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### Collection and Transportation of Municipal Solid Waste in Prishtina Municipality

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Student: LINDA SHUKU

Supervisor: Brian Bowen

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Submitted to A.U.K. as part of requirement for graduation

Collection and Transportation of Municipal Solid Waste in Prishtina Municipality

A Honors Society Project  
Presented to  
The Academic Faculty

By  
Linda SHUKU

In Partial Fulfillment  
of the Requirements for Membership in the  
Honors Society of the American University in Kosovo

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## Executive Summary

After many years of efforts Prishtina municipality for improving the waste collection, there are still many problems associated with it. Uncontrolled dumping has resulted in spread of diseases, flooding, and unpleasant smells. The lack of financial resources for improving the waste collection services is part of the problem. Considering this situation, the goal of this project was to identify and analyze the waste collection and transportation process. The city planning and service fees were identified as important aspects for ensuring a well maintained and clean environment.

The research showed that with only 63% of overall collection of the fees, the quality of the services was not able to be improved. With relatively reasonable priced services, ranging from 4-6 euros per month and the willingness of citizens to pay for better services, the joint-payment possibility (i.e. waste plus electricity bills and/or waste plus water bills) has been introduced. With the establishment of this new payment system “Pastrimi” can add to its revenues annually 2,365,064.78€ from the increased collection of fees. Whereas cost for establishing the system (administrative costs and cost of cooperation between respective companies) is estimated to be around 562,964 € annually. The improved collection scheme is expected to attract more waste collection companies to join this market, which gives to citizens more alternatives to select companies with best services, instead of having one dominant company responsible for the maintenance of the entire city.

Also, the project supports the establishment of the appropriate urban planning strategy to improve the efficiency on collection and especially transportation of household discards. Better collaboration between municipality and waste collection companies for setting up an appropriate collection points is expected to improve the control over illegal dumping.

## Problem Statement

This project will be addressing the problem of municipal solid waste management, which Kosovo deals with, focusing in Prishtina region. While specifying the municipal solid waste management incorporates the waste type that is discarded by households on everyday basis. It includes the waste collection by municipalities from households, public institutions, and small businesses who contribute to the generation of similar waste disposal. Although in the capital city we see the efforts of the private companies, contracted by the municipal body, to collect and clean the designated areas for waste disposal, in our everyday life we still witness uncontrolled dumping and not very well maintained collection spots, talking specifically for the household areas of the capital city. Collective households, which include sites with buildings of many apartments where the number of inhabitants is higher and more concentrated, the treatment of waste disposal seems to pose a higher problem. With this being said, it is a question whether the municipal capacities to collect and manage the collection points are not adequate. Or, are municipalities facing problems with finding landfills for dumping? Is the registering of households under the municipal waste management complete or do we face with illegal dumping, where households do not meet their payment obligations and are not included on the disposable collection centers? While these issues are important to analyze in order to improve the current management of waste disposal, when will Kosovo be ready to at least make one step forward for recycling.

On this regard, although the management of the waste disposal may depend on Kosovo's economic and environmental capacities, this project will recommend some improvements on waste management based on the practices of the countries that were successful in the past or are actively improving their performance.

### *Goals*

Overall, goals of this research are to identify the aspects that need further attention for the improvement of the municipal waste management, identify the lack of resources that prevents the improvement of the situation. To recommend alternatives based on comparable countries successful history on this issue. With these objectives, the research aims to contribute to the improvement of the collection and transportation of waste removal.

## **1.0 Background information on solid waste management**

### **1.1 Importance of proper solid waste management**

As population sizes increase and the economic development in the world accelerates, the consumption of household supplies also increases. With this, the amount of disposable solid waste and its management become of greater importance. There are many reasons to prioritize this issue. The inadequately managed solid waste collection and treatment, as well as, uncontrolled illegal dumping poses great risk for the environment and the health of the citizens. Due to improper regulation of disposal centers for the waste, cities may have problems with water contamination due to the mixture of the waste content with the different water resources; also, flooding is highly likely to happen as a result of the blockage of water sources from the solid waste. Additionally, cities may have issues with the spread of diseases from different insects attracted by unpleasant smell of the disposed waste (12). Further, because many cities try to eliminate the discarded waste by burning the collection points, there is also a risk of explosion and uncontrolled fire spread due to the difference and unknown composition of the solid waste. Besides the environmental impact of poorly managed municipal waste collection strategies and other means of reducing and treating it, cities that do not clean and care for the illegal and uncontrolled dumping are not pleasant areas to live for the local residents and are not seem to be very attractive for the tourists and visitors.

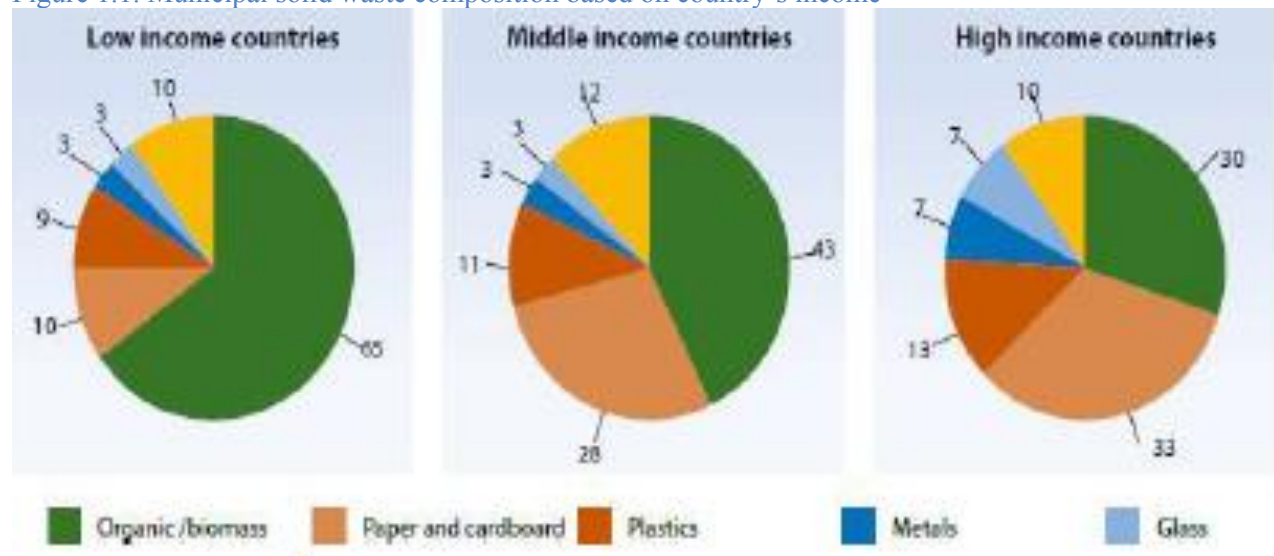
### **1.2 Municipal solid waste management**

While waste management and treatment has a broad definition based on different sources from which it is generated, the municipal solid waste makes up a specific category of waste management in the agenda of the urban and spatial planning of the cities around the world. Although the definition of the municipal solid waste may not be universal for every place because it depends from the consumption and the management practices that each country has, the Eurostat refers to the municipal waste in the following way “Municipal waste is mainly produced by households, though similar wastes from sources such as commerce, offices and public institutions are included. The amount of municipal waste generated consists of waste collected by or on behalf of municipal authorities and disposed of through the waste management

system” (5). With this being said, the municipal solid waste composes the everyday discarded waste from households, offices, or public institutions whose management is under the responsibility of the municipalities. Its composition is generally expected to contain different food packages, plastic/glass bottles, paper, remains of food and other daily discarded waste. The amount or the spread of these materials in the discarded solid waste may be different, when we distinguish between developed and developing countries. The composition or the type of the waste that developing countries generate is mainly made of organic waste (food and food remains), whereas, the high-income households generate waste that has higher amount of plastic and paper (Figure 1.1) (6). This is important especially when analyzing the techniques and management practices of waste collection and treatment, where more sophisticated methods and machineries are required for treating waste that is richer in its composition, although, in any case waste treatment needs to be considered as an important aspect of investment.

When analyzing the statistics from the broader perspective, it is noted that worldwide municipal solid waste is generated in the amount between 1.7 to 1.9 billion metric tons during 2011. In this context, mostly developing countries struggle with the collection and treatment of the waste, where only less than 70 per cent of the waste is collected, 50 per cent of which is disposed in landfills and around 15 per cent of the municipal waste is recycled or reused through poorly managed methods (4).

Figure 1.1. Municipal solid waste composition based on country's income



Source: UNEP (2010)

There is a discrepancy in the interest of developing a well-maintained municipal solid waste treatment between low and high income residents mainly because in the countries with low-income, population is more focused on the improvement of water supply, drain system, electricity and sanitary, where solid waste is mostly discarded along the roads, in the river flows, or burned (11). Finding and investing in the adequate techniques for waste treatment becomes an important concern only when population become more aware about the consequences and when their own living environment is impacted by the uncontrolled dumping.

Generally, waste management does not refer only to the strategies regarding the collection of the waste. It is a broader definition that incorporates also the transporting, processing and recycling, and disposing of waste materials in the landfills. In this whole cycle of activities there are several factors that are held responsible for improving the performance of any country. These are the technical, economic, environmental and institutional issues of the nation. Nevertheless, if we individually analyze this chain we can say that the collection and transportation phase of waste management is the beginning of this whole process and is seem to be quite important and costly phase because of the involvement of human capital as well as special and adequate vehicles for transportation. While activities in this process require frequent investment for vehicle maintenance, fuel, human capital and purchasing cost of new vehicles, the inability to cover the population of the whole city in the fee payment worsen the situation even further (7). Many studies about improving collection and transportation of the municipal solid waste suggest that this process should be privatized and controlled by individual companies who are expected to perform better because of their incentive to maximize profit (11). Advantages and disadvantages as well as other related issues of such a practice will be further analyzed in the next chapters.

Besides the collection process the discharge of the collected waste are highly important for gaining satisfactory results on waste management. Landfills that are not properly controlled, over many years became large areas of collected waste that today provides high risk of contaminating the drinkable water resources as well as the risk of lots of toxic and flammable gas emission. European countries try to decrease the landfilled municipal waste by employing different methods although not all of them were managed to achieve the specific target of landfilled waste cut required by European countries. Based on the report of “Managing the

municipal solid waste 2013” for European countries the period between 2001 to 2010 is the time when landfilling decreased the most, where sixteen countries cut the amount of waste dumped in the landfills by 10 percentage points (5). In this regard countries such as Sweden, Netherlands, Germany, Switzerland are amongst the best performing countries, while Bulgaria and Croatia are among the countries who still discard the most of the municipal solid waste in the landfills (Figure 1.2).

Figure 1.2. Landfilling of municipal solid waste in European countries 2001-2010



Source: Managing municipal solid waste 2013  
Eurostat, 2012c; ETC/SCP, 2013a, 2013b, 2013d, 2013e, 2013f.

Many European countries in order to decrease the landfilled municipal solid waste established a tax payment that is related to the amount of the waste discarded in the dumping areas. Studies of the European Commission show that there is a clear correlation between the taxation of the landfills and the decrease on the landfilled municipal solid waste (5). That is because as the cost of dumping increases, countries tend to switch to other means of waste treatment, be it recycling or other waste decomposition methods. It is also expected that as this tax approaches to 100 EUR

for one ton of solid waste, the amount of landfilled waste will decrease drastically (5). So, although in many countries landfills are a major waste management approach, they still put lots of effort to switch to other more sustainable means of waste treatment, one of which is recycling. Based on the Eurostat statistics for the European countries recycling is mostly popular in Germany, who recycles around 45% of municipal solid waste, followed by Ireland with 37%, Belgium with 36% and Slovenia 34%. These and some other European countries that emphasize the importance of sustainable waste management are either close or already achieved the target of 50% of waste recycle by 2020 (5).

As the above discussion shows, the developed and industrialized countries are employing different successful strategies on waste reduction, which is decreasing the amount of solid waste generated by consumption. Different policies on national level favor the packaging industries that use less materials or environmentally friendly materials in their production techniques. Several initiatives that aim on waste reduction are supported and financed by public or consumers. Establishing a mandatory solid waste separation structure for some waste fractions such as metal, paper, plastic, and glass is seen to improve the recycling and waste management techniques in different developed nations. Moreover, some countries try to incentivize the households to recycle their own waste by applying different fees based on the weight of the disposal. This method drives citizens to be more cautious with their discarded waste (5). Generally, these and other practices reflect the willingness of the citizens, especially in high-income countries to develop a cleaner living environment.

In the contrary, developing countries do not prioritize the reduction of the household solid waste. Due to the need of packaging and boxing of the food that aims to protect the public health, the demand for manufactured materials in these countries is high and with this the leftovers of consumption are high as well (6). Countries that are in such position try to identify different solutions in better managing the technical and financial agenda of municipal solid waste management.

### **1.3 Kosovo case**

As in all countries around the world, waste management is also an important issue in the agenda of Kosovo's Ministry of Environment and Spatial Planning. Although based on the data presented in Table 1.1, numbers regarding the amount of waste generated in Kosovo are

relatively low compared to other EU countries, however, considering the size and the population of the country, generating around 192 kilograms of municipal waste per person per year calls for strategies to control and manage this sector (Table 1.1) (13).

