Construction and Demolition Waste in Kosovo

A case study in the municipalities of Pristina and Fushe Kosova
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Report on the Results of a Case Study Research Project (2019)

Technische Universität Berlin
Urban Management Program
in Collaboration with
GIZ and the Municipalities of Pristina and Fushe Kosova

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Preface

The dismantling of the Federative Socialist Republic of Yugoslavia in 1999 was followed by a conflict between Albanian and Serb nationals in the area. In 2008, nearly 10 years after the end of that conflict, the Republic of Kosovo was established.

Kosovo’s challenge

With a history of changing borders, occupying forces, ethnic divisions, land cuts and land swaps Kosovo had little chance to develop as a nation. Subsequently, most things ‘governmental’ have tended to exist at a basic level and are presently in a state of development. These include:

• The legislative system and the capacity to enforce laws,
• Inventories and databases quantifying demographic details and cultural backgrounds,
• Industrial and agricultural production facilities and capacity,
• Housing conditions and public health,
• Natural resources and the state of the environment,
• The educational system and educational levels,
• The country’s financial management and a system for the taxation of revenues.

Kosovo and the EU

In addition to the challenge of setting up a functioning government in a country of nearly 1.81 million as of early 2019 (https://countrymeters.info/en/Kosovo), Kosovo is also in the process of becoming an aspiring associate member of the European Union. On top of having to formulate, democratically approve, implement and enforce new laws since becoming a country, Kosovo is also required to legislatively harmonize with the EU legal and enforcement system. One of the areas of harmonization with EU laws, regulations and practice is the field of environmental management in general and the area of waste management in particular.

Kosovo’s development supported by Germany

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has been working in Kosovo on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) since 1999, this year officially marking two successful decades of cooperation. Areas of cooperation include supporting the Kosovo government with the harmonization of EU laws, regulation and practice in the priority areas of sustainable economic development, governance, education and energy. Specifically, the GIZ Sustainable Municipal Services (Waste Management) Project provides specialized technical, policy and organizational support to the central and local level in Kosovo in the area of waste management. At the local level the project supports municipal authorities in implementing service delivery, administrative processes and innovations; at the knowledge management level GIZ supports multiplier to scale-up reforms, ensuring a broader impact and sustainability; and at national level by improving the legal and institutional framework of the sector. Currently the focus of the project is to support Kosovo in developing the local and institutional framework conditions for a circular material economy, which include implementing mechanisms that make the product producer responsible for the end-of-life of that product. In this context, construction and demolition waste (CDW) is a significant waste stream in Kosovo and the management and treatment of it is a major problem for the country.

Thus, the project aims to better define the current situation and CDW management in Kosovo in order to assess the economic and social perspectives that result from introducing new solutions for production, treatment, reuse, and recycling of secondary raw materials.

Kosovo + GIZ + TU Berlin

Based on successful cooperation in previous years, in 2019 the Faculty of Urban Management (UM) of the Technical University of Berlin supported by the Department of Circular Economy and Recycling Technologies (CERT) of the Institute of Environmental Sciences and Technology of the Technical University of Berlin joined forces with the GIZ Kosovo office to organize a student research project. The project was developed and guided by GIZ and focused on the real-life waste management issues in Kosovo, i.e. the management of CDW.

From student to researcher, data processor, graphics designer and author

In the third week of May, 2019, 26 Urban Management students from TU Berlin, together with 10 students from the National University of Kosovo, divided themselves into five groups and, guided and supported by GIZ Pristina, spent five days collecting and processing data on the management of CDW in Kosovo in general and more specifically on the following assigned topic:

1. CDW generation rates past and present; mapping of CDW disposal sites over time
2. Operating model for collection and transport - existing vs. proposed
3. Recycling and reuse as options to improve environmental, social and economic performance
4. Incentives for prevention, reduction and reuse, improving construction longevity
5. Comparison of legal and policy frameworks at local and national levels relative to needs

Data collection took place in a wide variety of ways including:

• during 26 meetings and 56 interviews with a wide variety and large number of stakeholders at various local and national government levels and with large and small private businesses,
• through own observations at construction and demolition sites,
• by using Google Earth® comparative analyses of CDW disposal sites over time,
• by comparing existing laws and regulations with their implementation in Kosovo,
• by studying best practices of surrounding countries and comparing these with related approaches observed in or read about in Kosovo.

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Athdetare Kelmendi
Foreword

A decade has passed since Kosovo declared its independence and the country is progressing in its political and economic path towards the European Union. Faced with rapid development, sustainable development and environmental protection strategies need to be in place to ensure sound growth and to mitigate adverse effects on society and environment.

One area of high impact on health and wellbeing of citizens in the country is ensuring proper management of waste. This is a common challenge that cities around the world face. Waste management is a capital-intensive sector that requires a multi-faceted approach in concept and operation to ensure sustainability. In Kosovo’s rapid development, a fraction of growing relevance that requires special attention is Construction and Demolition Waste (CDW).

The construction industry and related building activities in Kosovo have witnessed a significant increase over the past decade due to post-war reconstructions needs followed by diaspora investments and economic development. The effect has led to high amounts of CDW generation in the country. The improper collection and treatment of CDW has resulted in a substantial increase of illegal dumps in the countryside, posing a health threat to citizens, flora and fauna alike.

As Kosovo has made noteworthy progress in ensuring basic waste collection services over the past years, the next steps are focusing on the necessary legal and institutional framework for a circular economy. This includes the set up of a proper production, reuse, recycle and end-of-life process for special waste fractions, such as CDW. In order to review the existing situation and provide recommendations on how to tackle the CDW challenge, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf German Development Cooperation has joined forces with the Urban Management Program of Technical University (TU) Berlin to conduct a desk and field study. Specifically, the resulting publication aims to better define the current situation of CDW management in Kosovo in order to assess the economic and social perspectives that result from introducing new solutions for production, treatment, reuse, and recycling of secondary raw materials in the construction industry.

