



**Rochester Institute of Technology, NY**  
**American University of Kosovo**

# **Waste Management Action Plan for the Municipality of Prishtina**

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Capstone Project in partial fulfillment of a Master of Science Degree in  
Professional Studies at the RIT Center for Multidisciplinary studies  
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Special gratitude to my family and thank you all including those I could not mention here.

And finally, this paper is fully and completely dedicated to my children's.

### ***Abstract***

This Capstone project will address the important problem of waste management sector for the Municipality of Prishtina. Rapid urbanization has made solid waste management a serious problem today. The perception of the people has always been that it is a responsibility of the local government bodies. Local authorities are bound to keep their area clean. For some time now, many municipalities, city corporations and industries have been experimenting with several innovative and participatory methods of Reduce, Reuse and Recycle waste. Prishtina has been experiencing enormous difficulties with garbage collection over past years and there are two main reasons: first local authorities do not have sufficient capacity to develop a waste management strategy and secondly there is not awareness of inhabitants over the importance of their role in the keeping city clean. Low collection coverage, unavailable transport services, and lack of suitable treatment, recycling and disposal facilities are responsible for unsatisfactory waste management, leading to water, land and air pollution, and for putting people and the environment at risk. This Capstone project will involve all stakeholder of the waste management sector in the Municipality of Prishtina and finally the strategy and action plan. Finally the action plan will be developed where the mile stones will be settled for the better management in waste collection, waste reuse and waste recycling and will include:

- Evaluation of available and practical alternatives and techniques,
- Initiating a practical waste recycling methodology, and promoting 3R management in the waste sector for the municipality
- Preparation of Municipal Waste Management Action Plan and capacity building in this sector for the Municipality of Prishtina.

### **KEY WORDS:**

*Waste, sustainable solid waste management, waste collection, waste treatment, action plan, recycling*

## **Abbreviations and Acronyms**

MESP Ministry of Environment and Spatial Planning

WWRO Water and Waste Regulatory Office

PSP Private Sector Participation

KEPA Kosovo Environmental Protection Agency

KLMC Kosovo Land Management Company

MSW Municipal Solid Waste

PASTRIMI- Regional Public owned Company

MUNICIPALITY- Municipality of Prishtina

EU European Union

EC European Commission

EAR European Agency for Reconstruction

PPP Public-Private Partnership

SOK Statistical Office of Kosovo

DTD Door to Door

CD Collective Dwellings

SL, Statistics of Births in Kosovo,

KTA Kosovo Trust Agency

KPA Kosovo Privatization agency

AP Action Plan

IWMS Integrated Waste Management System

KBRA Kosovo business registration agency

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## CHAPTER 1

### *1.0. INTRODUCTION - MUNICIPAL WASTE CONCERNS IN KOSOVO*

Prishtina Municipality is located in the central part of Kosovo covering an area of 572 km<sup>2</sup>. It is the administrative, political, economic and cultural centre of the Republic of Kosovo and the most populous municipality. The huge influx of people to Prishtina after the 1999 conflict from other parts of Kosovo placed tremendous pressure on the existing infrastructure in the municipality, from accommodation to public services and roads. The municipality has also faced serious difficulties with the provisions of water, waste management and electricity supply. The total population, which increased significantly since the end of the 1999 conflict, is estimated around 500,000-600, 000 inhabitants<sup>1</sup>.

Rapid urbanization has made solid waste management a serious problem today. The perception of the people has always been that it is a responsibility of the local government bodies to offer best services and keep the municipal area clean. Prishtina has been experiencing enormous difficulties with garbage collection over past years and there are two main reasons: first local authorities do not have sufficient capacity to develop a waste management strategy and secondly there is not awareness of inhabitants over the importance of their role in the keeping city clean. Low collection coverage, unavailable transport services, and lack of suitable treatment, recycling and disposal facilities are responsible for unsatisfactory waste management, leading to water, land and air pollution, and for putting people and the environment at risk. The Government of Kosova is in drafting of the Waste Strategy for Kosovo. This set out the vision for sustainable waste management in the Republic of Kosovo and in future all local strategies should comply with it.

This Capstone project will address the important problem of waste management sector for the Municipality of Prishtina and sets out in detail the short, medium and long-term challenges facing the authority in how it collects and manages the City's

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<sup>1</sup> OSCE estimations for 2009

municipal waste. It identifies key targets to meet these challenges which form the Action Plan.

Municipal waste is considered the waste collected and treated from the companies, which their primary duty is to execute the territorial management of the municipal waste. As municipal waste is considered waste from households, waste from other activities as retail trade activity, street garbage, waste produced by institutions and similar activities, and waste from the wholesale trade and construction. In the municipal waste are included waste from city sewage system and foods remains from kindergartens and cantinas.<sup>2</sup> Kosovo's and as well Prishtina main problems in the field of waste management, summarized already in the MESP's (Ministry of Environment and Spatial Planning) report on the State of Waste in Kosovo 2007 to a great extent still persist. According to the *Law on Local Self-Government in Kosovo (Law No. 03/L-040)*, municipalities are inter alia responsible for providing water and waste services. This responsibility is to be implemented through the Service Agreement signed by the municipality and the relevant regional water and waste company that provides services in the municipality. There are number of issues related to this sector that affects directly in above mention sector like:

Incomplete legislation-Kosovo's sector specific legislation is in the process of elaboration and harmonisation with EU directives. From 2009 onward the Waste Law (02/L30) and the Laws on Local Self-government and Public Utilities are obligatory when organising and executing waste management in Kosovo. Municipalities are obliged to draw up and implement their specific Local Waste Management Plans.

Low level of institutional and public awareness-Though comprehensive information about waste and its impact on the environment and the acceptance of respective waste management measures is the key to successful operations, awareness is rather low.

Insufficient experience and professionalism at the level of sanitation companies-Staff of sanitation companies has no knowledge regarding the tasks of integrated municipal waste management. Professional operational planning, technical management (maintenance & repair) are clearly deficient; standards on labour safety and health unknown.

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<sup>2</sup> Survey on Municipal Waste 2008-WWRO

No cost recovery-All Reports related to this issue underlines in particular the problem of insufficient fee collection by the Municipal Waste Companies. At the moment the revenues from fees do not cover even the operational costs<sup>3</sup>.

Low productivity: According to the previous reports there was one target set in 2006 to increase productivity from 200 tonnes of waste collected on average per employee to over 600 tonnes by 2010. Pastrimi's productivity in 2008 and 2009 reached just 225 tonnes.

Insufficient data on production and composition of waste-Statistics on waste are fragmentary. Available data refer to surveys being performed some years ago. It is a must to base Local Waste Management Plans on reliable information.

Lack of installations for waste treatment-Controlled separation, treatment and/or reuse, and disposal of all kind of substances, materials, and equipment, whether hazardous or not, is pending.

Improper management of landfill-Though in recent years regional ecological landfills have been established, the uncontrolled dumping of all kinds of waste continues. The Kosovo Landfill Management Company (KLMC) is unable to manage the landfill as it was expected, not at least due to pending payments from sanitation companies.

Low awareness regarding environmental hazards and health risks caused by littering and illegal dumping of waste. Low appreciation of waste management.

Insufficient knowledge about integrated municipal waste management and no strategic planning at the local level, i.e. missing local waste management plan.

No legal basis at the local level for municipal waste management.

No legal Scale of fees at the local level, no proper calculation of fees, causing insufficient income from fees. Operating costs and charges for depositing are not covered, let alone reinvestment.

No separate collection of reusable materials (loss of revenues, waste of expensive landfill volume).

Low productivity of the waste collection and disposal service.

Actually, the Public owned Enterprises (PoEs), which were previously administrated by the Kosovo Trust Agency, are transferred to the ownership of one or several municipalities. Recent studies indicate that most municipalities are inadequately

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<sup>3</sup> Pastrimi Statement

prepared for taking on this new competence and most municipal officials working in this area have low awareness of the relevant legal framework<sup>4</sup>. Moreover, local Public Owned Enterprises are heavily affected by low management capacity, low service delivery standards, and inadequate collection rates, as already mentioned.

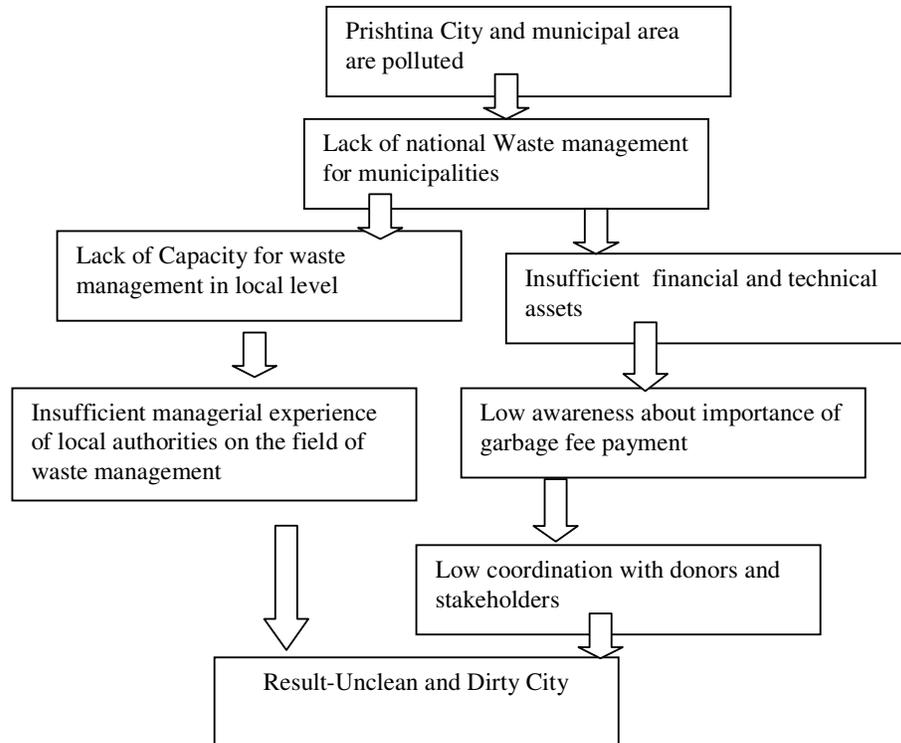
The anticipated measures are to support the development of local municipal capacity building and infrastructure by establishing an efficient integrated garbage collection Action Plan. In the medium term it can be expected that a shift of waste volumes takes place, i.e. greater quantities of waste are being collected separately and recovered, and savings of raw materials increase significantly. Recovery of energy and materials from waste also means savings of fossil fuels such as oil, gas and coal.