Table 1.1 Amount of municipal waste of some EU countries and Kosovo

	<b>Austria</b>	<b>Denmark</b>	<b>Slovenia</b>	<b>Croatia</b>	<b>Kosovo</b>
<b>Number of population (mil.)</b>	8.1	5.4	2	4.45	2.3
<b>Total amount of waste (mil.ton)</b>	48.6	13.0	8.4	12.6	2.504
<b>Amount of municipal waste (mil.ton/per year)</b>	3.1	3.1	0.8	1.2	≈ 0.4
<b>Yearly amount of municipal waste per citizen (kg)</b>	383	574	400	270	192

Source: Ministry of Environment and Spatial Planning in Kosovo (2013)

From this total amount, Kosovo disposes around 90% of total waste in the landfills, separates around 9% of the waste for recycling, and only 1% of total collected waste is designated for biological treatment. Considering that disposing in the landfills make up the biggest portion of the waste treatment in Kosovo, the Ministry of Environment and Spatial Planning established a tax that is related to the amount disposed in the landfills. This tax varies between 6 to 7 euros per ton of disposed waste and is considered to be the lowest tax comparing to other European countries (14). However, although this tax is very low, the idea of having such monetary value attached to landfill disposals with the aim to decrease the amount of waste generated by employing different recycling techniques is not considered to be quite successful. Kosovo is still not recycling and until now there was not any decent attempt from the institutions to create or implement any strategy that would improve the current situation.

Besides the lack of strategies that would increase recycling, local authorities of municipalities around Kosovo are continually facing problems with collection and transportation of the municipal solid waste. The lack of financial resources created by the inability of the waste



collection companies to collect the fees of service from citizens, which in terms is reflected in the lack of investment in the techniques, vehicles, and human capital of the companies is just one of the major obstacles. The other issues rely on the lack of the implementation of the rule of law regarding the fee payment, the need to increase the awareness of citizens regarding the proper management of waste treatment, the problems with identifying the best places to establish the collection points (containers) as per the demand of the citizens, the problems with establishing consistent agreements with the companies managing landfills are some other key aspects that will be further analyzed in the next chapters in the context of Prishtina municipality.

## **2.0 Collection, transportation, and treatment of the municipal solid waste in Kosovo**

### **2.1 Regulatory institutions of waste management in Kosovo**

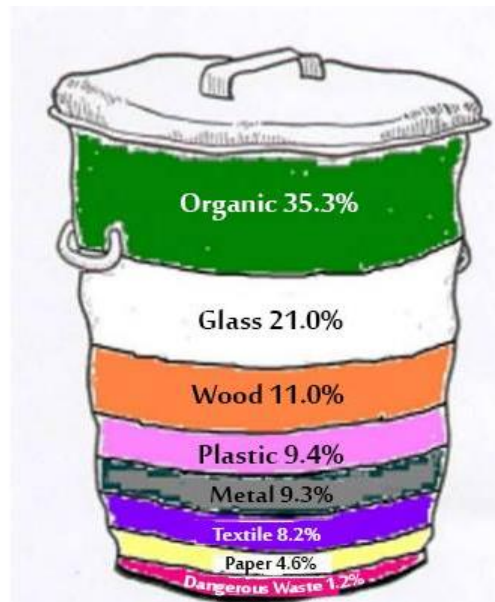
Under the UNMIK regulation in Kosovo, the Water and Disposable waste Regulatory Office (ZRRUM) was the responsible body for the management of water, wastewater, and disposable solid waste in Kosovo (1). This office was established in 2004 and its duties include the management of relations between the clients and service providers of these services. The duties incorporate establishing tariffs for the clients of the respective service companies, licensing companies responsible to provide services of water and waste, and establishing standards on service providing along with maintaining workable relationship between clients and companies. Beginning from 2009 the responsibilities of ZRRUM, regarding waste management were handed to municipalities, who now are completely responsible in the management of disposable communal waste separately (8). This new regulation was established as a result of the implementation of the law for waste management in 2006 that gives the responsibility to each municipality in Kosovo to manage the waste independently (3). Currently, as an example, the municipality of Prishtina has its own department and appointed director that manage the issues related with municipal waste management, (Directorate for Public Services for Prishtina Municipality). Under this law on waste management, municipalities as the responsible bodies for the communal solid waste management are especially responsible in the following areas:

- (a) Provide yearly reports on waste management;
- (b) Create the local plan for municipal solid waste management;
- (c) Collect and transport the communal waste in the specific landfills;
- (d) Collect and specify the taxes/fees of the services in cooperation with the Ministry of Environment and Spatial Planning; and
- (e) Ensure the collection of the fees as well as reporting the cases for non-compliance with client duties (10).

In this regard, based on the regulation adopted for Prishtina municipality, the communal waste is considered the inert waste that is not flammable due to physical and chemical reactions and is not considered to be harmful for health and environment and is not classified as a dangerous waste.

Different from general definition of the communal solid waste, Prishtina municipality classifies the waste with big volume generated from different machineries as well as the waste generated as a result of construction and demolishment of the buildings as a communal waste and is responsible for its management and administration as well (10).

Figure 2.1 Fractions of Municipal solid waste



Source: Environmental Protection Agency in Kosovo

Looking from the country's perspective the municipal solid waste in Kosovo is made up of different fractions including, organic waste (food and food remains), glass, wood, plastic, metal, textile, paper, and dangerous waste (flammable waste-ash). From these fractions organic waste composes the highest amount of the municipal solid waste, while the dangerous waste, which is expected to be disposed in a specific containers and conditions, make up the lowest amount of the total municipal waste (Figure 2.1) (13). Considering that collection companies who are responsible for the collection and the transportation of the waste are not responsible for the separation of the waste into fractions before disposing it into the landfills, this data on waste composition is generated only for the reports of Kosovo in general.

## 2.2 Establishing collection points

The collection of the municipal solid waste in the municipalities is generally done by emptying the containers that are established in the sites around the city for the common usage. However, in certain cases, private houses, or businesses as per agreement with the waste collection company, discharge their waste by directly handing their collected waste to the company groups at the time of collection. Under the regulation on waste management, Prishtina municipality is responsible to identify the places and reasons for providing containers as well as their characteristics, such as the volume, type, and the number of containers (10). Based on this, there are generally considered to be around three categories of containers for the communal waste:

- 1) 1.1 m<sup>3</sup> and 3.2 m<sup>3</sup> respectively containers with the volume of 440 kg to 1320 kg household waste
- 2) 5 m<sup>3</sup> with the volume up to 4000 kg of inert waste
- 3) 7 m<sup>3</sup> with the volume of 6000 kg of waste with high volume.

The dimensions of the bins designated only for household waste are usually those of 60 liter, 80 liter, and 120 liter distributed based on the locations, bigger for the park area and smaller for the pedestrian paths (10). The administration of the containers (cleaning, emptying, monitoring) is granted to the operator, who is managed independently but works in accordance with the rules and regulations of the municipality.

## 2.3 Selection of the operator

Prishtina municipality in order to increase the efficiency regarding the communal waste administration contracted a regional waste collection company, “Pastrimi”, whose duties are to collect and transport the waste from the collection points in Prishtina and further in the region of Prishtina to the landfill in Mirash, reserved especially for the dumping of the waste collected by “Pastrimi”. Prishtina region includes the areas of Gllogoc, Fushe Kosova, Lipjan, Podujeva, Obiliqi, Prishtina, and Gracanica (9). Based on the data from Kosovo Agency of Statistics, there are approximately 469,472 inhabitants in the whole Prishtina region, where only in Prishtina

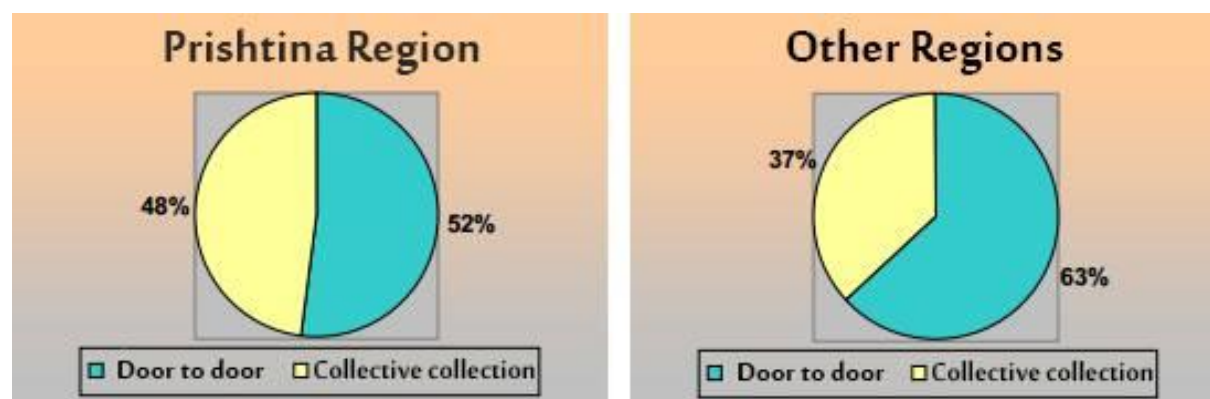
there are approximately 198,214 inhabitants for whom “Pastrimi” is responsible to ensure a clean and well-maintained living environment (2).

“Pastrimi” is also considered to be a public enterprise, which is operating as a shareholder entity starting from 2008. It employs in total 501 workers, where 78% of the workers are the physical, technical, and supportive staff (workers responsible for in-the-field work) and 22% of the staff composes the administrative and managerial body of the company (9).

## 2.4 Collection of the municipal solid waste

There are two main methods for collecting the municipal solid waste. The first one is door-to-door collection, while the second one is collective collection through containers around the city. In Prishtina, when compared to other regions, the door-to-door collection is more widely used practice than collective collection (Graph 2.1) (2). The collection of the waste in Prishtina is done mostly during the night shift from 12:00 midnight until 6:00 in the morning, while for door-to-door services are given at different time upon agreement (9). This arrangements aims to standardize the collection schedule that would prevent the collection of the excess discarded waste in certain areas.

Graph 2.1. Percentages of waste collection based on the location of disposal in Prishtina and other regions



Source: Statistical Agency in Kosovo (2007)

The reasons that can be pointed out is that in Prishtina location of the houses is more widely spread from one another and the presence of the high number of businesses who by contracts agree with the collection company on the specific dimensions of containers that they need, which are collected separately.

“Pastrimi” company is also responsible for the collection of the taxes/fees for the services to clients; however, the tariffs of payment are established by Prishtina municipality.

#### **2.4.1 Collection of fees/taxes on services**

Prishtina municipality is responsible to establish the tariffs and monitor the trend of collection of fees based on characteristics of the disposed waste. The tariffs established for the services of the “Pastrimi” company are:

- Tariffs for households sector is 4.31 euros for family per month
- Tariffs for businesses is applied in two “zones” with three categories in each zone
  - o First zone- the services are provided everyday by collecting the waste in the collection points (containers), where the first category pays 6.54 euros, second category 9.37 euros, and the third category pays 16.04 euros.
  - o Second zone- services are provided door-to-door, twice a week, where first category pays 4.68 euros, second pays 5.61 euros, and the third category pays 10.7 euros (9).
- Tariffs through contracts are 9.74 euros for the 1.1 m<sup>3</sup> containers and 37.80 euros for the container of 7.1 m<sup>3</sup> dimensions. These same tariffs are applicable for institutions as well, who are also included in the collection and payment system through contracts (9).

These payments are collected door-to-door, where households and businesses can pay directly or in the offices of the company.

Although the payment of the waste management services is considered as a mandatory obligation for citizens, this issue remains a challenge for the company due to the negligence of the citizens to meet their obligations on regard to payment of the monthly bills.

#### **2.5 Illegal discards of the waste**

On this regard, as in the Prishtina municipality as well as in the whole country, there is a serious problem with the illegal discard of the waste. This happens mostly because not all of the households are registered in the collection system for several reasons. These reasons include the

location of the households on the suburban areas where the collection companies fail to provide services in the four corners of the country or also the refuse of the households to pay for the services in the regular basis. On this regard, considering that the general amount of the municipal waste in Kosovo have not changed drastically (in the table is taken as the same value because of the insignificant difference in the three consecutive years), the discard of the waste in illegal landfills is showing a slight decrease, marking an improvement in the waste management system (Table 2.1). Nevertheless, nearly 35% of the overall municipal waste discarded in the illegal landfills is considered to be a serious issue and calls for the tighter strategies in this sector (14).

Table 2.1 Municipal solid waste, the discard in legal and illegal landfills for the years of 2008, 2009, and 2010 (includes all municipalities)

<b>Year</b>	<b>Overall amount of municipal waste in Kosovo (tons)</b>	<b>Discarded waste in the legal landfills (tons (t))</b>	<b>Discarded waste in the illegal landfills (tons (t))</b>
<b>2008</b>	384710	218402 t (56.77%)	166308 t (43.23 %)
<b>2009</b>	384710	247206 t (64.26%)	137504 t (35.74%)
<b>2010</b>	384710	255546 t (66.43%)	129164 t (33.57%)

Source: Ministry of Environment and Spatial Planning

Considering the current situation in Kosovo with the narrow focus in Prishtina municipality, this project will further deal with providing more stringent strategies on the waste collection process, as well as better with understanding of the obstacles on reducing the illegal discard, identifying the strategies to maintain a more coherent communication between companies who collects the waste and companies who controls the landfills by ensuring the high quality and not the monopolization of the system , and also providing strategies to increase the tax collection for the services.

