MANUAL ON PERFORMANCE BASED SERVICES

SOLID WASTE MANAGEMENT AT LOCAL LEVEL

Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Agency for Development and Cooperation SDC

dldp
decentralisation and local development programme

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SOLID WASTE MANAGEMENT AT LOCAL LEVEL

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INTRODUCTION

This module has been developed to further consolidate the initiatives undertaken by many project in the last 15 years and the Albanian Government latest vision to finally implement the accumulated knowledge on service provisions. The manual is focused on the waste management services only.

This manual is developed on the gathered experience and developed training curricula, manuals and guidelines to increase local level experts' capacities implemented by Swiss supported program *dldp*. Such packages have been developed for strategic planning and public finance management, waste management, e-gov and fund accessing.

Given that, one of the main objectives of dldp third phase is the anchoring of the instruments; collaboration with the Albanian School of Public Administration (ASPA) is seen as a good option not only anchoring curriculum developed by the program, but also to establish a certification system for public employees, valuable for their career system. Modalities for training on waste management issues with experts from 61 Municipalities (country-wide training) are developed. Thanks to the close collaboration with ASPA the terms for delivering the various modules of training and respective timeline throughout 1 year process, as well as the methodology and instruments for knowledge verification at the end of training (certification) have been defined. Dldp has already launched two cycles of long term training on solid waste management and training for strategic planning and management of public finances.

The curricula are now developed and consist of four modules of solid waste management training course: 1. Local waste planning; 2. Waste minimization and land – filling; 3. Cost calculation and tariff setting; and, 4. Performance based planning, benchmarking and monitoring.

The manual and its related training modules will be endorsed by ASPA and the knowledge learned will be evaluated by this institution followed by certificates of qualification. The correlation with the requirements for continuous education will be coordinated with ASPA and mandated by the Ministries of Line from the coordination WG. The national trainings aim to build a model of professional education under ASPA which will be rolled out even for other themes.

THE POLICY CONTEXT

Planning for solid waste management implies a set of techniques and tools that addresses the needs and adopt the right approach for transparent, easy to perform and affordable service for the citizens.

In this context, *dldp* has been working with international experts for local land in the last 7 years on developing the right planning tools to support the Municipalities on delivering efficient services.

The main tools develop for the solid waste management sector, are:

1. **The Manual for Planning Local Waste Management**

This manual on "Planning Local Waste Management" comes as a practical guide for all LGUs dealing with waste management issues.

The primary objective of this manual is to provide a practical and comprehensive guidance to local governments considering developing a local solid waste management plan, covering drafting, implementing and monitoring process of the plan itself. In addition, this manual can also serve as a resource for the local authorities willing to analyze the current situation, identifying and evaluating options, methodologies and scenarios, defining costs and financing needs, establishing regulations defining the organization at every stage of waste management, from waste generation through to final disposal.

Another objective of this manual is to highlight and disseminate good local experiences, projects and practices, which have been developed over a series of training, coaching and consultation sessions with LGUs, particularly in Shkodra and Lezha region. Such practices have been used to illustrate the technical and guiding steps of the manual, to make it as much comprehensible for the users as possible as well as to stimulate other similar initiatives in the regions.

2. **Solid waste management cost calculation tool** (excel based, developed in 2012 and consolidated in 2015)

The tool is a comprehensive excel based system, which requires minimal input from the user to produce analytic related facility, administrative and operations costs in detailed form for the LGU. It provides the exact number of trucks and bins, required for collection and transport and the related costs, number of works at all segments of operation and related costs, costs for transport and landfills and related costs, administrative and re-investment costs, extended for tourism related to operations and costs. It is easy to use but however only trained people who are able to interpret the results given by the model should use it. It is also accompanied by a guideline which provides insights for the user to understand the formulas and logic.

3. **Comprehensive solid waste tariff calculation tool** (excel based, developed and consolidated in 2015)

Tariff modeling is a pioneering model, which translates the principles of the environmental protection, producer pollution responsibility and waste reduction and minimization. The tariff tool is developed in excel format, in a user friendly model. It requires solid data from the LGU, although it is easy to maintain and operate. It is able to deliver an invoice for each producer at household, business and institution level. The tool is accompanied by the guideline, which provides knowledge for users on the logic of the selected system and approach.

4. Benchmarking Indicators for Urban Waste Service Provision

This document presents some initial first efforts to enable the design of several indicators measuring the performance of waste management services at the local level and the performance in terms of the implementation of waste management policies at the central level.

For the purpose of planning at local level, the service providers are required to follow the steps below, using the resources provided by the above listed tools.

For the performance indicators, only the indicators provided below in this document with the related explanations given in the annex will be used.

LEGAL PROVISIONS

The lessons learned from this manual are envisaged into two dimension frameworks, legal and regulatory: 1. High standards service provision; and, 2. Capacity development and continuous qualification.

The high standards service provisions are envisaged by the legal framework on environmental protection and integrated solid waste management. These standard level requirements are enforced by the organic law on local government which clearly envisaged the provisions of service based on performance and continuous monitoring.

Such concepts are materialized in the organic law framework on local government which requires for the first time a performance based service at local level, expecting to develop a system for developing indicators, controlling and monitoring and continuous improvement of the service.

Law, No. 139/2015, "On local government", Article 33 "Instruments for managing public services"
…
2. In any case, regardless of the selected instrument, the local unit shall be responsible for:
a) design and deployment of a performance management system in service, based standard on local and / or national minimum standards;
b) design and establishment of a system of indicators, including gender for performance measurement;
c) creation of a special unit in the structure of local self-government unit, which will be responsible for the presentation, supervision and monitoring of the performance of service, including gender.

Article 41, The budget of local self-government units and medium-term budget program
2. For the purposes of transparency and respect for the law, the budget of local self-government units shall include:
d) The main objectives of the budget for the coming year and expected results, including performance indicators and additional information required or may be required by law.

Continuous education and qualification is a must to cope with the very dynamic developments in the sector. New dimensions emerging concepts and mechanisms for improvement of the EU integration process are materialized very frequently in the Albanian regulatory framework. In this regard, every civil servant or specialist at the service provisions department will need to strengthen her/his capacities to cope with the standards and expectations of a developing country like Albania.

Persistent to the requirements and opportunities of the civil servant status and its related legal acts and regulations, the opportunities for continuous education and qualification are supported by the Albanian School of Public Administration (ASPA), based on the provisions set by the regulating DCM as below:

DCM, No. 138, dated 12.03.2014 “On the Rules of the Organization and Functioning of the Albanian School of Public Administration and Training of Civil Servants”.

…

Chapter IV “training of civil servants” 1. A civil servant shall be subject to mandatory activities, general and specific training at ASPA, in the following cases: a) during the probationary period; b) on the direct orders of his superior, when deemed necessary for the formation of civil servants, based on assessment results; c) training programs established by DAP in accordance with the policies of the training for at least sixty (60) hours of training per year for civil servants of middle and senior management; d) for vocational training programs for each step of the salary; d) for professional adjustment, in case of job requirements changes.

2. For training provided in paragraph 1 of Chapter IV of this decision, the worker is subject of the exam at the end of training. Training is considered successful if the workers take at least 50% of points in testing.

3. Procedures for testing and evaluation are provided in the internal regulation of the ASPA.

4. A civil servant can be trained abroad, in the general framework of training programs organized by the institution in accordance with the training programs, for a period of not exceeding one month. At the end of this training, the employee must be return to his former position, for not less than three years.

5. When the clerk refuses to return to his former position, according to the forecast provided in Paragraph 4 of Chapter IV of this decision, he should be compensating the institution for the costs of the training.

6. A civil servant can conduct training in other training institutions besides ASPA, up to a month, on his own initiative for the job he performs, on the mutual proposal of his superior and head of the human resources management unit and with the formal approval of the head of the institution.

7. Civil servants can conduct training from 1 (one) month to two (2) years, externally or internally, in his own initiative, for the job he performs. During this time, he is suspended from civil service.

8. All institutions of public administration are obliged, that for the trainings presumed in paragraphs 4, 6 and 7 of Chapter IV of this decision, deliver the information to ASPA and the Department of Public Administration.

THE STRUCTURE OF THE MODULE

This manual consists of three chapters. A brief description of each chapter is provided below:

Chapter 1: Waste management planning through performance and affordability concepts; this chapter provides guidance on how to develop a planning based on self-sufficient and affordable concepts. It offers a methodology on how to develop and measure performance indicators in order to confront the results of the planning process with the concepts of self-sufficiency and affordability. It helps the plan developer to understand the limitations of the local economic development and financial capacities on setting the objectives and indicators of the plan.

Chapter 2: Monitoring of operations, a tool for continuous improvement; this chapter is focused on monitoring the daily waste management operations provided either by municipality or from any private company. A good operational monitoring system will help municipality to improve the service efficiency, to better plan and better use of their resources. This chapter offers the methodology on how to develop an operational monitoring system analyzing all stakeholders, tools and processes involved at local level in both cases, either when the service is provided 'in house" by municipality or contracted out to a private operator. Finally a case study from Shkodra municipality where the operation monitoring system was developed and implemented is described in this chapter.

Chapter 3: Benchmarking of waste management at municipal level. This chapter outlines the benchmarking system. It aims to extend the experience presented in two previous chapters (how municipalities can monitor their service delivery at daily basis and its performance on the yearly basis) at the national level. This chapter provides guidance on how to compare each municipality with the other ones, as there is a high variability in terms of service delivery, quality of service and cost among the country.

CHAPTER 1 PERFORMANCE BASED PLANNING AND MONITORING

1.1 Introduction

According to the dldp "Manual on Planning Local Waste Management" Local Solid Waste Management Plan is entirely considered as a continuous cyclic process, and it is composed by components such as: overall planning, implementation and plan revision. The plan should be revised minimally in five year-intervals; however, in the event of significant developments the plan revision can be anticipated. The revision includes the evaluation of the objectives and measures, following the overall planning cycle. The overall planning process may be divided into the following phases: mobilization of the planning process and evaluation of the current situation (baseline including audits, public surveys, etc.), strategic planning and on-the-ground planning (short and medium terms), consultation process, implementation and monitoring, and plan revision.

Planning is a legal requirement as well as a must for local administration on exercising their function on waste management at local level. Its objectives must translate the national and regional objectives and targets set by the respective plans (NWMP and RWMP). In the Albanian reality such objectives follow the EU directives and EU ambition that the country has, reaching the best standards for the environment and human health. Planning also helps the municipality organizing its resources to answer the needs and demands of the population regarding basic services.

However, the objectives and targets of a plan are limited to the human and mostly financial capacities of a local unit. Every target has its own financial bill which must be locally financed. It requires the efforts and support of the citizens and business sector to support these ambitions considering that the service must be completely covered by local finances.

In this regard the plan must be very realistic, properly designed and adapted to the local reality and approached by the citizens of the Local Unit. A comprehensive baseline assessment is required to understand the local financial capacities and economic trends to be able to plan for a realistic future.

In addition, the concepts of self-sufficiency and affordability come into discussion (organic law references). According to the concept of **self-sufficiency** a municipality must have the financial, logistical and human capacities to provide service to the whole territory based on the legal requirements.

According to the concept of **affordability**, a municipality must provide a service which can be financed by local revenues and that citizens are able to pay for the service through the tariffs. Therefore, the system must be designed according to the legal framework, considering the limitation of the financial capacity of the municipality. Such provisions apply despite the economic profile of the municipality, its geographical position and capacities to further expand the economy.

In addition, a lot of questions derive. What are the standards that a municipality has to follow and implement? What if the municipality doesn't have the financial capacities to afford these standards? How can a municipality make the best of its financial capacities? How to deal with same service in the whole territory when there is no infrastructure access? How to deal with situations when providing the services to remote areas become highly expensive? It is better to provide a well-accepted, affordable and environmentally friendly service or strictly obey to the legal provisions? Is it possible to finance the legal provisions through the collection of tariffs? If not, what is the minimum standard on the quality of service that should be met? What are the alternative financial means?

This chapter provides guidance on how to develop a planning based on self-sufficient and affordable targets and how to set and measure performance indicators.

It supports the planning process by building on real figures (comprehensive baseline) which are measured based on a set of indicators selected for the reality of Albanian municipalities. Later it provides a methodology on how to project the service based on three different approaches making use of the indicators to confront the results with the concepts of self-sufficiency and affordability. It helps the plan developer to understand the limitations of the local economic development and financial capacities on setting the objectives and indicators of the plan.

1.2 About this chapter and what to learn

A performance based planning (PBP) is based on a clear set of indicators reflected in SMART objectives aiming effectiveness and efficiency of the solid waste management provisions at Municipality level. Performance indicators allow for an assessment of the observed situation, measuring trends, providing feedback and helping to identify the means to achieve these goals. PBP enables the system to focus on the desired or required performance results when targets are associated.

The indicators used for PBP can be qualitative, quantitative, absolute or relative and they must be supported by the systematic collection and analysis data. These data can be obtained from sources such as questionnaires/surveys, field observation reports, technical reports, operational performance monitoring systems, inspection activities, and more generally, data from such areas as economics, social and organizational information. PBP sets affordable goals for the desired outcomes (targets) and measures performance against them. Based on indicators, it becomes a strong communication tool with the local population.

This chapter provides the knowledge and guidance on how to accompany the planning process for waste management with performance indicators for a more efficient and sustainable planning. The user will be guided on the main steps of the planning process and the main elements of planning performance which can be used at each of the steps.

A set of performance indicators has been developed and is provided in this chapter. These indicators are selected based on the reality of the Albanian municipalities, their capacities to integrate these indicators in the situation where there was no system in place and their capacity to collect, analyze and make use of the indicators.

Therefore, the performance indicators are used in both planning and yearly monitoring of the service delivery, where the municipality compares its results with the ones of the previous years. The same indicators can be used as well in benchmarking system where municipality compares its results with the other municipality, presented on the third chapter of this manual

Indicators presented in this manual will be used in planning once the plan is developed and are expected to support the plan developer for a long term set objectives, while the usage of these indicators in a more detailed information are used to measure every year the implementation and actual situation of the policy developers and community in the benchmarking system.

The aim of performance based planning and monitoring is to compare year after year the evolution of the performance measured by the indicators as well as to compare the evolution of the cost service.

The main objectives of this chapter are to:

- Learn how to set indicators and how to measure them;
- Understand the process of performance based planning at local level;
- Develop knowledge on how to set SMART targets and objectives for an efficient and affordable plan.

Establishing the structures for a PBP

In order to implement a PBP the Municipality must establish a unit for developing and monitoring the performance indicators and service delivery as stipulated by the organic law, No. 139/2015, "On local government", Article 33 "Instruments for managing public services".

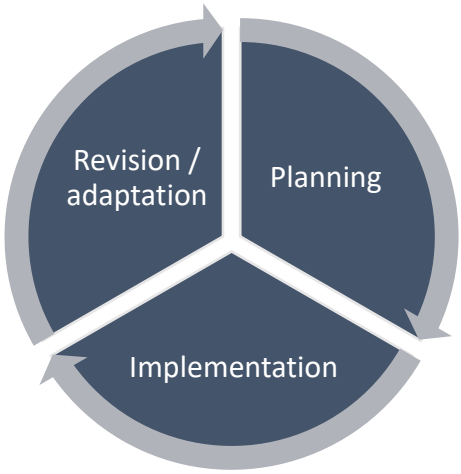
The assigned specialists within the unit must obtain necessary preliminary and ongoing training on how to:

- perform the PBP;
- collect data;
- continuously develop reports and report to the local decision makers;
- review objectives and targets and plan for the next planning period;
- coordinate with other structures at local, regional and national level on innovation and service improvements.