### **1.1. Problem analysis**

Garbage on the streets has been a feature of Prishtina Municipality for many years now. As presented on the “problem tree” diagram below there are two main interrelated reasons for this situation. First of all local authorities do not have expertise needed to develop a complete waste management strategy, nor do they have resources to keep the city clean. Secondly, the residents are not aware of the importance of their role in the process of keeping the city clean by properly disposing the garbage, and of their obligation to pay the garbage collection fee (the current payment rate is at some 40 -50 percent). Furthermore, the Prishtina municipality had until recently, no direct influence over the city’s cleaning company Pastrimi, a formerly public owned enterprise that was under the control of the Kosovo Trust Agency(KTA). Lately, the municipality has been granted control over the waste management enterprise but it lacks sufficient experience in the field of waste management as well as the funds for substantial changes in the garbage management system. Below are key obstacles and the following is an overview of identified problem areas for the Municipality of Prishtina in waste management and garbage collection. The Municipality of Prishtina has been experiencing problems with garbage collection in the past years. Everyone in municipality’s management shared the opinion that the city is certainly one of the dirtiest in the entire Balkan region. The municipality took over responsibility for the garbage collection company “Pastrimi” through a process that started in November 2008.

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<sup>4</sup> DFID Project Report



*Fig1.1 Problems resulting from the garbage collection sector for the Municipality of Prishtina*

This situation poses a great challenge for the municipality’s executive, which will have the control over 78 percent of the company’s shares. Up to now the municipal assembly approved the shareholders committee of the company. The recruitment of the Board of Directors has not yet been completed, as regional arrangements with the other municipalities that hold shares have to be made according to the Kosovo government’s administrative instruction issued in March 2009.<sup>5</sup>

## **1.2. Sustainability of the action plan**

The Capstone project is directed towards the achievement of sustainable results in terms of content and time. Main preconditions for a successful implementation and sustainability of the achieved results are: motivated and co-operative citizens, who are open for change, support from involved governmental institutions and agencies, interested and co-operative service providers, Assumptions are inter alias, that by improving quality and reliability of waste collection services the willingness to pay will increase significantly and that low income groups’ reduced ability to pay does not

<sup>5</sup> OSCE Project Proposal

jeopardize the intended integrated waste management system. Cost covering revenues are crucial for sustainability and indispensable when aiming at realizing the polluter-pays principle. It is expected that economics of collection and treatment of secondary raw materials will improve when the effects of the global economic crises diminishes and demand revives. Increasing revenues from waste collection allow in the long-term a successive extension of the separate collection system to other districts of the city.

This Capstone-Action Plan aims ensuring a sustainable Garbage Collection for the Municipality of Prishtina. The need to reduce waste, increase recycling and recover material resources is a major driver at all levels of government, and this is well supported by the Prishtina community. A sustainable community needs to have effective measures for the management of the waste it generates. Waste management services are not well established and not performing well. The collection system is not the best one and needs to be improved. Unfortunately the garbage collection system for the Municipality of Prishtina does not offer systematic data about garbage production and garbage collection for the Prishtina Municipality. However this region covers the about 64% of the population with their services<sup>6</sup>. This action plan discusses and sets out the objectives, targets and measures that Municipality is adopting to achieve success in line with best practices for Garbage collection and in order to have clean city. These objectives include minimising the quantity of municipal waste produced in Prishtina and maximising the proportion of this waste that is re-used, recycled or composted. It also includes the capacity building of “Pastrimi” company, enhancement of the efficiency and effectiveness of the waste collection services provided and increasing the level of public satisfaction with these services. Achieving these objectives requires a coordinated, multi-pronged strategy, which looks to the short, medium and long term, taking account of the diverse nature and needs of the population of Prishtina. Where possible, the plan quantifies data relating to current waste collection and recycling rates and how these will be affected by the proposals. Considering the current impetus for change within the garbage collection system for the Municipality and the number of actions required it is imperative that this document remains current and directional.

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<sup>6</sup> Gjendja e mbeturinave ne Kosove-AKMM

## **CHAPTER 2**

### **2.0. EFFICIENT MANAGEMENT OF WASTE**

Waste management is one of most important issues for Sustainable Environmental Management. So far, the Ministry of Environment and Spatial Planning has established so far basically legal structure for waste management. Also, based on its legal responsibilities the MESP has started preparation of the Strategic Plan for Waste Management. We are aware that waste management can not be carried out only by a single institution and that joint actions are needed by lawmaking institutions, executive institutions, regulatory office, local governments, waste collection companies and landfill management companies. It is obvious that local governments have a key role in this field, but also it is very obvious that an essential role have donors, civil society and business community. We have to admit that we are not satisfied with current waste management system. Difficulties and problems are evident in all system's components as in waste collection, selection, storage, and that these problems are evident in management process of all types of wastes as: household waste, industrial waste, hazardous waste etc.

The Capstone Project's main aim is to improve municipal environment service delivery. This will be accomplished by promoting greater community participation and private sector involvement in the provision of those services; stronger local government finance; and improved local government management capacity and better coordination between local and central government agencies, increased public awareness and participation in local governance, economic development in municipality of Prishtina, enhanced environmental awareness, and increased willingness and capacity of local governments (and residents) to pay for waste collection services in the municipalities.

This project will define performance targets that must be achieved:

- Evaluation of available and practical alternatives and techniques
- Initiating a practical waste recycling methodology
- Preparation of Municipal Waste Management Action Plan and capacity building in this sector for the Municipality of Prishtina

The project suggests that the Municipality integrates various stakeholders in waste management, since fostering cooperation between these stakeholders over a longer period of time will lead to lasting results. To achieve sustainable, effective and integrated waste management, action plans are suggested to go beyond purely technical considerations to formulate specific objectives and implementation of appropriate measures with regards to political, institutional, social, financial, economic and technical aspects.

### **2.1. Current situation and needs**

In the Municipality of Prishtina the 'Pastrimi' Co is responsible for garbage collection (as primary activity) and they provide as well secondary activities that currently are cleaning of streets and snow removal. Cleaning activities are based on secondary service contracts with municipality. Most service contracts are public tenders and collected revenues are substantial. "Pastrimi" is Regional Public Enterprise- it consists of companies which manage and deal with garbage collection and municipal waste. Before 1999 they were operated by the municipality, but this is now carried out and they are supposed to operate in regional level through Boards of Directors that will be contained form representatives of the Municipalities in the region. They are responsible for the collection and transport of municipal waste (urban) to the landfills. They also manage old municipal landfills. There are also some cases that the private companies are engaged in collecting garbage.

According to the Law on Local Governance the Local authorities – Municipalities are responsible for:

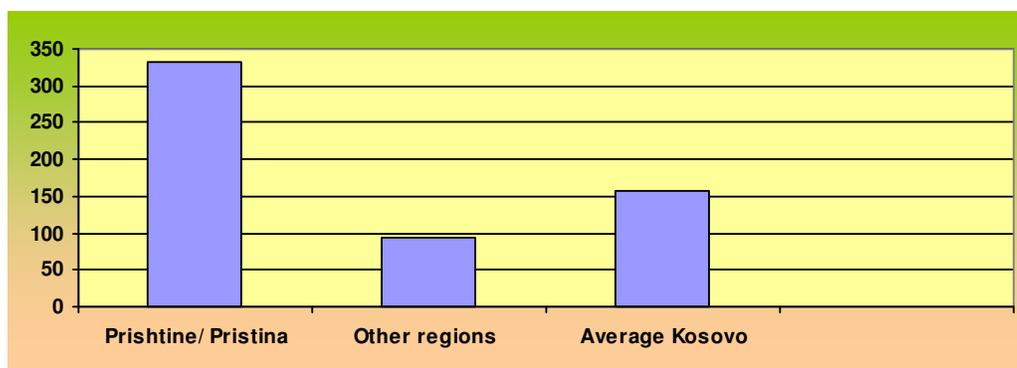
- Adopting plans for garbage collection and determining the location for garbage disposal-landfills
- Adopting database for municipal waste production and treatment
- Adopting tariffs for collection services for garbage in coordination with regulatory office
- Controlling the public enterprises through representatives in the Board

Other important players in the garbage collection within municipality are Regulatory Office that is responsible for licensing and tariffs and the Landfill Company. The situation in the Municipality of Prishtina is considered bit more favourable while

almost 60% of inhabitants are covered with services on garbage collection. Below there is presented data about yearly amount of garbage disposal per capita to the landfills for the region of Prishtina and other regions as well. This amount for the region of Prishtina is about 332 kg, whilst in other parts it is around 95 kg.

Region	collected amount of garbage (1000 ton)	Population <sup>7</sup>	Kg/capita	Daily average (kg/capita)
Prishtina region	198	500 000	396	1.1
Other regions	153	1 600 000	92	0.3
Total	351	2 100 000	167	0.5

*Tab2.1.1. Daily average of waste production in Prishtina and other regions (kg/capita)<sup>8</sup>*



*Graph.2.1.1. Garbage production in Prishtina and other regions (yearly /capita)<sup>9</sup>*

The latest State of Environment Reports<sup>10</sup> underlines in particular the problem of insufficient fee collection by the Pastrimi Company. At the moment the revenues from fees do not cover even the operational costs. For “Pastrimi Company, in years 2007 and 2008 following parameters have been determined: Billing ratio – 71%, fee collection ratio – 59%, operating ratio – 97%<sup>11</sup>. At least the last value is questionable, since in 2008 Pastrimi was unable to meet the costs for depositing the waste at the

<sup>8</sup> Micipal Waste Report 2008-WWRO

<sup>9</sup> Draft Waste Strategy for Kosovo, 2010 MESP/Micipal Waste Report 2008-WWRO

<sup>10</sup> MESP, State of Environment Report, Prishtina 2008

<sup>11</sup> Source: EuropeAid/120774/D/SV/KOS: Further Institutional Support to the Solid Waste Utilities in Kosovo, Final Report, 11/2007

Regional Landfill Mirash. By the end of the year Pastrimi owed KLMC (Kosovo Landfill Management Company) about 800.000 EUR. Though in 2006 Pastrimi outperformed the sector with a Revenue Collection Ratio (RCR) of 70% (growth of 16.6%), throughout the surveillance by the EU project the average debtor's month was still on the rise. Already in 2006 accounts receivable amounted to about 9 m EUR<sup>12</sup>. Given that in 2007 and 2008 even in Prishtina's noble district of Velania Pastrimi's revenue collection came up to only 55%, a real and sustainable improvement cannot be seen. Thanks to donations of equipment, capital costs were small. Financial gaps were closed by the government.

