumpsite, segregation), water and gas
- Fuel, oil, wheels
- Maintenance and reparation (trucks, bins)

**(ii) Capital costs**: the capital costs associated with landfill development, rehabilitation and aftercare are generally referred to as "airspace costs" and need to be considered. It is important that airspace costs are always included when disposal costs are calculated and disposal fees are set. The capital costs, combined with information on the total landfill capacity, can be used to determine a cost/ton of solid waste disposed of. This can be combined with the operating costs to arrive at a total cost/ton of solid waste disposal which will be used in setting disposal charges.

**(iii)**

***Typical capital costs which the municipality will need to have information on are:***

- Land acquisition costs;
- Sitting costs, such as search costs and the cost of environmental assessments;
- Development costs including all the engineering works, infrastructure and buildings;
- Capping, rehabilitation and aftercare costs

## *STEP 5: IDENTIFY REVENUE SOURCES*

In order to provide solid waste services in a financially sustainable manner, the municipality should have a sound revenue base for both operational costs and capital funding. All the funding sources available to the municipality should therefore be identified.

### a) Sources of capital finance

It may not be possible for the municipality to bear all the costs of providing solid waste infrastructure to all un-served or under-served users. It may only be able to make a limited contribution and the rest

will have to be raised from other sources. It is therefore important to assess the extent to which loan funding will be required since the cost of servicing loans affects the tariffs that should be set to raise recurrent expenditure. The following are the possible sources to be investigated:

- Government grant;
- Waste tariffs revenue;
- Other Municipal Revenue;
- Private loans;

**b) Sources of operating finance**

The type of solid waste infrastructure provided and associated levels of service have a significant impact on operating costs. The primary sources of revenue for operating expenditure are:

(i) **Tariffs:** solid waste services are provided to individual households and businesses and therefore it is appropriate and possible to establish tariffs for these services payable by each customer served;

(ii) **Rates:** solid waste services include public services, such as street cleaning. They also have a public good component in the sense that the cleanliness of each individual stand affects the overall environmental health quality of the area. In this regard it may be appropriate to finance solid waste services through rates which are typically used to finance public goods;

(iii) **Other subsidies:** there may be other operating subsidies e.g. taken from other municipal revenues or from annual unconditional fund, or public charges and fines- for the provision of basic municipal services to the poor, or to cover the deficit of waste tariffs collection.

## *STEP 6: SELECT APPROPRIATE TARIFF OPTIONS*

Once the municipality has identified possible revenue sources it should focus on the options available to raise the required revenue from these sources. A distinction should be drawn between residential and non-residential tariffs.

According to the law local authorities have the responsibility to control the setting and adjustment of waste tariffs in accordance with the tariff policy determined by the municipal council and based on:

- cohesion with the annual budget
- principle of "who pollutes pays"
- possible political choices in defining priority
- affordability

- legal constraints (e.g. for the cleaning fee of the small commercial units)[3].

With regard to residential tariffs, there is a wide variety of options available which should be evaluated against the tariff principles.

For example, some municipalities may focus on the equity and subsidy requirements, while for others the greater need may be to increase the efficiency of the service.

An important factor affecting solid waste tariffs is that MSW services have characteristics of both private and public goods. Residential waste collection is a public good in the sense that it is hard to exclude anyone from the service without leading to illegal dumping and public health problems. There are also pure public services in the MSW system, such as street cleaning, which benefit all residents and firms. At the same time MSW collection is a private good in that it is a service delivered to individual households, and it costs more to deliver the service the more households are served. Tariff approaches have to accommodate this dual nature of MSW services.

### a) Residential tariffs

**(i) Option 1 –** Financing of all solid waste services through municipal taxes

Under this approach all municipal solid waste services are funded from general rates. The full cost of the service is determined and an appropriate charge is included (e.g. in the general property tax), to recover this cost. The argument for this is that solid waste is primarily a public good and that costs should be recovered from all citizens of the municipality.

**(ii) Option 2 -** Solid waste services funded by user charges

This option is premised on the view that the solid waste operation is a separate service which is expected to recover all its costs from user charges. The utilization of user charges is based on the argument that a MSW service has significant private good aspects and stresses the principle that users should pay for their use of services.