### 3.0 Data collection methodology

The waste management sector in Kosovo and more specifically in Prishtina municipality is the background of this project. This sector has been going through many administrative changes. Those changes are reflected in the practices of the municipality in collection and transportation of the household waste. This is seen in terms of accommodating the executive plan in regard to household needs. Much effort is spent in increasing the collection fees for the services, which is a vital problem impeding the whole effectiveness of the process of waste management. However, today we still see that almost everywhere in the capital city there is uncontrolled waste dumping. Containers are filled and are sources of unpleasant smells that attract insects and animals risking the health citizens. Water sources as well are often considered a focal dumping area. Considering that uncontrolled waste disposal is an important concern, this project aims to thoroughly analyze the collection and transportation of waste. What are the most important phases in maintaining a clean environment? How to identify the problems and issues that are halting the improvement of this sector? Further, the goals of the project depend upon identifying the problems with fee collection as well as concerns related to the urban planning of the city that currently does not foresee the implementation of the appropriate waste collection points in specific designated areas.

This chapter presents the results of the research that are helpful in assessing the current situation in waste management and are helpful as well for addressing the goals of the project. The results are gathered in two different approaches and they are as follows:

1. Interview results with authorities of responsible institutions
2. Survey results with the citizens of Prishtina municipality

Regarding the interview section, there have been conducted three separate interviews. Two of the interviews were held with “Pastrimi” company. This company is the only responsible body for the waste collection and transportation within the city and although it is an independent economic entity, its work is supervised by municipality. In the first interview, the dialogue and the topic of discussion were primarily focused in identifying the competences, challenges, plans, and the organization of the company. This information was of a vital importance to understand



the basis in which this company operates and their efforts in improving the unsatisfactory situation on waste collection. The second interview was scheduled to more specifically discuss the issues that are considered major concerns for the effective administration of this sector by “Pastrimi” company. Those were mainly two issues. The first one was related to the inappropriate urban planning of the city, which became an important concern especially in the recent years due to the rapid expansion and development of the city. Inappropriate urban planning is highly correlated with the difficulties that working groups face in accessing collection points. The second issue is related primarily to the inability of the company to collect fees for the services. This reduces the potential efficiency of service providing. The results about these interviews and issues as well as further analysis of these main challenges will be provided on the following chapters.

The second interview was held with Prishtina municipality. The reason to incorporate inputs from this institution was because of their responsibility to provide administrative support in legislative aspects by amending and providing rules and regulation on the waste management sector. It is also their responsibility to appoint service companies and other activities to improve the waste sector.

Table 3.1 illustrates the clear sequence, duration, and appointed interviewees and institutions for the conducted interviews and results.

Table 3.1 Interview profile

	<b>Institution</b>	<b>Contact person</b>	<b>Held within (# weeks)</b>
<b>Interview #1</b>	Pastrimi	Arbnore Ademi	3
<b>Interview #2</b>	Pastrimi	Xhevat Jakaj	3
<b>Interview #3</b>	Prishtina municipality	Habib Qorri	3

For the purpose of understanding how satisfied citizens are with the “Pastrimi” company services and what are their concerns about waste collection in their neighborhood, this project incorporates survey results as well. There have been conducted 25 surveys from 5 different sites around Prishtina, with 5 households in each site living in apartments where the collection of

waste is done by containers, not in individual or door-to-door basis. Those five sites are Dardania, Upliana, Bregu i Diellit, Kalabria, Qafa. There are some reasons for specifying especially these sites. Bregu i Diellit is considered to be more of a peripheral area as compared to Qafa and the survey intended to incorporate answers from citizens living in both center and periphery. Kalabria is a newly built site in Prishtina and it was considered important to incorporate their concerns as well. Dardania and Ulpiana are usually considered to be bigger sites and are more populous; therefore, the household's answers of these sites were classified an important resource for identifying concerns with waste management. The results of the surveys will be presented in a more detailed version in the following sections and they will be used as a sample to only provide a general picture of the overall concerns of the citizens in Prishtina municipality. It is important to note that due to the limitations in time and financial resources, households in other sites around Prishtina that are not mentioned above were not been able to be included in the survey and as such are not counted in the results. It is left to the future researchers to expand the scope of this project further by increasing the number of surveys.

While this research project started with the aim to identify problems, analyze the situation, and recommend possible solutions on improving the waste management sector in Prishtina, data collection period is highlighted with some challenges as well. The researcher had to accommodate things by adapting the research schedule. Identifying contact persons and scheduling the interviews are classified as two important stepping stones that for this project were important concerns. For the purpose of incentivizing willing and enthusiastic researchers to commit in identifying the causes and contributing to the improvement of the waste management sector, it was expected from the intuitions to more readily carry on their support in these undertakings. In the case of Kosovo there is a lack of readily available information in different sectors, including waste management sector. More support and cooperation will definitely be of a crucial prominence for data collection and assessment.

Future researchers can derive potential conclusions from the results gathered by this research projects. However, it would advisable to expand the pool of the surveyed sites around Prishtina or if possible to also include all cities around Kosovo for better representation of the public opinion on waste management.

## 4.0 Research results

This chapter provides summaries of the (1) interview results with “Pastrimi Company and (2) the interview results with Prishtina municipality, and survey results with residents of the city (3).

### 4.1 Interviews with “Pastrimi” company

“Pastrimi” company is the only responsible body for collection and transportation of waste in Prishtina municipality. Inputs of this institution regarding the improvements, challenges, and complaints in maintaining a clean environment are considered to be very beneficial for the purpose of this project.

This interview was held with Ms. Arbonre Ademi from the Department of Public Services in “Pastrimi” company. The interview was conducted in a one-on-one basis and is composed of twenty one (21) questions separated in 4 sections. These sections are:

- General information about the company,
- Transportation of household waste,
- Collection of household waste, and
- Finances

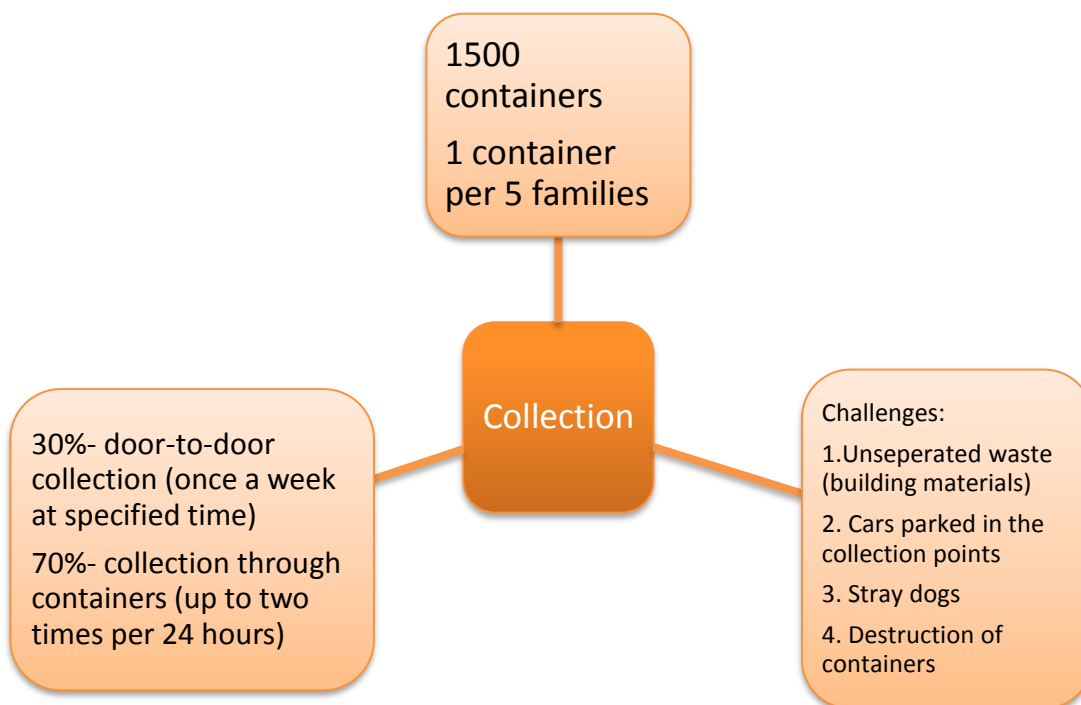
The sample of the interview questions is provided in the Appendix I at the end of the chapter. Interview results are summarized in Figure 4.1 and in the following figures.

Figure 4.1 Functions and responsibilities of "Pastrimi" company

Functions and responsibilities		
<b>Primary responsibilities:</b> <ul style="list-style-type: none"> <li>- Collection</li> <li>- Transportation and dumping in Mirash landfill</li> </ul>	<b>Functions independently and has 11 departments</b> <ul style="list-style-type: none"> <li>- Department for operational activities</li> <li>- Department for services with clients</li> <li>- Department for Internal Auditing</li> </ul>	<b>Several obstacles in waste management sector still remains unsold</b> <ul style="list-style-type: none"> <li>- The lack of emphasis of this sector on urban planning</li> <li>- Unresolved legal cases</li> </ul>
<b>Secondary responsibilities:</b> <ul style="list-style-type: none"> <li>- Cleaning of the roads during Summer season and maintenance of the roads from ice and snow during Winter seasons</li> </ul>	<ul style="list-style-type: none"> <li>- Cooperates with Prishtina Municipality for operational matters</li> </ul>	

Figure 4.1 summarizes the interview outputs of the first section of the interview with waste collection company, the general information section. It portrays the information about primary and secondary responsibilities, functions and departments, as well as the main three challenges that this company classifies as noticeable concerns.

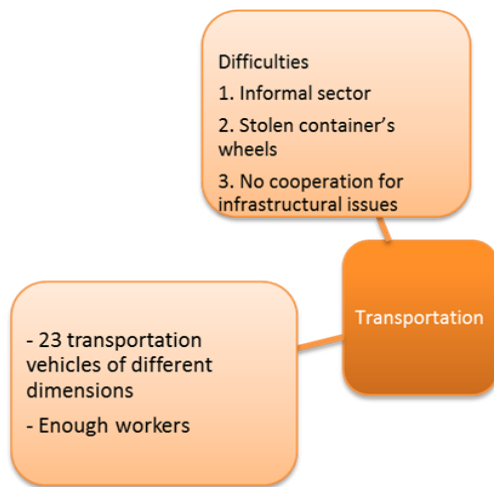
Figure 4.2 Waste collection issues of "Pastrimi" company



In the Figure 4.2, is presented the summary of the waste collection practices and the four prioritized challenges that the collection company has. For the capital city, higher percentages of waste collection through containers is considered to be a distinguishing fact on compared to other cities where living in the private homes rather than in apartments is a more widely spread practice. Private households have to agree with “Pastrimi” in specifying the waste collection dates, which has to be at least once a week. With around 1500 containers around the city, “Pastrimi” classifies its work as satisfactory in incorporating as many households in the collection system as possible. Still, this company faces many difficulties in the collection activities beginning with problems with unseparated waste, where household waste is often time mixed with other unclassified waste categories, which creates a problem when waste is dumped in designated landfills. Other challenges are also stray dogs who spread waste out of the collection points, as well as destruction of the containers.

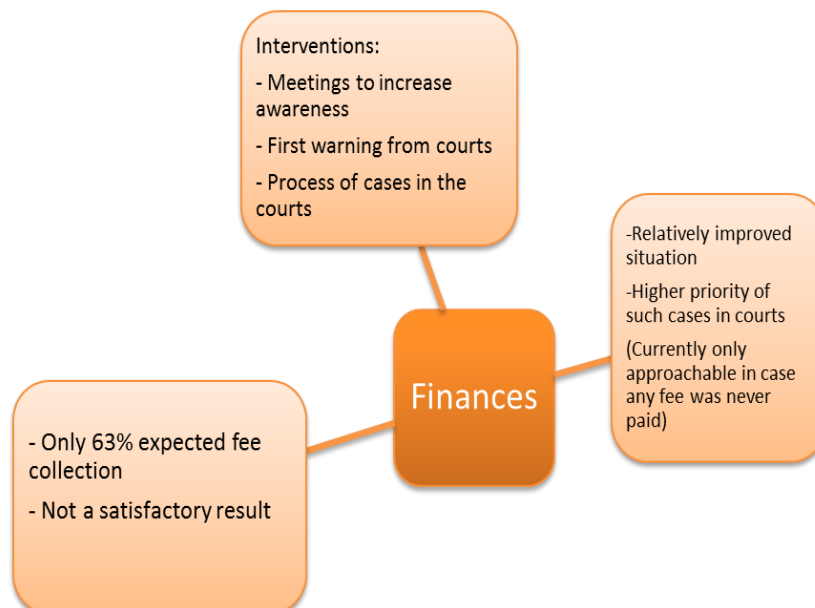
On the other side, one of the main challenges of “Pastrimi” company with regard to the transportation of waste is the lack of cooperation of the urban planners with this company in incorporating the collection points in city planning (Figure 4.3). It becomes a challenge for the transportation vehicles to reach all points and provide service in sites that do not provide infrastructural plans for such duties. Illegal parking in the collection points is also a related problem.

Figure 4.3 Waste transportation



An important issue that is considered to impede the efficiency “Pastrimi” company is the inability to collect service fees from the citizens of the capital city. With only 63% of the fee collection and ineffective sanctions through court procedures, this issue remains relatively unchanged.