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<sup>12</sup> *ibid.*

## CHAPTER 3

### 3.0. LEGISLATION AND STAKEHOLDER PARTICIPATION

#### 3.1. Legislation

This project sets out guidelines and describes measures aimed at reducing the pressure on the environment caused by waste production and management for the Prishtina Municipality. The main thrust of the strategy is on amending the legislation to improve implementation, and on preventing waste and promoting effective recycling. Unfortunately there is incomplete legislation for the waste sector while we still don't have established national waste strategy and we are far away from fulfilling all requirements deriving from Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives; however a list of laws and bylaws that regulates both waste and environmental issues in Republic of Kosovo is described below:

*Tab 3.1.1 List of laws and bylaws that regulates both waste and environmental issues in Republic of Kosovo*

Law for Environmental Protection	
Law for Air Protection	
Law for Water	
Nature Protection Law	
Law for Waste Management and Disposal	
Law for chemicals	
Law for Environmental Impact Assessment	
Law on Integrated Prevention Pollution Control	
Law for protection from noise	
Law about protection from radioactivity	
Law on IPPC	
Law on Strategic Environmental Impact Assessment	
Administrative Directive on regulation and standards for emissions from stationary sources	
Administrative Directive on regulation and standards for emissions from mobile sources	
Following adoption of the Regulation 2004/49 on the Activities of Water, Waste Water and Waste Services Providers, the Water and Waste Water Regulatory Office issued secondary legislation in 2005 for the implementation of this law.	

Other administrative directives from horizontal and vertical legislations are :

- Administrative Directive no.2/2004 on the establishment of the Environmental Protection Inspectorate;

Administrative Directive no.9/2004 for Environmental Impact Assessment;

- Draft Law on waste management;
- Sub-normative Act for Construction and Demolition Waste;
- Sub-normative Act for Management of Hazardous Waste;
- Sub-normative draft for Management of Landfills;
- Act for management of Used Oils;
- Act for management of 'end-of-life' vehicles and their associated wastes;

In the future, the following are planned to be drafted:

- Act for management of Batteries and Accumulators;
- Act for management of Used Tyres;
- Act for management of Packaging Waste and Materials;
- Act for management of Waste from Electrical and Electronic Equipment;
- Act for management of Waste containing PCB and PCT;
- Act for management of Waste containing Asbestos;
- Other acts as for: licensing, export- import, transit, authorized laboratories, incineration, and hospital waste.

### **3.2. Stakeholder participation-Stakeholder Analysis**

To achieve sustainability in waste management, it is important to look at the roles, interests and power structures prevalent in waste management. Experience in several countries has shown that cooperation and coordination between the different stakeholder groups like city council, national government, service users, NGOS, CBOS, the private sector (formal and informal), and donor agencies, will ultimately lead to increase sustainability of the waste management system, such as changes in behavior and sharing of financial responsibilities. On the other hand, ignoring certain activities or groups will result in decreased sustainability of the system.

#### **3.2.1. Ministry of Environment and Spatial Planning**

MESP is one of most important Ministries which make up the Government of Kosovo. It is responsible for environmental policy, the application of laws and supervision of activities for Environmental Protection and Spatial Planning. This includes water, air, soil and biodiversity.

Within the Department of Environment is the Waste Management Division. Responsibilities of the Waste Management Division include:

- a) Compiling and implementing legal norms for waste management;
- b) Waste management;
- c) Promoting and advancing the concepts for sustainable development in waste management and monitoring;
- d) Instigating primary activities such as research as well as the building and operation of landfills;
- e) Licensing of enterprises that are involved with: the sorting and disposal of waste; energy

### **3.2.2. Local Governments – Responsibilities of Municipalities<sup>13</sup>**

According to the waste Law, the municipalities as local governments, in the sector of waste management have the following tasks and responsibilities:

- Compile local plans for waste management
- Compile six month report on waste management and submit it to the Ministry,
- Regulate, implement and organize municipality waste management in their territory;
- Take part in issuing decisions for building waste management facilities;
- Accomplish any other tasks envisaged under this Law, and other bylaws
- Determine tariffs for services of municipality waste collection and disposal
- Introduce and enforce by-laws relating to waste management.
- Provide an efficient and affordable waste collection system
- Make available suitable storage bins or facilities for different types of waste
- Initiate and support the development of recycling centers and transfer stations where needed and set aside suitable areas for waste facilities such as landfill sites analyses from environmental pollution.

However as mentioned above there is hug problem in coordination and implementations of those responsibilities in all levels.

#### **3.2.2.1. Public owned Enterprises - PoE**

Public owned Enterprises are companies which manage municipal waste. Before 1999 they were operated by the municipality, but this is now carried out by KPA. They are responsible for the collection and transport of municipal waste (urban) to the landfills. They also manage old municipal landfills. The PoEs are managed by an executive director and they (in general) report to a Board.

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<sup>13</sup> Waste Law / nr.02L-30

## CHAPTER 4

### 4.0. STRATEGIC ORIENTATION

Below are described most important activities that should be taken during the project implementation:

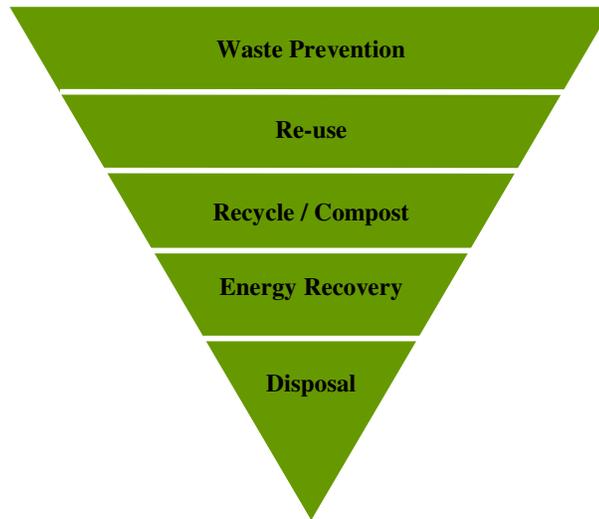
- Evaluation of available and practical alternatives and techniques
- Initiating a practical waste recycling methodology
- Preparation of Municipal Waste Management Action Plan and capacity building in this sector for the Municipality of Prishtina.

Based on these strategic orientations we are providing below list of annexes and objectives that remain part of Cap stone project and set the objectives and implementation measures in this action plan.

### 4.1. Objectives of the action plan

The main focus for this action plan will be for the short and medium term commitments but will also identify longer-term commitments where possible. This project aims to motivate people living in Prishtina to properly dispose of garbage and pay the garbage collection fee so that the city could be kept clean. Both these desired actions by the city inhabitants are crucial to the successful clean up action and later implementation of the waste management strategy. Through this project the municipality will be assisted with its obligation to inform the public and provide common services corresponding with public needs. All the elements of a modern and ecologically sound waste management system will be included, namely: *Prevention, Re-use, Collection and Separate Collection, Recovery and Recycling, Treatment and Disposal.*

From the municipality's perspective, the elaboration and approval of Prishtina Garbage Collection Action Plan will represent practical tools for developing a sustainable waste management system, at the local level. The preparation of this document will imply the co-operation between local authority, waste generators (natural and legal persons), sanitation operators and other key stakeholders in order to set up and develop an integrated waste management system and replace the current economically inefficient and environmentally dangerous one.



*Graph 4.1.1 - Waste Hierarchy*

#### **4.2. Profile of Prishtina municipality- trends and forecasts**

Prishtina Municipality is located at the north-east edge of the Kosovo and is the economic, cultural, political, and administrative centre of Kosovo. Comprising a territory of 854 km<sup>2</sup>, Prishtina is the most populous municipality in Kosovo, which doubled after the conflict. In 1991 the city was home to about 200,000 inhabitants, but presently, it is estimated that approximately 500,000-600,000 inhabitants.

*Tab 4.2.1. Demographic Composition for the Municipality<sup>14</sup>*

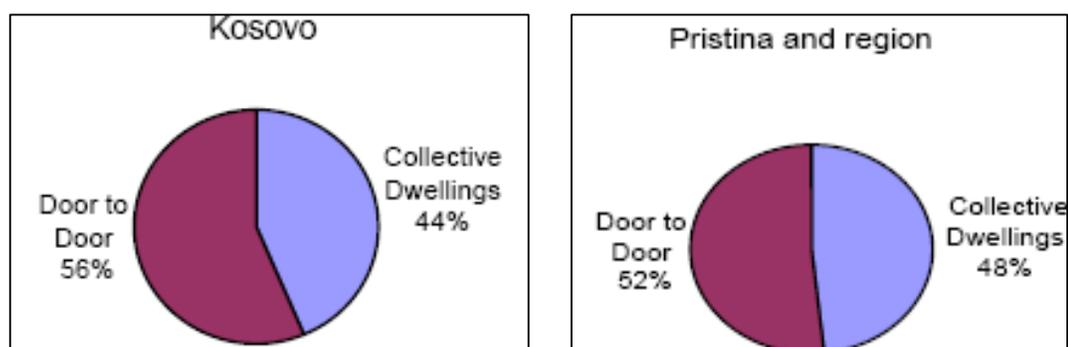
Population	Total	
	Number	
Unreliable 1991 census	205,093	100
Approximate data 1998	225,388	100
Estimates 2010	500,000-600, 000	100

<sup>14</sup> Source: 1991 figures from Federal Republic of Yugoslavia (FRY) Institute for Statistics – others include Montenegrins, Slav Muslims, Turks, etc. 1999 figures from UNHCR, "Kosovo Village List", 9 March 1999 (1998 population estimate excluding forced displacement). 2010 figures from KFOR –data

### 4.3. Type of Waste Generated in the Municipality of Prishtina

The current situation is caused by a number of factors. These range from a lack of a functioning waste collection service, through to the simple but devastating fact that for many local residents the canals and river systems have been, and will always be, the most simple and effective means by which to dispose of their waste. Another favored method of disposing of waste, which is particularly concerning, is through burning. Throughout the project area we can observe the remnants of, or still smoldering, bonfires. All forms of waste are disposed of this way, glass, metal cans, household waste and plastic bottles.