1.3 Integrate PBP into Planning Process

According to the dldp supported Manual on Planning Local Waste Management the local solid waste management plan itself is a continuous cyclic process, and comprises of components, such as: overall planning, implementation and plan revision.

Figure 1: Waste management planning cycle

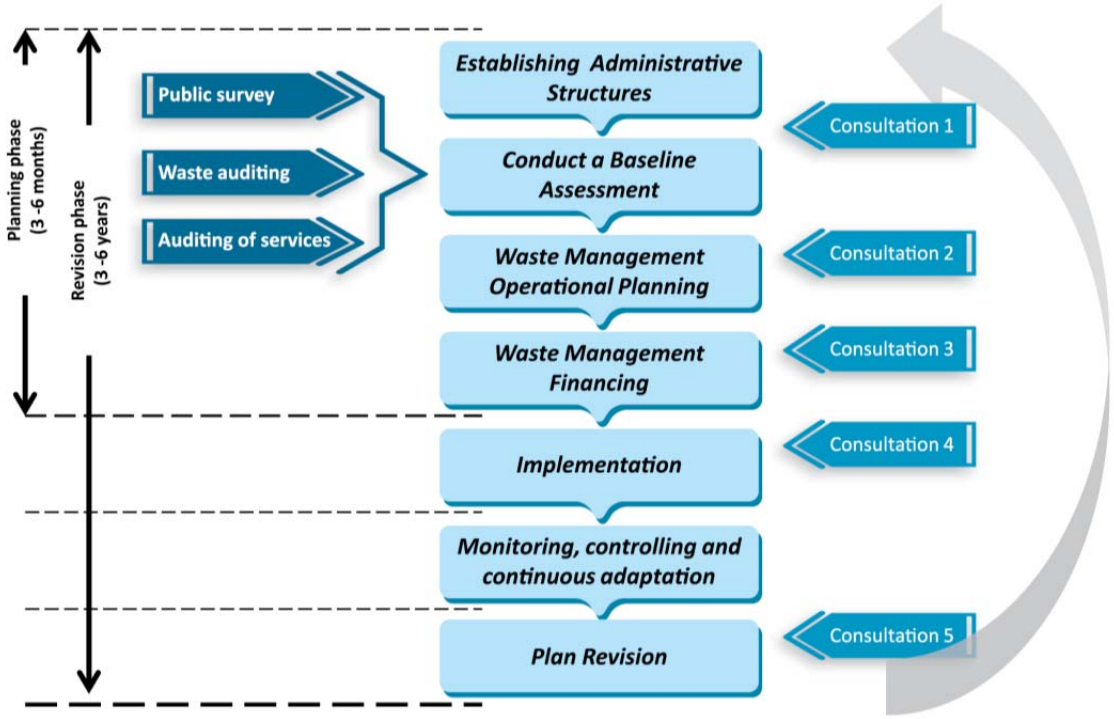


The plan should be revised minimally in five – years – intervals; however in the event of significant developments the plan revision can be anticipated. The revision includes the evaluation of the objectives and measures, following the overall planning cycle.

The overall planning process may be divided into the following phases:

- mobilization of the planning process and evaluation of the current situation (baseline including audits, public surveys, etc.);
- strategic planning and on-the-ground planning (short and medium terms), objective setting;
- evaluation of resources needed to implement the plan, cost calculation;
- consultation process and evaluation of affordability;
- implementation, monitoring and plan revision.

.Figure 2: Waste Management Overall Plan Process scheme (Source: dldp "Manual: Planning Local Waste Management", 2012)



The main critical aspects on developing a plan are the baseline study and setting of the objectives. To conduct a baseline study, a set of indicators, which later are analyzed to develop the right objectives, targets and measures, are necessary. It is of foremost importance that these indicators are well developed before starting the process of collecting data.

This process will then support the development of the SMART objectives with clear and achievable targets, which guide the planning process to develop the right approaches leading to achievable measures based on real capacities, tangible results, addressing national and regional legal and regulatory framework, and more importantly, to be financially affordable.

1.4 Developing a Performance Based Planning Process.

1.4.1 General Approach

This manual provides a detailed methodology on how to develop each step of the performance based planning making use of the performance indicators provided in table 1.

The indicators developing process, assessing the SWM service aspects, will result in a synthesis between the observation goal of monitoring and available data. So LGUs must be realistic in designing the list of desirable indicators. It is important to design indicators which in practice are probably more possible to measure and to use. The diagram below summarizes the concept of developing the indicators:

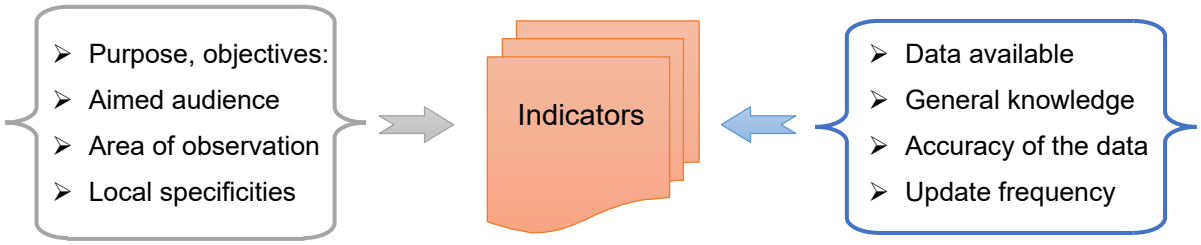


Figure 3 Design of performance indicators

Another important step is designing the performance indicators, to ensure that the indicators are well defined, understood and accepted by all stakeholders, are easily measurable (relying on the existing data) and are reportable, it is important to go through a participatory approach and having consultative meetings with the stakeholders in the field of SWM.

The performance indicators could be quantitative and qualitative. As the term denotes, a quantitative indicator indicates quantity. The quantity can be a pure number, ratio or percentage. Quantitative indicators are widely used in monitoring the service as they provide clear measurement of the service and are numerically comparable. This enables officials to compare the performances or achievements of service provided at different times.

Most often, quantitative indicators are preferred as they do not need feelings or judgment to quantify them. They just need mechanical methods that are theoretically expected to give the same results, no matter who measures them.

Qualitative indicators do not show numeric measures. They rather depict the status of something in more of qualitative terms. Qualitative indicators do not seem appealing for a lot of people. But it is also true that some things are better captured by a qualitative indicator than a quantitative one. In general quantitative indicators are used to complement the quality indicators and to give them a sense more than just a numerical percentage. For example, if the rate of coverage of waste collection and transportation service in an LGU is 95%, this does not mean that this service necessarily has the best quality of service provided in the area where the LGU is located.

The performance indicators are grouped in 4 categories composed by several specific indicators. The categories are: 1. Quality of service; 2. Environmental sustainability; 3. Economic, financial sustainability and institutional aspects; 4. The cost.

Their levels of achievement is scaled in three levels (low, medium and high) and are coded by the respective colors in light red, light yellow and light green. The level of achievement is considered towards the expected achievement of each selected indicator for the baseline scenario, while for the scenarios to be developed in the next 5 years, their level is set towards reaching the given target with the given infrastructure and financial capacity.

Table 1: Selected indicators of performance given for the base scenario

Indicators			**Classification coded in colors**			**Data accuracy**
			Low	**Medium**	**High**	
						Low **Medium** **High**
Quality of service	C1	Service coverage areas				
		C1.1 Service coverage in urban and peri-urban areas	0 – 40 %	41 – 80%	81 – 100%	
		C1.2 Service coverage in remote areas	0 – 30 %	31 – 50%	51 – 100%	
	C2	Cleanliness of the city	0 – 32 %	33 - 66%	> 66%	
	C3	Public perception: degree of public satisfaction with the service	0 – 50%	51% - 80%	81% - 100%	
Environmental sustainability	D1	Reuse: degree of differentiated collection of waste in urban areas	0 – 5%	5 – 20%	>20%	
	D2	Protection of natural resources: degree of waste treated in engineered landfills or approved controlled disposal sites.	0 – 30%	31 – 70%	71 – 100%	
Institutional Economic. & financial sustainability	E1	Cost recovery: Revenue through tariff covers the cost.	0 – 35%	36 – 70%	71 – 100%	
	E2	How citizen contribute to financing the service: rate of the tariff collection	0 – 40%	41 – 75%	75 – 100%	
	E3	Transparency of the billing system	low	medium	high	
Cost of service			…….ALL/t …….ALL/ inhabitants / y			

The process of data maintenance and their reporting is a culture absent in the LGU and as such it represents a series of difficulties, which can impact the monitoring process in the future. It is expected that the reliability of the data or their quality will affects the measurement of the indicators and later the determination of the wanted level of service quality. Therefore this methodology proposes a classification of data as follows:

- data with a low level of trust,
- data with a moderate level of trust,
- data with a high level of trust (desired)

In order to support this planning approach the following performance planning process is proposed:

Table 2: Performance planning approach

STEP NO.	STEP TITLE	ABOUT
Step 1	Make use of the indicators and analyze the current situation (baseline study)	*The indicators necessary for the performance based planning are provided by the table xxx below and will serve as baseline scenario for setting the targets on the selected scenario.*
Step 2	Analyze economic and financial capacity of the Municipality and try to understand the behavioral trends of the citizens towards paying the tariff	*This is not necessarily based on the indicators, but rather trends and capacities to afford a certain measure. However, some information is to be collected support the financial indicators later presented by the manual.*
Step 3	Set objectives and targets based on different scenarios	*Make use of the performance indicators baseline scenario which relates to the current situation and develop 2 to 3 scenarios of objectives and targets which are compared to the baseline scenario considering the behaviors and financial capacities for the next 5 years.*
Step 4	Analyze each of the scenarios financially	*Evaluate the cost of each of the proposed scenarios focused on the learning provided by the manual for SWM planning which considers infrastructure development, operational costs, depreciation, administrative costs etc.*
Step 5	Agree on the most self-sufficient and affordable scenario and further develop it	*Based on the analysis developed try to accommodate in maximum the concepts of self-sufficiency and affordability and maximum compliance with sectorial legal and regulatory framework.*
Step 6	Analyze the financial gap towards legal standards (if any) and obligations	*Considering the selected scenario analyze the financial gap to cover the costs and well document it.*
Step 7	Promote the gap and try to support through other financial means	*The gap must be well defined in the plan and ways to fill this gap can be stipulated in the plan. It will be another objective the Municipality will tend to reach in the future and can be addressed by developing project proposals making use of national and foreign aid funds. The local council must adopt the plan considering this gap as well so the local administration can officially inform regional and national authorities on the needs for supporting the legal and regulatory framework in waste management.*

This process is presented schematically below:

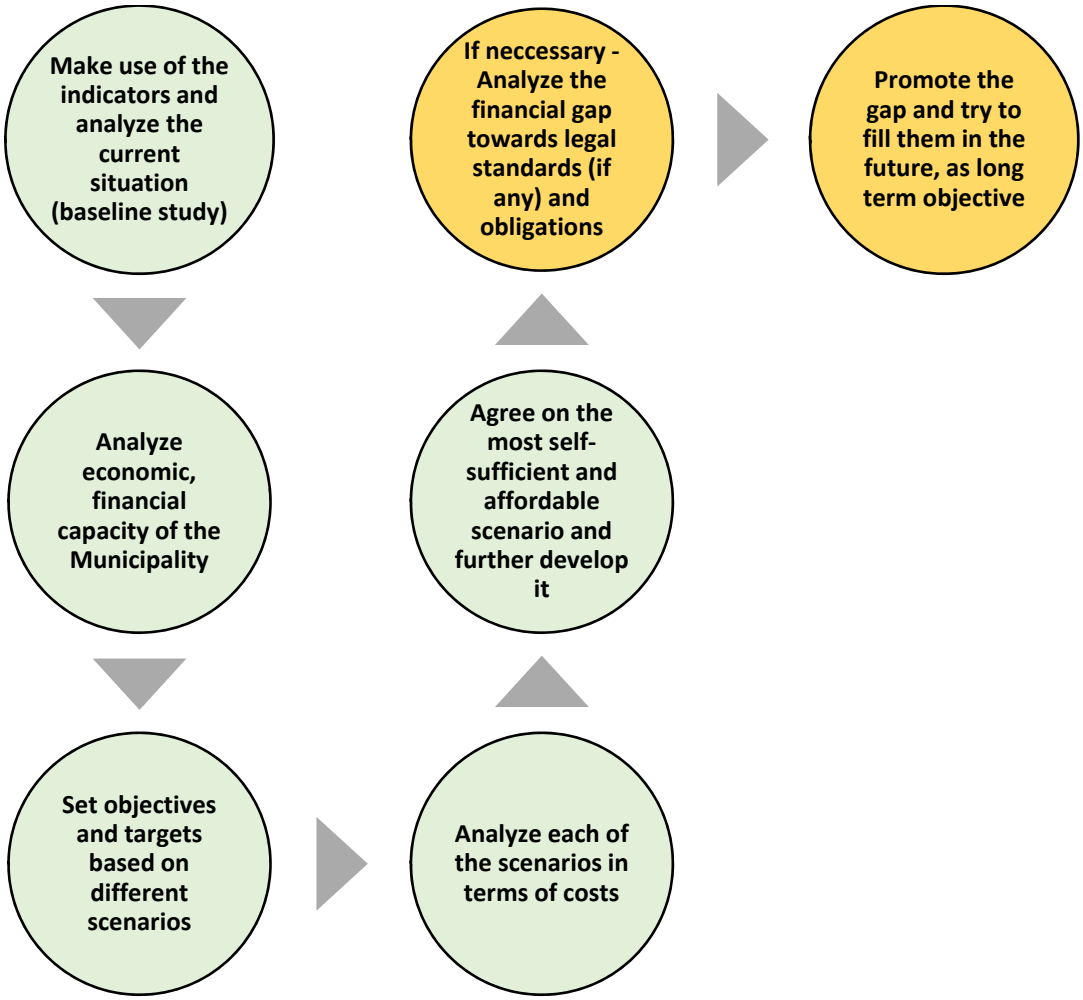


Figure 4: Performance based planning scheme

1.4.2 Defining Affordability

According to the law No. 139/2015 "On self-governance", "public services" are defined as those services of general public interest, which are provided to the community and municipality in a continuous way with affordable prices, based on minimal national standards defined by law or other normative acts. Later on the article 32 the provision of the services requires the use of instruments to calculate the affordability of the service by the municipalities themselves.

Considering that the term "affordable", isn't properly defined for a public service but a definition of the term, can help. Therefore, an affordable service can be considered a service which most of the population are able to pay for.

Despite that the service will be covered fully by the tariffs or financed in part by the Municipality, the financial resources are always limited as both waste generators and Municipality have many other services to cover in regards to their priorities.

Therefore, the calculation for the affordable price for the service needs a technical exercise and political decision.