Figure 4.4 Collection of fess and procedures for non-payment



## 4.2 Interview results with Prishtina municipality

The purpose of conducting an interview with Prishtina municipality lies upon the fact that municipality is the responsible body for the process of waste management in Prishtina. Activities of the collection company are conducted in a direct accordance with the rules and regulations provided by municipality. As such, cooperation with municipality provided handful assistance on identifying the areas of waste management that needs further attention and are still undeveloped.

The interview in the municipality was conducted with Mr. Habib Qorri from the office of Directorate for Public Services in Prishtina municipality. The sample of the interview questions is provided in Appendix II.

The questions of this interview were outlined in a format as follows:

- *General* - in this section more information is gathered with regard to the activities and future plans of the municipality to improve the waste management sector. Duties and Responsibilities as well as challenges that that this institution has upon maintaining cleaner living area in the capital city were also identified.
- *Finances* - considering that collection of the service fees is identified as an obstacle in improving the system of collection, more information is gathered regarding the establishing a joint-payment possibility with other institutions (i.e KEDS). It also included more information about efficiency in increasing the percentage of collected fees as well as more information about service prices and affordability.
- *Landfills* - in Kosovo very insignificant amount of waste is processed through recycling, composting, or other means of waste treatment. The transportation of waste includes the transportation to the landfills, where almost 100% of the collected household waste is discarded. In this section, available landfills in Prishtina the relation between managing companies are discussed.

In the Figure 4.5 future plans of the municipality are shown to be oriented toward more advanced techniques on maintaining cleaner environment. Providing containers that separate waste categories as well as establishing underground containers are considered to be important steps on improving the current situation. While Prishtina municipality is also aware about the need for further investments in this sector, higher emphasis is expected to be given on waste recycling and composting, two widely employed practices for waste treatment.

Figure 4.5 General information on waste management (Prishtina municipality)

Waste management (Prishtina Municipality)			
<b>General information</b> <b>Need for improvement:</b> <ul style="list-style-type: none"> <li>- Separation of waste and enhancing recycling</li> <li>- Building of the landfills for inert waste (building material)</li> <li>- Waste composting</li> </ul>	<b>Responsibilities of municipality:</b> <ul style="list-style-type: none"> <li>- Amend the law on waste management in accordance with current issues</li> <li>- Build landfills</li> <li>- Plan and establish policies in the local level</li> </ul>	<b>Three difficulties associated with collection and transportation:</b> <ol style="list-style-type: none"> <li>1. Dumping waste outside containers</li> <li>2. Mixture of the waste of different categories</li> <li>3. Lack of awareness of the side effects of improper behavior</li> </ol>	<b>New plans:</b> <ul style="list-style-type: none"> <li>- Creation of local plan and regulation on waste management</li> <li>- Formulated the project on waste separation in Dardania site</li> <li>- Framed the project for the building of the new landfills</li> <li>- Formulated the project for the building of the underground containers</li> </ul>

Challenges on collecting waste collection service fees are emphasized by municipality as well. With the monthly bill of €5 per household, fees are considered to be very affordable. However, non-payment remains a problem and solving these cases of failure to pay through courts is shown to be quite ineffective. Establishing a proposed scheme of merging fees of electricity bills, where the company has higher control over non-payers, with the waste fees is currently perceived as a problem. This problem arises due to the conflict of responsibilities between central and local government, respective management bodies of KEDS and “Pastrimi” company (Figure 4.6). Nevertheless, possibilities for increasing the efficiency in collection of the fees through joint-payment technique are further analyzed in the following chapters of the project.



Figure 4.6 Issues related to fee collection (Prishtina municipality)

Finances (Prishtina Municipality)	
<p>Establishment of payments</p> <ul style="list-style-type: none"> <li>- 5€ ( established by Regulatory Office for Water and Waste)</li> <li>- Affordable enough (covers expenses)</li> <li>- Collection of fees remain a challenge</li> <li>- Not enough attention given by courts</li> </ul>	<p>Emerging of fees with KEDS:</p> <ul style="list-style-type: none"> <li>- Not applied (KEDS is managed by Central Government)</li> </ul>

While waste dumping into landfills as a final destination of the waste transportation is considered to be a vital part of the waste management, there are certain problems associated with this sector as well. The current obstacles related to landfills are:

- Only one Landfill (Mirash) – not enough for the dumping of all and different kinds of waste
- New project for building new landfills- still in the initial phase

Cooperation of KMDK and “Pastrimi”

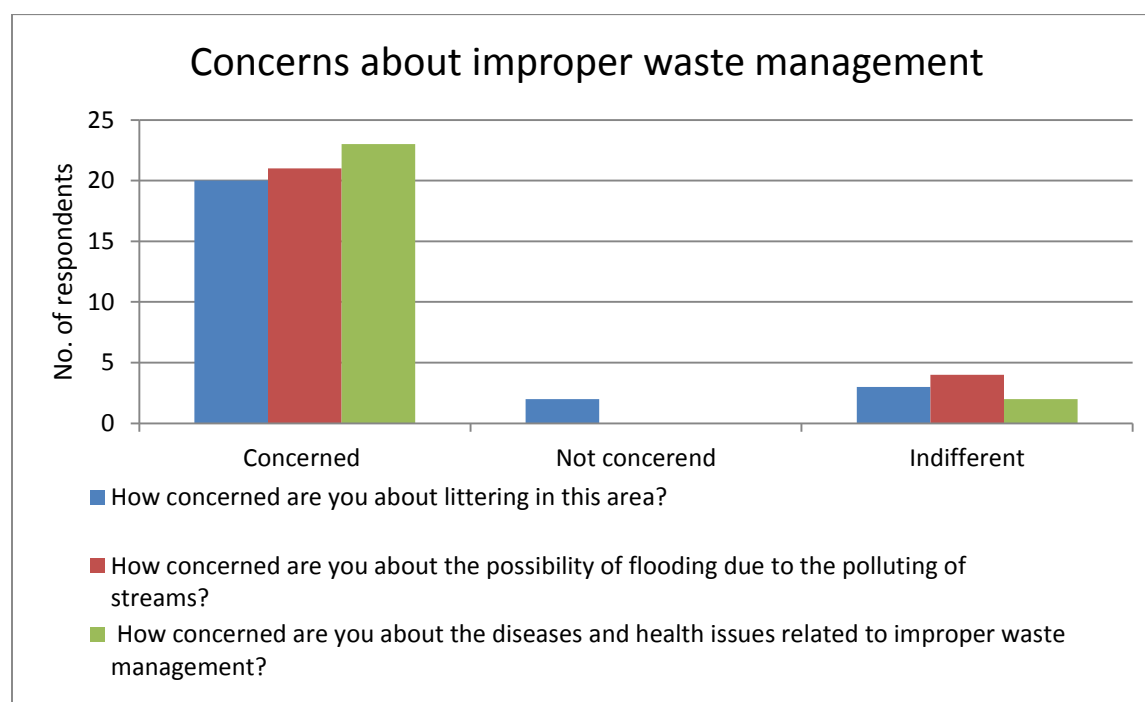
- Not a good cooperation
- High debts that “Pastrimi” owns to KMDK
- Conflicts on managing strategies of local and central authorities

### 4.3 Survey results with different sites around Prishtina municipality

While collecting information from the institutional side would provide the insights about the challenges and future plans of the respective institutions on waste management, through surveys the project provides handful results of public opinion about this sector. In order to include habitants from different sites around the city, households from five different sites are surveyed. Considering that surveys primary aim was to mainly provide some insights as to how satisfied households are with the current management of waste, around 25 surveys were conducted, 5 in each site. The sample of the survey can be found in Appendix III.

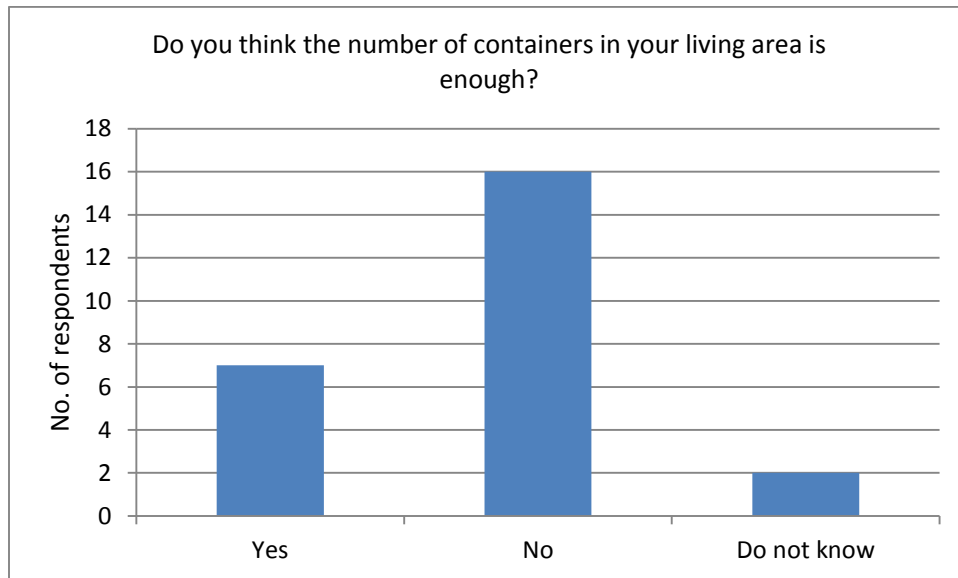
Graph 4.1 provides a summary of the concerns related to waste management in the city. In general, respondents were quite worried about diseases, flooding and other problems related to poor waste collection practices.

Graph 4.1. Summary results of the household's concerns regarding improper waste management



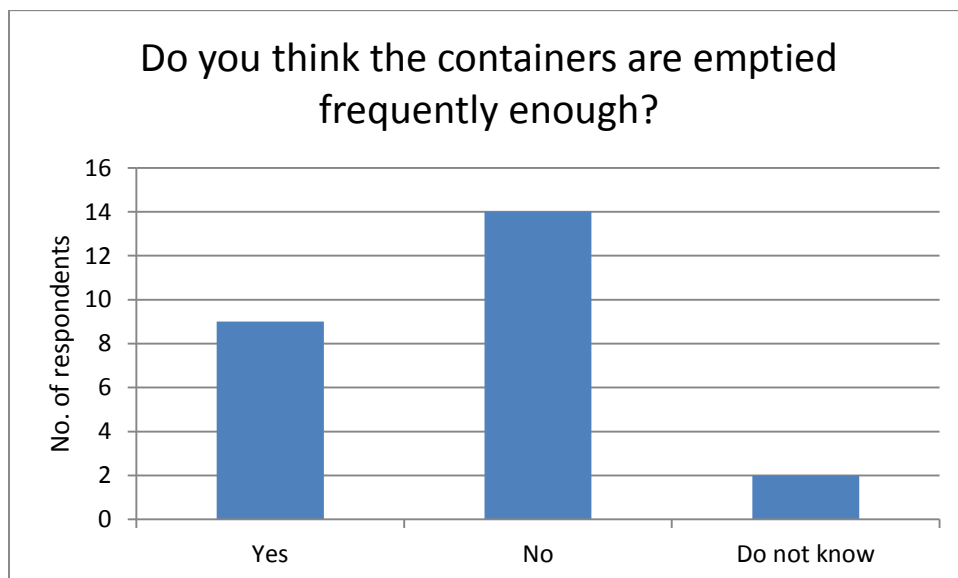
In the Graph 4.2 quite high number of respondents claims that they need more containers in their sites.

Graph 4.2 Summary results about the number of containers around the city



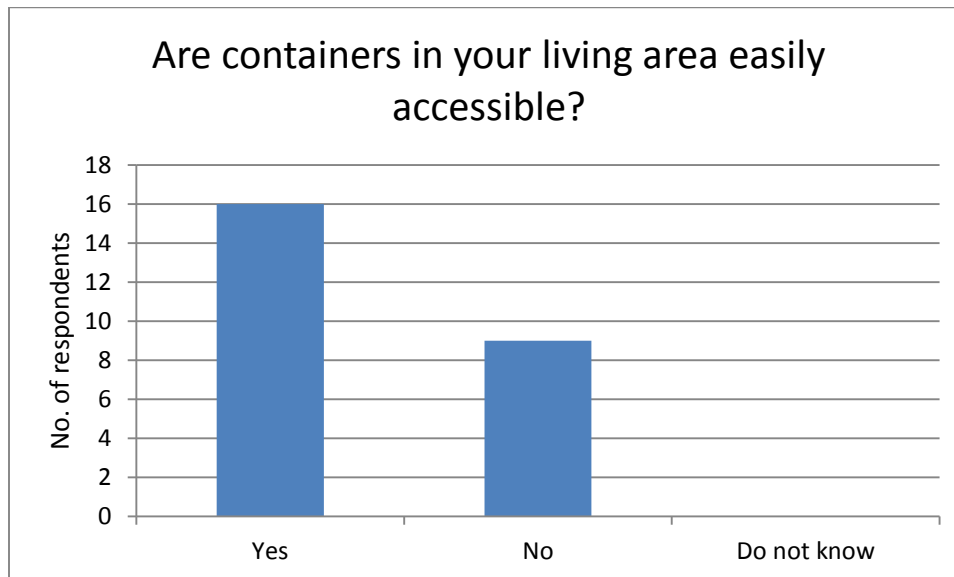
In the Graph 4.3 results shows that in many sites collection of waste according to respondents is not done frequently enough.