*Graph 4.3.1 Percentage of waste collected from collective dwellings and “Door to Door” for all Kosovo and for Pristina and region.*



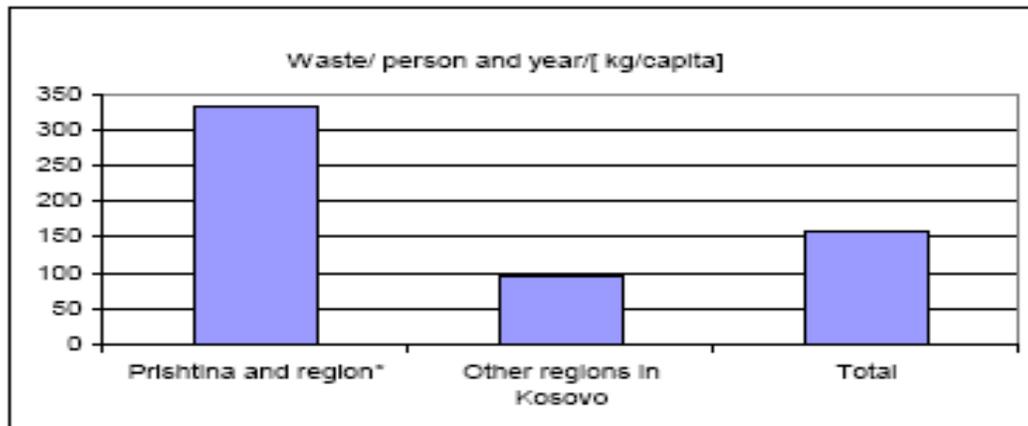
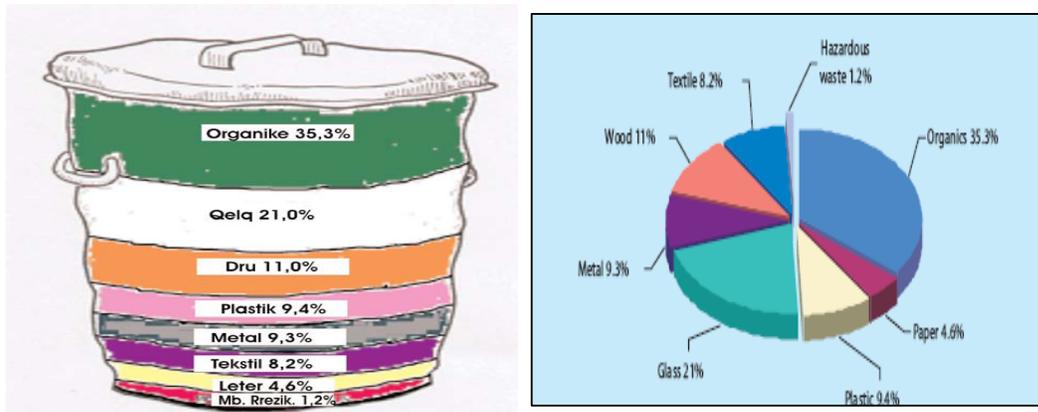
*Tab4.3.1 Amounts of municipal waste collected in Prishtina and Kosovo 2007/08 per capita (kg/capita).*

Region	Collected amounts (1000t)	Population	Kg/cap	Daily average (kg/capita)	Population Kg/capita	Waste/ Person Kg/capita
Prishtinë & region	198	500000-600000	396	1.1	332	0.9-1.0
Rest of Kosovo	153	1 600 000	92	0.3	95	0.3-0.4
Total	351	2 100 000	167	0.5	157	0.4-0.45

Obviously plastics will give off toxic fumes when burnt adding further to the dangers to health. Municipal waste in the Municipality of Prishtina is being managed by the Municipal authorities through regional public company “Pastrimi”. The municipal

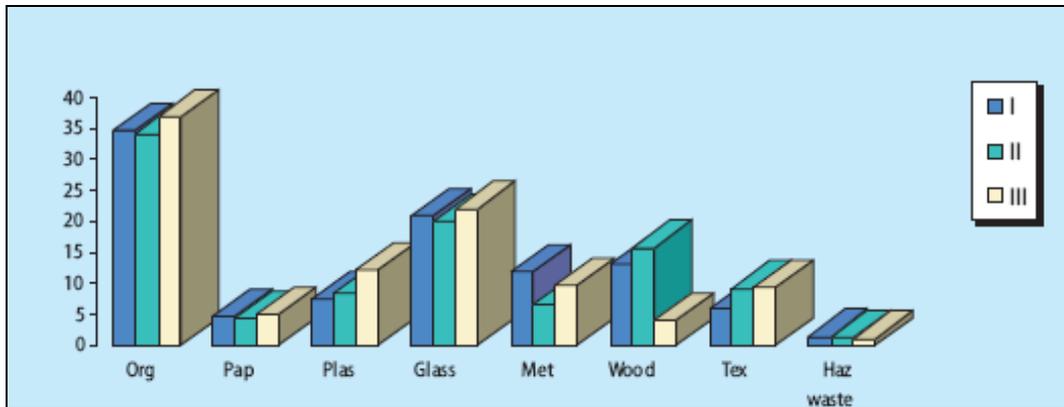
waste collected is transported from various locations in the municipality and is being disposed at the Mirash Landfill Site. The municipal waste includes domestic, commercial, construction and non-hazardous industrial waste as well as carcasses and animal waste. The total amount of municipal waste in Kosovo for 2007 is a little more than 300 000 tonnes.

Graph 4.3.2. Amounts of municipal waste collected in Kosovo 2007/08, person/year.



Graph 4.3.3 Analyse of household waste fractions and average of waste fractions (%) in Prishtina.<sup>15</sup>

<sup>15</sup>Notes: organics 35.5%, glass 21%, wood 11%, plastic 9.4%, metal 9.3%, textile 8.2%, paper 4.6%, hazardous waste 1.2%



*Graph 4.3.4 .Analysis of waste fractions in Prishtina*

In Kosovo the door to door collection is just above 50 %. However if you consider Prishtinë and surroundings and the rest of Kosovo the door to door collection is more dominant in the rest of Kosovo.

In Kosovo the municipal waste was 157 kg per person in 2007 but it differs very much regionally. In Prishtina and surroundings it was 0.9 kg per person/day. For the rest of Kosovo it was much less.<sup>16</sup> The results are shown in charts and figures above.

<sup>16</sup> EPTISA International,  
Waste survey for Municipality of Prishtina.

## CHAPTER 5

### 5.0. FUTURE MUNICIPAL ACTION PLAN

This project sets out guidelines for municipality action and describes the ways in which waste management can be improved.

The aim of the action plan is to reduce the negative impact on the environment that is caused by waste throughout its life-span, from production to disposal, via recycling, reducing and reusing of waste. This approach means that every item of waste is seen not only as a source of pollution to be reduced, but also as a potential resource to be exploited. These objectives are integrated into the approach based on environmental impact and on the life-cycle of resources. According to this below are settled future Municipal Targets for waste minimization and recycling.

*Tab 5.1. Targets for waste minimization and recycling (Note:\* assumes an annual growth of 1% waste in Prishtina)*

Year	*Total Waste Collected (1000 tones)	Recycling & Composting(T)	Recycling %
2009/2010	182	↑	↑
2010/2011	182 x 1%	↑	↑
2011/2012	(182X1%) x 1%	↑	↑

This Capstone project proposes the following new programs and for Municipality of Prishtina:

-Waste reduction: Undertake an extensive public education and outreach program to educate residents and businesses on how to reduce waste at the source and to expand opportunities for reuse.

-Recyclable materials: Maintain and expand the existing network of transfer stations and recycling centers in Municipality of Prishtina:

This Recycling-Based Waste Management part of this Capstone Project has to be prepared to lay the foundation for building midterm sustainability for waste reduction and recycling programs in Prishtina Municipality. With this Action Plan as a starting point, hopefully we can set Prishtina Municipality as a model of how to transition from waste management practices that emphasize disposal to one that emphasizes reducing both the volume and toxicity of waste.

-Undertake wide scale public education efforts: Public education is the underpinnings of any successful waste management program. These educational efforts should be diverse, widespread, and ongoing.

-Work in partnership with the private sector: In all likelihood, the private sector will play a significant role in a new waste management system. Local governments should work closely with the private sector to share their vision on waste management for the county and how the private sector can play a role in achieving that vision.

-Consider job creation impacts of recycling: On a per-ton basis, sorting and processing recyclables alone sustain ten times more jobs than land filling or incineration. Towns should consider the job creation impacts of recycling and waste reduction efforts when implementing a new recycling-based waste management system

**5.1. Institutional capacity and human resources development**

There is hug need for the capacity building for waste management in municipality and below are key objectives to achieve those:

*Ta 5.1.1 Goals and objectives for human resources and institutional capacity building*

<b>Goal</b>
Provide Effective Waste Management Service
<b>Objectives</b>
Effective Structure of Human Resources

**Objective 1: Effective Structure of Human Resources-**The Municipality is experiencing shortages of labor for waste collection, Environmental cleaners; as well as for the proper management of the waste disposal facilities. Existing vacant posts should be filled and posts will have to be created to improve the current service delivery as well as for the additional services that will have to be rendered with new developments in the future.

**5.2. Financial resources**

*Tab 5.2.1 Goals and objectives for Financial Resources*

<b>Goal</b>
Provide Cost Effective Waste Management Service
<b>Objectives</b>
Undertake a Detail Financial Investigation
Improve Payment of Service Tariffs
Standardize Tariff Structure

**Objective 1: Undertake a Detail Financial Investigation**

The level of financial information required in terms of the Integrated Waste Management Action Plan is not sufficient to make decisions for example whether the Municipality should render the waste management service internally or through an external service mechanism. It is therefore recommended that a detail financial investigation be done by the Municipality which will address the following: Run of vehicles, salaries, maintenances etc.

**Objective 2: Improve Payment of Service Tariffs**

Formal households as well as businesses currently serviced are billed on a monthly basis. Penalties for non-payment of accounts should therefore easily be enforced by withholding services. This however is an administrative problem that generally takes a long time.

**Objective 3: Standardize Tariff Structure.**

Upgrading service delivery throughout the municipal area will entail standardizing the service that is delivered to all the households in the area. It is important that the tariffs identified for service delivery is comparable throughout the municipal area. Specific tariffs for a specific service, municipal or communal, should therefore be levied and not vary depending on the geographical area. The standardization of the tariff structure will provide uniformity that may encourage payment of tariffs. Tariffs for additional services, including garden and commercial waste removal, should also be according to service delivery.

**5.3. Management of illegal waste disposal activities**

The Prishtina Municipality as with several other Municipalities in the country has problems with illegal dumping throughout the municipal area. This can either be attributed to a lack of an effective refuse removal service or residents being unaware of their options regarding private waste disposal. A certain portion of these activities will be eliminated through proper community awareness programs as discussed above.

*Tab 5.3.1.. Goals and objectives for management of illegal activities*

<b>Goal</b>
Minimize/Prevent Illegal Activities
<b>Objectives</b>
Develop Penalty System for Illegal Activities
Improve Removal of Illegally Dumped Waste

**Objective 1: Develop penalty system for illegal activities improve removal of illegally dumped waste**

It is imperative that the Municipality develops and implements a system to minimize or stop illegal dumping within the Municipal area. The major problem facing the Municipality is that they do not have the specific manpower to police the illegal disposal of waste. Within the serviced areas it is easier to regulate illegal dumping and introduce a penalty system for offenders. There are several actions the Municipality can take to minimize illegal dumping and introduce such a penalty system. The first is that the Municipal By-laws must be amended to allow the Municipality to issue spot fines for residents caught dumping waste in illegal areas. This will to a certain degree reduce and prevent illegal dumping within the town boundaries. The disadvantage is that it will not reduce dumping outside the town boundary and it will increase the pressure on already limited human resources. A second option will be to introduce community awareness whereby a community watch movement is introduced. This will limit the pressure on the human resources of the municipality as neighborhood watch systems are put in place. Incentives such as discount on regular fees for “clean” neighborhoods can be introduced to encourage these activities. A third option is the provision of garden/domestic refuse skips at strategic locations throughout the towns to minimize traveling distances for the general public. The Municipality can then remove the refuse on a monthly basis.