The various user charge options associated with this approach are:

- *Charges based on a proxy for amounts of waste generated* - In this approach a proxy, typically stand size, is used as the basis to distinguish the solid waste tariff. Other proxy variables, such as numbers of scholars or officials in an institution, can be used.

- *Charges based on service level* - In this tariff structure tariffs are based on the level of service provided to the consumer. Ideally the consumer would be able to choose the level of service according to need and affordability.

[3] Law No10117 dt 23.04.2009 "On some adjustment of the previous law on Local Fees on Local Level"

- *Charges based on actual amounts generated (pay as you throw)* – This approach requires a detailed recording of the amounts of waste collected from a site and establishes a charge per amount of waste generated. More crude versions of this approach are based on consumers purchasing special bags, with a surcharge which goes to the municipality, which are the only bags collected by the municipality. The more refuse generated the more bags have to be bought by the household.

**(iii) Option 3 -** Combined approaches

This approach is based on the argument that solid waste services have components of both public and private goods. A combined approach is aimed at recovering the private component through user charges, while the public component is recovered either through a universal flat charge or through an explicit solid waste component incorporated into the property rates.

The more specific combinations under this option are:

- *Flat rate and variable user charge:* The use of flat rate on all households and variable user charge (on one of the bases identified above) provides a workable approach if the municipality would like to ring-fence the service;

- *Combination of property rates and user charges:* This approach splits the financing of the service between the rates account, for the public components, and user charges, for private components.

**b) Non-residential tariffs**

Big commercial and industrial tariffs should be set within the same framework as residential tariffs. Services to these consumers are often on a demand basis, which allows the municipality to establish tariffs for specific services (and service levels) rendered, such as removing supermarket wastes.

However, unlike residential users, the tariff options for these consumers are quite limited, with the user charges being the well-developed and preferred tariff setting approach. Municipalities should, as far as possible, link these user charges to actual costs. The tariff structure should therefore reflect the various cost drivers of service provision. These include the distance of the customer, the type of waste (if the waste type imposes specific costs or benefits1), and the type of containers required. The tariff adopted will often have to be cost competitive with private firms.

The collection of commercial and industrial waste should not be subsidized. If the costs of collection of the municipality are higher than those of the private sector the municipality should not reduce its tariffs below its cost of providing the service.

**c) Disposal charges**

Those municipalities that manage their own disposal sites will need to establish waste disposal charges. Disposal charges should be established to recover both the capital and operating costs of waste disposal facilities and will therefore be based on the costs of disposal per ton of waste.

It is generally best to charge for solid waste disposal on a mass basis as the mass of waste disposed bears the most direct relationship to airspace costs. Where a weigh-bridge is in use the charges should be based on mass. Where there are no weigh-bridges, the waste tonnage should be determined using vehicle size and volume to estimate the mass of waste disposed of.

A number of other factors should be considered when establishing disposal charges:

- *Differentiation of waste types:* disposal charges can allow for the differentiation of waste types;
- *Minimizing illegal dumping*: some municipalities allow a certain amount of waste to be disposed of at no charge. In this way it is hoped to minimize illegal dumping;
- *Rehabilitation levy*: in most municipalities the costs of closure and rehabilitation of the disposal site are not included in the disposal charge. This leaves the municipality with a large future cost with no associated revenue. Some municipalities have begun to impose a small rehabilitation levy.

### d) Incentives for waste reduction and recycling

The pricing of solid waste services can assist in changing consumer behavior and can be used to provide incentives for consumers to reduce the amount of waste generated. Pricing will only alter consumer behavior where there is a direct relationship between the amount of waste generated and the price paid.

### e) Affordability analysis

An affordability analysis should be conducted as part of the tariff calculations. The annual bills for households should be compared against the annual income of households in the municipal area to assess whether municipal services will be affordable to households.

If some households are not able to afford the service at the calculated tariffs the municipality will need to reconsider its service level approaches and will need to evaluate what subsidy options are available for these households.

The affordability analysis is crucial to ensure that households are not denied or cut-off from services because of an inability to pay. The affordability analysis is also important to ensure that there is not excessive non-payment of service charges. Unaffordable tariffs will translate into high levels of non-payment which is not a sustainable basis for a tariff strategy.