In order to ease set this level the Municipality should consider the following steps:

1. Defining economic and financial capacity:
    a. Define the economic development by understanding the employment/unemployment rate, income and minimum living standards for the families;
    b. Financial capacity of the Municipality, its yearly budget (5 years' trend).
2. Assign the maximum level of service expenditures:
    a. Assign the level of percentage for the budget going for waste management service in relation to all service the Municipality has to provide for the year;
    b. Assign the percentage the spending for waste management an average family can pay for the year.
3. Calculate the costs for the service:
    a. Calculate the cost for the selected service in different scenarios as will be presented below;
    b. Calculate the tariff based on the selected scenario of service.
4. Set the affordable level:
    a. Compare the calculated cost with the assigned level of expenditures (point 2) by the Municipal budget and tariff collection;
    b. Set the affordable scenario.

1.4.3 STEP 1: Assess the Current Situation

1. Provide general information (see planning local waste management manual), including:

1.1. Population, settlements, service area, waste generation, geography, road infrastructure, economy, consumption, business sector, institutions, other waste generators, typologies of waste generated (urban, mining, hazardous, etc.)
1.2. Infrastructure of the current service provide (types of trucks and bins, dumpsite and other facilities)
1.3. Service provision (public / private), collection frequency
1.4. Personnel (waste service and cleaning)
1.5. Waste disposal sites status and operations
1.6. Recycling facilities if official or other operations such as waste pickers

2. Provide financial information including aspects of:

2.1. Total budget of the Municipality
2.2. Total budget of the Municipality allocated for solid waste management services
2.3. Cost/ inhabitant
2.4. Typology of the tariffs
2.5. Cost recovery capacity (tariffs collected) in percentage
2.6. Tariff paid (equivalent. Inhabit. /year)

3. Evaluate current performance through indicators (table below)

Table 3: Indicators for baseline evaluation

			Current
Quality of service	C1	**Collection service coverage areas**	
		C1.1 Service coverage in urban and peri-urban areas	60%
		C1.2 Service coverage in remote areas	20%
	C2	**Cleanliness of the city**	50%
	C3	**Public perception**: degree of satisfaction	30%
Environmental sustainability	D1	**Degree of differentiated collection** of waste	Un-known
	D2	**Protection of natural resources**: degree of waste treated in engineered landfills or approved controlled disposal sites.	30%
Financial & institutional sustainability	E1	**Cost recovery**: Tariff covers the cost.	30%
	E2	**How citizen contribute to financing the service:** rate of the tariff collection	50%
	E3	**Transparency** of the billing system	Low
Cost of service		**……** ALL / t **……** ALL / inhabitants / y	

The planning process will aim at designing the service in order to increase these indicators on performance and reflect it in the costs. Increasing C1, D1, D2 or E3 has a cost. The objective for the municipality is to set objectives that are affordable, in its situation.

1.4.4 STEP 2: Compare Different Scenarios

In order to provide the best option for service delivery which guarantees at the same time full coverage of the area (serving to all citizens, business and institutions), environmental protection, compliance with the legal framework, affordability and self-sufficiency, different scenarios must be evaluated.

The Albanian legal and regulatory framework in the sector of solid waste management is very comprehensive, setting high level standards which are aligned with EU standards. Therefore, such conditions set by the law should be analyzed in line with the concepts provided by the organic law of self-governance which considers the affordability and self-sufficiency in service provisions.

An analysis of the legal framework requirements only for the urban waste (not hazardous, inert or other special streams) is provided attached.

Below are presented two typical scenarios and indicators to be used for the evaluation. Other scenarios can be built based on the variables provided. Each of the variables has an impact to the financial aspects of the service, and must be evaluated and allocated (e.g. sending the waste to the regional landfill site or to the local dumpsite makes a significant difference). The methodology proposes to set and cost a fictive and comprehensive scenario, where legal requirements are met, in order to show the gap between this scenario and the selected scenario proposed in the municipality plan.

Define affordable targets

The selected scenario will be constructed by:

1. setting targets (on service coverage, collection frequency, disposal, recycling,…)
2. analyzing the technical options to reach the targets (design of the service)
3. costing these options (through the cost model) and establishing a budget for the service
4. calculating the tariffs to be set to cover these costs

The plan must consider affordable services, which implies that the cost must be covered by the tariffs. Political commitment to approve a tariff increase is needed. A balance must be established, considering on one hand the wish and legal obligation to increase the service and on the other hand the financial capacity of the municipality.

The financial capacity depends on the political commitment to increase the tariffs and on the population capacity and willingness to pay for the service. This latter is strongly related to the quality of the service delivered. It is highly recommended for the municipality to first guarantee a basic, but reliable service to the citizens. This will increase the general cleanliness and willingness of the population to pay for that service. Once this is established, additional services can be considered.

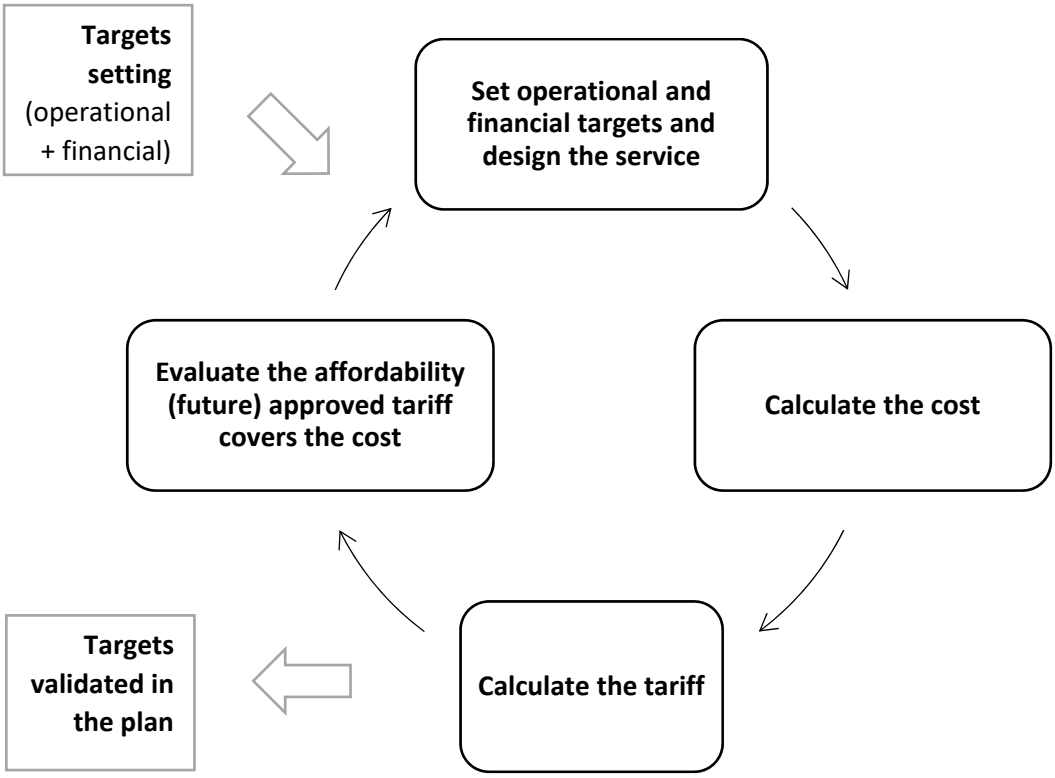


Figure 5: Steps for defining the targets

Targets scenarios to be compared

This chapter presents two cases of targets setting, as examples.

Scenario 1: 100% coverage of collection service, basic service
In this scenario, the following criteria are met:

- the service of collection is offered to all citizens (100% coverage);
- no waste separation;
- the waste is sent to the local dumpsite;

Scenario 2: legal requirements (3 bins system + land-filling)
In this scenario, the following criteria are met:

- the collection service is offered to all citizens (100% coverage);
- 3 bins system is offered to all citizens (100% coverage);
- the waste is sent to controlled dumpsite or landfill and full payment for the operation is paid/allocated;

The municipality can calculate the cost of each of these two scenarios, or others that may be discussed, in order to calculate the financial means needed to cover the cost and define if they are affordable or not.

Once the scenarios are established:

a) **Use the methodology on planning and the cost modeling tool to provide technical description:**
   - Service area (population, generated waste, service days)
   - Infrastructure (collection bins and trucks for transport)
   - Personnel (drivers and operators for the trucks and dumpsite)
   - Waste disposal facilities (dumpsites or landfill)
   - Illegal dumpsites (general estimation)

b) **Calculation of the scenario (using the cost and tariff models):**
   - Total cost for the new infrastructure
   - Total cost for personnel
   - Total cost for operation and maintenance
   - Total cost for the service
   - Cost per ton and cost per inhabitant / in different components of the service
   - Cost for clean-up activities (%)
   - Administrative and training and education costs (%)

c) **Define the affordability by considering the following information:**
   - Percentage of the cost for the service provisions to the total budget of the Municipality
   - Tariff for the three groups of the waste generation (population, business and institutions)
   - Gap in investments (in ALL) for each component of the service
   - Percentage of the tariff increase from the current situation for each component of the service (collection, transport and treatment)
   - Gap in tariff (in ALL, compared to current tariff)

A political discussion must take place to evaluate the feasibility to implement one option or the other, according to the related tariff increase. The final scenario, chosen for implementation must consider cost that can be covered by the future approved tariff (self-sufficiency and affordability).

It is proposed to calculate the cost for the chosen scenario and for the "legal compliance" scenario, to show the gap.

1.4.5 STEP 3: Define a 5 years' target for each component of the service (based on the selected scenario)

Based on the selected scenario, intermediate steps can be considered.

- Setting specific objectives and defining intermediate steps (first year, after 3 years and 5 years);
- Developing targets based on the same system of indicators provided [e.g. by year 2017 98% of the territory will covered with the service];
- Considering the infrastructure to be invested at each stage (number of trucks and bins, or other infrastructure);
- Considering the financial capacity introducing steps to reach the principle "tariff must cover the cost";
- Considering law compliance at maximum level possible (separation, recovery, special treatment, etc.);
- Considering capacity development, education and awareness rising, clean-up activities.

A business plan should be developed, considering:

- needed investments for each step;
- cost of the service for each step;
- tariff to be collected, including loan interests, if this is needed to finance the investments.

Translate the 5 years targets in performance objective, as proposed in the example below:

Table 4: Setting objectives based on indicators (example)

			Current	Affordable Objectives
Quality of service	C1	**Collection service coverage areas**		
		C1.1 Service coverage in urban and peri-urban areas	60%	90%
		C1.2 Service coverage in remote areas	20%	60%
	C2	**Cleanliness of the city**	50%	70%
	C3	**Public perception**: degree of satisfaction	30%	60%
Environmental sustainability	D1	**Degree of differentiated collection** of waste	Un-known	5%
	D2	**Protection of natural resources**: degree of waste treated in engineered landfills or approved controlled disposal sites.	30%	70%
Financial & institutional. sustainability	E1	**Cost recovery**: Tariff covers the cost.	30%	100%
	E2	**How citizen contribute to financing the service:** rate of the tariff collection	50%	80%
	E3	**Transparency** of the billing system	Low	Medium
Cost of service		ALL/t ALL / inhabitants / y	xxx xxx	xxx xxx

The objective must be achievable and set by the Municipality considering its reality and possibilities. An objective, by definition, is a clear statement of what you are planning to achieve quantified data given at a specific timescale. There are three types of objectives:

- Output objectives;
- Outcome objectives;
- Impact objectives.

LGUs at any kind of monitoring programme must always include at least one impact objective as they are the only way how the result of activity / waste management operations or any scheme can be measured.

Outputs	Outcomes	Impacts
Outputs objectives	**Outcome Objectives**	**Impact Objectives**
This means an activity carried out on the way to delivering an outcome. It is easy to measure your effort but not your achievement	These relate to changes that happen as a result of your efforts. Often you will need to make a theoretical assumption to set the objective.	These are the ultimate result of LGUs activities. For example, the change in behavior of households results in more people participating and as a result, increased recycling
Example: to provide 300 more containers distributed for introducing a separate waste collection across one LGU.	**Example:** the assumption is that by distributing 300 more containers this will result in a change, e.g. to ensure that 5000 more residents are aware of the separate waste collection scheme.	**Example:** 1,200 more households participating in the scheme. To Increase tonnages of recyclables collected by 2% per annum.

To measure these objectives is very easy – it is a simple count of what LGUs have done, check the quality of separated waste at material recovery facility or measure the tonnage of recyclables each year. Then when we set up the objectives we must be sure to have SMART objectives.

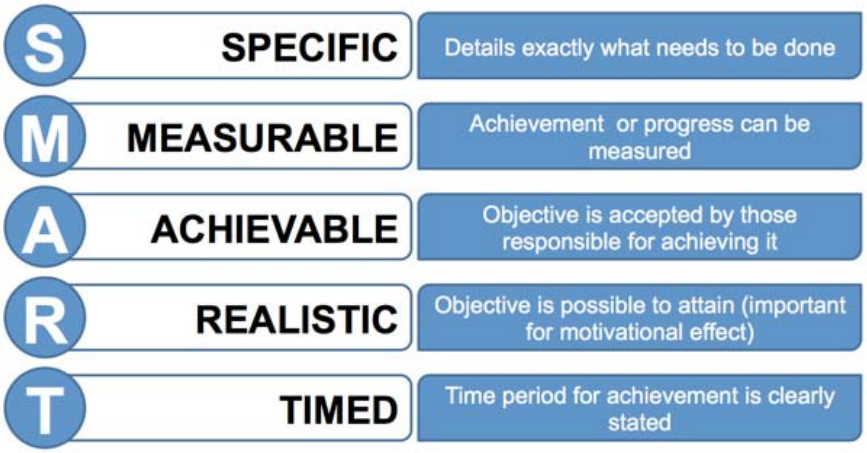


Figure 6: Design SMART Objectives

Specific: It is important that the objective should be clear and unambiguous so it will be easy to understand what is involved in achieving that objective. Don't assume common understanding of an objective among different people, every term that is being used must be clarified.

For example, an objective like: 'to improve the performance of the recycling scheme' is very ambiguous and is actually only a goal of LGU to increase the recycling. Immediately a lot of uncertainties will pop up: What aspect LGUs wants to improve? Is it the overall rate of recycling, the level of participation in the service or the operational efficiency of the service? Is this a green waste collection, bring bank or a plastic waste collection?

Measurable: The objective must be capable of being measured in practice not just theoretically. It is important to have baseline information for different aspect of any kind of waste management operations so through monitoring program it will be possible to measure and evaluate performance of those specific operations.

For example, is it actually possible to measure tonnage by collection round and to realize about the efficiency of using the truck or to measure the timing of performance of waste collection activity or the quality level of recyclable materials if local authorities have introduced two bin collection systems.

So it is very important to have an easily measurable objective.

Achievable: When an objective or a specific target is design, the most important question that LGUs may ask will be - can the objective be achieved? Is it possible, for example, to increase the recycling rate to 20% in three months? Is six months or a year a more appropriate timescale? Having good, reliable data will help to ensure if objectives are achievable or not.

Relevant: Objectives must be related to the original goal. If they are not, then they are not relevant. LGUs must make sure if the objectives are important to what they are trying to achieve? Are LGUs objectives' going to help them to achieve their goal?