GIZ in Kosovo and the GIZ Sustainable Municipal Services project team expresses full appreciation to all our partners who actively contributed to the realization of this publication. A special recognition is given to the Ministry of Environment and Spatial Planning in Kosovo for their time and readiness to answer questions. To the municipalities of Pristina and Fushe Kosova, the Regional Waste Company “Pastrimi”, the Kosovo Landfill Management Company, local communities and NGOs, private construction companies and experts alike, a big thank you for welcoming the students and providing them with your invaluable experience and expertise. Lastly, a special thank you to the TU Berlin professors, teachers and students for their hard work and research dedicated to the topic. The findings of this publication provide a baseline and important stepping stone guiding further CDW concepts and initiatives for Kosovo in the years to come.

Alexandra Linden, Program Manager Sustainable Municipal Services, Kosovo
Acknowledgements

Appreciation and thank you’s: For this wonderful experience, many thanks are due to:

- GIZ for financial support, for hosting us during the working days and for allowing us to leave our mess behind at the end of the day to facilitate the continuation thereof on the next day.

- Alexandra Linden as chef d’équipe and her colleagues in the Kosovo office for their interest in our group of young researchers and for extending us lots of support, both practical and in terms of guidance.

- All the people, from the Minister of Environment and Physical Planning to the informal collector of CDW metals, for giving us their time, practical knowledge and experience and for their interest in what brought us to Kosovo.

- The Kosovar students who, on the Monday morning were patiently waiting to see what they’d got themselves into but by Friday afternoon were indistinguishable from the Berlin students in terms of enthusiasm and interest in the project and each other, not to mention tiredness at the end of a week of high-intensity research.

- Dr. Bettina Hamann back in Berlin, long-time driving force behind the practical development of international students attending the Urban Management program. This year she once again played a leading and stimulating role.

- Marcus Busse, who knitted together nearly 60 files of various sorts into the piece of art in front of you reflecting the findings of this multiresearcher high-intensity investigation.

The editors can’t emphasize enough the pleasure of working with this great mixture of international students, and how smoothly and seamlessly they all related to and cooperated with one another. It was special to realize that these 26 Berlin and 10 Kosovar students gave their time and creative intelligence to a project that only a few weeks earlier, they had not even heard of. In return, they gained experiences in real life research and in working with a multinational and -culturally mixed group of other promising young people, an experience that gave each of them a true personal growth spurt not easily to be forgotten.

Last but way from least, our collective thanks go to Atdhetare Kelmendi, a driving force during the preparation phase of this project and an extremely dynamic, enthusiastic and tireless leader during the Kosovo week. Your spirit greatly contributed to the wonderful atmosphere during the week and to the product this research has resulted in. We surely speak for everyone who was directly involved when we say, ‘Atdhetare please go on inspiring young people to develop academically, socially and practically.’
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List of Abbreviations

CDW  Construction and Demolition Waste
EoW  End-of-Waste
EU   European Union
GDP  Gross Domestic Product
GIZ  Deutsche Gesellschaft für Internationale Zusammenarbeit
KEPA Kosovo Environmental Protection Agency
MESP Ministry of Environmental and Spatial Planning
MFK  Municipality of Fushe Kosova
MP   Municipality of Priština
PCB  Polychlorinated Biphenyl
PoE  Public-owned Enterprise
RAE  Roma, Ashkali, Egyptians
ROMA Romani ethnic group of the population living in Kosovo
SD   Selective Demolition
SME  Small and Medium Enterprises
USEPA United States Environmental Protection Agency
Challenges

Limitations encountered when carrying out research on Construction and Demolition Waste in Kosovo/Germany

The following list of challenges was experienced while carrying out the Construction and Demolition Waste research in Kosovo. Since these limitations could affect the results and conclusions drawn from the research, a rough assessment of the potential impact of each limitation is added.

CDW composition data: If little systematic information is available on CDW in general terms of mass or volume relative to location, even less information is available on the types and fractions of non-mineral waste mixed with what is roughly called CDW.

Major limitation: Insufficient information may lead to gross over- or underestimation of the CDW fraction and thus, may affect the chosen management approach.

Data accuracy: The field of CDW management has seen the development of a number of publications attempting to systematize the different aspects of CDW management in general and methods for gathering quantitative information in particular. Methodologically accurate information is important when setting up CDW management systems or when benchmarking against CDW management systems in, for example, different geographical areas.

Nevertheless, quantitative methods are as strong as the precision with which methods are executed and consequently so are the data entering the database. Even though literature has seen estimates - in two decimal points - of the volume of CDW in illegal disposal sites, this does not mean much when it is known how much information was obtained through interviews or when trying to find out whether certain CDW-related laws are respected or not.

Major limitation: When data estimates have rarely or never been verified by actual measurements, systematic errors can slip into the followed methodology, leading to potentially major errors impacting on data accuracy. This leads to major limitations in the usefulness of the data.

Data gathering through social media: Part of the information gathered was obtained through setting out questions in some popular social media tools. It is recognized that the distribution of questions through social media has the potential to result in answers to those questions with an age-dependent bias.

Major limitation: The use of social media to ensure a large response group may largely attract responses from younger age groups who may be differently acquainted with the specific questions than older age groups. Comparing responses between age groups could allow for an assessment of the impact of the specific limitation.

Data on road construction: In research on CDW, waste from road construction is usually included. Unfortunately, information on that aspect of CDW was nearly entirely absent in the Kosovo data. The only mention referred to the use of CDW for temporary road repair.

Major limitation: It can be assumed that serious attention is paid to road improvement and extension projects. If so, lack of info could seriously underestimate CDW generation rates.

Different people, different interviewers: Interviews were conducted by three people. The amount of information collected varied accordingly as did the interpretation of the gist of what had been communicated by the interviewees.

Minor limitation: The more people involved in both questioning and answering the better. Nevertheless, three interviewers are hopefully sufficient to cover the breadth of the interviewing approach.

GIZ - dynamic engine, source of bias: GIZ was the initiating partner in the cooperation between TU-Berlin - Department of Urban Management and the Chair of Circular Economy and Recycling Technology - and the Kosovo GIZ office. Moreover, the GIZ office was the focal point where all work was done and from where all visits, meetings and excursions were organized. As a result, the familiarity of the GIZ staff with the local situation, key players, sites of interest in project terms and project needs was the key influential factor. Sites where interviewees might be found were mostly selected by their close proximity to the GIZ office or resulted from the personal knowledge of construction site locations of GIZ colleagues familiar with or actually working on the CDW project Pristina.