For the purpose of this analysis, the operational or total annualized costs (annual capital + operational costs) per household are compared to the affordability threshold (1% of average income).

### *STEP 7: COMMUNICATION WITH CONSUMERS*

To gain acceptance of solid waste tariffs by the users, it is vital that the process of setting these tariffs is transparent and communicated properly to all parties affected.

The communication exercise should be clear to users in terms of what they are entitled to and what is expected of them with regard to solid waste services. The municipality should undertake one or more of the following in its communication process:

- *Waste management Planning:* as part of the public participation exercise, communicate the tariff setting process, how it is being approached, and what tariff options and tariff structures are being considered.
- *Consultative workshops:* should be held with the users where the different tariff options will be presented together with the methodologies followed to arrive at these. Depending on how the meeting goes, a follow up meeting to finalize and adopt the tariffs may be necessary.

People are generally not happy to pay tax. It is important to explain very clear on how the tariff is composed. It is also often important to compare the cost with a non proprietary expense of anyone: for example: same price like half a coffee per day or like xx cigarette per day, etc. in order to make comparison between an important need (my city must be clean) and a not so important one (Coffee or cigars are not oh high life priority).

## III. HOW TO BUILD AN ANNUAL BUDGET?

### *3.1 ESTABLISH A BUDGET (IN 8 STEPS)*

***STEP 1:*** This step comprises the evaluation of previous budgets/expenses and the pre-consultation phase. The gathering and evaluating of available financial information and consulting with different stakeholders help local authorities to prepare a realistic budget for the respective area or activity of work. It is important to take into account the past experience, trends and developments likely to affect future expenditure. The financial evaluation provides an overview of expenditures and revenues for the municipality/ commune, over the past two or three years; it looks specifically at expenditures on the existing solid waste collection services and the revenues directly generated via the “Cleansing Tax” or “Waste Tariff”; and calculates an indicative cost per UNIT (tone, m2, m3) for existing services;

***STEP 2:*** Indentify all relevant capital and operating cost projections for the proposed investment programme and calculates indicative unit costs for the new waste disposal service;

***STEP 3:*** Presents the results of a suggested investment financing plan, identifies two alternative plans to be used for sensitivity analysis in later analysis, and sets out the loan service schedules applicable to local and foreign loans included as part of the suggested plan;

***STEP 4:*** Provide a range of possible cost recovery objectives for the new waste disposal authority and establishes indicative tariffs for each option based on the suggested financing plan. Furthermore, a sensitivity analysis is conducted to illustrate the tariff implications of the two alternative financing plans.

***STEP 5:*** Assesses sources of revenue available to fund the operating costs and debt service requirements of the programme, looking particularly at the alternative of user charges.

***STEP 6:*** Allocate costs according to beneficiaries.

***STEP 7:*** Conduct an analysis of the affordability of the proposed waste management service.

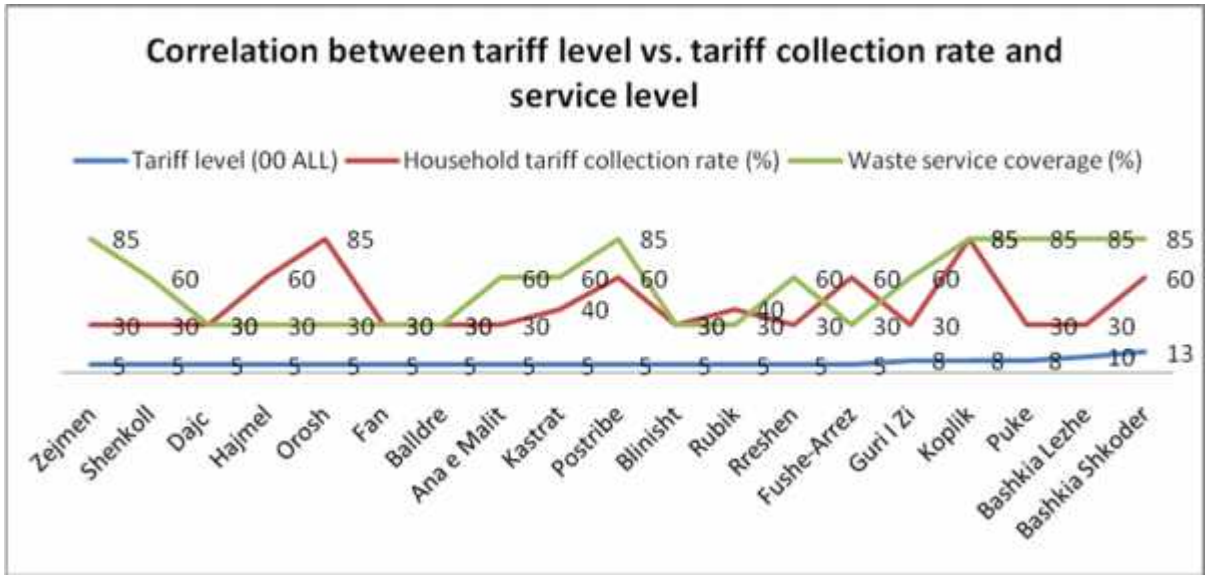
***STEP 8***: The step consists of the submission of the proposed budget to the relevant people within local authority for approval and to assist the overall financial planning process. Discuss and, if appropriate, negotiate the proposed budget with the relevant officials in the organization, agree and approve the final budget.