Graph 4.3 Summary results about collection services



While in general respondents were not very satisfied with the number of containers and the frequency of waste collection, they do not having problems with the accessibility of these waste collection points (Graph 4.4).

Graph 4.4 Summary results of container accessibility



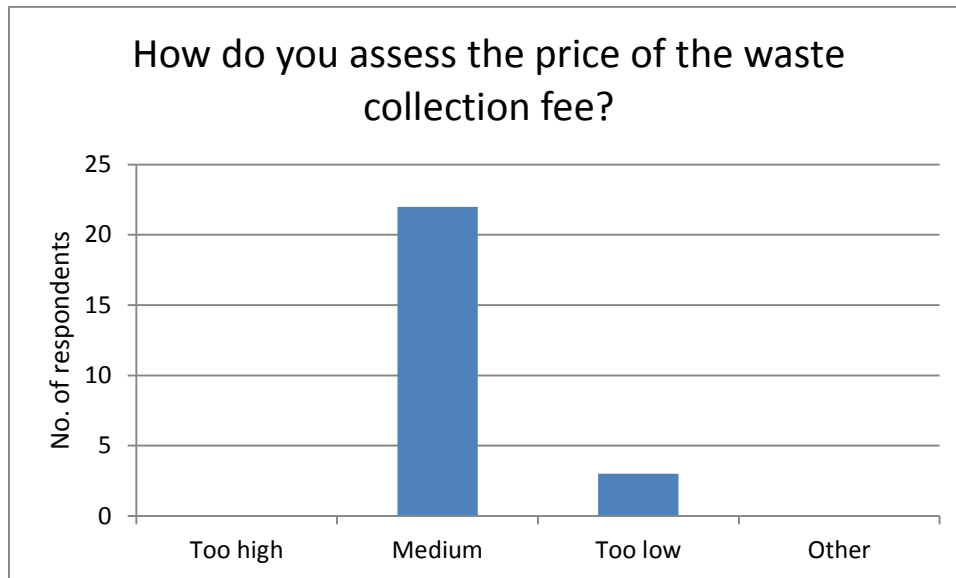
Graph 4.5 illustrates the range of fee price per month for households living in apartment. While €5 per month is the most common fixed price, there are many households paying €4 and some also paying higher prices up to €6.

Graph 4.5 Service fees per month



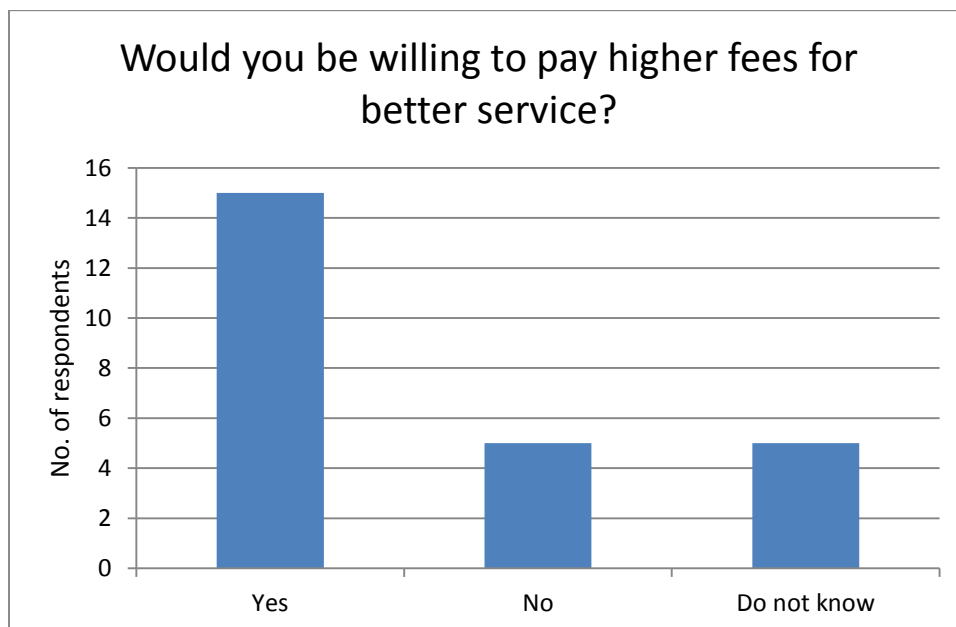
In the below graph, respondents perceive the price of the collection services to be medium. None of them claimed that price of the fee is too high.

Graph 4.6 Summary results of the assessment of the collection service prices



Graph 4.7 further displays that many respondents would be willing to pay higher price for improved services of waste collection.

Graph 4.7 Summary results of the willingness to pay more for better services



Note that Graphs from 4.1 to 4.7 displays the summary results that take into consideration the responses of the all surveyed households in the specific questions. For more detailed presentation, in the Appendix IV the percentages for the responses in each site for each question are calculated.

## 5.0 Result Analysis

Waste management for Prishtina municipality is becoming an important issue especially with the increasing trend of urbanization and modernization of the city. Rising number of houses and expansion of the living areas due to the mobility of citizens from different cities or regions around Kosovo makes the capital city quite attractive place for living. Building of new apartments, emergence of new sites, and population of even most remote places in the city are easily noticed. With the constant trend of population mobility flowing inside Prishtina, more people are now contributing to the consumption of different products, which consequently results in the higher waste generation. Meeting the demand for containers, and collection points, as well as the need for higher efficiency in waste collection activities are becoming important issues. Unfortunately, both service providers from responsible institutions as well as community, who benefits from better management of waste, agree that this sector needs more attention and they identified many areas of unsatisfied performance. From the institutional side, challenges are focused on inability to increase fee collection for services and many technical problems related to unstandardized establishment of collection points around the city, both of which are impacting the quality of the waste management practices. Such problems are also reflected in the community's satisfaction level of waste treatment for the city. Their complains are oriented toward the deficiency in the number of containers per site, the inappropriate frequency of collection services, and in the other general cleaning and maintaining activities that need higher efforts. Considering these problems, the following analysis will identify in details areas that are satisfactorily managed and those that needs improvements for the collection and transportation of waste in Prishtina municipality.

### 5.1 Analysis of results – institutional level

Collection and transportation of waste for Prishtina municipality is for the long time under the regional company, “Pastrimi”, who is also the only responsible body for such activities in entire Prishtina region. Two primary responsibilities of this company are often associated with difficulties of different nature.

Firstly, unseparated waste is considered to be a serious problem for the efficient collection. “Pastrimi” company is responsible for the collection of household waste only. The cooperation with the only available sanitary landfill in Prishtina, Mirash landfill, is also specifically done on the basis for collection and dumping of the household waste. However, often time, containers are filled with the destruction materials (inert waste or remains from the destruction of the buildings, such as bricks, iron, heavy machine parts etc.). Being unable to collect and transport these materials in Mirash landfill, many collection points remains unseparated and uncollected. Currently, municipality of Prishtina is working on the building of the landfills especially for these special/specific categories of waste. However, this project is still not implemented and the current situation remains the same.

Secondly, many logistics problems remain with regards to containers. The focus of these problems is mainly the destruction of the containers and the stealing of the container’s wheels (Figure 4.2). Destruction of containers happens mainly due to the different weather conditions and due to misbehavior of the citizens who are irresponsible in this aspect. In almost all cases, collection points are not established under shelters or covered areas, instead they are only placed around the sites where enough space is identified for approximately 3 to 4 containers in one collection point. As such, changing weather conditions effects the destruction of containers, which are replaced with the new ones very rarely. Stolen container’s wheels impede the process of transportation while emptying them in daily basis. More attention and responsibility is expected from citizens who can contribute to improving the process of waste management with their activities.

While unseparated waste, stray dogs who scatter waste all around the place, destruction of the containers are some of the important technical challenges for municipality and “Pastrimi” company, the fourth challenge, which is of the same importance is also unstandardized establishment of the collection points. New buildings as well as the old ones in many cases have to access containers which are randomly placed in the area. The total number of containers for Prishtina city is 1500, where 1 container serves to 5 families (Figure 4.2). While these numbers are considered to be appropriate, they do not necessarily say very much about the accessibility, which may encourage citizens to dump their waste in wrong places. Moreover, parking of the cars near or in the place where containers are established, hinders the process of collection and



transportation of the waste because collection vehicles could not access all points (Figure 4.2, 4.3). As such, establishing a standard and specific collection points in every new site and if possibly invest in the improving of the old ones is considered as a significant stepping stone for the better management of the spaces for waste discard.

All three above identified aspects are quite related to technical aspect and can be improved in basically two ways:

- *Increase awareness* of the citizens for discarding waste only in the designated areas for dispose of the household waste as well as increasing their willingness to separate waste in individual basis, and
- Willingness of the municipality to *provide a better standardized plan* for the establishment of the collection points in the coordination with the owners of the houses or different buildings.

While all these challenges are components of the overall results of unsatisfied waste management for municipality and they all seek attention, financial aspect remains the biggest challenge for all responsible institutions.

### **5.1.1 Challenges in fee collection**

One of the identified problems that “Pastrimi” company as well as municipality of Prishtina emphasizes is the inability of these institutions to collect 100% of the fees from the costumers. As stated before, as a regional company “Pastrimi” provides services for the entire region. As such, based on the data provided from the company, in total, only 63% of the fees from all categories (households, businesses, institutions, and consumers with contracts) for the entire region of Prishtina (Prishtina, Fushe Kosove, Kastriot, Hajvali, Lypjan, Podujeve, Gracanice, and Drenas) are collected (Figure 4.4). Total amount of revenues collected with 63% collection is 4,985,562.53 € for the year 2013.

If this company would be able to collect 100% of the fees for the entire region in all categories total amount of revenues would be 7,913,591.31 €. This figure is identified based on the following calculation:

$$4,985,562.53 \text{ €} : 63\% = X : 100\%$$

$$4,985,562.53 \text{ €} = 63\% X$$

$$X = 7,913,591.31 \text{ €}$$

From this calculation it is identified that while 100% fee collection amounts to the

7,913,591.31 € of revenues, 63 % of collection only results in the loss of 2,928,028.78 €, which constitutes uncollected fees.

$$7,913,591.31 \text{ €} - 4,985,562.53 \text{ €} = 2,928,028.78 \text{ €}$$

While figures above display the financial situation for entire region and all categories, below are the calculation for entire region in category of households, which is also the focus of this project. Based on the financial report of “Pastrimi” company for 2013, only 57.10% of households pay their fees regularly. Total amount of revenues from households with 57.10% of collection, is 2,848,710.49 €.

If this company would be able to collect 100% of the fees from the households than total amount of revenues from households sector would be 4,988,985.09 €.

$$2,848,710.49 \text{ €} : 57.10\% = X : 100\%$$

$$2,848,710.49 \text{ €} = 57.10\% X$$

$$X = 4,988,985.09 \text{ €}$$

Again, from this calculation it is identified that “Pastrimi” company from “households” category record an annual loss of around 2,140,274.6 €.

$$4,988,985.09 \text{ €} - 2,848,710.49 \text{ €} = 2,140,274.6 \text{ €}$$

Although reports from waste collection company does not provide information for the households of Prishtina municipality only, below are approximate calculations of the anticipated fee collection for this city only.

Prishtina in 2013 had 38,066 household consumers. From the research we can identify that average monthly fee price for waste collection services is 5 €, which for 12 months is 60 €. In total, if all these consumers would pay their fees, in total “Pastrimi” would collect only from Prishtina households around 2,283,960 €, which is as much as what currently this company collects from households of the entire region.

$$38,066 \times 60 \text{ €} = 2,283,960 \text{ €}$$

However, considering that collection of the 100% of the fees in the actual system of payment is almost impossible, for the anticipated calculations, 57.10 % (collection percentage of households of Prishtina region), is taken as a proxy for the following calculations.

$$57.10/100 \times 2,283,960 \text{ €} = 1,304,141.16 \text{ €}$$

$$2,283,960 \text{ €} - 1,304,141.16 \text{ €} = 979,818.84 \text{ €}$$

This concludes that with the 57.10 % of fee collection of the total anticipated amount of projected revenues for 38,066 customers in Prishtina “Pastrimi” collects only 1,304,141.16 € resulting in a loss of 979,818.84 €.

Table below summarizes the financial calculations.

Table 5.1 Summary of financial calculations of “Pastrimi” company for 2013

	<b>Total collection (entire region and all categories)</b>	<b>Household collection (entire region)</b>	<b>Households of Prishtina (approximate calculations)</b>
<b>Expected amount with 100% collection of fees (€)</b>	7,913,591.31	4,988,985.09	2,283,960
<b>Collected amount (€)</b>	(4,985,562.53)	(2,848,710.49)	(1,304,141.16)
<b>Loss (€)</b>	2,928,028.78	2,140,274.6	979,818.84

On this regard, results from the interviews with municipality shows that cases for the citizens who are non-payers that are referred to the courts for further preceding usually are not prioritized and remain unsolved for long periods. Cases that are sent to courts are usually the ones where a

household did not pay any fee at all since being registered for services in “Pastrimi” company (Figure 4.4). This shows how hard it is for institutions to control the fee payments and penalize citizens do not meet their payment obligations. The nature of this sector, and inability to cut services selectively for non-payers, impacts this situation in a very serious way.