It is recommended that a combination of the above be implemented to find an effective solution to the illegal dumping of waste. The amendment of the by-laws will provide the municipality to officially produce policies and strategies that will benefit the community. Through community awareness and a neighborhood watch system the residents will have all the information regarding the disposal of waste in their area. They will also be aware of the incentive scheme to prevent illegal dumping from taking place within their surrounds. To prevent illegal dumping outside of town, garden refuse skips should be placed at strategic locations to provide convenient access to a dumping facility.

**5.4. Waste minimization**

*Tab 5.4.1. Goals and objectives for waste minimization*

<b>Goal</b>
Decrease Waste Deposited on Landfills
<b>Objectives</b>
Encourage Recycling Activities
Encourage Waste Minimisation

**Objective 1: Encourage Recycling Activities**

This project sets out guidelines and describes measures aimed at reducing the pressure on the environment caused by waste production and management. The main thrust of the action plan is on amending the legislation to improve implementation, and on preventing waste and promoting effective recycling. Through proper recycling it might be possible to remove as much as 30% of all material earmarked for landfill disposal. The Municipality should start with the establishment of a recycling centre at the Mirash disposal site and encourage recycling by providing measures to increase the convenience of recycling for the average person.

**Objective 2: Encourage Waste Minimization.**

Waste minimization and recycling at source is more effective than reclamation at landfills since it reduces the removal and transport costs. It is therefore recommended that waste sorting and minimization be encouraged amongst the businesses in the Municipal area. It is recommended that a system be implemented whereby businesses within the community are billed for waste removal based on the number of receptacles or mass collected from their premises. They therefore effectively receive a discount for in house recycling activities, as it will limit the number of receptacles collected.

## CHAPTER 6

### 6.0. DEATILED ACTION PLAN FOR GARBAGE COLLECTION

#### Needs and problems

1. Low ecological awareness and need for greater and better tolerance of the citizens for the waste collection in the Municipality;
2. Not practising the ecological waste management systems;
3. Disinterest of the business sector in solving the problematic situations with the solid waste and not having knowledge for the waste as a row material;
4. Not conducting the law and incomplete legislation in managing the solid waste;
5. Not having cooperation (horizontal and vertical) between the state government and the local self government, the public institutions, business sector and the citizens

#### Aims

1. To raise the ecological awareness of the citizens about the waste;
2. To introduce ecological waste management;
3. To initiate decrease and collection waste;
4. To improve the legislations and enforce their implementation;
5. To improve the cooperation among state and local authorities, business sector and citizens at all levels

### 6.1. Activities for solving of waste and garbage collection problems

*Aim 1: To raise the ecological awareness of the citizens and to reduce their tolerance towards the solid waste*

Activities	Expected results	Indicators of success	Sources of verification
<b>1.1. Preschool age children education</b>	90% of the children are aware of how citizens should take care of the waste	-90% of children at the kindergartens are aware. -survey indicators	Kindergartens: -cooperation with NGOs
<b>1.2. Basic and secondary students</b>	90% of the children at the basic and secondary schools are aware of the	-90% of children at the secondary education are aware.	-Basic schools: - Secondary

<b>education</b>	problems and prevention regarding waste	-survey indicators	schools - NGOs
<b>1.3. Public education</b>			
1.3.1. Public debates, tribunes, round-tables, etc	Active participation of the citizens at educational events	-Number of events - No of participating citizens at the events -citizens attitude towards solid waste	-Civic Centre of Informational - NGOs -UC (Urban Communities) -Municipality
1.3.2. Printing and material distribution	-citizens are constantly reminded of the problems and solutions regarding waste through educational materials,	-Number of citizens interested in educational materials - citizens' attitude	-Civic Inform. Centre - NGOs - UC
1.3.3. Radio and TV broadcasts on local level	Local radio and TV stations live broadcasts focused on the solid waste issues	-Number of radio and TV broadcasts - Number of contacts from citizens through broadcasts	-Radio: - TV:
1.4. Initiative and education on sustainable development	Citizens are introduced with the basics of the sustainable development	-Number of educational projects on sust. dev- -survey res.	-NGO-s

*Aim 2: To introduce ecological solid waste management*

Activities	Expected results	Indicators of success	Sources of verification
2.1. Training of professionals for waste management	‘Pastrimi’ and Municipality have sufficient number of professionals trained in waste management	Number of trained professionals from ‘Pastrimi’ and Municipality -(Nr of certificates)	‘Pastrimi’ Municipality

2.2. Research on the actual situation with the waste management in Prishtina Municipality and publication of the results	Local authorities, “Pastrimi”, business sector and citizens are highly familiar with the factual situation of the solid waste	-prepared analysis on the situation with the solid waste - adoption of the analysis by the Municipal Assembly - No of distributed copies of the analysis to interested parties	- “Pastrimi” - Municipal Assembly - NGOs -Community
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*Aim 3: To introduce ecological solid waste management and “Pastrimi” Capacity Building Development*

Activities	Expected results	Indicators of success	Sources of verification
2.4.Improved remuneration for waste management	Increased budget of the “Pastrimi”	80/85 % remuneration for waste management	’Pastrimi” Municipality
2.5. Collection of the waste on the whole territory of municipality	waste is constantly collected from the urban communities and surrounding	90 % collection of the waste	’Pastrimi”
2.7. Widening of the initiative for selective waste collection in other urban community	Citizens from urban communities are selectively collecting waste	Tons of collected recyclable waste from urban communities	’Pastrimi” Municipality
2.8. Education on waste selection	Citizens are guided in selection of waste	Waste is selectively collected	’Pastrimi” Municipality NGO
2.9. Campaign on elimination of illegal dumps	Increased interest of the citizens for elimination of illegal dumps	No of citizens active in elimination of illegal dumps	’Pastrimi” Municipality NGO

2.10. Re-cultivation of the old dump – “locality	Old Dump re-cultivation and environmental improvements	-No of eliminated illegal dumps - No of illegal dumps 3 months after	’Pastrimi’ Municipality NGO
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*Aim 2: To introduce ecological solid waste management “Pastrimi” Co”-Capacity Building*

Activities	Expected results	Indicators of success	Sources of verification
2.3.1. Purchase of a 4(four) Rear Loader Compactors with hydraulic loading equipment for the containers of nominal volume of 1.1 m <sup>3</sup> and capacity of 9 m <sup>3</sup> .	’Pastrimi’ has sufficient number of transportation vehicles of 8 m <sup>3</sup>	4(four) Rear Loader with Capacity of the trucks from 9 m <sup>3</sup> . are in place	’Pastrimi’ Donations Municipality
2.3.2. Purchase of 8(eight) Rear Loader Compactors with hydraulic loading equipment for the containers of nominal volume of 1.1 m <sup>3</sup> and capacity of 16 m <sup>3</sup> .	’Pastrimi’ has sufficient number of vehicle for household and industrial waste collection	8(eight) purchased Rear Loader Compactors with Capacity of 16 m <sup>3</sup> . are in place	’Pastrimi’ Donations Municipality
2.3.3. Purchase of 2 tracks 20m <sup>3</sup>	’Pastrimi’ has sufficient number of container lifters for timely collection of waste from containers at urban communities	2 tracks purchased with capacity of 20 m <sup>3</sup> are in place	’Pastrimi’ Donations Municipality
2.3.4. Purchase of 300 containers of 1.1 m <sup>3</sup> for year 2010	There is sufficient number of waste containers of 1.1 m <sup>3</sup> at	There is sufficient number of waste containers of 1.1 m <sup>3</sup>	’Pastrimi’ Donations Municipality

	the urban communities in Prishtina	at the urban area	
2.3.5. Purchase of 500 containers 1.1 m <sup>3</sup> for years 2011 / 2012	There is sufficient number of waste containers of 1.1 m <sup>3</sup> at the urban areas	Purchased and placed 500 new containers of 1.1m <sup>3</sup>	‘Pastrimi’ Donations Municipality
2.3.6. Purchase of 20 000 completes of bins for households	10000 households have unified waste bins	Purchased and placed 20 000 waste bins	‘Pastrimi’ Donations Municipality
2.3.8. Purchase of Two (2) Vacuum Cleaner Vehicles used for cleaning of the roads and pavement. and 3 wash cleaning vehicles for 2011 middle gross size	Prishtina’s streets are constantly cleaned with vehicles	-cleaning vehicles purchased - Cleaner streets -better environment	‘Pastrimi’ Donations Municipality

*Aim4:To initiate accelerated preparation of legislation for solid waste and its application*

Activities	Expected results	Indicators of success	Sources of verification
4.1.Campaign for preparation of legislation on solid waste and application of the legislation	Continuous advocacy conducted to the Local Government and responsible ministries from the civil society organization for legal regulation of the solid waste management	-Number of letters to the Local Gov and responsible ministries -No of press releases in the media - No of broadcasts in the media -No of new adopted legislation	-Government - MESP -Municipality - ‘Pastrimi’ - Ministry on Health - Daily newspapers

*Aim 5: To improve the cooperation among central and local authorities, business sector and citizens at all levels*

Activities	Expected results	Indicators of success	Sources of verification
5.1. Initiative for establishment of fund for environment protection on local, regional and national level	Initiated debate on establishment of fund in the MESP and Municipal Assembly	Meetings / debates reports -	MESP - Municipal Assembly
5.2. Undertaking efficient activities for building regional recycle centre	Inter-municipal debate for recycling centre and location	Decision for building	Municipal Assembly
5.3. Building of regional recycling centre	Regional recycling centre	Technical receipt done and functional recycling centre	ARBK-KBRA Municipality
5.3. Concessionary or PPP waste management project established	Tender opened	Decision on concessionary or PPP	Municipal Assembly

## **6.2. Activities – implementers and finances / financial sources**

*Aim 1: To raise the ecological awareness of the citizens and to reduce their tolerance towards the solid waste*

Activities	Implementer	Budget (Euro)	Budget sources
1.1. Preschool age children education	Kindergarten nurses	40X 500	Municipality Donators
1.2. Basic and secondary students education	Professional staff at basic and secondary schools	60X500	Ministry on Education Municipality, NGO
1.3. Public education through educational events and media broadcasts			

1.3.1. Public debates, tribunes, round-tables, etc	NGOs, Community	5X1000	Donation Municipality
1.3.2. Printing and distribution of educational materials	NGOs, C Community	3X10000	Donation
1.3.3. Radio and TV broadcasts	Radios: TVs	5 X 3000	Own contribution Municipality