# IV. OPTIONS FOR IMPROVED REVENUE COLLECTION

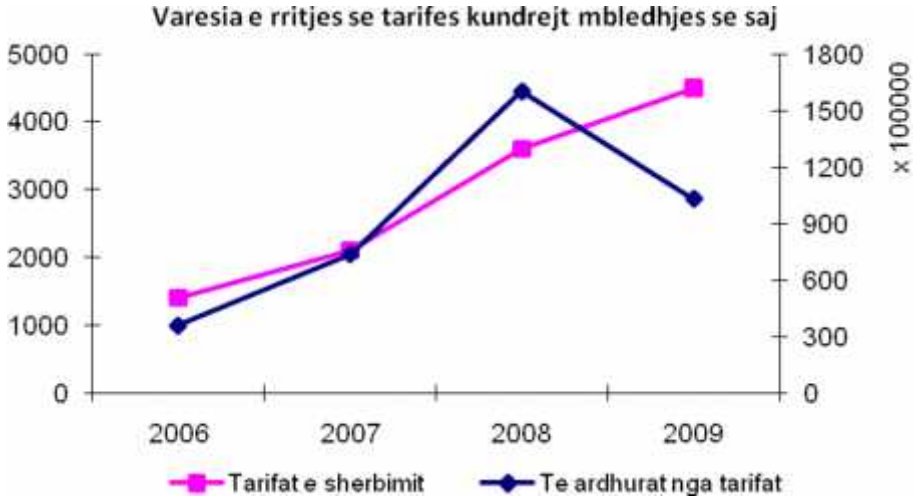
## *4.1 OPTIONS FOR IMPROVING WASTE REVENUES – OR REDUCING COST OF WASTE COLLECTION*

**a) Correlation of "tariff level" with "fee collection rate" and with "service levels"**

According to the international experience, there is no clear trend in tariff level upon fee collection rates. Similar approach is identified even in Albanian context. The following figure (based on the data collected from some local authorities in region of Shkodra and Lezha) shows the relation between collection rate and tariff levels. There were identified three tariff levels, in 2010: < 700 ALL, 700-1000 ALL and > 1000 ALL, while collection rate varied from <30%, 30-50%, 50-70%, and 70-100%; On the other hand, on the same graph is illustrated the correlation between tariff level and service level (waste service coverage).




Another graph illustrates different levels of waste revenues for city of Tirana towards the process of tariff growth along 4-year period (2006-2009)




These examples show that to a certain level there is no clear correlation between level of waste tariff and tariff collection rate and collection rates mostly depend on the collection method and consistency, and not the tariff amount itself.

Looking at the data, there is no strong correlation between the level of the waste fee and service level provided can be recognized. One important explanation for the lack of a very clear relation between the better service level and the tariffs is the high level of subsidization of the waste collection services from local budgets.

It is to be mentioned that there is also very often solution to reduce the cost of waste collection and transportation using good technology and mostly by developing a efficient logistical organization of human, machine and time. In Europe, It has been proved that the price for waste collection can vary from a city to another one in a range from 7 to 1 by using appropriate technologies and engineering.