For example, a communications campaign objective to deliver a leaflet or to provide information about the recycling collection won't improve performance if the residents lack knowledge for the service. The reason for low performance may be something related to the service itself, or to the area covered by the collection.

Time-bounded: Objectives must have a time limit. This makes it easier to measure success or failure and provides a focus for the effort required. For example, it is a good practice to set a date by which LGUs expect the objective to be achieved. Timescales should be appropriate and relevant to the objective that LGUs have set.

1.5 About Indicators of Performance and Methods of Calculation

The system of performance indicators is developed to be used as quality monitoring for the service provided at Municipality level. It helps providing a clear picture of current situation and establishing targets to reach.

The indicators are evaluated at the beginning of the planning process and revised yearly, to monitor the performance. They are presented to the Council once a year.

They will be used at least at the beginning of the planning process and as indicative for setting the targets for the objectives of the plan. The Municipality must measure the indicators at yearly bases to understand the developments and adjust the targets as necessary.

Before measuring the indicators provided in the table below the following information is necessary to be documented:

(1) Municipality typology and diversity among different administrative units
(2) How is the service provided by a public company or PPP;
(3) What is the cost per inhabitant and cost per ton?

The table below shows the selected set of indicators chosen to reflect waste management performance.

Table 5: Set of indicators on performance

Indicators			Classification coded in colors			Data accuracy
			Low	Medium	High	Low Medium High
Quality of service	C1	Service coverage areas				
		C1.1 Service coverage in urban and sub-urban areas	0 – 40 %	41 – 80%	81 – 100%	
		C1.2 Service coverage in remote areas	0 – 30 %	31 – 50%	51 – 100%	
	C2	Cleanliness of the city	0 – 32 %	33 - 66%	> 66%	
	C3	Public perception: degree of public satisfaction with the service	0 – 50%	51% - 80%	81% - 100%	
Environmental sustainability	D1	Reuse: degree of differentiated collection of waste in urban areas	0 – 5%	5 – 20%	>20%	
	D2	Protection of natural resources: degree of waste treated in engineered landfills or approved controlled disposal sites.	0 – 30%	31 – 70%	71 – 100%	
Institutional Econ. & financial sustainability	E1	Cost recovery: Tariff covers the cost.	0 – 35%	36 – 70%	71 – 100%	
	E2	How citizen contribute to financing the service: rate of the tariff collection	0 – 40%	41 – 75%	75 – 100%	
	E3	Transparency of the billing system	low	medium	high	
Cost of service			……. ALL/t …….ALL / inhabitants / y			

The way of calculating each indicator is presented in the following chapters.

Performance is evaluated considering three pillars:

- Service quality
- Environmental sustainability
- Financial and institutional sustainability

The last column “data accuracy” provides information on the level of data reliability according to the way of collecting it. Implementing a monitoring tool will help the municipality measuring and recording data. With the time, this accuracy should increase.

1.5.1 Service Quality Indicators

Indicator C1: "Service coverage in urban and sub-urban areas"

C1 indicator expresses the amount of waste collected in the LGU, by the authorities, authorized to carry out this service, versus the total amount of waste generated in the LGU. It is divided into 2 sub indicators, reflecting each urban / sub-urban areas (C1.1) and remote areas (C1.2).

Formula

$$C1.1 = \frac{\textbf{Quantity of collected waste in urban \& periurban areas } (\frac{ton}{year})}{\textbf{Quantity of generated waste in urban \& periurban areas } (\frac{ton}{year})} \times 100$$

$$C1.2 = \frac{\textbf{Quantity of collected waste in remote areas } (\frac{ton}{year})}{\textbf{Quantity of generated waste in remote areas } (\frac{ton}{year})} \times 100$$

Data to be used and evaluation of the reliability

This indicator is widely suggested by the literature to be used while measuring the efficiency of waste collection. However, the reliance on this indicator varies significantly depending on the methods used to generate the data.

Waste generation	Waste collection	Degree of accuracy / reliability
According to the size of the city and National Waste Management Plan (NWMP).	No measurement, «guess» estimation or based on a unique survey	**Low**
According to the size of the city and National Waste Management Plan (NWMP).	Estimation the number of trips made and the tonnage of collection vehicles toward the disposal site.	**Medium**
Waste generation is assessed on waste sampling	Measurement on the scales located in the disposal site (and each treatment plants, when applicable - composting, recycling and dumpsite / landfill)	**High**

Indicator C2: "Cleanliness of the city"

Indicator C2, the effectiveness of waste collection and sweeping of the streets, is a compound qualitative indicator, which is detailed by 3 evaluation criteria. The description of each criterion and its method of calculation are given in the table below.

Formula

C2 = C2.1 + C2.2 + C2.3

N°	Criteria	Description	Evaluation	
C2.1	**Effectiveness of waste collection**	Presence of accumulated waste around the containers / collection points	High presence of waste (very visible Moderate presence of waste (some sporadic) Low presence of waste (almost nothing)	0 16 33
C2.2	**Effectiveness of streets cleaning**	Presence of waste in the streets.	High presence of waste (very visible) Moderate presence of waste (some sporadic) Low presence of waste (almost nothing)	0 16 33
C2.3	**Effectiveness of collection in remote areas**	Presence of waste accumulated / illegal dumpsites / burning of the waste in remote areas / suburbs	High presence of waste (very visible) Moderate presence of waste (some sporadic) Low presence of waste (almost nothing)	0 16 33

Data to be used and evaluation of the reliability

Evaluation of presence of waste	Accuracy / reliability
Interview of the responsible municipality	Low
Limited field survey	Medium
Regular (daily / week / month) operation reporting, realized by the municipality.	High

Indicator C3: "Public perception"

Indicator C3 is introduced as an indicator of quality for the Municipality. The citizens will be asked to provide input on their perception on the service based on one question addressed during the planning process and regularly reviewed.

One question will serve to calculate the indicators: "**Is the waste collection service satisfactorily delivered to your house / street"? Answer "yes" or "no"**

Formula

$$C3 = \frac{\text{Number of yes answers}}{\text{Number of persons asked}} \times 100$$

Data to be used and evaluation of the reliability

Conduction of the survey	**Accuracy / reliability**
The statistic laws indicate the number of persons to interview, according to the size of the total population, to get representative information (with 5% error): **Size of the population** — **Sample required for the survey** • 1'000 — 200 • 5'000 — 257 • 10'000 — 263 • 100'000 — 270	
Chosen sample is not representative of the population	**Low**
Chosen sample is representative of the population	**High**

1.5.2 Indicators of environmental sustainability

Indicator D1: "Reuse – degree of differentiated collection of waste"

The indicator D1 represents the ratio of the amount of waste which is officially collected by a closed cycle from collection points to the treatment center.

The amount would represent every kind of waste separated by any authorized actor, from the generation level, collection level or treatment level.

It is compared to the total quantity of waste collected.

Formula

$$\boldsymbol{D1} = \frac{\textbf{Qty of waste collected seperately } [\mathbf{t/y}]}{\textbf{Qty of collected waste } [\mathbf{t/y}]} \times \mathbf{100}$$

Data to be used and evaluation of the reliability

Waste collection	**Degree of accuracy / reliability**
No measurement, «guess» estimation or based on a unique survey	**Low**
Estimation the number of trips made and the tonnage of collection vehicles toward the disposal site.	**Medium**
Measurement on the scales located in the disposal site (and each treatment plants, when applicable - composting, recycling and dumpsite / landfill), regular reporting	**High**

Indicator D2: "Protection of natural resources: degree of waste treated in engineered landfills or approved controlled disposal sites"

This indicator expresses the amount of waste treated in authorized centers (landfill or authorized dumpsite, composting or recycling plant).

Formula

$$\boldsymbol{D2 = \frac{Qty\ of\ waste\ treated\ poperly}{Qty\ of\ collected\ waste} \times 100}$$

Data to be used and evaluation of the reliability

The scale proposed for the indicator D1 can be applied for D2 as well.

1.5.3 Indicators of Institutional Sustainability

Indicator E1: "Cost recovery through tariffs"

This indicator compares the total cost for providing the service and it's financing through the adopted tariff and collection rate.

Formula

$$\mathbf{E1 = \frac{Annual\ income\ from\ WM\ through\ tariffs\ (\frac{ALL}{year})}{Annual\ cost\ to\ operate\ the\ service\ (\frac{ALL}{year})} \times 100}$$

Data to be used and evaluation of the reliability

Cost and income through tariff: municipality accountability	**Accuracy / reliability**
Cost of the service: the budget is calculated as lump sum without any system of segregated costing. The Municipality uses general information on cost calculation. **Income**: the tariff is a historical one, it is not calculated specifically to cover the costs; the municipal accounts don't allow knowing exactly which part of the tariff is collected.	**Low**
Cost of the service: the budget considers some items related to waste management and a basic cost calculation is in place. **Income**: the tariff is a historical one; it is not calculated specifically to cover the costs.	**Medium**
Cost of the service: cost is calculated according to a full cost calculation, including all operation, amortization, administrative costs. **Income**: tariff is calculated according to a clear methodology. There is a separate tariff for different generators (citizens, business, institutions). The accounts on tariff setting and collection rate are clear.	**High**

Indicator E2: "Citizens contribution to financing the service: level of collection of the adopted tariff"

This indicator reflects the capacity / willingness of the population to pay for the tariff.

Formula

$$E2 = \frac{\text{Annual income from WM through tariffs } (\frac{\text{ALL}}{\text{year}})}{\text{Total of planned incomes } (\frac{\text{ALL}}{\text{year}})} \times 100$$

Data to be used and evaluation of the reliability

Level of collection	**Accuracy / reliability**
Municipal estimation	Low
Transparent accounts	High

Indicator E3: "Transparency of the billing system"

This indicator evaluates the capacity of the municipality for providing a proper bill to all waste producers.

Formula

This is a qualitative indicator, evaluated according to next table.

Transparency of the billing system	**Accuracy / reliability**
There is no billing system for the waste tariff	**Low**
There is a billing system in place, the generators receive a bill	**Medium**
There is a billing system in place The citizen has access to information to understand the tariff calculation The way how each tariff is calculated is clear and transparent for all waste producer	**High**

CHAPTER 2 MONITORING OF OPERATION

2.1. Introduction

After developing the performance based planning process with all the indicators which are used to monitor the performance of municipality on a yearly basis (macro), this chapter is focused on monitoring of any waste management operations on a smaller scale, every day.

This chapter aims to outline the process with necessary steps to be carried out by experts at LGUs when a monitoring system for any waste management operation is planned. It offers the methodology on how to develop an operational monitoring system analyzing all stakeholders, tools and processes involved at local level in both cases either when the service is provided 'in house" by municipality or contracted out at a private operator, associated with concrete example and case study from practice.

2.1.1 Why LGUs should take care for Monitoring of Waste Service Delivery?

Monitoring of daily waste management operations (waste collection, transport, recycling, composting and reusing activities as well as disposal) is part of a continuous process of learning and improvement that enables local government units (LGUs) to assess the performance of this service against their aim and objectives.

In both cases, even when waste management operations are delivered "in house" by municipal enterprises and even more when these operations are contracted out to a private company, effective monitoring and evaluation will help LGUs to:

- measure the progress of all waste operations delivered against objectives and targets agreed in waste service contract, so LGUs will know in advance if service's objectives are likely to be achieved or not;
- measure the effectiveness of each waste management operations (equipment and staffs);
- address and draw corrective measures or adjustments to improve the service based on information collected through monitoring;
- assess expenditures and control costs of all waste operations, to check if existing budget is dispersed in proper way to cover each operations and if it is enough to achieved local targets;
- measure customer satisfaction and user attitudes and to establish how to measure the impact on the performance of the service;
- better plan the service in the future and how to expansions and redesign the service.

2.1.2 How this chapter will help LGU's to Improve Waste Practices?

This part of the module is designed for head of services and local waste experts working at municipal and regional level. Waste management experts involved at any private initiative can also benefit from this module. The module itself won't tell you how to improve the performance of certain service or scheme, but it will help you to diagnose problems so you can decide how to solve it according to local conditions.

- Are you directly or indirectly involved in any waste operation delivery but you don't know how well they are performing?
- Are you part of waste service delivery supervision department (unit)?
- Do you need to report about the waste collection, transport, recycling, composting, reusing, disposal or street's sweeping and washing but you don't know if existing schemes that are employed in your city are performing better or worse than is expected and why?
- Do you plan to draw a waste communication campaign or do you participate in any project or initiatives that received internal or external funding (e.g. from government or donor community) which needs to be monitored for impact?

If the answer is 'yes' to any of these questions you need to follow this training module while if the answer is "I don't know" you definitely need to follow this module.

2.1.3 Main steps of a Monitoring System

The monitoring system is a continuous improvement cycle and employed following steps as depicted below.

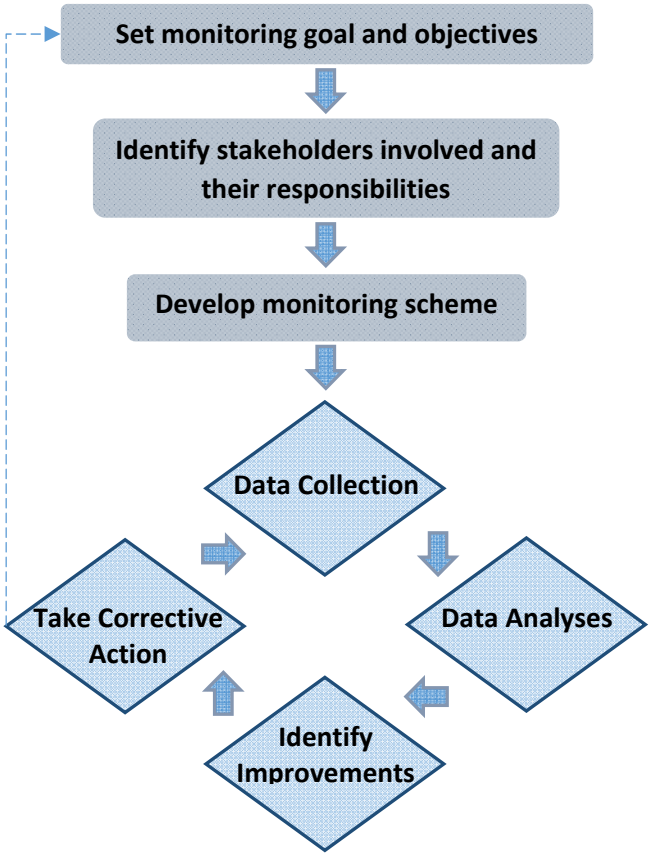


Figure 7: Main stages of the monitoring system

2.2 Monitoring Goal and Objectives

Monitoring and evaluation of each daily operation are very important elements of waste management planning process. A good monitoring system will help municipality saving money since it will help a better planning and a better use of their resources.

However this very important steep several time is neglected from LGUs due to inadequate financial and human resources allocated at planning stage. To enable monitoring system in waste management activities, LGUs in yearly budget must have a separate line budget only for this purpose. Human resources are critical for effective monitoring and evaluation, even after securing adequate financial resources. LGUs must employed dedicated staff time and skilled personnel with specific terms of references, work plans and other resources.