*Aim 2: To introduce ecological solid waste management*

Activities	Implementer	Budget (Euro)	Budget sources
2.1. Training of 30 waste management professionals	“Pastrimi”	30 000	PASTRIMI Municipality
2.2. Research on the actual situation with the solid waste in Prishtina Municipality and publication of the results	“Pastrimi” Municipality NGO	5 000	PASTRIMI Municipality Donors
<i>2.3. “Pastrimi” capacity building</i>			
2.3.1. Purchase of a 4(four) Rear Loader Compactors with hydraulic loading equipment for the containers of nominal volume of 1.1 m3. Capacity of the trucks is 9 m 3.	“Pastrimi”	4 X 45 000	-PASTRIMI - Donations
2.3.2. Purchase of 8(eight) Rear Loader Compactors with hydraulic loading equipment for the containers of nominal volume of 1.1 m3. Capacity of the trucks is 16 m 3.	“Pastrimi”	8 x70 000	Donation Pastrimi, Municipality
2.3.3. Purchase of 2 tracks with capacity of 20 m3	“Pastrimi”	2x100 000	Donation Pastrimi, Municipality

2.3.4. Purchase of 300 containers of 1.1 m3- 2010	“Pastrimi”	300x320	Donation Pastrimi, Municipality
2.3.5. Purchase of 500 containers of 1.1 m3- 2011 and 2012	“Pastrimi”	500x320	Donation Pastrimi, Municipality
2.3.6. Purchase of 50 containers of 7 m3	“Pastrimi”	50x420	Donation Pastrimi, Municipality
2.3.7. Purchase of 20 000 completes of bins for households	“Pastrimi”	20 000x1	Pastrimi
2.3.8. Purchase of Two (2) Vacuum Cleaner Vehicles used for cleaning of the roads and pavement. and 3 wash cleaning vehicles for 201	“Pastrimi”	2x70 000 3x80 000	Pastrimi Co -- Credits - Donations

*Aim 2: To introduce ecological solid waste management*

Activities	Implementer	Budget (Euro)	Budget sources
2.4. Improved remuneration for waste management	“Pastrimi”	50 00	“Pastrimi” Municipality
2.5. Collection of the waste on the whole Municipal territory	“Pastrimi”	10 000	“Pastrimi”
2.6. Waste selection and separation in one pilot project	“Pastrimi”	10 000	“Pastrimi”
2.7. Widening of the initiative for selective waste collection in other urban communities	“Pastrimi”	10 000	“Pastrimi”
2.8. Education on waste selection	“Pastrimi”, NGO	5. 000	Donations “Pastrimi”

2.9. Campaign on elimination of illegal dumps	“Pastrimi”, NGO Municipality	5. 000	“Pastrimi” - Municipality Donations
2.10. Elimination of illegal dumps	Municipality “Pastrimi”	10.000	“Pastrimi” - Municipality

*Aim 3: To initiate decrease and collection of industrial waste*

Activity	Implementer	Budget (Euro)	Budget sources
3.1. Campaign for trade with items with ecologic label	NGO	5. 000	Donators Municipality

*Aim 4: To initiate accelerated preparation of legislation for solid waste and its application*

Activity	Implementer	Budget (Euro)	Budget sources
4.1. Campaign for preparation of legislation on waste and application of the legislation	NGO	2.000	Donators Municipality

*Aim5. Improvement of the cooperation among central and local authorities, business sector and citizens at all levels*

Activities	Implementer	Budget (Euro)	Budget sources
5.2. Provision of access to information on the environment through the Civic Centre	Municipality	5000	Municipality MESP
5.3. Initiative for establishment of fund for environment protection on local, regional and national level	Municipality)	10000	Municipality MESP
5.4. Undertaking more	Municipality	5000	Municipality

efficient activities for building recycling centre			MESP Donors
5.6. Concessionary solid waste management establishment	MESP, Municipality	5000	Municipality MESP Donors

According to all this sub activities and necessary steps to be taken from Municipality and other stakeholders there is calculated an financial cost about 1 684 00 Euro that will ensure integrated waste management for the municipality of Prishtina. This amount includes all relevant budgetary sources (municipality, central government, donors, pastrami and other possible investors).

### 7.3. Timeframe for the activities

<i>Activities</i>	<i>Timeframe</i>			
<i>Aim 1: To raise the ecological awareness of the citizens and to the Community towards the solid waste problems</i>				
	2010	2011	2012	2013
1.1. Preschool age children education	X	X	X	X
1.2. Basic and secondary students education	X	X	X	X
1.3. Public education through educational events and media broadcasts				
1.3.1. Public debates, tribunes, round-tables, etc	X	X	X	X
1.3.2. Printing and distribution of educational materials	X	X	X	X
1.3.3. Radio and TV broadcasts on local level	X	X	X	X
1.4. Initiative and education on sustainable development	X	X	X	X
<i>Aim 2: To introduce ecological solid waste management</i>				
Activities	2010	2011	2012	2013
2.1. Training of professionals for solid waste management	X	X		
2.2. Research on the actual situation with the solid waste in Prishtina. and publication of the results	X	X		
2.3. ‘ ‘Pastrimi’ ’ ‘ capacity building	X	X	X	
2.3.1. Purchase of a 4(four) Rear Loader Compactors with hydraulic loading equipment for the containers of nominal	X	X		

volume of 1.1 m3. Capacity of the trucks is 9m3.				
2.3.2. Purchase of 8(eight) Rear Loader Compactors with hydraulic loading equipment for the containers of nominal volume of 1.1 m3. Capacity of the trucks is 16 m 3.	X	X		
2.3.3. Purchase of 2 tracks with capacity of 20 m3	X	X		
2.3.4. Purchase of 300 containers of 1.1 m3- 2010	X			
2.3.5. Purchase of 500 containers of 1.1 m3- 2011 and 2012		X	X	
2.3.6. Purchase of 50 containers of 7 m3		X		
2.3.7. Purchase of 20 000 completes of bins for households	X	X	X	X
2.3.8. Purchase of Two (2) Vacuum Cleaner Vehicles used for cleaning of the roads and pavement. and 3 wash cleaning vehicles for 2011 middle gross size		X	X	
2.4. Improved remuneration for waste management	X	X	X	
2.5. Collection of the waste on the whole Municipality		X	X	X
2.6. Waste selection and separation in one pilot urban community		X	X	X
2.7. Widening of the initiative for selective waste collection in other urban communities		X	X	
2.8. Education on waste selection	X	X	X	X
2.9. Campaign on elimination of illegal dumps	X	X	X	
2.10. Elimination of illegal dumps	X	X	X	
<i>Aim 3: To initiate decrease and collection of industrial waste</i>				
	2010	2011	2012	2013
3.1. Campaign for trade with items with ecologic label	X	X	X	
<i>Aim 4: To initiate accelerated preparation of legislation for solid waste and its application</i>				
	2010	2011	2012	2013
4.1. Campaign for preparation of legislation on solid waste and application of the legislation	X	X		
<i>Aim 5: To improve the cooperation among state and local authorities, business sector and citizens at all levels</i>				

	2010	2011	2012	2013
5.1.Provision of access to information on the environment through the Civic Information Centre	X	X	X	X
5.2. Initiative for establishment of fund for environment protection on local, regional and national level	X	X		
5.3. Undertaking more efficient activities for building recycling centre	X	X		
5.4. Building of regional dump recycling centre		X	X	
5.5. Concessionary solid waste management steps		X	X	

## **CHAPTER 7**

### **7.0. ECONOMICAL AND ENVIRONMENTAL BENEFITS FOR THE MUNICIPALITY**

Through the action plan the garbage management expenses are reduced due to professional trained staff and new equipment. This decrease can vary depending on number of new equipment, capacity building and management improvement. As well due to new recycling centers the economical benefits will be greater and this will decrease the unemployment rate. When the volume of garbage is reduced, the work required of Pastrimi to collect will not be so great; therefore, in future contracts the remuneration can be renegotiated or further responsibilities can be added, such as collection of recyclables. In addition, when the volume of disposed garbage is reduced, the need for campaigns and education will be reduced because the behavior will be ingrained and taught to the younger generation. In environmental point of view the impact will be much greater whilst Prishtina will become clean city and the behavior of its inhabitants will rise. As well with the actions on illegal dump elimination and waste selection, waste reuse and waste recycling there will be huge opportunities to rise both-economical and environmental benefits.

#### **7.1. Waste Minimization Cost Benefit Analysis**

Waste is lost raw material, lost product, lost resource, and lost profit. Generating significant amounts of waste is not sustainable for today's society, especially not for Municipality of Prishtina, a city with overloaded number of inhabitants. The environmental, social and economic benefits of using recycled materials include the conservation of virgin resources and energy to the diversion of materials from landfills. Benefits also may vary, depending on the point in the life cycle where the benefit occurs. A commonly cited example is aluminum. Recycled aluminum requires 95-percent less energy per kg to produce than a kg of virgin aluminum. Beyond energy, the use of recycled aluminum conserves all of the cumulative environmental impact, and can reduce the transportation miles that might also be involved. From this perspective, using recycled aluminum helps minimize our current impacts based on the existing system. Using recycled materials sends a signal that materials are valuable because of the investment in environmental impact made in their creation

and their disposition, and the cumulative nature of those impacts, such as climate change. From this point of view, the use of recycled materials is an investment in a strategy to drive both system and economic change<sup>17</sup>. There is no doubt that raw material industries are very environmentally impact full. Using recycled materials isn't only an essential part of a strategy to reduce today's footprint—it also drives changes needed to engineer systems that rationalize the economics of recycling. It means an economic supply chain from cradle-to-cradle and a more sustainable materials future.

## **7.2. Benefits of Recycling**

Recycling benefits both the environment and the economy. Anytime you recycle your plastic bottle, aluminum can, or newspaper, remember how you are part of the solution.

-Environmental Benefits - Using recycled materials in the manufacturing process conserves energy, saves natural resources, and reduces pollution.

-Conserves Energy-Using recycled materials as raw materials to make new products saves a significant amount of energy. Here's how much these materials save compared to their virgin counterparts.

- *Recycled newspaper uses 40% less energy.*
- *Recycled glass uses 40% less energy.*
- *Recycled steel uses 60% less energy.*
- *Recycled plastic uses 70% less energy.*
- *Recycled aluminum uses 95% less energy.*

-Saves Natural Resources-Using recycled materials means we can log fewer forests, mine fewer metals, and drill for less oil.

- *Every ton of newspaper or mixed paper recycled saves the equivalent of 12 trees.*
- *Every ton of office paper recycled saves the equivalent of 24 trees.*
- *Every ton of steel recycled conserves 2,500 pounds of iron ore, 1,400 pounds of coal, and 120 pounds of limestone.*

Many residents understand the environmental benefits of recycling, but they usually didn't know that recycling also has economic benefits. In future Municipality has to

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<sup>17</sup> [www.epa.gov/epaoswer/hazwaste/minimize/about.htm](http://www.epa.gov/epaoswer/hazwaste/minimize/about.htm)

make all efforts to establish recycling center and help people to be educated in waste problems.