## 5.2 Analysis of results – community

While from the analysis of results with different institutions responsible for waste management in Prishtina municipality it is quite obvious that certain problems prevails and needs to be addressed, the project also investigated certain aspects from the community perspective as well. Results show that there are many issues related to waste management for which citizens are quite concerned. In the prioritized order, citizens are shown to be very concerned about the health issues related to the improper waste management. Unpleasant smells that attracts different insects that can spread lots of diseases are becoming a serious problem for the urbanized cities. 100% of the survey respondents, from 3/5 of overall included number of sites around Prishtina, claimed that they are very concerned about health issues related to improper waste management, while from the remaining 2/5 number of sites, 80% of the respondents have such position as well (Graph 4.1). Considering that the uncontrolled, illegal waste dumping in different areas around Prishtina has also created lots of problems with the pollution of the water streams that can result in flooding, citizens are very concerned about this phenomenon as well. 80% to 100% of the surveyed citizens from all sites claim that flooding and water stream pollution is a serious issue (Graph 4.1). Similarly, littering in the living area is considered as an important concern for the all surveyed households who demand more attention to proper waste management practices.

While these are the general concerns of the citizens about waste management, certain practical aspects related to the number of containers, collection services, and accessibility of containers are also investigated. With regards to the establishment of the appropriate number of containers, Ulpiana and Kalabria seem to have the worst position because 100% of the respondents from these sites claim that the number of containers in their living areas is not enough. In contrast, Dardania site is in the best situation because majority of the households in this site are happy with the number of containers in their living hood (Appendix IV). Moreover, about the accessibility of containers and frequency of services (emptying containers in daily

basis), results reveals that Ulpiana site can be ranked in the worst position while having serious problems with both collection services and accessibility of the collection points. In contrast, Dardania, Bregu i Diellit and Qafa are perceived as areas with fewer problems on this regard (Appendix IV).

With this being said, the overall results derived from the surveys with community show that in the operations and functions side of the waste management (number of containers, accessibility of containers, collection services frequency), the Dardania site is characterized for having very few significant problems and issue. Whereas, the households from Ulpiana are identified for dealing with problems of different nature in their daily activities related with waste collection and transportation techniques.

Results taken from the community perspective also include certain financial concerns that are mostly focused on the price of services and insights of citizens about these fees. As previously seen, one of the major challenges that “Pastrimi” company encounters in the waste management practices is the insufficiency of the fee collection as compared to the projected collection, because of the irresponsibility of the households to meet their obligations in this regard. Reflecting on this situation, the first reasons raised from this case would be mainly gravitated toward the high price of the fees that would possibly discourage citizens to pay them. However, results show that majority of the respondents from all included sites believe that the waste collection fee is medium high, with none of the respondents claiming that they are too high (Graph 4.6). Moreover, surprisingly, 15 out of 25 respondents claimed that they are willing to pay higher prices for better services. It is important to note that, in the Ulpiana site, which was characterized as a site where households are having lots of complaints about waste management; all surveyed respondents claimed that they are willing to pay higher prices for better collection services (Graph 4.7). Similarly, in the Dardania site, which is considered to be in the best situation of waste management practices, households assess the price of the waste collection fees as “medium”, however, majority of respondents stated that they are not sure whether they are ready to pay higher prices for better services. This again ensures that households in the Ulpiana site are facing different problems and are willing to sacrifice more for better.

Also, considering that majority of respondents assessed the waste collection fee as “medium”, but with the evidence derived from the financial statements of “Pastrimi”, high percentage of citizens do not meet their payment obligations, it can be concluded that higher control over payments needs to be established. This means that if citizens are conditioned to pay their fees upon higher fines or upon having higher control over their requirements, they will be more willing to allocate their monthly budget for waste collection as well. Increasing the efficiency in reviewing the cases of noncompliance with payment, brought in the courts of Kosovo, would certainly be an effective approach. However, in order to maintain a sustainable and long-term solution to this current situation, some new strategies in the payment process can also be considered as an important step of improvement.

## 6.0 Discussion

Comparing the situation of waste management practices from after war period (early 2000), with the situation that prevails now, it is obvious that responsible institutions are working in increasing the efficiency of waste collection. The importance of having properly managed waste management system is of many folds and institutions are aware of this importance. Establishing an operations system that tries to include all sites and areas around Prishtina, organizing collection during the night shift, establishing a convenient way of payment for citizens in the door-to-door collection of fees are just some of the ways that “Pastrimi” company in cooperation with Prishtina municipality recognized for improving the waste management system. However, even in the small talks between citizens it is seen that they are not satisfied with the collection of the waste and they do not qualify Prishtina as a clean place to live. This shows that in this process, there are areas that need attention. Collection and transportation of waste are identified as important aspects of this practice.

Results of the research show that there are certain problems that respective institutions have to deal with. Increasing the awareness of the citizens about the importance of saving the environment, being more willing to separating waste by their categories and contribute to recycling, as well as increasing their willingness to be a regular payer of the waste collection fees remains a challenge. Especially when it comes to the collection of the fees, both the responsible company for waste collection, “Pastrimi” company, as well as citizens suffers a lot. Insufficiency in the collection of the fees impairs the quality of the services that the company can offer and that the citizens deserve. The results show that this problem is possibly disturbing the process of standardization of the payments as well. This is especially encountered while examining the list of the prices of payments where citizens from “Bregu i Diellit” site as well as some of the citizens in the “Ulpiana” site pay the monthly fee for waste collection in the amount of 4€, while citizens in the other sites around Prishtina have to pay their monthly fees in the amount of 5€ for the same services. The immediate response to such an unexpected situation is that “Pastrimi” charges slightly different prices for the sites where it cannot perform its work efficiently enough. This deficiency in the quality can be easily linked to the lack of the financial resources resulted by the inability to collect the monthly service fees from the registered customers.

The results about the collection of the payments also reveal that majority of the citizens assess the price of the waste collection services as medium high. While this result would be classified as an expected response, the willingness of the majority of the citizens to pay higher prices for better services is unexpected situation. Further studies have to be done with on identifying the critical level of the price to which citizens' responds positively and remain motivated to pay. However, for this study it is sufficient enough to conclude that non-payment of the bills is not directly linked to the high prices. Instead, having no mechanism to cut the services selectively for the individuals who do not pay their fees makes this process very vulnerable to free riders, who benefit from the services but do not pay the cost. Therefore, this leads to the recommendation for the reformation of the payment system where "Pastrimi" can have higher control over the payments of consumer or better incentivize them for being more responsible on this regard.

The research also show that while municipality is responsible body to monitor the work of the companies that are in charge of collection and transportation of waste, "Pastrimi" company is the only company dealing with these duties. Moreover, "Pastrimi" is considered as a regional company, which under its administration it includes many areas around Prishtina. As such it provides services for around 1/3 of the all citizens of Kosovo, with the registered number of customers amounted to 62, 654 customers. There is not very much effort is given on the evidence about the capacity of the company to effectively serve all the customers. Moreover, having no competition between companies as well as having no options for citizens to choose who will be the responsible company available to perform the collection and transportation services for them raises different concerns. From the evidence gained through the research, it may be assumed that companies are generally reluctant about entering this market because of the deficit in the collection of the fees that can result in the loss of the projected revenues for them. However, it is assumed that more companies will be attracted if this situation improves and more people will be included in the regular payment system that in turn will incentivize more businesses to be part of this market. Increasing the available options among the companies to choose for citizens in the waste collection services as a result is expected to alleviate certain complains about efficiency in the waste management process that community encounters. Ultimately, having more than one company engaged in this process, based on how efficient they



can be and how satisfied citizens are with their services, have the potential to trigger the prospective businesses to be as proficient as possible with their job.

While assessing problems with different sites around the city, certain areas appeared to be less effectively managed in the waste collection and transportation process. Ulpiana as one of the biggest sites around Prishtina, have the households who are mostly concerned about problems related to poor waste management practices. Such problems are related to possible health issues, water stream flooding, and generally littering in the living area. They are also having more problems in the technical aspect as well. For many households their number of containers is not sufficient to meet their needs. Many times they have complaints with the accessibility of the waste collection points, meaning that they are either established in the high distance from the apartment buildings or are placed in the corners of the street and are hardly identified. Surprisingly, such problems are less present or are not applicable at all in other sites. For example, households in the Dardania site are the most satisfied citizens with regards to waste collection in their area. They are less concerned about the problems related to the improper waste management practices and they are quite satisfied with the operational activities of “Pastrimi” company. However, while they assess the price of the collection services as medium high, they appeared less willing to pay higher fees for these services because they claim to be pleased with the current situation.

While these are the analysis driven by the research, it is important to note that “Pastrimi” company as a regional company does not provide detailed information about each city that is under its responsibility. While there are figures that show the revenues collected from Prishtina municipality, there is lack of evidence about the losses registered from this region or any evidence about how satisfied citizens are with the services in this area. There is also lack of evidence with regard to waste categories generated from each city. This in part results because of the lack of the incentives of citizens to separate their waste, which would help in identifying the amount and the types of the waste that dominates in each area. Having this information would certainly impact the service companies with aligning their collection system and would contribute to the initiation of the recycling practices.

With this being said, the process of waste management is rather a complex concern that incorporates many phases. While collection and transportation of discards are the initial steps in

the process of waste management arrangements, a quite important aspect to consider is also the recycling. In the developed countries, recycling of waste provides substantial revenues that contribute to the increasing efficiency of waste treatment. The process of recycling usually begins with the separation of waste after consumption into specific categories, which also identifies the recyclable and non-recyclable materials. In Kosovo, recycling is still very new activity which is very scarcely practiced. Despite the suggestions of certain respondent participants in the research for increasing awareness for the importance of waste separation, citizens are generally not applying this practice. Households discard their waste in the same location regardless of its composition. Mechanisms to incentivize citizens, be it in financial or any other means, to separate waste are non-existent. It is important to emphasize that many times, containers with specific names and colors for a certain waste category have been established, however, considering the lack of initiatives for recycling they did not serve their purpose and quickly became inefficient. In this regard, the informal sector that includes group of the people who collect specifically plastic bottles and cans for certain amount of compensation do have a contribution in the separation of waste and its recycling. Therefore, the role of the informal sector in recycling, the projected revenues that recycling can bring, and the involvement of community in this process, are all parts of the waste management process and needs to be consider closely. The scope of the project does not incorporate recycling but the importance of this process for the general outcomes on improving waste collection is very high. It is known that with recycling less waste is generated and as such cleaner and ecological living environment is maintained.

Hence, the scope of this project is focused on identifying and addressing the problems related to the collection and transportation of waste for Prishtina municipality. It identifies the challenges of related institutions in improving the management of waste collection. It addition the project focuses in identifying complains of citizens and their suggestions for advancing the current system of waste collection. As a result households of different sites appear to have different opinion with regards to these services. While some are satisfied other have lots of complains and demand better management. This leads to the opinion that “Pastrimi” is not able to meet the request of the all households in the entire region. Problems related to this are predominantly based on the inefficient financial capacities. Nevertheless, the scope of the project does not address important aspect of waste management such as recycling and its economic and

ecological benefits. This activity is still very new for Kosovo and further initiatives are expected in the future.

## 7.0 Recommendations on improving the waste management

Considering the problems that citizens in Prishtina municipality are facing with regards to the inefficient waste management system, this project aims to identify the difficulties related to the collection and transportation of waste and the possible causes of such concerns. It is well known that if the waste management does not meet the requirements of citizens for such services, many problems can emerge. These problems are related to different aspects. They primarily can impact the health of the citizens due to the spread of the diseases caused by unpleasant smells and insects. They pollute the environment and can cause flooding. In the broader sense, if collection points are full of waste and they are not maintained appropriately, then cities can be quite uncomfortable places to live. Keeping these points in mind, Prishtina is one of the cities that need an intervention for the improvement of the waste collection system. As identified during the research, areas that need more care and attention can be grouped in two categories:

1. Improving the system of fee collection
2. Introducing more companies in the waste collection services
3. Improving the operational activities, so that they can support the demand of services

### 7.1 Improving the system of fee collection

Despite the fact that citizens have lots of complaints about the waste management practices, the percentage of monthly uncollected fees for Prishtina municipality remains high. With only 63% of fee collection from the total amount of registered customers, “Pastrimi” persistently registers lots of losses in annual revenues that would otherwise be invested in increasing the efficiency of the waste collection process. Collection of the waste for apartments is done collectively through containers. It is arranged in a way that 5 households (apartments) can discard their waste in 1 container. This arrangement however, is not maintained in the practice. Usually many containers (3 to 4 containers) are placed in one area and whoever needs a space to discard their waste uses the available containers. This in turn disturbs the process of waste management because many people use the services that “Pastrimi” provides but not all of them provide a compensation for these activities. Since the collection of waste is performed

collectively and not selectively for each customer, the company cannot identify the “free riders” in this process and as such cannot cut their services for specific households. So far, the company solved some of these cases through the court procedures, where households who did not pay any of the monthly fees for a long period of time and have a high accumulated debt are brought to the court and obliged to meet their payment responsibilities. This method of incentivizing citizens to pay their fees is perceived to be efficient where only few people do not pay their fees but did not work very well with the increasing number of nonpayers. Court procedures tend to last very long and are very often delayed for indefinite deadlines. In the case like this, “Pastrimi” identifies the problem with nonpayers as a major concern that impact the quality of their services and the satisfaction of the citizens.