Minor limitation: GIZ was clearly influential in conceptualizing and developing the research project in the way it was fit. However, this also meant that doors were easily opened from finding workers to be interviewed to setting up a meeting with the Minister of Environment and Spatial Planning. In short, the bias on one side, that was the consequence of the heavy involvement of GIZ, was offset by the breadth of the approach as a result of the network and reputation of GIZ.

Language - ingredient of communication skills: The project’s language of communication is English. However, for only a handful of those involved (including the interviewees) was English their mother tongue (or close). Additionally, people with significant experience in spoken English may have limitations when expressing themselves in written English. As a result, when interviewing C&D field workers, responses to questions were mostly given in Albanian. These responses were jotted down in either Albanian or English and later relayed in the report in the English. At each of the points of ‘conversion’ losses in precise meaning may well have occurred.

Minor limitation: Communication skills were basic to the underlying research project. Language was an important element. These skills were needed to jointly develop the approach, extract information and coherently and systematically present the information in a report designed to enrich local professionals and incidental readers. Although differences between those involved existed, average communication skills were well up to standards.

Limited factual data: Information regarding CDW generation rates is limited. Institutions at the municipal and central level do not presently collect and interpret data on the C&D sector and therefore do not yet have a database in the public domain.

Major limitation: Limited (and limitedly reliable) data forced the researchers in this project to design plans and policies based on their assumptions of the needs.

Local content: Quantitative, factual information related to construction and demolition practices was limited to that for the cities of Pristina/Pristina and Fushë Kosova and, to a more limited extent Pejë/Peć. Therefore, it was not possible to make statements regarding CDW with a country wide validity.

Major limitation: The three locations may not be representative of Kosovo as a whole.

Minor limitation: The three locations represent approx. 30% of the total population of Kosovo.
Time: Time was in short supply. This is true for any research endeavour but especially true when the topic is not in one’s daily area of expertise and when the end results also depend on coordination with stakeholders and their availability, knowledge and willingness to share that knowledge.

Minor limitation: Half a day more of data collection in Kosovo would have added to the results but would not have improved the reliability of the information obtained.

Two groups of interviewees: One group of interviewees had a practical, work-related level of knowledge while the other group had relatively high educational levels (students, GIZ employees). For that reason, the questions in the interviews were modelled after the expected area of knowledge/expertise of those to be interviewed.

Minor limitation: More groups of interviewees would have been better. However, the two groups actually interviewed were, one could say, pretty much at the opposite ends of the scale and, as such, may have provided a relatively balanced picture.

We researchers - a potential bias: When contacting field C&D workers we were perceived to be inspectors although we rushed to explain that we were students doing a research project. Nevertheless, the high sensitivity of the topic - CDW, illegal disposal, threat of fines when caught - might have impacted the responses. If anything, workers may have given underestimations of waste sent to illegal disposal sites.

Minor limitation: It is possible that for some workers the fear of meeting inspectors impacted their answers. By contrast, the realization that they were dealing with students, may have led others to feel at ease and therefore more inclined to open up.

C&D inerts in recycling: In the context of getting a handle on CDW generation and disposal rates in Kosovo there are unsubstantiated claims from construction companies that backfilling of inerts in the mining industry is the major CDW recycling practice in the country.

Minor limitation: As long as ‘external’ claims regarding rates of CDW backfilled are not substantiated and no data appear to exist on the rate of excavation of mining base materials for production of concrete, the extent of this limitation is unknown. However, it could be significant relative to the many other uncertainties.
Chapter 1 - Status quo of construction and demolition waste in Kosovo
Chapter 1 - Status quo of construction and demolition waste in Kosovo

Kosovo, a post-conflict country, is transitioning to become a potential candidate for membership of the European Union (European Commission, 2019, p. 6; Council of the European Union, 2008, p. 9). As such, it is required to meet a long list of EU quality standards including those relating to waste management. For example, while EU countries are moving to phase out the disposal of waste in landfills, Kosovo inventoried the existence of 1,572 illegal disposal sites in 2017 (KEPA, 2018, p. 47).

According to the EU Construction and Demolition Waste Management Protocol 2016, CDW currently represents one-third of all waste produced in EU member countries (European Commission, 2016, p. 1). KEPA indicates that 47% of the waste fractions found in illegal disposal sites is comprised of CDW. These data imply that CDW management is one of the biggest challenges in Kosovo (KEPA, 2018, p. 47). Although, in some exceptional cases, landfills accept CDW after reaching a special agreement with the local government (Hajdini, 2019), most of the country’s municipalities have no licensed CDW landfills. Despite sporadic efforts to clean up illegal disposal sites, the number of illegal disposal sites is growing (KEPA, 2018).

1. Status quo of construction and demolition waste in Kosovo

Authors: Yllka Agusholli, Alejandro Alvarado Lima, Mohammad Arifuzzaman, Eunice Doan Tran, Fjolla Kosumi, Win Htein Lin, Dhany Ningtyas, Sunita Rai.
This chapter will present the status quo of CDW management in Kosovo. First, it will provide a CDW classification system. Second, it will focus on estimates of CDW generation in Kosovo. Third, it will study the CDW collection and disposal systems. Fourth, it will estimate the quantity of this type of waste in illegal disposal sites. Fifth, it will provide an overview of CDW flows and the stakeholders involved. Sixth, it will present the possible impacts of illegally disposed CDW on the environment and economy. Finally, the findings from the study will be presented with recommendations.

1.1 Objectives, Methods and Limitations

1.1.1 Objectives

The objectives of this chapter are:

- To understand the general CDW situation in Kosovo, identify the stakeholders involved and generate an approximation of CDW generated annually, including classification, spatial distribution, and trends of illegal disposal sites over the years.
- To analyze illegal CDW sites in 2016, 2017, and 2019 in correlation with policies and actions currently being implemented in the country to comprehend their correlation and effects on a larger scale.
- To briefly review laws and policies in order to identify possible obstacles. Based on this, future opportunities and strategies are established.
- To define possible impacts of CDW on sustainability in general and the environment in particular.