## 4.2 IMPROVING LEGAL FRAMEWORK

The chosen of cost-recovery options (explored above) depend upon the national and local legal system.

**a) Municipal by-laws:**

When the tariffs have been finalized, these should be drafted into the council by-laws for implementation. Establishment and implementation of an organized waste tariffs collection system require legal approval (annual fiscal package) from the local council.

**b) Municipal tariff policy:**

Every municipality must "adopt and implement a tariff policy on the levying of fees for municipal services provided by the municipality itself or by way of service delivery agreements". The municipality must include a solid waste tariffs policy within this tariff policy or within a local waste tariffs regulation. This should be followed by clear rules to be followed by employed personnel or agents as well as consumers.

**c) Enforcement of tariff policy:**

The above rules should be accompanied with appropriate sanctions for compliance with rules. Agreement should also be reached on how enforcement will be undertaken in cases of non-payment, taking into account the measures that will be in place for the poor households.

For this purpose local authorities can use adequate mechanisms to force the residents who are not paying for the delivered waste services, such as:

- Direct sanction in case of non-payment, or penalty interest for arrears;
- Or correlation of waste tariff payment with any mandatory national or local fees (e.g. electricity bill, property tax, etc.)
- Or sanctioning with not delivery any of local basic service (e.g. access to potable water supply )

## 4.3 BILLING

The first step of billing system is to identify all the consumers, and categorize them in terms of their characteristics (type, size, nature, etc) and to establish a list of clients or consumers within administrative borders. This list has to be checked regularly, at least once a year, to ensure that all in-out population or businesses changes are accurately updated.

The municipality can either collect tariffs itself through its normal procedures or it can allocate the responsibility of tariff collection to the external agent public or private entity. At present, there are different collection options for waste management fees from the households in place as follows:

**Option 1***: Waste fee collection via joint charging with other infrastructure services*: to add the waste collection tariff onto the electricity tariff. As for the first option (joint utility charging), this would mean that the billing and revenue collection for waste user charges is carried out together with another infrastructure service. Typically suitable utilities are those where individual disconnections are possible; therefore potable water supply will less appropriate. Possible public "host" utilities of a combined billing system might be: e.g.: electricity or telephone, the bills sent to the customers include two line items of payments due, one for the infrastructure service provided by the "host" utility company and the other for the waste fee.

**Option 2***: Municipality collects fees*: in this system the municipality would introduce a mandatory fee for waste management which effectively would become practically a special municipal tariff to households for waste management. The fee would include operation and maintenance and may be investment costs. The fee can be collected together with other revenues of the Municipality such as the property tax or separately independent of the tax collection. The basis for a successful implementation of the mode of collection is the establishment of a legal obligation of the citizens to pay the waste fee without any need for separate agreement of contract. With a proper amendment of the legal basis as recommended, the local authorities can exert more intensive pressure on the households in the case of non-payment. In this way, the overall arrears can be reduced and kept at a minimum.

**Option 3:** Waste fee collection by the waste collection company. In this option each individual household and other generators will need to sign contracts and pay directly to the waste collection contractor. This contractor would bring the waste to the landfill and pay directly to the landfill operator managing the site. This option is more adequate to commercial/industrial or nonresidential consumers which have a dedicated waste collection scheme.

Most of the Albanian local authorities are performing by themselves tariff collection process through their local taxes offices or local fiscal department. Sometimes, they charge waste tariff with other local tariffs (such as water supply tariff[4]) or local taxes (property tax[5]) within the same bill. Few of them have appointed any private fiscal agent or any public company (local Post-offices). There also combined system where local authorities fulfill billing process (including receipt delivery) while private agent accomplish tariff collection and enforcement measures or other combinations between billing-collection-enforcement.
In conclusion, the whole billed-paid relationship needs to be checked, and analyzes in terms of who paid and who did not, based on the list of clients (consumers), find out what went well and what did not, the potential reasons and factors that influenced.

[4] Case of Municpality of Korça

[5] Municipality of Lezha and Municipality of Lushnje

To ensure sustainability of the system it is important to employ some important mechanisms, starting with remainder tools to make consumers more aware on the responsibility or obligation to pay until the application of enforcement tools such as sanctions, penalties etc.