Each monitoring and evaluation group should have a clear ToR outlining of its role and responsibilities. One of the main reasons why LGUs undertake monitoring in any waste management operations is to understand how that service/scheme which is monitored is performing and where are the possibilities to improve it.

After establishing separate units well equipment with financial and human resources, the next step before starting monitoring is to be familiar with the aim and objectives that have been set for the activity/activities you are measuring.

When the waste management operations are delivered by municipal enterprise, the goal of the monitoring system will be to:

- optimize every waste management operations (collection transport and disposal) for achieving cost efficiency;
- optimize the time efficiency of the equipment used and the staff involved in these activities;
- measure the progress of all waste operations delivered against objectives and targets agreed in waste management plan;
- create a data base for improving planning process;
- verify that public unit realizes its contractual duty / assigned tasks.

When the waste management operations or any kind of the service or scheme is contracting out to a private company the main objectives of the monitoring system must be:

- If all the components and targets agreed in the contract are respected;
- To facilitate reporting and communication between each responsible body in the system;
- To create a data base for improving planning process.

However in both cases the most important elements, when was decided to start monitoring of any kind of waste management operation, is to have clear aims and objectives/targets for all the undertaken activities, so that it can be monitored.

2.3 Stakeholders Involved at Local Level

The second step in the monitoring system for evaluation of the service provision performance is identification of all actors involved in this service. In order to improve the service efficiency, in both cases even when the service is provided by municipality and also when it is contracted out, is important to distinguish all actors involved in each operation foreseen in any agreement or contracts and to analyze their duties and responsibilities. In chapter 2.5 are explained in more detailed through a case study from Shkodra municipality, which are in general the main actors, involved in waste management operations at local level and how their duties and responsibilities are linked in the monitoring process involved at local level.

2.4 Develop Monitoring Scheme

After identified all the actors involved in waste management operations and their duties and responsibilities, it's time to develop the monitoring system. The monitoring system or any monitoring scheme in general implies four phases which are: a) data collection, b) data analyze, c) identify improvements, d) drawing corrective actions.

Monitoring system is an ongoing process which will help municipality in better planning and later in improving the quality of service provision.

2.4.1 Data Collection

Before started with data collection LGUs must have cleared the aim and the objectives of both the activity she want to measure as well as the monitoring system she needs to implement.

The objectives of data collections are to:

- Evaluate the quality of the service and identify rooms for improvement;
- Verify that the company is complying with its contractual duty (private case);
- Verify that the working teams are complying with the task of their job descriptions (public case).

In general in both cases even when the service is provided by the municipality even when the service is contracted out, data collection must be focused on:

- Total amount of urban waste produced within municipality (ton/year);
- Total amount of urban waste collected and transport;
- Amount of different waste stream (kg or ton/year) collected separately;
- Amount of the recycled/composed waste;
- Amount of waste disposed in dumpsites or landfills;
- Surface street sweeping (mechanically and automatically);
- Surface street washing;
- The number of the collection points and the number of the bins in each collection points;
- Time and the frequency of the bins collections as well as their conditions;
- Time and the frequency of the streets swept and washed;
- Itinerary of collection roads and operational hours of each truck.

There are several methods how to generate these data. The method used for generating the data depends on the financial means that LGUs may have. For example:

a) Generating data for waste production, LGU may employ the following methods ranks according to the degree of reliability:
   - Waste generation is estimated on the basis of empirical data suggested, depending on the size of the city, as described in national plan of waste management.
   - Waste generation is assessed on waste sampling at least 1 time in 3 years (samples are statistically representative) in every season of the year for each category that receives the service.

b) Generating data for waste collection:
   - Based on the number of waste bins collected and the average amount of the waste which contain one bins.
   - Based on the number of the road described by a truck and its tonnage capacity

c) Generating data of waste collected separately (if any):
   - Segregated waste collection is estimated by the service provider without any accompanying documentation and any measurement methodology.
   - % of service recipients who are equipped with the relevant infrastructure (system with two or three bins) is used as a basis to estimate the amount of segregated waste collection.
   - Assessment of the collected amount is based on the data collected by the authorities involved in the segregated collection (collection points of different streams) accompanied by appropriate documentation.
   - The amount of waste per day reaching the treatment plants which is measured with scales based on the weight of each car for every trip.

d) Generating data for waste disposal:
   - The data are given based on the number of vehicles or trips to the landfill.
   - The data are given based on mass balance (total waste collected – loss of moisture – the recycled or composted amount).
   - The amount of waste transported is assessed on their measurement on the scales located at the entrance of the landfill.

e) Generating data about street sweeping or washing:
   - The data are given based on the length or surface of the streets that received that service.

2.4.2 Data Analyses

All the data that are being collected during data collection phase might be useful only if LGUs which are analyzing it, will understand their meaning. What is needed in this case is the interpretation of the data as well as comparing it with other information such as previous data of the same type or findings from other areas.

So, for instance, it is very important to compare monitoring data with the same type of data from any previous LGUs monitoring in order to identify any patterns or trends such as increases or decreases in figures over time.

In data analyses phase before starting data collection phase, it is important to have baseline data if LGUs want to measure any impact (e.g. when a new contract is implemented) because without it, is impossible to measure the change that has been achieved.

In addition to comparing similar types of data to each other, LGUs will also need to look across all the different types of data they have collected to see if they give any useful information about underlying causes or factors that might be affecting the performance.

If, for instance, the waste collection scheme is poorly performing on peripheral areas of the city, LGUs may want to look at different bits of data to understand why. It may be, for instance, that from other neighborhood areas additional waste are deposited in the same containers, which may result in rejection of containers (or the waste speeded around them) by crews and therefore low capture. Monitoring team can only establish this by looking at different sets of data for that round (i.e. containers collected, tonnage figures in disposal site, timing of collection etc). Of course, obtaining feedback from crews will also help but is important to remember that one of the aims of monitoring is to identify the problems, not what you think the problems are.

Data can be analyzed in short terms that means day after day or every week, for instance, the number of uncollected bins or unwashed or the not swept streets. This information can help LGUs to better plan their service and also to take appropriate corrective actions.

Data can be also analyzed in long terms and LGUs can used all the information collected during the year from the monitoring teams, for example, to better understand the full cost of service provision or to improve the budget calculations and also to amended the contract if it is required to.

2.4.3 Identify Improvements Needs

By looking and analyzing the monitoring data, LGUs can not only identifying potential service changes to improve the service (in short term), but they are also in a position to identify any useful lessons learned (in long term). So, after analyzing the data LGUs can distinguish:

- What aspects of the service / or waste management operation appear to be working particularly well and what not?
- Which areas receiving the service are performing better than expected and which areas in the city need additional service?
- Which is the coverage area with the service and in which areas we need to redesign or introduce the service?

As a result, answering these questions will help LGUs adapting its system and future planning. The data that are collected and analyzing will provide to LGUs about how well or not, they are able to meet defined objective. How close are they to meeting the objectives? Finally this will help LGUs also to set realistic objectives in the future.

Having obtained and analyzed all the monitoring data, LGUs should be in a position to identify potential areas for improvement. Reflect on, for example:

- Are there areas with particularly low waste collection and transport?
- Are there areas that need more waste collection points or that are not covered at all with containers?
- Are there any particular areas with high levels of contamination (littering)?
- Does that particular separate waste collection scheme meet the objectives for separate collection rate?
- Are all the agreed objectives and waste management operations in the contract respected by the service provider or contractor?

- Are there areas where the bins are overloaded?
- Are the trucks used at their maximum capacity in terms of time and volume?
- Are the trucks and bins cleaned and in a good shape?

Monitoring team, in order to identify the issues affecting different waste management operations or particular elements in any waste management scheme, must address the following questions about performance levels:

- Do the services beneficiaries (households, businesses or institutions) have everything they need to effectively participate in any waste management scheme (e.g. the right container, the right information, knowledge of collection days and collection time)?
- Are the collections happening effectively or are there service problems (e.g. missed collections, overflowing communal bins, same bins used for households and commercial activities, presence of damaged bins or missing bins)?
- Are there external factors that may be affecting the performance (e.g. vandalism, an increase in population, increasing a particular waste stream generation etc.)?

To give answers to these questions, the monitoring team needs to look at sources of data such as supervisor's reports, surveys, interview with different focus group, complaints and feedback to LGUs etc. It may be the case that monitoring team has not enough information to conclude to an appropriate opinion and needs to do same more data gathering before it can draw to conclusions. It is important to take this step before pressing on to decide on potential improvements.

2.4.4 Take Corrective Actions

Most LGUs confine solid waste management operations to waste collection, transport, and disposal. However, this simple system stills is neither effective nor efficient. Inappropriate equipment and waste infrastructure result to inefficient utilization of personnel. Without systematic routes and regular schedules for collecting other resources like time and fuel are wasted. Operating under already meager budgets, local governments find that the combined effects of all these factors make collection of solid waste costly.

After implementing the monitoring system and identifying the improvement needs, a lot of corrective actions can be taken like:

- Adapt the positions of the collection points;
- Adjust the number of the bins in each collection points according to the real needs;
- Improve the infrastructure of the collection points in order to reduce the collection time (prepare the basement of the container's place);
- Redesign the collection road and the frequency of the collections;
- Making the schedule for maintaining the vehicles and containers on regular basis;
- Adapt the schedule of the collection and sweeping etc.

When the service is provided by the municipality, a simple way to cut costs is to improve the collection system. This includes establishing a collection route with minimal left turns, regular schedule for collection, and maintaining vehicles and containers regularly. However, these actions and especially when the service is contracted out must be combined with a robust supervision and monitoring system and the sanctions must be applied.

2.4.5 Use of Technology for the Supervision such as GPS on Trucks

Empowering data collection process is one of the main challenges that LGUs are facing in the framework of SWM and not only. So to know details about any operations in SWM, the solid waste planner, monitor and management requires comprehensive reliable data and information on solid waste. However, the solid waste database in each LGU is limited to manage the data by individual local authorities or waste contractors.

In order to deal with this great demand on data management, the advanced information technologies solutions such as RFID (radio frequency identification), GPS (global positioning system) and GIS (geographical information system) tracking system can be utilized.

The recent development of low cost global positioning systems has tremendous potential to change the way how municipalities collect data about their waste management systems, the type of data that they will collect, and the uses that they will find for that data.

GPS Tracking System:

Tracking system based on GPS can be used to locate the position of a truck at all time. To achieve this, a GPS tracking device is installed on the vehicle, and the information about its location is made available to the central office. To transfer this information, it is possible to use satellite transfer method or to transfer through a mobile network. The mobile network transfer method shall be used because it is less expensive than the satellite transfer method, and mobile network is readily available, without need for installing any expensive components or dealing with complex maintenance problems.

Route Designing

From the tracking systems discussed, based on the information gathered, some parameters can be obtained about the vehicle such as speed, direction and location. With this information, the duration for the vehicle to arrive at a particular location can be predicted. Achieving that, a GPS tracking system shall be used along with graphical information software. To design routes, earlier routes pattern can be stored in a database and used to identify area that continually encounter problem which should be avoided when designing and optimizing new routes.

In that way a GPS tracking system may help to reduce transport operation costs and manage mobile assets more efficiently. GPS vehicle tracking system gives the ability to closely monitor driver behavior and find opportunities to improve vehicles efficiency. This system can set up automated alerts to track speeding and idle engine times (identify suspicious stops). Reducing these driving behaviors, tracking vehicle usage and optimizing driver routes can help reduce fuel costs. In the same time, maintaining accurate records of driver behavior and vehicle activity, keeps drivers accountable during the workday.

Bin Tracking and Weight Calculation

To measure the weight of the waste within the bin, an electronic weighting scale or system can be installed on the vehicle's lifting system. This can be used in weighing the bin before it is emptied into the vehicles. To get the waste weight, the empty bin weight (mostly standard weight) is subtracted automatically from the total bin weight (empty bin plus waste).

To track the emptied bin, RFID tags (passive type) can be installed on every bin while the reader or scanner is installed along side with the weighing system on the vehicles. When the bin is weighted in

the earlier stage, it is also scanned and the weight value is recorded along with the tag code. With this information LGUs can identify:

- whether or not all the bins were collected (as codes of collected bins would have been recorded),

Mobile Broadband

The GPRS based wireless internet access could be used to transmit data to the back office because of the availability of mobile networks supporting the GPRS.

2.5 Tools and Processes involved at Local Level (Shkodra's case)

A case study from Shkoder municipality is been used to better explain the role that has to play each actor in service provision as well as their interactions and responsibilities in the monitoring system. The same structure and tools can be used for the public case as well.

Within the new territorial reform Shkodra municipality was expanded and now it includes several other administrative units: Ana e Malit, Bërdice, Dajç, Guri i zi, Postribë, Pult, Rrethinat, Shalë, Shosh and Velipojë. In terms of waste management, Shkodra municipality on the one hand should spread the borders of the service in question also in the new administrative units, and on the other hand, the organic law obliges this municipality, as well as all other municipalities, to measure and monitor the performance of the service.

Currently, Shkodra municipality has contracted a private operator for the cleaning service for Shkodra administrative unit, through a 5-year contract which terminates in June 2018. At the same time, the municipality is also managing the existing contracts of cleaning private companies in the other administrative units. To enable cleaning service provision and the waste management in throughout its territory, Shkodra municipality is entering in the planning process for ensuring integrated, efficient and affordability waste management operations.

In the following pictures are presented all the actors involved in waste management operations provided in Shkodra Municipality.

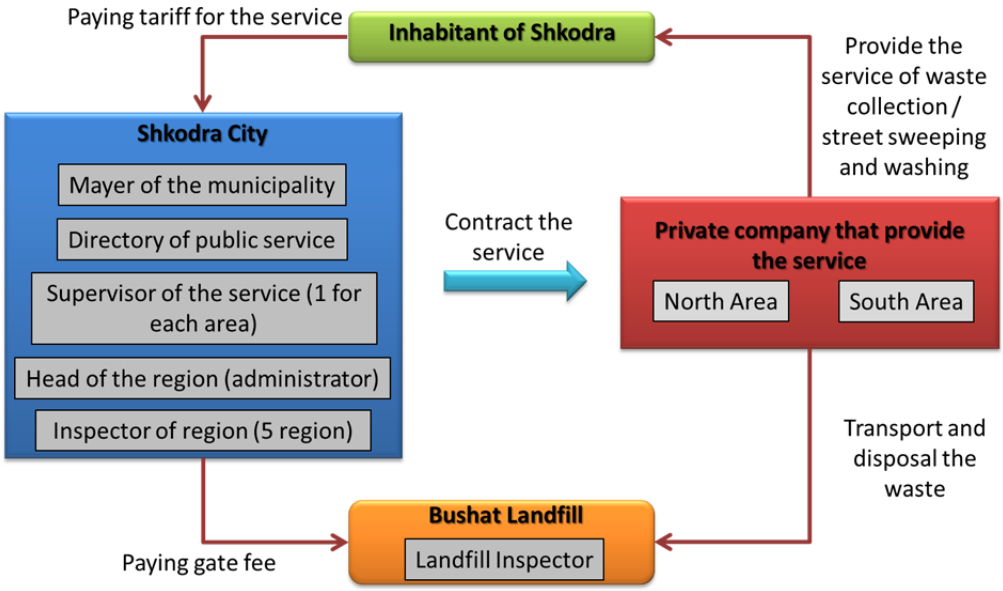


Figure 8: Stakeholder involved in Shkodra municipality

Within the assistance of dldp program, Shkodra municipality has built a simple monitoring system. This system aims to measure the progress of agreed waste management operations in the contract as well as improving the reporting and effective communications between all actors involved in cleaning service provision.