1.1.2 Methods

In order to achieve these objectives, the following methods were used:

- Primary and Secondary Literature review: to comprehend the historical, social and political context of Kosovo. This provided a clear overview of the local scenario and established a starting point for the research. The secondary literature review was done to analyze CDW classification, generation, disposal and recycling.
- Interviews: in collaboration with the GIZ office in Kosovo, a set of interviews with several actors and institutions directly involved in CDW were conducted. This not only provided the information needed to map out the stakeholders, it also allowed the researchers to detect inconsistencies in the management of CDW between institutions and loopholes in the current legal framework.
- Analysis of the mapping results of illegal disposal sites: to analyze the illegal disposal sites based on the work done by GIZ Kosovo in the years 2016, 2017 and 2019. Fluctuations over time in the size of some illegal disposal sites in Pristina and Fushe Kosova municipalities were assessed by size determinations using Google Earth. Furthermore, changes in the volume patterns of some of the illegal disposal sites were discussed and analyzed with the relevant stakeholders.
- Estimation of CDW from registered building permits: to calculate from registered construction permits for new buildings and demolition permits the possible waste generated in Pristina and Fushe Kosova, using a formulation from a study in Spain by Solís-Guzmán et al. (2009). This estimation is to establish how much CDW is generated annually in both cities and how this number contributes to total CDW generation.
- Field observations: field visits to two illegal CDW disposal sites were made to assess the status of the disposal sites and the condition of the waste disposed of there. Physical dimensions were measured such as the size and height of the disposal sites. The surface area was subsequently cross-checked with the area measured on Google Earth.

1.1.3 Limitations

- Information was limited to that for the cities of Pristina and Fushe Kosova. Therefore, it was not possible to quantify the accumulated CDW for the entire country.
- After scrutiny and consultations with GIZ experts, it was determined that in previous reports ambivalent methods for calculations of quantities of CDW may have been used. Therefore, improved calculation methods were introduced leading to more accurate quantity estimates.

1.2 Classification of CDW in Kosovo

Defining CDW can be a complex task, as construction and demolition are primarily a local activity and involves different perceptions about CDW among diverse stakeholders (European Commission, 2016, p. 7). The EU defines CDW as ‘any waste generated in the activities of companies belonging to the construction sector and included in category 17 of the European List of Wastes’ (European Commission, 2016, p. 28). Category 17 of the European List of Waste classifies the types of materials that can be considered as CDW (European Commission, 2016, p. 31). The State Waste Catalogue (MESP, 2013, pp. 86–88) presents a detailed classification of the CDW groups with material types and adopts congruity with the classification system of the European List of Waste provided by the European Commission. The State Waste Catalogue of Kosovo also classifies construction and demolition waste in waste group 17 and assigns eight subcategories according to CDW material types (MESP, 2013, pp. 86–88). Table 1 shows the CDW material types that are included in the State Waste Catalogue of Kosovo. For detailed classification please see Appendix 1: CDW classification including hazardous waste and waste codes.

1.3 CDW Generation Rate

This section describes the CDW generation rate in the area of Pristina and Fushe Kosova.
However, information regarding waste generation is limited since public institutions such as municipalities and the central government rarely collect and analyze data on the construction sector. A document published by the Ministry of Environment and Spatial Planning in 2013 states that 167,900 tons of CDW are produced every year in the country as a whole (MESP, 2013). As shown in Table 2.

1.3.2 CDW Generation Rate at Municipal level

Due to the unavailability of information with respect to the generation rate of CDW in Pristina and Fushe Kosova, the generation rate was estimated based on the number of new building and demolition permits issued by the Urban Planning Department in Pristina and Fushe Kosova. The available data gathered in this section is limited to building permits issued between 2012 and 2018 and demolition permits for the year 2018 in Pristina. Meanwhile, information regarding building permits in Fushe Kosova is available for 2015 to 2018, with no information available regarding demolition permits. Each building permit refers to a total surface area, meaning the total area of the building including single or multiple floors (Municipality of Pristina, n.d; Municipality of Fushe Kosova, n.d).

In 2012, 100 permits were issued for new buildings by the Urban Planning Department in Pristina, for a total surface area of 247,867m². This number more than doubled 6 years later in 2018 with 186 permits being issued for a total surface area of 869,020m² as shown in Table 5 (Municipality of Pristina, n.d). Meanwhile, the number of demolition permits issued in 2018 was 33, for a total surface area of 10,767m² (Municipality of Pristina, n.d).

According to data from the Urban Planning Department in Fushe Kosova, 52 construction permits were issued for new buildings in 2015, for a total surface area of 298,398m². This number decreased in 2018 to 38, for a total surface area of 201,950m², as shown in Table 6 (Municipality of Fushe Kosova, n.d).

1.3.3 Estimation of CDW

The Ministry of Environment and Spatial Planning in Kosovo has issued several laws relating to the regulation of Construction and Demolition Permits, such as Law No. 6/2017, Law No. 2/2018 and Law No. 10/2013. However, none of these laws mandate to estimate the amount of CDW produced in construction, demolition and renovation projects. Hence, there...
was no data on CDW generation. In order to estimate the amount of CDW generated by construction and demolition projects, data from Pritina and Fushe Kosova municipalities was analyzed using the data available, as previously mentioned. A methodology taken from a study conducted in Spain by Solís-Guzmán et al. (2009) was used for these estimations in this report.

In their research, Solís-Guzmán et al. (2009) developed a model to calculate the generation rate of CDW based on the volume of waste produced, starting with reinforced concrete, bricks, glass, circuits, etc. Based on their study, the ratio of 0.31m³/m² was used for new construction works and the ratio of 1.26m³/m² for demolition works (Solís-Guzmán et al. 2009).

The methodology used by Solís-Guzmán et al. (2009) calculates waste generation by multiplying the total surface of the building (m²) and the waste generation ratio of new construction work (m³/m²). The estimated volumes of construction waste based on data available from Pritina fluctuate between 2012 and 2018, as shown in Table 5. In 2018, approximately 269,000 m³ of construction waste was generated from 186 new building permits issued by the Urban Planning Department in Pritina. According to the data gathered for Fushe Kosova from 2015 to 2018, construction waste decreased by 10% per year. In 2017, the amount of construction waste is estimated at 75,564 m³, but this number declined to 62,604 m³ in 2018, as shown in Table 6.