Below is a table that shows Environmental Benefits of Recycling-Recycled vs. Virgin<sup>18</sup>

Tab.7.2.1. Recycled vs. Virgin

Material	Energy Savings	Environmental Impact	Natural Resource Savings	Miscellaneous Info.
 Aluminum	95% energy savings; recycling of one aluminum can saves enough energy to run a TV for 3 hours (Reynolds Metal Company)	Reduces pollution by 95%, (Reynolds Metal Co.)	4 lbs. of bauxite saved for every pound of aluminum recycled (Reynolds Metal Co.)	Enough aluminum is thrown away to rebuild our commercial air fleet 4 times every year
 Glass	50% energy savings (Center for Ecological Technology); recycling of one glass container saves enough energy to light a 100-watt bulb for 4 hours <sup>19</sup> (EPA)	20% less air pollution; 50% less water pollution (NASA)	1 ton of glass made from 50% recycled materials saves 250 lbs. of mining waste (EPA)	Glass can be reused an infinite number of times; over 41 billion glass containers are made each year (EPA)
Paper	60% energy	95% less air	Recycling of	Every year

<sup>18</sup> National Recycling Coalition; University of Massachusetts' Environmental Benefits of Recycling.

<sup>19</sup> US EPA's Recycling Facts and Figures.

	<p>savings (Center for Ecological Technology)</p>	<p>pollution; each ton saves 60 lbs. of air pollution (Center for Ecological Technology)</p>	<p>one ton of paper saves 17 trees and 7000 gallons of water (EPA)</p>	<p>enough paper is thrown away to make a 12' wall from New York to California</p>
	<p>Plastic milk containers are now only half the weight that they were in 1960 (EPA)</p>	<p>If we recycled every plastic bottle we used, we would keep 2 billion tons of plastic out of landfills (Penn State)</p>	<p>We use enough plastic wrap all of Texas every year (EPA)</p>	<p></p>
	<p>74% energy savings; every pound of steel recycled saves enough energy to light a 60-watt bulb for 24 hours (Penn State)</p>	<p>Every year we create 11.5 million tons of ferrous wastes (Steel Recycling Institute)</p>	<p>One ton of recycled steel saves 2,500 lbs. of ore, 1000 lbs. coal, and 40 lbs. limestone</p>	<p>Enough iron &amp; steel is discarded in the US to continually supply the nation's automakers (Steel Recycling Institute)</p>

## **CHAPTER 8**

### **8.0. DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

Even though there have been many efforts, there is still not a reliable system for waste treatment in Kosovo. After the war, some projects were started for the separation and sorting of waste. The first project was started in Prishtina, but there are several reasons why it did not meet its objectives. There is not only a lack of available containers for efficient separation but also a general lack of investment in, amongst others, making new containers, treatment plants, recycling and overall infrastructure. The country is now looking forward to establish national waste management strategy and this Project aims to establish practical integrated and sustainable action plan for municipal waste management which is environmental friendly and can safeguard the public health of the residents and national environmental resources. However until now the segregation of the waste is not in practice, or is rarely done

#### **8.1. Recommended Courses of Action-Approaches**

To develop recommendations for the stakeholders and Municipality's garbage management, we divided our direct means into three approaches. First, "household approach", second is "community approach", and the third is "informal sector approach".

##### **8.1.1 Household Approach-Education**

The survey and our interviews with village headpersons during the project showed us that many people are not aware of the need for recycling. It is necessary to give education to households that explain the benefits and importance of sorting.

The benefits would include the proceeds from selling recyclables, the cleanliness of the neighbourhood, the savings to the Municipal budget, and the environmental benefits. It is suggested that housewives be specifically targeted in the education campaign. The reason why housewives should be targeted is that they produce much garbage and are in a better position to enforce sorting in the household.

### **8.1.2. Household Campaign**

Education should be reinforced by a long term campaign. The Municipality did conduct a campaign, but it was not very effective as it was hoped. These steps are necessary to reinforce the education of people, but we think the campaign alone will not be effective.

Education must be conducted first, followed by the campaign. So our suggestion is:

- 1) Educate the people through community meetings or newspaper announcements,
- 2) Distribute literature to every household, and
- 3) Make the program prominent in public places.

### **8.1.3. Convenience of containers**

Households have commented that the locations of collection bins are inconvenient. Therefore, it is suggested that the bins for each type of garbage be located together at a central location. Maybe the example from more developed countries (Japan for example) could be helpful. In Japan, it seems there is a convenience store on every corner. In front of these convenience stores are a set of recycling bins for glass, plastic, and burnable garbage. Many supermarkets also have a set of recycling bins. Of course, there are not as many convenience stores in Prishtina as in Nagoya, but the idea of having a set of recycle bins in a convenient, central location could be used.

### **8.1.4. Collection of recyclables for charity**

It is suggested involving school groups or charitable organizations in their offices collection of recyclables. Under such a scheme, the manpower is free because volunteers would collect, and the proceeds would be contributed to a worthy group.

Many other nations and schools use this activity to raise funds for school trips or other activities. In addition, it could be combined with the school's education program to promote recycling among school children. The Municipality could play a role in offering guidance or equipment for the collection.

## 8.2. Community approach and organisational structure

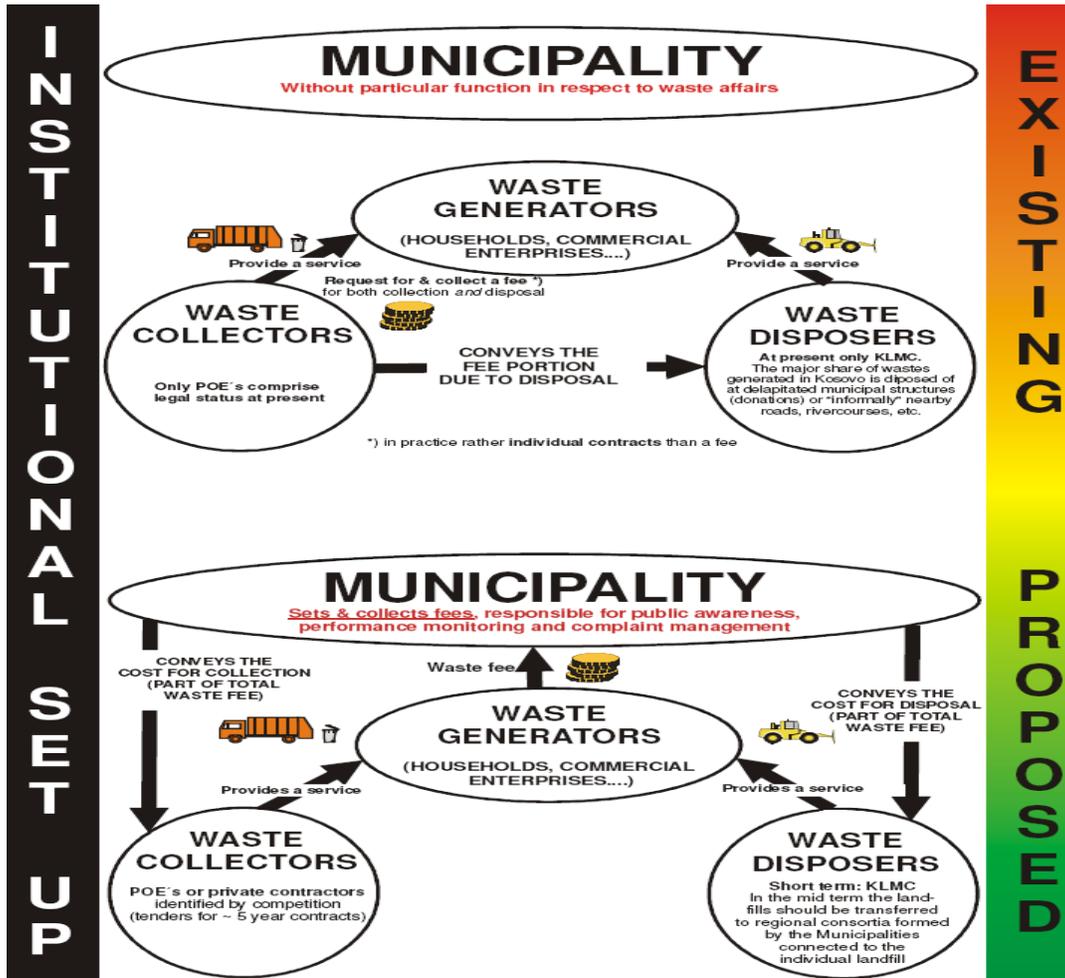


Fig 8.2.1. Municipal institutional structure for waste management sector<sup>20</sup>

### 8.2.1. Create incentive and competition

The Municipality could create competition among communities to decrease garbage volume or such. This is meant to motivate households to sort. Perhaps the Municipality could create an incentive or prize to award each year to the good communities. In addition, the Municipality could work in cooperation with a department store or supermarket to create an incentive to return recyclables. For example, returned recyclables could be exchanged for points that, when accumulated, are exchanged for goods or discounts. An opposite approach to creating incentives to sort and recycle would be to create a disincentive not to sort. In Canada, a tax is

<sup>20</sup> Solid Waste Collection: A Summary of European Good Practice with recommendations for Kosovo

imposed on bottles, cans, and other commonly used reusable items. This tax is 100% refundable when the reusable materials are returned to any store selling such products. Despite its slight inconvenience, it does not cost the consumer anything and it encourages recycling. We realize that this system would be difficult to implement only in the Municipality without the support of neighbouring villages and provinces or a nationwide program because it would create a black market for materials brought from outside the Municipality. However, we feel the idea of creating a disincentive not to reuse and recycle has merit given the importance of this situation.

### ***8.2.2. More equipment***

According to our research, there are some problems with the garbage collection in the Municipality while they are facing g with lack of capacity and lack of equipment. As well some roads do not allow the company, tot reach to collect garbage. As a result, large number of areas are neglected and residents tend to dispose of garbage in rivers and the surroundings instead of taking them to collection bins . We believe that increase number of equipment will stimulate the workers and citizens and we propose as priority to receive such equipment.

*As well there is hug need on increase of container number as supporting measure for better services to citizens and in order to facilitate the garbage collection in collective points.*

### **9.3. Possible treatments for organic and inorganic waste**

According to the data obtained from total waste generated in the Municipality of Prishtina around 40% is Organic waste<sup>21</sup>. The best way of processing organic waste is by composting.

-Composting is a biological process of decomposition carried out under controlled conditions of ventilation, temperature, moisture and organisms in the waste themselves that convert waste into humus like material by acting on the organic portion of the solid waste.

-Vermi compost is another type of composting produced using Earthworms. The biodegradable waste will be partially decomposed for a period of 3 weeks and the material is then shifted to vermi pits for consumption by Earthworms. The casting of

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<sup>21</sup> Xhevat Jaka-Pastrimi CO

the Earthworm is the final product. For the processing of biodegradable wet waste in to compost and land filling of inert the ‘‘PASTRIMI’’, has to identify land in the municipal limit 3 km away from the city. The wet and dry waste should be transported to this site. Technical support and guidance for the construction and maintenance of landfill cum compost unit has to be supported by municipality, donors and from own sources

The inorganic waste should be transported for scientific landfill site. The waste collector will deposit the recyclables at the identified spots from where the contractor will pick up the useful material. Only the refuse is transported to the landfill site.