In the following pictures are linked all the actors identified in waste management operations and the flow of information and reporting between them. So, the inspector of each five region must report to two supervisors of the service in a daily basis as well as to the directory of public work within municipality. Also the landfill inspector must report to Directory of Public Work about daily amount of the waste discharged at Bushat landfill. Then, the Directory of Public Work must compile all the information and must report in a daily basis to the deputy Mayer and once per week at contractors. While the contractors of the service provision must reports to the supervisors on monthly basis.

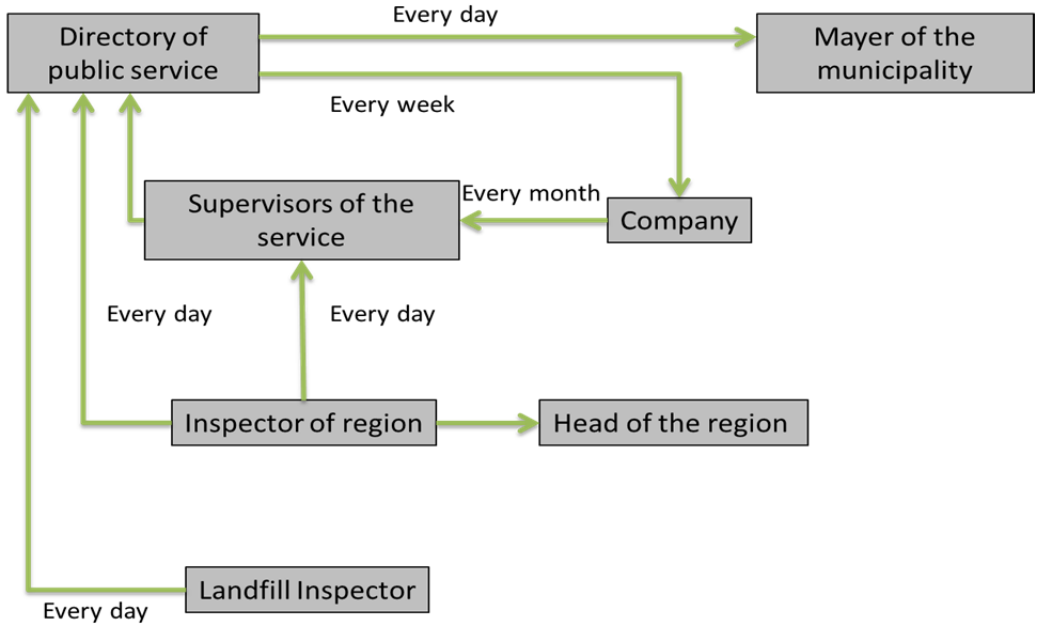


Figure 9: Monitoring system (frequency of the reporting and information flow) established in Shkodra municipality

All the actors were enclosed in a WhatsApp Group to efficiently communicate among each other's during monitoring process (they are sending pictures of the present situations in real time and sharing information with each other's).

In general, the main actors involved on waste management operations and their role in waste management activities are depicted as follows:

2.5.1 Municipality

The role of municipality in monitoring the performance of service provision is to:

- Defines priorities, bases of tenders, waste management plan.
- Defines strategy on waste collection, sweeping and washing the streets.
- Defines budgets, approve bills, incl. penalties.
- Negotiates with company in case of disagreement.

The main objective for a municipality implementing a monitoring system is to:

- Collect and cross check data with the company to validate if the work has been properly realized, as a basis for invoice payment.
- Collect data that allow implementing a continuous improvement by introducing changes and measuring the effect.

2.5.2 Head of Quarter and Inspectors

They must control service given to the population, and:

- Report about the quality and quantities of services: bins not collected, streets not swept, collecting places not cleaned, damaged bins.
- Verifies and adapts the needs of bins:
    - Where too much bins (they are empty) proposes to reduce
    - Where not enough bins (bins full and waste on the street) proposes to increase
    - Proposes to displace or to add collecting points
- Identifies the special needs: inert wastes, events and makes proposition to supervisor.
- Give information:
    - to company + supervisor, immediately for each lack of quality/quantity:
        - ✓ bins not collected (bin position, street, day and hour of observation)
        - ✓ streets not swept (streets, day and hour of observation)
        - ✓ damaged bins (bin position, street, type of damage, day and hour of observation)
        - ✓ bins not monthly washed
    - to supervisor, each month, synthesis of lacks of quality :
        - ✓ monthly report, as a basis of report for municipality, retribution and possibly penalties

In the following pictures is presented the format of the reporting that each inspector from each regions of Shkodra municipality must daily report to the Directory of Public Works.

Waste collection and transport — **Time of the service** 22.00 - 06.00 (1st shift) 10.00 - 13.00 (2nd shift)

Daily report	Zone	Region	Name of supervisor	Date	Time
	South	1	Ilo Hajkoja		

	Name of the street	Time of monitoring	TCP	No of Containers	Frecuency of collection	No of containers collectet		Date of washed	No of containers wached or not		No of Containers dameged	Notes
1	Zogaj Qender		1	2	2 times / week							
			2	1								
			3	3								
			4	4								
			5	2								
2	Zogaj - Shiroke		6	2	2 times / week							
			7	1								
			8	2								
3	Rr. Ura e Bunes Shiroke		9	3	3 times / week							
			10	2								
			11	2								
			12	3								
			13	1								
			14	1								
			15	2								
			16	2								
			17	2								
			18	1								
			19	1								
			20	3								
			21	1								
			22	1								
			23	2								
4	Rr. Bacallekut		1	2	Evry day							
			2	2								
			3	2								
			4	2								
			5	1								
			6	3								
5	Rr. Agron		1	1	Evry day							
			2	1								

Figure 10: Waste report sheet for inspectors of the regions

2.5.3 Supervisors of the Service

They have the role to control if all the operations that are agreed in the contract are respected based on the reports provided by the inspector. He must manage the verification of bills and proposition of payments to the company as well as penalties. The job description of the supervisors is as follows:

- Works in the municipality office under responsibility of Public Service Department;
  - defines priorities and orders special needs to the company (inert, events, displacement of bins) in the frame of the budget.
- Establishes statistics and controls of quantities;
  - data of the company (maintenance of bins, hours of collection, routes, km, employees, etc.).
  - data of Head of Quarter and controller on the landfill site.

- Establishes weekly and monthly reports to the Municipality, based on the reports of the Head of Quarter, and statistics:
  - Quantities of services: control and validation of the bills;
  - Lacks of quality: bins not collected, streets not swept, collecting places not clean, damaged bins, disposal out of the landfill;
  - Makes propositions of penalties to the Municipality, if necessary, based on the contract, reports of the Heads of quarter and statistic;
- Decides reduction or displacement of bins or proposes increase, if necessary.
- Establishes proposition of special expenses, and helps to the preparation of annual budget for the Municipality:
  - special expenses out of the budget (inert, open points)
  - purchase of new bins
  - modification of annual budget

In the following pictures is presented the format of the reporting that each supervisor from each area of Shkodra municipality must report to the directory of public works weekly and monthly.

Weekly Summary Report

Waste collection **Period 01 - 04 /08 /2016**

North Area	Unit	Containers not collected							Total
		Friday	Saturday	Sunday	Monday (01/08/2018)	Tuesday (02/08/2016)	Wednesday (03/08/2016)	Thursday (04/08/2016)	
Region 2	pcs				5	0	0		5
Region 3	pcs				0	0	0		0
Region 5	pcs				0	0	0		0
Total	pcs	0	0	0	5	0	0	0	5

South Area	Unit	Containers not collected							Total
		Friday	Saturday	Sunday	Monday (01/08/2018)	Tuesday (02/08/2016)	Wednesday (03/08/2016)	Thursday (04/08/2016)	
Region 1	pcs				6	0	5	0	11
Region 4	pcs				8	3	3	3	17
Region 5	pcs				12	4	3	1	20
Total	pcs	0	0	0	26	7	11	4	48

Evaluation

Week	Shkodra City	No. of Temporary Collection Points	No. of containers	Collection (Lekë)		Washing (Lekë)	
		252	611	ot collecte	Penalties	Not washed	Penalties
01-04/08/2016	North Area			5	1,545.00		
01-04/08/2016	South Area			48	13,104.00		

Figure 6 Weekly summary report of the supervisor of the service / the directory of public work

Monthly Summary Report

Waste collection **Period 01 - 18 /08 /2016**

North Area	Unit	Containers not collected	Penalties	Containers not whashed	Penalties
Region 2	pcs	99	30,591		
Region 3	pcs	15	4,635		
Region 5	pcs	1	309		
Total	pcs	115	35,535		

Total no of not collected containers

232

South Area	Unit	Containers not collected	Penalties	Containers not whashed	Penalties
Region 1	pcs	24	6,552		
Region 4	pcs	36	9,828		
Region 5	pcs	57	15,561		
Total	pcs	117	31,941		

Penalty for the Private Company

67,476 ALL

Figure 11: Monthly summary waste collection report for the contractor / Deputy Mayer

One month after the monitoring system was applied in Shkodra municipality, it is reported that:

- the time of service provision and the frequency for each shift are established on regular basis;
- the number of the damaged containers is reduced;
- the number of the bins in some collection points are adjust based on the needs for the bins;
- the number of the bins not collected are reduced dramatically;
- the number of the streets not swept and collecting places not cleaned are reduced.

2.5.4 Controller on the Disposal Site

He has the duty to control and report of the activities on the disposal site:

- Controls and collects information of quantities of services;
  - Reports for each truck : truck ID, hour, owner, type of waste (if special), quantity (estimation of volume if no weighing)
  - Reports of hours of machine
  - Reports of any special events on the site: fire, accident, etc.
- Controls quality of waste;
  - Informs the supervisor if non-conform waste are coming in, driver or trucks not belonging to Shkodra municipality etc.
- Provides weekly report to the supervisor.

In the following pictures is presented the format of the reporting that controller on the disposal site must report to the Directory of Public Works daily and monthly.

Date	Truck 1: SH 45-02 E		Truck 2: SH 44-95 E		Truck 3: SH 44-71 E		Truck 4: SH 44-79 E		Truck 5: SH 44-96 E		Total ton/day
	No of way	ton (net)	No of way	ton (net)	No of way	ton (net)	No of way	ton (net)	No of way	ton (net)	
1/8/2016	1	10,120	2	21,680	-	-	2	14,920	2	19,220	65,940
2/8/2016	2	16,140	3	32,720	1	11,120	2	16,340	1	9,760	86,080
3/8/2016	1	10,000	1	11,620	2	17,680	1	8,380	2	19,660	67,340
4/8/2016	1	11,100	1	10,380	1	10,520	2	15,980	1	10,320	58,300
5/8/2016	2	21,320	1	11,240	2	19,440	1	8,860	2	19,220	80,080
6/8/2016	2	18,100	2	23,840	1	10,660	1	8,600	2	19,980	81,180
7/8/2016	1	9,580	3	30,560	1	10,420	2	16,620	2	21,120	88,300
8/8/2016	2	21,180	-	-	2	20,120	1	8,760	1	10,520	60,586
9/8/2016	2	20,880	2	22,820	1	9,360	1	8,540	3	30,340	91,949
10/8/2016	2	22,400	1	11,380	2	17,680	3	23,460	1	11,360	86,289
11/8/2016	2	23,240	1	11,120	1	8,960	1	9,500	1	10,540	63,366
12/8/2016	1	9,660	1	11,660	2	16,120	1	8,020	3	28,240	73,708
13/8/2016	2	19,700	3	21,820	3	26,220	3	20,980	1	10,300	99,032
14/8/2016	1	9,260	2	20,220	-	-	1	8,160	2	20,700	58,340
15/8/2016	2	22,060	1	8,800	2	17,880	1	8,340	1	10,720	67,800
16/8/2016	2	17,880	2	20,040	2	13,700	1	10,480	2	22,220	84,320
17/8/2016	2	20,500	1	10,780	2	18,460	2	17,520	2	20,880	88,140
18/8/2016	2	21,440	2	24,460	3	28,040	-	-	2	21,020	94,690
19/8/2016	1	8,840	2	26,520	2	17,200	1	8,660	1	10,800	72,020
20/8/2016	2	19,200	2	23,460	2	18,140	1	10,060	1	10,640	81,500
21/8/2016	3	33,020	1	11,040	1	8,920	2	16,740	3	32,080	101,800
22/8/2016	3	33,020	2	24,100	-	-	1	7,320	2	21,000	85,440
23/8/2016	3	29,900	2	23,000	2	17,220	2	19,960	1	10,560	100,640
24/8/2016	1	11,500	2	25,360	1	9,960	1	8,680	3	30,900	86,400
25/8/2016	2	17,380	2	23,780	2	19,160	-	-	2	20,760	81,080
26/8/2016	2	16,480	2	17,520	1	10,900	-	-	2	17,060	61,960
27/8/2016	1	9,120	1	7,780	2	18,560	1	7,720	2	20,100	63,280
28/8/2016											
29/8/2016											
30/8/2016											
31/8/2016											
	48	483,020	45	487,700	41	376,440	35	292,600	48	490,020	2,129,560

Figure 12: Daily amount of the waste deposited in Bushat Landfill (waste report of landfill inspectors)

2.5.5 The Contractor

In the reporting context he has to hold daily statistic on the main following points and report it monthly, on a paper and on digital form to the supervisor the:

- number of loaded bins on each route;
- real hours of collection: daily time of departure of the trucks, time of unloading on the landfill, time of coming back to the garage;
- daily km of each truck;
- fuel and oil consumption of each truck, maintenance operations and date;
- number and itinerary of trucks routes;
- list of swept and washed streets, daily hours of mechanical sweeping and washing;
- list of employees and hours of work;
- monthly inventory of bins, street by street, with ID number and state;

- displacement, maintenance or missing bins, washed bins: list of concerned bins (street, ID number), specific repair, date;
- feedback on demands of the Heads of Quarter or supervisor about lacks of quality or quantity.

In the following pictures is presented the format of the reporting that contractor must report to the Directory of Public Works daily and monthly.

Date	Daily waste disposed in landfill (ton)	No of containers collected	No of containers washed	No of containers repaired	Total no of containers	Street surface mechanical sweeping	Street surface manual sweeping	Street surface washed
8/1/2016								
8/2/2016								
8/3/2016								
8/4/2016								
8/5/2016								
8/6/2016								
8/7/2016								

Data	ID of the vehicle	Time of departure of the trucks	Time of unloading on the landfill	Time of coming back to the garage	Daily km of each truck
8/1/2016					
8/2/2016					
8/3/2016					
8/4/2016					
8/5/2016					
8/6/2016					
8/7/2016					

Figure 13: Daily information data reporting from the contractors

2.5.6 Application of Sanctions

LGUs must include in the service contract of SWM and implement the sanctions to ensure that the contractor is fulfilling all agreed waste management operations as they are drafted in the contract. In the following paragraphs public and private cases are presented.