### 1.4 Collection and Disposal of CDW

#### 1.4.1 Legal Framework

According to Kosovar law, each municipality is responsible for the management of CDW within its jurisdiction (KEPA, 2018). Central government is not outside this issue, given that the MESP must provide support by issuing laws and strategies that align with municipal efforts (MESP, 2013). Nevertheless, a closer look at current Kosovar waste legislation reveals a paradox. Currently CDW is one of the biggest issues in the country, yet there are no companies authorized to manage this waste (KEPA, 2018). In addition, there is no designated landfill for users to dispose of CDW in Kosovo (Hajdini, 2019). Illegal disposal is therefore a result of the lack of policy implementation.

Policy implementation in Kosovo is inconsistent, even though the local authorities are making legislative efforts to control CDW generation. Fushe Kosova Municipality is planning to enforce a demolition permit that is directly linked to the construction permit, making it mandatory for the developer to dispose of waste according to Kosovar legislation (Qyqalla, 2019). Municipal authorities claim that there is currently no waste segregation policy (Qyqalla, 2019), meaning that all subcategories of CDW are mixed and the location for the final disposal of this waste is unclear under current regulations. Further, these policies do not specify how to treat and dispose of CDW after collection. This brings to light the absence of a strategy that tackles CDW management on a larger scale.

#### 1.4.2 CDW Collection

As previously mentioned, there are no companies authorized to manage, i.e. transport and dispose of, CDW in Kosovo (KEPA, 2018). The lack of mechanisms and proper infrastructure for CDW management has resulted in alternative solutions in both the formal and informal sectors.

On the formal side, the authorities needed to use available resources to handle the issue. Pastrimi, a publicly-owned company authorized by Pritina Municipality to collect and dispose of municipal household waste, is currently appointed to collect and transport 18,000 m³ of inert waste, mostly composed of CDW (Hajdini, 2019). This solution is not feasible and generates problems for both the authorities and the company, which is incurring additional expenses as the landfills charge extra for handling CDW (Qyqalla, 2019).

On the informal side, various actors have become part of the system as a result of the lack of options to manage CDW. The ethnic minorities (Roma, Ashkali and Egyptian) are often called in to clean small construction sites, or they buy CDW from developers to reuse in improving their homes (Qyqalla, 2019).

On the informal side, various actors have become part of the system as a result of the lack of options to manage CDW. The ethnic minorities (Roma, Ashkali and Egyptian) are often called in to clean small construction sites, or they buy CDW from developers to reuse in improving their homes (Qyqalla, 2019).

### 1.4.3 CDW Disposal

With no authorized landfills for CDW disposal, illegal disposal is the most common practice to dispose of this type of waste in the Pritina region (Hajdini, 2019), resulting in the increase and spread of illegal disposal sites (Qyqalla, 2019). According to Fatmire Hajdini, manager at Pastrimi, landfills only receive CDW when the material is needed to stabilize the soil as part of the maintenance of the landfill facilities (Hajdini, 2019). Collection companies are allowed to dispose of CDW on municipal landfills only under special circumstances. Usually a special contract is drafted requiring landfills to accept CDW when the municipality cannot deal with the large quantities of CDW being produced and illegally disposed of (Hajdini, 2019).

### Table 5: Estimation in Pritina Area

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of new building permits issued</th>
<th>Total surface area (m²)</th>
<th>CDW estimation (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>100</td>
<td>247,467</td>
<td>76,838</td>
</tr>
<tr>
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### Table 6: Estimation in Fushe Kosova Area

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<tr>
<th>Year</th>
<th>Number of permits</th>
<th>Total surface area (m²)</th>
<th>CDW estimation (m³)</th>
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<td>2018</td>
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1.5 Overview of Illegal Disposal of CDW

This section focuses on the analysis of illegal disposal of CDW at both national and municipality levels, using Pristina and Fushe Kosova as case studies.

1.5.1 Quantification of Illegal Disposal of CDW in Kosovo

There were 1,572 illegal disposal sites in Kosovo in 2017 (KEPA, 2018, p. 47). Data collected by GIZ suggested the higher figure of 1,643, with the number expanding to 2,527 sites in 2019, a 30% increase (GIZ database citation).

Following the same KEPA (2018) classification method, the illegal disposal sites were labelled ‘small’ (waste volume estimated at 1 to 5 bags of 200 liters), ‘medium’ (5 to 20 bags) and ‘large’ (more than 20 bags).

For the entire country, out of 2,527 disposal sites, 28% are small, 32% are medium and 40% are large (Figure 2). The Municipality of Peja has the most illegal disposal sites at 237. Meanwhile, Junik and Klokot Vrbovac have the lowest number of disposal bags per site at 11 sites for each municipality (GIZ database citation).

The illegal disposal sites are commonly observed along roads, mostly regional or local roads. For example, 20 out of 25 large disposal sites in Pristina were found away from the main roads. Malisovo municipality has the highest number of large disposal sites, 86% of which are located on regional and local roads (GIZ database citation).

Different types of waste are to be found in illegal disposal sites, including (Figure 3) (a) Inert/construction waste, (b) Household waste, (c) Industrial/hazardous waste, and (d) Bulky waste. The fraction of CDW across all 38 municipalities differs widely, from 0% to as high as 79% in Deçan/Dečane (GIZ database citation).

While the error in the estimation of the amount of waste stored in an illegal disposal site is small for small illegal disposal sites (the error in estimating the height is limited because of the limited surface area involved and the implicit pyramidal shape of the disposal site), this error is bigger in estimating the height of a medium illegal disposal site (more variation in height over the disposal site) and quickly becomes significant with large illegal disposal sites because both the height and the surface area are guesswork. Therefore, a more practical approach was followed:

1. The surface area of a number of large illegal disposal sites in Pristina was measured onsite.

2. Subsequently, the height of the generic disposal site needed to be determined. Here the following consideration is of importance. The illegal disposal sites are formed by the dumping of waste materials unloaded from cars and small trucks. Since that activity is illegal the drivers of these cars and trucks are not concerned about unloading the materials neatly on top of the material already there. As a result, each time a car or small truck is unloaded, this is done on a new piece of (easily reachable by car) land, at best close to the materials already dumped there, resulting in a series of disposal sites all separate from one another. This means that the height of the material unloaded at most disposal sites, whether large or small, is around half a meter.