Considering this case, the project introduces the possibility of applying the joint-payment mechanism as the most significant recommendation. Joint-payment is introduced as a system where the collection of the fees is merged with the fees for other household utilities. For the purpose of this project and considering that the project scope is focused in Prishtina municipality exclusively, the recommendation on the merging the monthly payment of drinking water (tap water) and waste collection monthly fee payment is suggested. The company who is responsible for water services in Prishtina is “KUR Prishtina-KURP”. This company is also a regional water provider that besides Prishtina it incorporates also Fushë Kosova, Obiliq, Shtime, Lipjan, Podujeva, Glogoc, Graçanica and Vushtrri. The payment of the water services is also registered in the monthly basis and citizens pay the monthly price based on how much water they spend for the specific period of time. The reason for suggesting the merging of the fees between these two companies is primarily because of convenience. The fees for the water usage for households in Prishtina region generally varies between 12 € -15 €, it is expected that adding 5 more euros to this price will not frustrate citizens. However, establishing this payment mechanism will certainly engage some additional financial calculations. If “KURP” takes the responsibility of administering the payment of fees for “Pastrimi” the administration cost will be expected to rise and KURP will request a share from the revenues gained from this newly established system.

The yearly administration cost of “Pastrimi” company (this includes cost of printing, cost of banking services, cost of official administration, cost of paper, cost of auditing and other related costs) amount up to 62, 964 € annually. When the fee collection is handed to the “KURP”

the administrative costs will also be handed over this company. Therefore, “Pastrimi” should pay the amount of around 63,000 € to “KURP” yearly for only administering or including their fee in the joint-payment system. Additionally, it is expected that “KURP” will be willing to accept the offer of the joint payment upon a certain amount of profit from this contract.

In this case, based on the previously performed calculations, the annual revenues generated from Prishtina region for the collection of household waste is 2,848,710.49 € while the loss from the inability to collect 100% of the fees is 2,140,274.6 € (Table 5.1). For the establishment of this new payment mechanism that aims to improve the situation and for the purpose of this project, it is assumed that “Pastrimi” decides to give to “KURP” the yearly amount of 500,000 € from the joint-payment mechanism in addition to 62,964 € for covering its administrative expenses. As such, in the event of 100% of the fee collection, which is expected to result from the establishment of joint-payment mechanism, the revenues of “Pastrimi” company will increase up to 1,577,310.6 € annually.

$2,140,274.6 \text{ € (amount of yearly losses)} - 562,964 \text{ € (cost of establishing joint-payment mechanism)} = 1,577,310.6 \text{ € (added revenues)}$ .

The cost of establishing the joint payment system (562,964 €) is subtracted from the loss because for “Pastrimi” that amount is still a loss, while the amount of 1,577,310.6 € will be regained or added to the annual revenues.

Similarly, considering that joint-payment mechanism cannot be assumed to be established for the household waste only but it will incorporate managing bills of all categories, the calculation for this scheme are provided below.

The total amount of revenues that “Pastrimi” collects from the collection of bills from all categories of waste in the entire Prishtina region is 4,985,562.53€. Whereas the loss that this company register due to inability to collect 100% of the fees is 2,928,028.78 € (Table 5.1). If it is again assumed that the total cost for establishing joint-payment scheme is 562,964 €, then, the collection of the fees will be improved by adding to the revenue generation an additional 2,365,064.78 €.

2,928,028.78 € (amount of annual losses) – 562,964 € (annual cost of establishing joint-payment mechanism) = 2,365,064.78 € (annual added revenues).

Table 7.1 Summary of revenue increase from the joint-payment system

	<b>Total collection (entire region and all categories)</b>	<b>Household collection (entire region)</b>
<b>Registered losses from uncollected fees</b>	2,928,028.78 €	2,140,274.6 €
<b>Administrative expenses + joint-payment cost (500,000 €)</b>	(562,964 €)	(562,964 €)
<b>Added revenues</b>	2,365,064.78 €	1,577,310.6 €

The amount of 500,000 € is decided arbitrarily upon the consideration of certain factors:

- The reason for “Pastrimi” to establish this payment mechanism is to increase its revenues so that it can improve its service quality. If this cooperation is too costly (exceeding 500,000 € by far) than the mechanism cannot result to the intended purpose.
- This amount is also considered to be reasonable because:
  - Although it is expected that 100% of fees will be collected from this new system, it risky to assume such a perfect situation. As such, establishing a very costly cooperation will not be satisfactory for “Pastrimi”.
  - Although administrative costs of “KURP” for registering fees of waste collection are covered in the amount of the previously established cost, in fact administration cost may not increase for the specified full amount because joint-payment will merge payments and not establish a new system. As such, increasing the cost of cooperation even further is not an expected decision.

The reason for suggesting the emergence of fees with water services is the fact that companies who manage water services have higher control over payments. They can simply cut their services for non-payers. As such, it is believed that having this control for waste services will

improve the payment scheme. However, the cost of establishing this new payment system is assumed based on certain calculations and it is open to the negotiations and agreements between two companies. Also, establishing a trial of this payment system for certain amount of time will contribute to a precise amount of contractual agreement. For the purpose of this project the system is introduced and certainly needs an expert view before the application.

While the previous calculations show how a joint-payment mechanism can work, there are some reasons why the cooperation with “KURP” may be problematic in application. The dominant issue is that “Pastrimi” as well as “KURP” are regional companies but the regions that they administer are not exactly the same ones. As such, considering that “KURP” cannot release bills differently for the areas that are under both companies’ responsibility and differently for those that are not, it can be hard to be applied. Consequently, for a better view of the application of this system, the joint-payment with Kosovo Electricity distribution and Supply Company (KEDS), responsible company for the distribution of electricity and collection of electricity bills for Kosovo is also suggested.

Having a uniform payment system of waste collection services for all cities will increase the control over the collected revenues, where each city will collect these revenues based on the number of customers they serve within their area. The cost of establishing this system can be assumed to be the same as with the “KURP” but as previously mentioned it should not be too high because it cannot be efficient enough for improving the system of the waste fee collection. The major attention in establishing the cooperation with KEDS should be given to maintaining an agreement between local and central governance. That is because “Pastrimi” company or in general waste management is under the responsibility of local administration (responsibility of municipalities), whereas, “KEDS” is under the management of central government and provides services for all citizens around Kosovo. Assuming that both parties benefit from this agreement, such cooperation can impact the improvement of the situation significantly.

Joint-payment mechanism for waste management services together with other utilities is a very well established payment system in many European countries. Most of the citizens of the westernized countries pay for their waste management services together with the payment of taxes or other utility payments. For example, in the Netherlands, citizens pay their quarterly fees for water, waste water, and waste collection all together (13). This practice is coordinated very



well in the European countries because waste management is considered as a public service that is very important for public health. Learning from these examples can add lots of value to the efforts on improving the current situation on waste management for Prishtina municipality.

## **7.2 Introducing more than one company on waste collection services**

Currently based on the interviews held with different officials in Prishtina municipality, the primary reason for having only one company responsible for the entire region of Prishtina on waste collection is the fact that other companies do not see this market as a good opportunity. Having lots of losses from the inability to collect fees of the services and having very limited mechanism in improving this situation drives away many other businesses, which would be able to provide qualitative services.

Citizens do not have options on deciding with which service provider they want to cooperate because there is only one company, “Pastrimi”. In such situation, complains of the citizens and strategies for improving the operation services are not very diverse. In the market where there is not competition there is also less incentive to find effective and creative methods for improving the collection services. While this does not imply that “Pastrimi” is less interested to improve the waste management, having more than one company in the market would provide new methods and techniques that possibly can address certain issues that for the moment are not considered.

Increasing the collection of the fees and consequently increasing the revenues generated from this business will attract new companies. Considering that joint-payment mechanism aims exactly to maintain this increase, it is expected that the monopolistic nature of the market in the waste management services will be changed. More companies and more effective methods of collection can be provided.

## **7.3 Establishment of collection point**

Research revealed also many problems related to the establishment of the collection points. Respondents from many sites around Prishtina (i.e Ulpiana, Kalabria, Qafa) claims that they are not satisfied with the number of containers, frequency of the collection services, and the

accessibility of the collection points. This means that in many sites number of containers is not in line with the demand and they are placed in the areas that are not easily accessible, meaning they are provided in the areas that are far from the apartments.

Also based on the rule 1 container should serve to 5 households (apartments), it is obvious that inside the site 2 or 3 containers serve to the all near neighborhood which usually is made up of 2 or 3 buildings (more than 20 apartments with an average of 3 family members). Considering these observations it is implied that there is not any standardized form for establishing the number of containers. Even more, there is not any specific strategy for identifying the best places for establishing these collection points. In the case like this the project recommends that taking into consideration the number of registered customer, specific number of containers should be established. For increasing the control over the users of the containers, these collection points can be established in closed spaces that are accessed only by the customers who are expected to use such containers. If this can be applied in the practice there will be less complains about services. Regardless of the technique used to meet the demand for such services, municipality should have a standardize method of satisfying the needs for each citizen who meet their payment obligations and expect higher efficiency.

## Conclusion

In conclusion, the project's aim was to identify the challenges that impede the development of the waste management. The research and analysis shows that, waste management and many issues related to this sector are associated with lots of challenges for Prishtina municipality. Citizens in this city are concerned about the illegal littering and uncontrolled dumping. Increasing the awareness of the citizens for the importance of maintaining a clean living environment is of a crucial importance. Improving the collection and transportation of the waste will positively contribute toward a well-maintained environment. However, achieving these improvements is not easily possible, especially considering financial difficulties that responsible institutions encounter. These difficulties in a great part are related to the inability to collect monthly fees from all customers in Prishtina region. That is because only 63% of the customers pay their bills regularly, while others benefit without contributing. This unfortunate

situation that clearly impacts the quality of the waste collection services and the situation in entirety happen because of lack of mechanisms to prevent the non-payment. Sanctions for nonpayers proved to be inefficient because they did not incentivize people to be more responsible with the payment obligations.

Grounded by this situation, the project recommends the establishment of the joint-payment mechanism with KEDS or KURP, which is expected to reduce the loss of the revenues from non-collected fees significantly. For the illustration, based on the calculations with the current number of customers and the costs of monthly waste bills, “Pastrimi” company can regain to its annual revenues an amount of 2,365,064.78 €, if applied in all Prishtina region and for the all categories of waste. Maintaining this improvement in the collection of the fees will incentivize more companies to join the market, where citizens can have the ability to choose between those firms that suits their needs or performs the best. In general, these steps will positively impact this sector and minimize complains of the citizens.

Moreover, the project also highlights the importance of establishing a standardized system of implementing the collection points. If this is achieved, there will be enough containers that are easily accessible for all households. In turn, this will enhanced the control for illegal dumping.

## References

- (1) Annual report of Regulatory office for water and waste in Kosovo. (2007, June 1). Retrieved October 8, 2014, from [http://www.wwro-ks.org/Publications/AnnualPerfor/01\\_SHQIP.pdf](http://www.wwro-ks.org/Publications/AnnualPerfor/01_SHQIP.pdf)
- (2) Gjendja e Mbeturinave. (2009). Retrieved September 15, 2014, from [http://www.ammk-rks.net/repository/docs/2Raporti\\_i\\_mbeturinave\\_2008.pdf](http://www.ammk-rks.net/repository/docs/2Raporti_i_mbeturinave_2008.pdf)
- (3) Grumbullimi i Mbeturinave të Ngurta: Një Përmbledhje e Praktikave të Mira Europiane me rekomandimet për Kosovën. (2008, March 20). Retrieved September 15, 2014, from [http://www.wwro-ks.org/Publications/Studimet/Praktika\\_e\\_Mire\\_Europiane\\_dhe\\_Rekomandimet\\_per\\_Kosoven\\_Grumbulimi\\_Mbeturinave.pdf](http://www.wwro-ks.org/Publications/Studimet/Praktika_e_Mire_Europiane_dhe_Rekomandimet_per_Kosoven_Grumbulimi_Mbeturinave.pdf)
- (4) In 2011, 40% of treated municipal waste was recycled or composted, up from 27% in 2001. (2013, March 4). Retrieved September 17, 2014, from [http://epp.eurostat.ec.europa.eu/cache/ITY\\_PUBLIC/8-04032013-BP/EN/8-04032013-BP-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/8-04032013-BP/EN/8-04032013-BP-EN.PDF)
- (5) Managing municipal solid waste — a review of achievements in 32 European countries. (2013, January 1). Retrieved October 8, 2014, from [www.eea.europa.eu](http://www.eea.europa.eu)
- (6) Modak, P., Jiemian, Y., Hongyuan, Y., & Mohanty, C. (2010, January 1). Chapter 5 – Municipal Solid Waste Management: Turning Waste into Resources. Retrieved October 7, 2014, from [http://www.un.org/esa/dsd/susdevtopics/sdt\\_pdfs/shanghaimanual/Chapter\\_5\\_-\\_Waste\\_management.pdf](http://www.un.org/esa/dsd/susdevtopics/sdt_pdfs/shanghaimanual/Chapter_5_-_Waste_management.pdf)
- (7) Plani i Republikës së Kosovës për Menaxhimin e Mbeturina. (2013, January 1). Retrieved September 15, 2014, from [http://www.kryeministri-ks.net/repository/docs/Plani\\_i\\_Republikes\\_se\\_Kosoves\\_per\\_Menaxhimin\\_e\\_Mbeturina\\_ve\\_2013-2017.pdf](http://www.kryeministri-ks.net/repository/docs/Plani_i_Republikes_se_Kosoves_per_Menaxhimin_e_Mbeturina_ve_2013-2017.pdf)
- (8) Promovimi i transparencës dhe efikasitetit në sektorët kyç. (2007). Retrieved September 15, 2014, from <http://www.arkep-rks.org/repository/docs/Promovimiitransparences-fikasitetit.pdf>
- (9) Raporti i punes per vitin 2013 (Vol. 346, p. 20). (2013). Prishtine: Kompania Rajonale e Mbeturinave "Pastrimi"
- (10) Rregullore për Menaxhimin e Mbeturinave në Territorin e Komunës së Prishtinës. (2012, December 28). Retrieved October 7, 2014, from <https://kk.rks.gov.net/prishtina/getattachment/Home/Rregullore-per-menaxhimin-e-mbeturinave-ne-teritorin-e-komunes-se-Prishtines.pdf.aspx>