❖ **Waste management operations are provided by the private sector**

In the following paragraphs is given the example of different penalties designed and included in the contract that Shkodra municipality has with private operator.

Penalties 1 – for damaged bins

- **Goal:** to avoid that damaged bins reduce efficiency of the collection road: no damaged bins in the streets.
- **Responsibility:** the Company must identify and repair all damaged bins. The company must wash the bins monthly.
- **Control:** the Head of Quarter will check all damaged or non washed bins. The company has to change the bin with another one and has 5 days to repair the damaged bin. The company gives to the supervisor the list of the damaged bins in repair and the list of washed bins in a monthly report.

- **Criteria:** more than 3 % of damaged or non-washed bins (reported in the streets or in repair) reported in a month.
- **Penalty:** reduction of 5 % of the monthly price for waste collection for each 3% of damaged bins or part of it.

Penalties 2 – for non-collected bins

- **Goals:** to insure full quality of collection, to force the company to provide alternative solution in case of problems (mechanical, personal,…).
- **Responsibility:** the Company must collect each bin on the requested frequency.
- **Control:** the Head of Quarter will check and report to the company, with prior information to the supervisor, if collection is not done, indicating place, number, date and hour of observation.
- **Criteria:** penalty if more than 10 bins are mentioned as not-collected in a month.
- **Penalty:** reduction of 150 % of the price for collecting one bins for each non collected bin.

Penalties 3 – for non-replaced bins

- **Goals:** to ensure that the damaged bins that can't be repaired are replaced by the Company, in order to guarantee the presence of the required number of bins in the streets, as defined by the Municipality.
- **Responsibility:** the Company must replace the bins that can't be repaired.
- **Control:** the Head of Quarter will check and report to company, with information to the supervisor, if bins are missing, indicating place, number, date and hour of observation.
- **Criteria:** penalty for each missing bin, per month.
- **Penalty:** reduction of 150 % of the price for collecting one bins for each non collected bin.

Penalties 4 – for non-swept streets

- **Goals:** to insure full quality of sweeping, to force the company to provide alternative solution in case of problems (mechanical, personal,…)
- **Responsibility:** the Company must sweep each street on the requested program and frequency, and find alternative solution if needed
- **Control:** the H of Q will check and report if sweeping is not done
- **Criteria:** penalty if more than 2 % of surface are not swept in the month or if more than 10 days without a functional machine in a month
- **Penalty:** reduction of 150 % of the price for sweeping for the non-collected surface of streets.

Penalties 5 – for disposal on a wrong place

- **Goal:** to strictly avoid that the company disposes waste on a wrong place without a preliminary and formal agreement of the Municipality.
- **Responsibility:** the Company must dispose the waste where it is requested.
- **Control:** the Head of Quarter, supervisor or any official will check and report if wrong disposal.
- **Criteria:** penalty for each wrong disposal of a truck of the company.

- **Penalty:** reduction of 5 % of the total monthly price for collecting the waste for each truck concerned. Obligation of the company to take back the wastes and clean the place at they own cost.

Penalties 6 – for non-given or wrong reporting

- **Goals:** to insure that the company give all the required reporting and statistical data each day a month, and that they correspond to the reality.
- **Responsibility:** the Company must give each month, to the 15th of the next month, the required data and reporting to the supervisor real and correct data.
- **Control:** the supervisor will check, the date of reception of reporting and will check and control the reality of the data, with the help of the Head of Quarter and the controller on the disposal site.
- **Criteria:** cumulative penalty for each week, for the delays per each week. Double penalty if the data are wrong, all legal consequences being preserved.
- **Penalty:** reduction of 2 %, than 4% after the next week and so on, of the monthly bill of the next month.

❖ **Waste management operations are provided by the municipal enterprise**

In case when the service is provided by municipality enterprise, failure to meet a minimum standard in service provision would be a subject of different penalties:

Penalties 1 – for non-collected bins on the road that is attributed, without a clear reason

- **Goals:** to insure full coverage of collection.
- **Responsibility:** the Municipal enterprise must collect each bin on the requested frequency.
- **Control:** the municipal inspectors/supervisors will check and report, if collection is not done, indicating place, number, date and hour of observation.
- **Criteria:** penalty if more than 10% are mentioned as not-collected in a month.
- **Penalty:** sanction can be warnings and following other consequences as are mentioned in the civil code of work.

Penalties 2 – waste collection or transport is not provided because vehicles and truck are not operated due to lack of maintenance or bad management of fuel

- **Goals:** to insure proper waste collection and transportation.
- **Responsibility:** mechanical department (head of the sector) must provide all the maintenance services for all the vehicles according to specific vehicles requirements.
- **Control:** supervisors will check and report, if any of the vehicles is not operating, indicating plate of the vehicles or ID number, area when the service is missing, date and hour of observation.
- **Criteria:** penalty for each day that the vehicles are not operated.
- **Penalty:** Sanction can be warnings and following other consequences as are mentioned in the civil code of work.

Penalties 3 – Streets are not properly swept or washed because the hour of the work are not completed by the staffs

- **Goals:** to insure that all the roads received the service according to the schedule of swept and washed.
- **Responsibility:** department of street sweepers (head of the sector) must be responsible for the service provision according to requested schedule and frequency.
- **Control:** the municipal inspectors/supervisors will check and report, if sweeping or washing is not done, indicating street, date and hour of observation.
- **Criteria:** penalty if more than 2 % of surface are not swept in a month or if more than 10 days without a functional machine in a month.
- **Penalty:** sanction can be warnings and following other consequences as mentioned in the civil code of work.

2.6 Key Points to Remember

Monitoring of daily waste management operations (waste collection, transport, recycling, composting and reusing activities as well as disposal) is part of a continuous process of learning and improvements that enables local government units to:

- assess the performance of this service against their aim and objectives;
- address and draw corrective measures or adjustments to improve the service based on information collected through monitoring;
- assess expenditures and control costs of all waste operations;
- measure customer satisfaction and user attitudes and their impacting on the performance of the service;
- better plan the service in the future and how to expansions and redesign the service.

Monitoring system of daily waste management operation is a continuous improvement cycle and include following steps:

- Set monitoring goal and objectives (SMART objectives);
- Identify stakeholders involved and their responsibility (define the information flow and the frequency of the reporting);
- Develop the monitoring scheme, which implies data collection, data analyses, identify the improvements and draw the corrective actions.

GPS tracking system may help to reduce transport operation costs and manage mobile assets more efficiently.

In both cases, even when waste management operations are delivered “in house” by municipal enterprises and even more when these operations are contracted out to a private company, LGUs must develop (include in the service contract of SWM) and implement the sanctions to ensure that the service provider is fulfilling all agreed waste management operations.

CHAPTER 3 BENCHMARKING SYSTEM

3.1. Introduction

The previous chapters have presented how the municipalities can monitor their service delivery and performance based on different systems of monitoring and indicators. The benchmarking aims at extending this practice at a national level, to compare each municipality with the other ones, as there is a high variability in terms of service delivery, quality of the service and cost of it, among the country. A benchmarking system can help identifying and measuring the minimum level of service over the country and also identifies “best in class” cases, to promote a positive competition.

Benchmarking system is a set of agreed indicators which are used to measure and report periodically different aspects of solid waste management. Benchmarking should be established at national, local and SWM public utility levels. National benchmarking indicators show the baseline situation at the national level and will allow regional comparison and measurement of country’s achievements towards the set of international targets, such as the EU SWM targets set out in the Directive 2008/98/EC on waste (Waste Framework Directive).

The national set of benchmarking indicators describes the average situation at the national level, while, in practice, the value of these indicators varies from one municipality to another.

Since local authorities are responsible for SWM, there is a legitimate reason to establish benchmarking at the local municipal level, among the different regions or service delivery areas as well. Local authorities often face limited funds for the development of SWM municipal infrastructure. Benchmarking at the municipal level will provide information for decision making on priorities for the limited funds available for service improvements and will enable the monitoring of changes over time.

Establishment of Benchmarking System at a local level in Solid Waste Management will help local government units in country to gain an independent perspective of how well the SWM is performed compared to other municipalities. It clearly identifies specific areas of opportunity, prioritizes improvement opportunities, sets performance expectations and monitors changes at municipal level. Ultimately, it is managing solid waste in a socially, environmentally and financially responsible manner.

The literature recommends that the process of drafting the benchmark system should be a participatory approach with the participation of all stakeholders (representatives from line ministries, LGUs, "service providers", representatives from civil society and national and international experts). The benchmarking system should be entirely on the current state of the service level offered today in the LGU and it is led by the principles and policies designed at national level. However the main stage when a benchmarking system is designed are shown if the following figure:

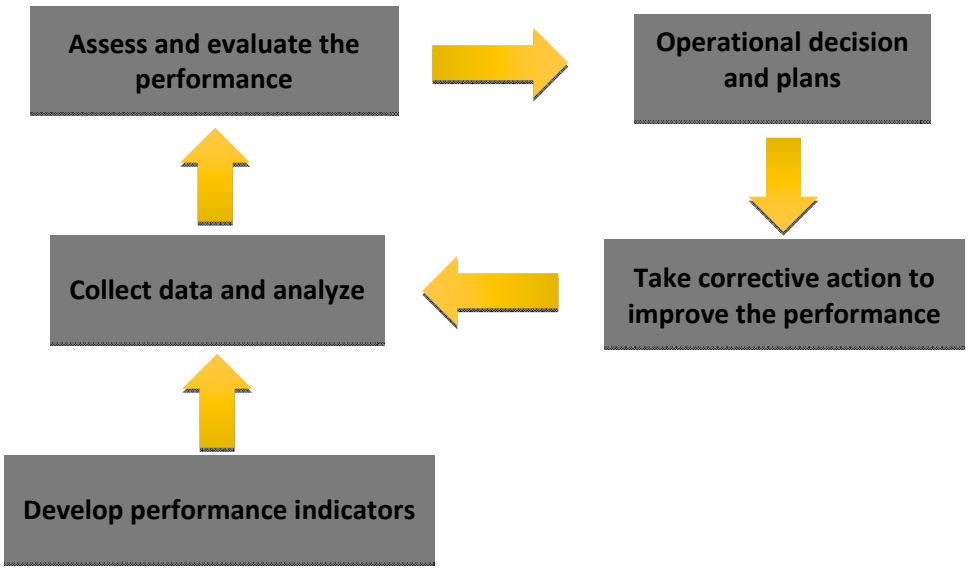


Figure 14: Main stages in solid waste management benchmarking system

Some of the major reasons for designing a benchmarks system are summarized as below:

- make it possible for each LGU to judge its performance in SWM service delivery;
- provide the necessary information for decision-making authorities on priorities for improving the SWM service in the current conditions with limited funds available;
- enable the identification of strengths (local circumstances) on the basis of which it can be built further and identify the weaknesses that need to be handled with care;
- monitor changes in the quality of SWM service over time.

3.1.1 Why LGUs should take care about Standards and a Benchmarking System?

Benchmarking is a common practice and practical exercise to establish baselines, define best practices and identify improvement opportunities on waste management activities.

What shall we mean by "good practices" in SWM?

Waste collection and transportation service is offered in almost all urban areas in country, while in some rural areas the service is not provided at all. The collection system that is applicable at each municipality is curbside mix waste collection, with containers 1.1m^3 distributed in the main roads. No differentiated waste collection service is in place. Separate collection of waste at the source is not yet being implemented at any municipality. Most of the time, the informal sector is found in waste collection points or even at the dumpsites scavenging and looking for recyclable waste. The recycling industry works with limited amount of raw materials. All municipalities, excluding Tirana, Shkoder and Sarande, transport their mix waste into the respective dumpsites without any prior treatment.

However measuring service levels performance for each operations in waste management chain implies measuring outcomes of this service, and indirectly also reflects on institutional capacity, locally infrastructure, financial performance and other parameters of LGUs. So introducing local benchmarking indicators will enable not only to present the baseline situation at the local level but will also allow local comparison between LGUs.

3.1.2 How this chapter will help LGU's to Improve Waste Practices?

Using the information and knowledge described in this chapter will help LGU to:

- describe a baseline situation regarding waste management operations in their territory in a very synthesized way;
- compare their existing situation with the benchmark indicators and to identify the priorities areas for improvement in waste management;
- compare their existing situation with other LGUs to identify their weaknesses and problems as well as best practices from other LGUs. So best practices in waste management will be distinguished and will be subjected to replication in other LGUs.

3.2 Performance Indicators and Benchmarking System

In the following table are represented all the indicators that can be used for building a benchmarking system. Some of the indicators which measure the performance of the service are also used during the planning phase. The way how are calculated is presented in first chapter.

A	**General Information**	
A1	Type of service provision	▪ offer the service themselves ▪ contract the service ▪ offer the service jointly
A2	Population	▪ No. of residents ▪ No of seasonally inhabitants
A3	Average quantity of the waste	▪ kg waste/inhabitant/day ▪ ton waste/year
A4	Composition of the waste	▪ % of dried recyclables (paper, cardboard, plastic etc.) ▪ % of wet recyclables (bio-organic) ▪ % of residue
A5	Other parameters	▪ calorific value of the waste ▪ moisture contents ▪ density of the waste
B	**Assessment of existing infrastructure**	
B1	Distribution of containers	$\mathrm{B1} = \frac{\text{No of containers}}{\text{km}^2}$
B2	No of residents that are served from one vehicle of waste collection and transport	$\mathrm{B2} = \frac{\text{No of residents}}{\text{No of vehicles}}$
B3	No of residents that are served one container for the mixed collection of waste	$\mathrm{B3} = \frac{\text{No of residents}}{\text{No of mix containers}}$
B4	No of residents that are served one container for the differentiated collection of waste	$\mathrm{B4} = \frac{\text{No of residents}}{\text{No of diferentiated containers}}$
C	**Quality of the service**	
C1	Efficiency in waste collection	$\mathrm{C1} = \frac{\text{Quantity of collected waste } (\frac{\text{ton}}{\text{year}})}{\text{Quantity of produced waste } (\frac{\text{ton}}{\text{year}})} \times 100$

C2	Effectiveness of waste collection and streets wiping	C2.1 Presence of waste accumulated around the container / PGM C2.2 Presence of waste in the main streets of the town and in the most populated areas C2.3 Presence of accumulated waste / illegal landfills/burning of the garbage in the suburbs C2.4 Fair application of control and supervision C2.5 Use of personal protective equipment and application of protocols
C3	Efficiency in addressing the complaints of the clients	$C3 = \frac{No\ of\ addressed\ complaints\ (24\ \mathrm{h})}{No\ of\ complaints\ (24h)} \times 100$
D	Environmental Sustainability	
D1	Degree of differentiated collection of waste	$D1 = \frac{Qty\ of\ waste\ collected\ separately}{Qty\ of\ waste\ collected} \times 100$
D2	Degree of waste treatment in compliance to the legislation	$D2 = \frac{Qty\ of\ waste\ treated\ based\ on\ legislation}{Qty\ of\ collected\ waste} \times 100$
E	**Economic and financial sustainability**	
E1	Cost recovery rate	$\mathrm{E1} = \frac{\text{Annual income from WM } (\frac{\mathrm{ALL}}{\mathrm{year}})}{\text{Annual operating cost } (\frac{\mathrm{ALL}}{\mathrm{year}})} \times 100$
E2	Efficiency in tariff collection (for each service beneficiary)	$\mathrm{E2} = \frac{\text{Annual income from WM } (\frac{\mathrm{lek}}{\mathrm{year}})}{\text{Total of planned incomes } (\frac{\mathrm{ALL}}{\mathrm{year}})} \times 100$
E3	Total service cost	$E3 = \frac{Total\ cost\ of\ the\ service\ (ALL)}{Amount\ of\ waste\ \ (ton)}$ $E3 = \frac{Total\ cost\ of\ the\ service\ (\frac{ALL}{Year})}{Inhabitant}$
F	**Institutional assessment**	
F1	Degree of the coherence of local institutions	F1.1 Organizational structure F1.2 Institutional capacities F1.3 Local SWM plan F1.4 Availability and quality of data for SWM F1.5 Control, management and service supervision F1.6 Inter-communal interaction

3.3 Analyze the Data of the Benchmarking System

Information collected from benchmarking system will help in developing the minimum standards of service provision as well as best practices for waste sector. A good sector regulation needs reliable information and data as well as continued monitoring. The monitoring provides the opportunity to make a correct assessment of the performance of service provision in each municipality and establish realistic objectives, taking into account their current capacities.