3. The surface area of 25 large disposal sites in Pristina and 18 large disposal sites in Fushe Kosova was measured using Google Earth.

4. With the Google Earth-determined surface areas and the assumed height of 0.5m, the volume of the illegal disposal sites in Pristina and Fushe Kosova could be calculated.

5. The volume of illegally disposed waste in Pristina and Fushe Kosova was expressed in bags of 200 liters. The authors arrived at 6,000 bags per site as an average amount for each large disposal site and applied this number to the remaining 36 municipalities.

6. Using the percentage of CDW encountered at the illegal disposal sites, the total volume and mass of CDW was calculated for Kosovo. In this report, we used 1.3 as a conversion factor to estimate the weight of mixed CDW described in the ‘Waste Weight Determination’ guidelines (Agency for Statistics of Bosnia and Herzegovina, 2015, p. 45).

The study suggests that CDW comprises 37% of the total volume of illegally disposed of solid waste, equal to 583,000 tons in the whole of Kosovo. This figure is 3.5 times higher than the amount of CDW generated in one year in the entire country (MESP, 2013, p. 22) (GIZ database citation).

The decrease in the number of illegal disposal sites in Kosovo can be attributed to the ongoing cleaning efforts by the municipalities. 345 illegal disposal sites have been removed or cleaned up, accounting for 16% of the total number of disposal sites in 2018 (Bakija, 2018, p. 9). However, prevention of the reappearance of illegal disposal sites remains a challenge faced by many municipalities (Bakija, 2018, p. 15). Implementation of an approach focused on preventing further development of illegal disposal sites seems urgent.

Overall, the total amount of CDW in Kosovo declined by 15.5%, from 689,600 tons (2017) to 583,200 tons (2019). These figures reflect the slowdown in construction activities due to the fall in Foreign
Direct Investment (FDI) for the construction and manufacturing sector (Council of the European Union, 2019, p. 19). Table 7 illustrates the number of illegal disposal sites in each municipality and the percentage of CDW composition.

1.5.2 Changes over Time at Illegal Disposal Sites in Pristina and Fushe Kosova

A number of illegal disposal sites were further analyzed in two municipalities, Pristina and Fushe Kosova, based on mapping carried out by GIZ Kosovo in 2016, 2017, and 2019. Further analysis was carried out using measurements from Google Earth to verify the transformation of the illegal disposal sites. Three large illegal disposal sites, two in Pristina and one in Fushe Kosova, each containing the maximum amount of CDW, were observed over the time. The dump site size variations obtained from Google Earth over different time periods were later analyzed.

In 2016, the mapping shows 74 large, 18 medium and 4 small illegal disposal sites in Pristina Municipality (GIZ database citation). In 2017 the number of sites increased in all three categories. The 2019 mapping shows a considerable reduction in the number of large and medium sites whereas the number of small sites continued to increase. The graph representing the number of sites and the significant changes in that number over the three-year time period are shown in Figures 5 & 6.

As listed in the GIZ database, the observation of ‘M9 Pristina’ through Google Earth (Figures 7 & 8) shows that there was no disposal site present in 2016. The site appeared in 2017 with a maximum volume of CDW and was reduced in 2018. In ‘M9 Lukare’ the situation seemed to be similar, with a reduction in waste volume observed there between 2013 and 2018. The transformation of the sites is shown in Figures 7 & 8.

The number of illegal disposal sites in Fushe Kosova was lower than in Pristina (Figure 9). A graphical representation of the change in the number of sites over a three-year time period can be seen in Figure 10, where illegal disposal sites drastically decreased in number from 2016 to 2017. However, the number of illegal disposal sites went up noticeably in 2019.

The number of illegal disposal sites in Fushe Kosova

<table>
<thead>
<tr>
<th>WHD</th>
<th>Name of Municipality</th>
<th>Newer of Illegal dump sites in 2015</th>
<th>Volume of waste (in m³)</th>
<th>Estimated Percentage of CDW</th>
<th>Estimated Weight of CDW (ton)</th>
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was lower than in Pristina (Figure 9). A graphical representation of the change in the number of sites over a three-year time period can be seen in Figure 10, where illegal disposal sites drastically decreased in number from 2016 to 2017. However, the number of illegal disposal sites went up noticeably in 2019.

Google Earth observation of Fushe Kosova site, ‘Rruga e Parkut te Pishave, Sllatinë e Vogël’, as listed in the GIZ mapping table (Figure 11), explains the changes in the disposal site from 2016 to 2018. The waste volume outstandingly increased in 2018, matching the illegal waste disposal mapping conducted by GIZ.

In summary, the growing and shrinking of the three sizes of illegal disposal sites over the years under study reflect the ongoing activities of the authorities in both municipalities, where the sites are being cleaned up by them time and time again. The
increasing and decreasing orders of small and large sites in the Pristina municipality and the dramatic increase in volume at the sites in Fushë Kosova from 2017 to 2019 raise several questions about the issue.

It is claimed that the most prevalent fraction in illegal disposal sites all over Kosovo is CDW (KEPA, 2018, p.51). Google Earth Photos of the disposal sites in Pristina and Fushë Kosova show piles of white concrete, supporting this statement. Hence, the fluctuating numbers of illegal disposal sites in both municipalities over the three years of the study clearly indicate the management issues surrounding the Construction and Demolition disposal sites.