*Tab8.3.1. Various types of recyclables present in the waste*

	Types of recyclable	Type of waste
1	Unbroken bottles	Glass
2	Ferrous and non ferrous components	Metals
3	Plastic sheets, plastic bags ect	Plastics
4	Newspaper, packaging covers ect	Paper
5	Wooden logs ect	Wood
6		Ect

#### **8.4. Disposal of Waste in the Landfill**

Kosovo Landfill Management Company (KLMC) is the only one who manages the waste disposal in sanitary waste disposal sites in Prishtina region. Despite the fact that the performance of KLMC is gradually improved in past years the inability of this company to collect the debts from regional waste companies for services delivered has caused major financial difficulties. Those difficulties are present as well in lack of investments in sanitary disposal sites.

As result of this the operation of disposal sites in years 2008 and 2009 was at an extraordinary low quality level, which do not expose only potential risk for public health and environment but endangers as well and may cause unpredicted damages to waste disposal sites. Over 70% of Kosovo's population is served by the landfill. Actually KLMC has 42 clients (5 public and 37 private companies). The main

customers are regional waste Companies. The overall capacity is 3,5 mil m<sup>3</sup> and the Land fill is divided in cells and the Licence is issued at 2007 and is valid until 2022, The total of waste collected from Prishtina and transported in waste disposal site is 89 891 to for year 2009 with tariff charge of 5.26Euro/ton for regional public companies and private companies. Within disposal site exists the possibility for separation of different types of waste and recycling. Below are main indicators for last three years for KLMC.

*Table 8.4.1. Performance of Landfill Management Company (KLMC)*

	Performance indicators	2007	2008	2009	Trend
1	Working ratio	1.68	2.46	2.48	+
2	Working coverage ratio	1.15	2.05	2.04	+
3	Collection rate%	68	83	84	+
4	Unit operating cost(EUR/Ton)	3.69	2.07	2.06	+

## **8.5. Recommendations**

It is recommended here that the municipality adapts the ISWM approach outlined here in solving the waste management problem. It is important that resources for running the waste management program are properly harnessed. Financial resources, legal institutional framework and human resources are the fundamental components on which the waste management action plan can be run.

### **8.5.1 Financial resources**

In addition to external sources of funds that help to establish waste management programs, these programs must be planned to internally generate funds to support operational maintenance. If the current uneconomic and or no tariffs on waste collection continue then there will be no progress in waste management. It is therefore recommended that;

- Direct cost recovery from users should be applied where it is possible to charge a full commercial price covering all operating and capital costs for solid waste collection services.
- Municipal Assembly has to encourage private sector service providers to participate in the setting of tariffs for services which are to be provided on cost recovery basis.

- In considering the level of waste collection tariffs, a reasonable level of fees could be charged per household per month and this fee must be subject to gradual upward review to achieve a cost recovery rate.

As it is previously mention all this sub activities and necessary steps to be taken from Municipality and other stakeholders are calculated and financial cost varies at about 1 684 00 Euro that will ensure integrated waste management for the municipality of Prishtina. This amount includes all relevant budgetary sources (municipality, central government, donors, pastrami and other possible investors).

### **8.5.2 Legal institutional framework**

To facilitate the ISWM concept, the current approach to waste management planning need to be reviewed. The role of Municipality in this process would be to; set service standards, the enabling bylaws and regulations, monitoring and evaluation; initiate the necessary actions for the provision of an efficient waste management service; encourage private sector investment by a flexible approach to public-private partnership by ensuring fair competition between private sector service providers and between the public and private sectors. The best approach would be to incorporate other integrative and participatory modes involving citizens and other stakeholders.

### **8.5.3 Human Resources**

To overcome the problem of lack of professional manpower human resource requirements can be tracked by; ensuring that appropriate training courses are available; collaborating with training institutions on suitable curriculum development; training arrangements through exchange programs with other international institutions. The public must be involved in an informed consensus building by educating them on the socio-economic and environmental impacts of improper waste handling and be informed on the values of the waste if properly handled. By so doing, their active participation in effective waste management process is ensured.

### **8.5.4. Technical Aspects**

The adoption and transfer of the technologies from the developed countries without adapting them to the local or regional perspective would be fallacious on the part of the developing countries. Therefore, the technical aspects for a sustainable SWM

would have to take into account the following points for planning and implementation of strategies.

- Provision of facilities for primary collection of waste from curbside/community bins and adequate storage facilities in the urban areas based on the population density.
- Transportation of waste from the community storage facilities at regular intervals and improvement in the waste collection fleet.
- Transfer stations (at optimal distances from residential areas) should be constructed wherever necessary with provision for weighbridges.
- There must be a separate SWM system for hospitals, health care establishments and industries to prevent the infectious and hazardous wastes from entering the municipal waste stream.

#### **8.5.5. Management Aspects**

Sustainable SWM would call for the strengthening of the management sector which has to go hand in hand with technical planning. In most developing countries, overstaffed management due to politically motivated appointments result in absenteeism and hence the working efficiency decreases while at the same time there is a squeeze in resource allocation for technical aspects that get neglected. The effectiveness can only be achieved by a strong management that takes into consideration the following aspects.

- An executable master plan and implementation plans for MSWM at the provincial level or the state level in accordance with the strategy for national environmental quality would help the management;
- Application of Polluter Pays Principle to all waste generators, especially in urban areas including governmental and non-governmental agencies, private sectors and commercial enterprises;
- Application of the 3R concepts, product stewardship, cleaner production and specification in the selection of packaging materials to the manufacturers.
- Continuous monitoring and record keeping of MSW aspects with the development of a systematic information system that can be comparable, utilizable and updated;
- Appointment of responsible governmental agencies that can regulate and supervise MSWM activities of both local government and private operators so as to reduce the environmental impacts;

- Providing of organizational support for encouraging the involvement of private sector operators, NGOs; and
- The informal sector needs to be formalized.

#### **8.5.6. Conclusion**

The management of Municipal Solid Wastes (MSW) in Prishtina municipality still has many problems. The current regulation system is not perfect and the existing management system and the collection facilities do not fit the present requirements. Municipal solid wastes are still collected without separation at the source, treatment facilities are limited and the collected wastes are mostly dumped haphazardly in open areas. Government, NGOs, and private sectors are working hard in this field but still much needs to be done. The main management strategies to remedy this should include amendment of current laws and regulations, improve current management systems and introduce classified collections. The effective implementation of these strategies will help to solve the environmental pollution problems to a large extent. It is also important to observe that there are possibilities for research implementation and collaboration among developing countries having similar climatic and solid waste characteristics. The solid waste disposal depends on dumping on land and land filling in abandoned stone quarries. The public also burns, buries their garbage and throws the garbage into drainages and water bodies. Recycling of waste occurs but is very minimal. Current waste management practices are unable to keep pace with the waste generation rate. In the process of integration: collection of materials for recycling and composting must be linked with the available markets for these materials; waste collection and handling must also be integrated with anaerobic treatment, processing and disposal activities; the biological treatment facility, collection, recycling and composting programs must be brought in close co-operation with the management authorities, the public and private investors.

Despite all this the project aim is to encourage the municipality working in directions of minimization and recycling processes, as well improving the human capacities and modernizing the equipment with final aim – offering better services to the citizens of Prishtina municipality and keep the environmental conditions clean in the area

## SUMMARY

The implementation of a waste management action plan, to optimize waste management by maximizing efficiency and minimizing the associated environmental impacts and financial costs of waste, was identified as a high priority short term initiative in the project. This Action Plan was developed to prepare for the implementation of this initiative, the integrated waste management planning initiative, by defining targets, activities, tasks, responsibilities, timing, control procedures and the results/outputs expected. To ensure the successful and sustainable implementation of the Action Plan for Integrated Waste Management Planning, full commitment and dedication from the relevant governmental personnel will be required, as well as support from management, both politically and in the allocation of staff members. Based on the findings of this report the following conclusions can be drawn:

- 1.) The Municipality is in need of a comprehensive waste management strategy and legislation review.
- 2.) The Municipality does have a shortage of equipment and personnel to render the current waste disposal service. Delivery of new equipment must be acquired and personnel to be trained to operate this equipment.
- 3.) The landfill in the Municipal Area needs to be managed properly. The Regional Landfill is, however, not under the control of the Prishtina municipality.
- 4.) More extensive waste minimization and recycling strategies are required
- 6.) The establishment of a community awareness program and a communication channel with all waste generators in the area would be of benefit to all.

The immediate objectives, to be achieved by implementation of this Action Plan over the next three years, are:

- Developing regulations and guidelines for the implementation of integrated waste management planning.
- Developing a campaign to promote awareness regarding integrated waste management planning and developing a capacity building programs.
- Ensure that services are flexible enough to allow new technological developments and new legal requirements to be accommodated, and improve communication between all stakeholders

Based on the results achieved by the short-term Action Plans, the medium and long-term plans of the waste management will be reviewed and revised, if necessary.

### **Capstone Project Consultants (Committee Members)**

According to the RIT policy on Capstone Project proposals I have identified three professionals in the area that Capstone Project covers and below are described their professional qualifications, occupations and contact information.

- Prof. Dr. Shyqyri Kelmendi, Doctor of Science, actually Professor in the Faculty of Mines and Metallurgy at the University of Prishtina. He has large professional background in academics and scientific work. Also he is the one who has given lot of contribute also in waste management and waste utilization and is member of many academic societies in Kosovo and abroad. His contact details are : [Sh\\_Kelmendi@yahoo.com](mailto:Sh_Kelmendi@yahoo.com), [Sh\\_Kelmendi@hotmail.com](mailto:Sh_Kelmendi@hotmail.com); [www.upshyqa.tk](http://www.upshyqa.tk); Mobile: + 377 (0) 44 142 146
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- Prof. Dr. Izet Zeqiri, University of Prishtina, Dean of the Faculty on Mines and Metallurgy, Mitrovica. He has large institutional and professional background. Mr Zeqiri was directly engaged in large number of projects that were related to the environmental issues and within the faculty where Mr Zeqirri works as Dean is established the Department for environmental issues and technological processing. His contact details are: email address: [izet\\_z@hotmail.com](mailto:izet_z@hotmail.com), [Izetzeqiri3@gmail.com](mailto:Izetzeqiri3@gmail.com) ; Mobile:+377(0)44 823 129

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<sup>22</sup> Municipal Waste Report 2008-WWRO

<sup>23</sup> Draft Waste Strategy for Kosovo, 2010 MESP/Municipal Waste Report 2008-WWRO

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