Benchmarking system can help municipalities in developing and well maintain their solid waste data base. A lack of data is often a norm for our LGUs solid waste management, which in practice is the barrier to take applicable actions or to lead action into a wrong direction.

Within a benchmarking system the analyses of performance indicators may help each municipality to:

- establish municipality's priorities for action;
- Identify within each aspect of SWM what are the priorities for further improvement;
- develop SMART objectives to improve the planning process;
- know the full cost of waste management operations;
- help in budget calculation / amendment of the contract;
- increase the efficiency of each SWM operations;
- design the adequate policy which can be applicable;
- propose any legal requirement.

	Indicators	Shkodra	Ana e Malit	Berdica	Guri i Zi	Postribe	Rrethinat	Dajc	Velipoja
Quality of the service	C1 Service coverage areas	90%	73%	69%	53%	55%	68%	73%	70%
	C2 Cleanliness of the city	82%	32%	49%	32%	32%	32%	49%	49%
	C3 Degree of public sadisfaction	unknown	unknown	unknown	unknown	uknown	unknown	unknown	unknown
Environmental sustainability	D1 Degree of differentiated collection	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	D2 Degree of properly waste treated	100%	22%	90%	90%	80%	80%	60%	50%
Economic and financial sustainability	E1 Cost recovery	83%	12%	56%	25%	12%	17%	38%	33%
	E2 Rate of the tariff collection	111%	33%	103%	55%	55%	47%	58%	50%
	E3 Transparency of the billing system	Medium	Low	low	low	low	low	low	low
Cost of the service	Lek/ton	**4,733**	**20,995**	**19,047**	**10,880**	**27,677**	**26,115**	**9,975**	**11,980**
	Lek/banor/vit	**1,456**	**781**	**434**	**457**	**646**	**748**	**409**	**2,058**

Figure 15: Classification of performance indicators in Shkodra municipality

3.3.1 Group Work – Exercise for Assessing Performance Indicators

All the participants will be divided in four groups. Each of the group will have the task to assess the set of key performance indicators for monitoring the following aspects:

(i) Quality of service;
(ii) Environmental sustainability;
(iii) Economic and financial sustainability;
(iv) Cost of the service.

After 20 min each group will present the set of indicators assessed in classification codes in color

Next question to be addressed:

- Are all LGUs able to use the proposed indicators for monitoring different aspects of waste management service?
- Do they possess all the required data to calculate all the proposed indicators?
- If not how can LGUs generate these data?
- How can they establish and maintain their database in order to report regularly about these indicators?

To apply this exercise, each participant will bring in the training day the following completed table.

No	Variables	Units	Value	
			Year 2014	Year 2015
1	Total no of population	Person		
2	Quantity of waste production	ton/year		
3	Quantity of waste collection	ton/year		
4	Quantity of separate waste collection	ton/year		
5	Quantity of the waste disposed in dumpsites or landfills	ton/year		
6	Total annual operation cost	ALL / year		
7	Annual planned incomes to be collected from beneficiaries of the service: • Inhabitants • Business • Institutions	ALL/Year	Inhabitants =	
			Business =	
			Institutions =	
8	Annual income from waste tariffs	ALL/Year	Inhabitants =	
			Business =	
			Institutions =	
9	Average no of complaints received in one months	No/months		
10	Average no of complaints addressed in one months	No/months		
11	In your LGUs do you have a separate unit which is responsible to plan the SWM, provide the service and finance	Yes/no		

	it?			
	Is there a detailed organigramme for the SWM department?			
	Are all the key positions staffed and is the staff adequately qualified?			
	Do you have a SWM plan and is it under implementation?			
	Do you regularly record and maintained database for waste?			
	Do you have the system to control and supervise the service and is it under implementation?			
	Do you have documented evidences of the service monitoring procedures?			
	Do you have the entire waste management budget as a line item of the budget for SWM department or unit?			

3.4 Stakeholders involved in establishing Benchmarking System

Benchmarking system may be established at national and local levels. A national benchmarking indicators system is missing. At the national level, some data available as part of the national statistics or reporting on environmental status, are reported to European Environmental Agency (EEA).

However, data collection and SWM Information System are legally regulated. The responsibilities of municipalities (LGUs) on waste management are firstly implied by the Law no. 10463, dated 22.09.2011 "On the integrated waste management". Further to enhance monitoring capacities and enable reporting on waste, the new DCM "on *Rules for maintenance, updating and publication of waste statistics"*[1] has been adopted by the GoA. This government decision specifies responsibilities of municipalities and other central institutions (several line ministries) and state agencies on the data collection, data processing and reporting.

Figure 2 shows the institutional monitoring system related to maintanance and reporting on waste management activities (waste statistics).

[1] DCM no. 687, dated 29.07.2015, Adoption of rules for maintenance, updating and publication of waste statistics

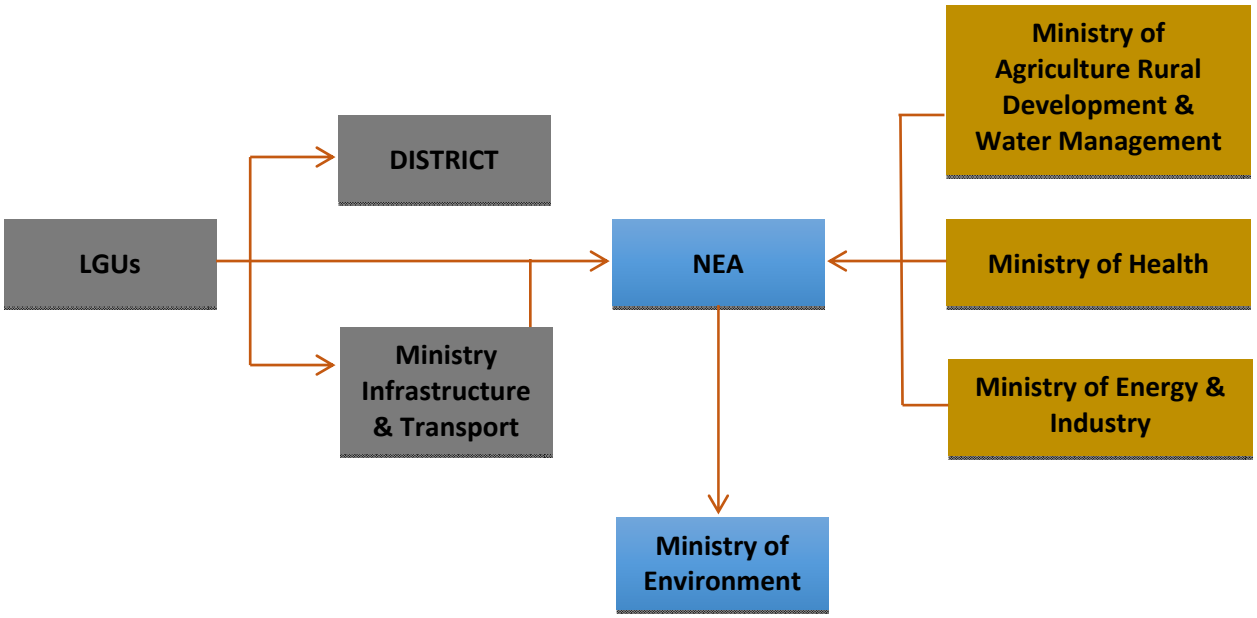


Figure 16: Reporting flow in waste management

Municipalities are obliged to provide annual waste statistics for waste generated on their territory according to the following template:

No	Data required per year	Albanian Catalog Code
1	No. of inhabitants	
2	Amount of waste for inhabitant (kg/year)	
3	Amount of urban waste (kg or ton/year)	20
4	Amount of inert waste (kg or ton/year)	17 09 04
5	Amount of hospital waste (kg or ton/year)	18 01 10
6	Amount of plastic waste (kg or ton/year)	17 02 03 ; 15 01 02
7	Amount of glass waste (kg or ton/year)	15 01 07
8	Amount of metal waste (kg or ton/year)	17 04 07; 15 01 04
9	Amount of wood waste (kg or ton/m3)	17 02 01; 15 01 03
10	Amount of paper and cardboard waste (kg or ton/year)	15 01 01; 03 03 08
11	Amount of battery waste (kg or ton/year)	16 06 01; 16 06 06
12	Amount of tires waste (kg or ton/year)	16 01 03; 400 400 00
13	Amount of oil waste stream (kg or ton/year)	12 01 06; 12 01 10
14	Amount of by - animal waste stream (kg or ton/year)	02 01 02
15	Amount of textile waste stream (kg or ton/year)	04; 15 09 04
16	Amount of WEEE waste stream (kg or ton/year)	16 02; 20 01 36
17	Amount of the waste deposited in landfill (ton/year)	
18	Amount of the waste incinerated (ton/year)	

Figure 17: Waste statistics to be reported by LGUs

Each LGU must report to the region council, National Environmental Agency (NEA) and to the Ministry of Transport and Infrastructure no later than 31 January of each year. As well as at the central level ministries such as: Ministry of Agriculture Rural Development and Water Management, Ministry of Health, Ministry of Energy and Industry and Ministry of Infrastructure and Transport, in accordance to DCM no 1189, dt. 18/11/2009 "On the Rules and Procedures for the Design and

Implementation of the National Program of Environmental Monitoring" must report not later than 10 of February to NEA. NEA collect, maintain and updates statistics on waste and report to the Ministry of Environment within 28 of February of each year. Finally MoE prepares and publishes electronic version of a 3 years report on waste statistics, which must be available to public and at the ministry web site.

3.4.1 Exercise / Discussion – Waste Statistic Generated at Local Level

Topics to be discussed with all participants:

(i) How municipalities can establish databases and how can generate all the required data to be reported each year according to DCM no 687, date 29.07.2015?
(ii) What are the actors involved and in which level of waste management can data be measured or generated?
(iii) What tools/formats or reporting system must be employed and what will be the specific role and contribution of different actors involved in service provision?

ANNEX 1 - EXAMPLE – CALCULATING AFFORDABILITY

1. TESTING WITH REAL FIGURES

Municipality of Lezha
Year 2015

According to the dldp survey (year 2015) for the Lezha Municipality (considering the new Municipality) which consist of 10 Administrative Units namely Lezhë, Shëngjin, Balldre, Kallmet, Zejmen, Shënkoll, Dajç, Blinisht, Kolsh and Ungrej, the following figures are identified for the waste management services budget the (in total for the new Municipality):

- Total budget of the Municipality (as usual by summing all budgets of 2015) = **647,301,617 ALL**
- Total budget of the Municipality allocated for solid waste management services = **29,240,587 ALL**
- Total cost of solid waste management = **50,780,787 ALL**
- Financial gap between own allocated budget and contracts awarded = **36,680,000 ALL** in **percentage 50 %**
- Percentage of the cost to run the service = **8%**
- Cost recovery capacity (tariffs collected) in percentage = **36%**
- Tariff paid equivalent. Inhabitants. /year) **= 471 ALL (max 816 ALL, min 91 ALL).**

The above measurements refer to a service which is not provided to all inhabitants in the respective units (accumulative only 63% receive it). Furthermore, the service is not offered as required by the sectorial legislation, considering at least 3 waste bins separation

2. TESTING WITH MODELING

Compliance with normal service provisions
Municipality of Lezha
Fictive

This testing considers the following obligations:

1. The service is offered to all citizens;
2. The waste is sent to landfill;
3. The Municipality fully covers the service;
4. Citizens pay the tariff as usual;
5. Landfill costs remain very low (600 ALL/ton).

The data for the testing are performed by the cost modeling tool developed by dldp. Data for the population and waste generation are collected from the above mentioned survey for each of the units. The modeling is performed considering that each unit runs the service as one area of service (optimization can be reached). Therefore, the following figures are produced:

- Total budget of the Municipality (as usual by summing all budgets of 2015) = **647,301,617 ALL**
- Total cost for running the service (calculated) = **95,801,225 ALL**
- Percentage of the cost to run the service = **15%**
- Cost recovery capacity in percentage (considering the payments of the tariff by all clients for 2015) = **23%**
- Tariff to be paid equivalent. Inhabitants. /year **= 936 ALL** *(max 1400 ALL, min 605 ALL)*.
- Tariff **gap** equivalent. Inhabitants. /year = **466 ALL**

The calculations indicate a further burden to local budget capacities to cover the service. In order to optimize the system, which provides for all citizens of the Municipality and remains to the financial capacities of the Test 1 (business as usual), the total budget of the Municipality needs to be increased by about 45M ALL about 50%.

3. TESTING WITH PROJECTED FIGURES

Full compliance with legislation

Municipality of Lezha

Fictive

This testing considers the following obligations:

1. The service is offered to all citizens;
2. The waste is sent to landfill (tariff paid as per business plan);
3. The Municipality fully covers the service;
4. All citizens pay the tariff;
5. The service is provided according to the requirements of the law:
    - 3 bins system
    - Waste recovery (special bins for paper only)

The data for the testing are performed by the cost modeling tool developed by dldp. Data for the population and waste generation are collected from the above mentioned survey for each of the units. The modeling is performed considering that each unit runs the service as one area of service (optimization can be reached).

The test considers that based on studies 40% of the waste in bins is organic, therefore an extra number of bins and trucks is necessary. Considering this is very difficult to be measured properly, a single cost modeling is run for the whole municipality as one truck goes around every day.

The number of total bins is shared by 30% for dry waste. An additional number of bins for paper recovery is added to the system by a percentage of total of 5%.

- Total budget of the Municipality (as usual by summing all budgets of 2015) = **647,301,617 ALL**
- Total cost for running the service (calculated) = **~105,000,000 ALL**
- Percentage of the cost to run the service = **17%**
- Cost recovery capacity in percentage (considering the payments of the tariff by all clients for 2015) = **20%**
- Tariff to be paid equivalent Inhabitants /year **= 1064 ALL** *(max 1723 ALL, min 778 ALL)*.
- Tariff gap equivalent Inhabitants /year = **593 ALL**