Figure 10: Illegal dump sites variation in Fushë Kosova municipality (2016, 2017, and 2019)
Source: GIZ mapping 2016, 2017 & 2019

Figure 11: Illegal dump site over the project in Rogoje Polaku, Pristina, Shëntirë Shtëpia, Fushë Kosova municipality
Source: Google Earth, 2019

Figure 12: Changing of illegal dumpsites of Pristina municipality in the year 2017 and 2019
Source: GIZ Database citation
However, recently the municipalities seem to be more aware of the consequences of illegal disposal of CDW. During the interviews conducted on 21st and 22nd May 2019 in Fushe Kosova and Pristina municipalities, staff members from both municipalities claimed to be concerned about the impacts of illegal disposal sites. In Pristina, the volume of illegally disposed of waste decreased by 37.8%, from 101,400 m³ in 2017 to 63,300 m³ in 2019. It is estimated that 37% of this was CDW or 29,000 m³. As mentioned earlier, the municipality has started a program to clear sites by removing an initial 18,000 m³ (Municipality of Pristina, 2019).

At the same time, Fushe Kosova municipality was the winner of the 2017 ‘Clean Environment Race’ organized by GIZ (E. Gucialla, 2019, personal communication, 21st May). The results can also be seen in Figure 12 with minimal numbers of illegal disposal sites on 2017 data. Nevertheless, the municipality recorded a significant increase in illegally disposed of CDW, from 11 tons in 2017 to 6,000 tons in 2019 (up to June 30, 2019) with the addition of 18 new large disposal sites across the city (Figure 13).

1.6 Stakeholders Involved in CDW Management

Based on field observations and interviews with local experts, information about the stakeholders involved in the CDW flow was collected and resulted in the following overview:

- Construction waste is generated during the construction of new buildings and infrastructure, and demolition waste is generated during the renovation and/or demolition of buildings. Stakeholders involved include: developers, citizens, public authorities and administration officials, building and demolition companies, companies producing construction-related materials, and companies involved in the remanufacturing, reuse and recycling of used materials.

- The collected waste is transported by a public company operator, namely Pastrimi. However, the waste produced by developers is usually collected and transported by specially hired private and informal companies.

- Transported waste either ends up in landfills or is recycled or sent to other countries in containers. In Pristina and Fushe Kosova municipalities, CDW is either disposed of in the formal landfill known as Mirash and managed by Kosovo Landfill Management Company (KLMC) or is disposed of in illegal landfills.

1.7 Environmental and Economic Impacts from CDW

CDW is generated at every stage of demolition, construction, and renovation. According to the United States Environmental Protection Agency (USEPA), the highest volume of waste is generated through renovation and demolition (Esin and Cosgun, 2007, p. 1669). Simple demolition techniques result in mixed waste of building materials and may contain hazardous substances. Hazardous materials include lightweight composite, insulation, chemical substances such as coating, seals and bonding agents (Tränkler et al., 1996, pp. 21–22).

Illegal disposal of untreated CDW and organic waste may have diverse harmful impacts on the environment, such as the contamination of groundwater and rivers (Tränkler et al., 1996, pp. 21–22). Disposal of CDW in the absence of some kind of sorting process has a negative impact on the economy as a result of material loss and an increase in illegal disposal sites. It has been shown that in mid-2019 there were a total of 2,527 illegal disposal sites around Kosovo (GIZ database citation). Illegal disposal sites near city centers interfere with the development of public spaces such as parks and playgrounds for children, and those located on the periphery interfere with the development of agricultural and industrial lands. Previously discarded land areas could be converted to high value land, instead of being used as illegal disposal sites.

1.7.1 Environmental Impact

A. Pollution from Construction Materials:
The untreated waste that ends up in illegal disposal sites is a potential source of contamination of ground and surface waters. Construction waste is made up of a mix of different materials which may contain hazardous materials such as asbestos, heavy metals, tar, radioactive waste, electrical equipment containing PCBs, lead, mercury, or insulation materials (Esin and Cosgun, 2007, p. 1668) (European Commission, 2016, p. 10). In Table 8 a total of 15 hazardous properties are described (European Commission, 2016, p. 32). Due to the non-existence of source separation of hazardous materials, illegal disposal sites may be polluted by hazardous waste materials.

B. Pollution from the Processing and Transport of CDW:
The processing of CDW releases dust into the air which can settle on the leaves of plants and can be inhaled by humans and animals. Other harmful emissions are produced by the burning of construction materials. On the other hand, CDW delivered to landfills also produces emissions from crushing and bulldozing during the breaking-down process (USEPA, 2013, p. 65) (Marzouk and Azab, 2014, p. 41).

C. Impact on Flora and Fauna:
During our visits to illegal CDW disposal sites a common observation was that many small plants and grasses in open green areas had died (Figure-14). The city of Priština is naturally hilly (Figure-15) and, since CDW is often illegally dumped on unused sloping land, pollutants from CDW are likely spread during rainy periods and end up in the surface and/or ground water bodies. However, no data were encountered on the impacts of CDW on the Kosovar environment.

1.7.2 Economic Impact
CDW consumes more space than other types of waste. CDW that ends up in landfills tends to cause severe overstressing of the landfill, resulting in the creation of more landfills. For example, in the United States of America, CDW takes up one-third of landfill space, while in Canada it represents thirty-five percent of landfill space (Esin and Cosgun, 2007, p. 1667). As the materials are hard to break down naturally, mechanical power is required. Alternatively, CDW destined for landfills stresses the infrastructure of existing landfills with space constraints. Either way, CDW causes negative impacts if it is not well treated or recycled (Marzouk and Azab, 2014, pp. 41–42).

Maintaining and developing sanitary landfills costs a tremendous amount of money for local municipalities. The development of landfills depends on many factors such as terrain and soil type, while maintaining the landfill involves such costs as leachate treatment as well as general maintenance costs (USEPA et al., 2014, pp. 2-15). When construction and demolition waste occupy one-third of landfill it is

<table>
<thead>
<tr>
<th>Hazardous Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>191</td>
<td>Explosive</td>
</tr>
<tr>
<td>192</td>
<td>Corrosive</td>
</tr>
<tr>
<td>193</td>
<td>Infectious</td>
</tr>
<tr>
<td>194</td>
<td>Irritant</td>
</tr>
<tr>
<td>195</td>
<td>Specific Respiratory Toxicity (COPD, Asthma)</td>
</tr>
<tr>
<td>196</td>
<td>Radioactivity</td>
</tr>
<tr>
<td>197</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>198</td>
<td>Irritant</td>
</tr>
<tr>
<td>199</td>
<td>Corrosive</td>
</tr>
<tr>
<td>200</td>
<td>Inert</td>
</tr>
<tr>
<td>201</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>202</td>
<td>Non-flammable</td>
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<tr>
<td>203</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>204</td>
<td>Non-flammable</td>
</tr>
</tbody>
</table>

Table 8: Hazardous Properties
Source: European Commission, 2016, p. 32

Figure 14: Illegal dumpsite in Priština
Source: Muhammad Arifuzzaman, 2019

Figure 15: Illegal dumpsite in Priština (2)
Source: Muhammad Arifuzzaman, 2019
unsustainable in the long run for local governments to recover the cost of maintaining and developing new landfills (Marzouk and Azab, 2014, p. 41).