- (11) Schubeler, P., Wehrle, K., & Christen, J. (1996, August 1). Conceptual Framework for Municipal Solid Waste Management in Low-Income Countries. Retrieved October 7, 2014, from [http://www.worldbank.org/urban/solid\\_wm/erm/CWG\\_folder/conceptualframework.pdf](http://www.worldbank.org/urban/solid_wm/erm/CWG_folder/conceptualframework.pdf)
- (12) Solid Waste Management: A Local Challenge with Global Impacts. (2002, May 1). Retrieved October 7, 2014, from <http://www.epa.gov/solidwaste/nonhaz/municipal/pubs/ghg/f02026.pdf>
- (13) "Solid Waste Management Sourcebook/2.3 Topic K: Financing." [Http://www.unep.or.jp](http://www.unep.or.jp). United Nations Environment Programme, 2011. Web. 28 Jan. 2015. [http://www.unep.or.jp/ietc/ESTdir/Pub/MSW/RO/Europe/Topic\\_k.asp](http://www.unep.or.jp/ietc/ESTdir/Pub/MSW/RO/Europe/Topic_k.asp)
- (14) Strategjia e Republikës së Kosovës për Menaxhimin e Mbeturisë 2013-2022. (2013, January 1). Retrieved October 8, 2014, from [http://www.kryeministri-ks.net/repository/docs/Strategjise\\_se\\_Republikes\\_se\\_Kosoves\\_per\\_Menaxhimin\\_e\\_Mbeturise.pdf](http://www.kryeministri-ks.net/repository/docs/Strategjise_se_Republikes_se_Kosoves_per_Menaxhimin_e_Mbeturise.pdf)

## Appendix I

(Interview questions with “Pastrami” company)

### INTERVIEW WITH THE REGIONAL COMPANY FOR WASTE COLLECTION AND TRANSPORTATION “PASTRIMI”. PRISHTINE

#### *General*

1. How many functional departments does “Pastrimi” company has?
  - List departments here:  
\_\_\_\_\_
2. Does this company have Board of Directors? If yes, how many members it has?
3. Does “Pastrimi” company have any cooperation agreement with other companies for collection and transportation of household waste? If yes, how does this cooperation works?
4. In which aspects does your company collaborate with Prishtina municipality?
5. Which are five (5) main responsibilities of “Pastrimi” company?
  - List responsibilities here: -  
\_\_\_\_\_
6. Which are main challenges of “Pastrami” company regarding waste collection?
  - (a) Unseparated waste   (b) Stray dogs   (c) Destruction of containers   (d) Car parking in collection points   (e) Other challenges
7. Which are main challenges of “Pastrimi” company regarding waste transportation?
  - (a) Lack of transportation vehicles   (b) High number of collection points

### ***Waste Collection***

8. What is the percentage of door-to-door waste collection and the percentage of collection through containers?
  - Percentage of door-to-door collection: \_\_\_\_\_
  - Percentage of collection through containers: \_\_\_\_\_
9. In which sites around Prishtina door-to-door waste collection is higher than collection through containers?
10. What is the total number of containers in Prishtina municipality?
11. What is the average number of containers per site in Prishtina and how is this number determined?
12. How many times and at what part of the day does your company collect waste (door-to-door and through containers) in the city?
  - Door-to-door collection: \_\_\_\_\_
  - Through containers: \_\_\_\_\_

### ***Waste Transportation***

13. How are the collected waste transported from containers to the landfills?
14. How many waste transportation vehicles do you have and of what type are they?
15. Do you think you have enough waste transportation vehicles and appropriate number of workers engaged in this activity?
16. How appropriate is the urban planning of the city for the efficiency of your company in collection and transportation of the waste? What are the actual problems?

17. Should apartment construction companies consult with your company or Prishtina municipality for identifying appropriate collection points for the new owners of the apartments?

### ***Finances***

18. What is the percentage of the collected fees for Prishtina municipality? Is this situation satisfactory?
19. What are the possible penalties applied in case of non-payment of the service fees?
20. How effective are these penalties in improving the current situation of lack of payment?
21. Does your company have any future plan to incentivize households to pay their waste collection service fees?

*Thank you for your contribution!*



## **Appendix II**

(Interview questions with Prishtina municipality)

### **INTERVIEW QUESTIONS WITH PRISHTINA MUNICIPALITY (HABIB QORRI- DIRECTORATE OFFICE OF PUBLIC SERVICES IN PRISHTINA MUNICIPALITY)**

#### ***General***

1. How do you assess current situation of Prishtina on municipal solid waste management?
  - (1) Satisfactory
  - (2) Needs Improvements
  - (3) Not satisfactory
2. If it needs more improvements, which aspect requires more attention?
3. If it is not satisfactory, which are three main problems?
4. Can you summarize the responsibilities of “Pastrimi” company and the responsibilities of Prishtina municipality for the collection and transportation of waste?
5. What are three main challenges associated with waste collection?
6. What are three main challenges associated with waste transportation?
7. Does Prishtina municipality have any future plan to improve the current situation of waste collection and transportation?

#### ***Finances***

8. How is the current fixed rate fee for waste collection determined?
9. How reasonable is this fee and how successful have you been in collection of the fees so far?

10. What are the measures taken toward those who do not pay monthly waste collection fees?

***Landfills***

11. Which are the landfills that Prishtina municipality discards the collected municipal solid waste?

12. What is the relation of Prishtina municipality/how do you coordinate with companies who manages landfills?

13. What are the future plans of the municipality for the waste management sector?

*Thank you for your contribution!*

## **Appendix III**

(Households survey questions)

### **SURVEY QUESTIONS FOR HOUSEHOLDS LIVING IN APARTMENTS**

#### *General Information*

1. How many members of family do you have?

A. 1

B. 2

C. 3

D. 4

E. 5

F. >5

2. How many times do you discard your household waste in containers per day?

A. 1

B. 2

C. >2

#### *Information about the concerns on waste management*

3. How concerned are you about littering in this area?

A. Concerned

B. Not concerned

C. Indifferent

4. How concerned are you about the possibility of flooding due to the polluting of streams, rivers, wells of uncontrolled (illegal) dumping?

A. Concerned

B. Not concerned

C. Indifferent

5. How concerned are you about the diseases and health issues that may be related to improper storage and disposal methods of waste?

A. Concerned

B. Not concerned

C. Indifferent

*Service Information*

6. Do you think the number of containers in your living area is enough?

A. Yes

B. No

7. Do you think the containers are emptied frequently enough?

A. Yes

B. No

8. Are containers in your living area easily accessible?

A. Yes

B. No

*Financial Information*

9. How much do you pay for waste collection per month?

• \_\_\_\_\_ €

10. How do you assess the waste collection fee?

A. Too high

B. Average

C. Too low

D. Other (Please specify) \_\_\_\_\_

## Appendix IV

(Detailed percentages of the responses for the question 3-8)

<b>3. How concerned are you about littering in this area?</b>			
<b>Site</b>	<b>Concerned</b>	<b>Not Concerned</b>	<b>Indifferent</b>
Dardania	40%	40%	20%
Ulpiana	100%	100%	100%
Bregu i Diellit	60%		40%
Kalabria	100%	-	-
Qafa	100%	-	-

Table 1. Question 3 results

<b>4. How concerned are you about the possibility of flooding due to the polluting of streams, rivers, wells of uncontrolled (illegal) dumping?</b>			
<b>Site</b>	<b>Concerned</b>	<b>Not Concerned</b>	<b>Indifferent</b>
Dardania	80%	-	20%
Ulpiana	100%	-	-
Bregu i Diellit	80%	-	20%
Kalabria	80%	-	20%
Qafa	80%	-	20%

Table 2. Question 4 results

<b>5. How concerned are you about the diseases and health issues that may be related to improper storage and disposal methods of waste?</b>			
<b>Site</b>	<b>Concerned</b>	<b>Not Concerned</b>	<b>Indifferent</b>
Dardania	80%	-	20%
Ulpiana	100%	-	-
Bregu i Diellit	100%	-	-
Kalabria	100%	-	-
Qafa	80%	-	20%

Table 3. Question 5 results

<b>6. Do you think the number of containers in your living area is enough?</b>			
<b>Site</b>	<b>Yes</b>	<b>No</b>	<b>Do not know</b>
Dardania	80%	20%	-
Ulpiana	-	100%	-
Bregu i Diellit	20%	40%	40%
Kalabria	-	100%	-
Qafa	40%	60%	-

Table 4. Question 6 results

<b>7. Do you think the containers are emptied frequently enough?</b>			
<b>Site</b>	<b>Yes</b>	<b>No</b>	<b>Do not know</b>
Dardania	40%	20%	40%
Ulpiana	-	100%	-
Bregu i Diellit	80%	20%	-
Kalabria	40%	60%	-
Qafa	20%	80%	-

Table 5. Question 7 results

<b>8. Are containers in your living area easily accessible?</b>			
<b>Site</b>	<b>Yes</b>	<b>No</b>	<b>Do not know</b>
Dardania	100%	-	-
Ulpiana	40%	60%	-
Bregu i Diellit	100%	-	-
Kalabria	20%	80%	-
Qafa	60%	40%	-

Table 6. Question 8 results

## Appendix V

(Excel file of all survey results)

No.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
<b>Dardania</b>												
1	5	1	Not concerned	Concerned	Concerned	Yes	I don't know	Yes	€ 5	Medium	I don't know	Garbage around containers
2	>6	1	Indifferent	Indifferent	Concerned	Yes	Yes	Yes	€ 5	Medium	I don't know	Seperation of waste
3	5	1	Concerned	Concerned	Concerned	yes	Yes	Yes	€ 5	Medium	I don't know	Clean the surroundings
4	5	1	Not concerned	Concerned	Indifferent	Yes	No	Yes	€ 5	Medium	No	Seperation of waste
5	5	2	Concerned	Concerned	Concerned	No	I don't know	Yes	€ 5	Medium	Yes	
<b>Ulpiana</b>												
1	4	1	Concerned	Concerned	Concerned	No	No	No	€ 6	Medium	Yes	More containers
2	4	1	Concerned	Concerned	Concerned	No	No	No	€ 6	Medium	Yes	
3	5	2	Concerned	Concerned	Concerned	No	No	No	€ 4	Low	Yes	
4	3	1	Concerned	Concerned	Concerned	No	No	Yes	€ 4	Low	Yes	
5	2	1	Concerned	Concerned	Concerned	No	No	Yes	€ 4	Low	Yes	
<b>Bregu i Diellit</b>												
1	5	2	Indifferent	Concerned	Concerned	I don't know	No	Yes	€ 4	Medium	Yes	
2	5	1	Indifferent	Indifferent	Concerned	I don't know	Yes	Yes	€ 4	Medium	No	
3	2	1	Concerned	Concerned	Concerned	No	Yes	Yes	€ 4	Medium	I don't know	
4	3	1	Concerned	Concerned	Concerned	Yes	Yes	Yes	€ 4	Medium	Yes	Higher fines
5	4	2	Concerned	Concerned	Concerned	No	Yes	Yes	€ 4	Medium	Yes	
<b>Kalabria</b>												
1	4	1	Concerned	Concerned	Concerned	No	Yes	No	€ 5	Medium	Yes	
2	5	2	Concerned	Concerned	Concerned	No	No	No	€ 5	Medium	No	Stray dogs
3	5	1	Concerned	Concerned	Concerned	No	No	No	€ 5	Medium	I don't know	Dumping outside containers
4	3	1	Concerned	Indifferent	Concerned	No	No	Yes	€ 5	Medium	Yes	
5	5	2	Concerned	Concerned	Concerned	No	Yes	No	€ 5	Medium	No	
<b>Qafa</b>												
1	4	1	Concerned	Concerned	Concerned	No	No	No	€ 5	Medium	Yes	
2	4	1	Concerned	Concerned	Concerned	No	No	No	€ 5	Medium	Yes	
3	2	1	Concerned	Concerned	Concerned	No	Yes	Yes	€ 5	Medium	Yes	
4	3	2	Concerned	Indifferent	Indifferent	Yes	No	Yes	€ 5	Medium	No	
5	5	1	Concerned	Concerned	Concerned	Yes	No	Yes	€ 5	Medium	Yes	

Table 7. Collection of survey results