The short- and long-term effects of CDW on the environment and economy of Kosovo still need to be proven since there is a vast lack of data for analyzing the effects of CDW on such things as ground and surface water contamination. Further analysis of groundwater and air pollution at the big illegal disposal sites is required. With these results, the actual effects can be determined, and further necessary action taken.

1.8 Discussion/Summary of Findings and Recommendations

The status quo of CDW management in Kosovo raises several issues that need to be tackled. One significant issue is the lack of data on CDW, thanks to limited research on the topic. In the Priština and Fushe Kosova municipalities the issue of illegal CDW disposal sites is growing. In addition, CDW is not being managed according to European standards in Kosovo. As a result of this mismanagement, CDW is the largest category of illegally disposed of waste in the country.

The Kosovar authorities have turned their attention to the issue and have started implementing a variety of strategies to try to reduce the number of illegal disposal sites in the country. Local authorities are working alongside international cooperation agencies to achieve the goal of reducing the number of illegal disposal sites. However, at the local level, different institutions are implementing different strategies to deal with CDW and unfortunately these efforts are not coordinated, resulting in unsatisfactory outcomes when it comes to achieving this goal.

Having an organized governmental body working alongside international cooperation agencies towards a fixed objective would be beneficial for the Kosovar Government. It would eliminate miscoordination between institutions and result in a more efficient and organized strategy. Likewise, having a more organized local workforce would result in better implementation of resources and donations by cooperation agencies, which could lead to further cooperation in the future.

By developing the existing quantification methodology, we estimated the amount of illegal waste disposal for the entire country, which was found to be significantly high.

The number of constructions permits issued during the 6 years from 2012 to 2018 increased from 100 to 186 in Priština. Meanwhile, in Fushe Kosova the number of permits issued between 2015 and 2018 decreased from 52 to 33. Based on the number of building permits issued in Priština and Fushe Kosova in 2018 and using the Solís-Guzmán et al. formula (2009) we calculated that Priština and Fushe Kosova respectively contribute 269,396 m³ and 62,604 m³ of CDW to the total waste generation in Kosovo. However, it is unclear whether CDW from new building ended up in landfill or on illegal waste disposal sites. Remarkable variations in the size and number of illegal disposal sites were found in Priština and Fushe Kosova municipalities during the years 2016, 2017 and 2019. In both municipalities, no legal CDW disposal sites were allocated. The municipalities seemed to be aware of this issue, however, and are taking initial steps to resolve it.

The number of illegal disposal sites could be controlled by allocating authorized construction and demolition disposal sites as a short-term solution. In addition, proper law enforcement and regular site inspections could also help reduce the number of illegal disposal sites.

Consequently, this study suggests further research on the CDW cycle, its classification, and trends in Kosovo. Also, a better understanding of stakeholders and their roles and responsibilities, along with public awareness programs, might help to improve the present situation. There is also a need for strict audit and law enforcement in management. A reassessment of CDW accumulation estimations should also be carried out. As a whole, an integrated waste management system is required to solve current issues and prepare for possible future shortcomings.
Chapter 2  - Operating model for collection and transport - existing and proposed
Chapter 2 - Operating model for collection and transport - existing and proposed

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émile Martin

2. Operating model for collection and transport - existing and proposed

2.1.1 Topic

The objective of this chapter is to understand the current patterns of collection and transportation of CDW and to identify possible ways to upgrade or improve the current scenario. The chapter offers recommendations based on good practices for CDW management.

The collection and transportation of CDW are a crucial part of the life cycle of waste, integral to the functioning of the whole waste disposal system and its financial viability. While Article 9 of Administrative Instruction 07/2015 regulates the licensing of companies for the transportation of CDW, as of May 2019 no company is licensed for that purpose (interview with MESP and KEPA representatives on May 20th, 2019). This, together with the practice of illegal dumping, translates into a significant lack of opacity in the system. During the field survey interviewees were, for instance, often reluctant or unable to indicate where their transport companies disposed of CDW.

2.1.2 Methodology

The research process was organized in two stages with different methodologies:

• First stage: data collection in Priština and Fushe Kosova

Given the time constraints and limited access to a sufficiently representative sample size, our group decided to focus on qualitative data. Information was gathered during:

- Meetings and interviews with stakeholders including officials from the Ministry of Environment and Spatial Planning (MESP), municipalities, construction companies etc. (c.f. list of interviews in Annex).

- Meetings and interviews with stakeholders including officials from the Ministry of Environment and Spatial Planning (MESP), municipalities, construction companies etc. (c.f. list of interviews in Annex).
Semi-structured interviews with 9 construction workers conducted at Construction and demolition sites, and with individuals on smaller-scale renovation works. Small scale includes household renovation—c.f. Section 2.2.1 and 2.2.2.

Observations made on construction sites.

- Second stage: desk research in Berlin, reviewing literature and secondary sources to analyze possible inspirational practices in the collection and transportation of CDW.

In addition to the general limitations of the research mentioned in Chapter 1 (location, language), a further limitation was the lack of information on waste generated by road construction (see Photo. Road Construction in Pristina). Any further data collection on CDW in Kosovo should aim to fill this gap. It is important to highlight that due to the lack of information registered by the authorities in charge of CDW in Kosovo, there is no precise data about the type of material generated or the amount of it. Nevertheless, based on the methodology applied in this research, we identified an approximation of the most common and relevant materials.

2.1.3 Structure

This chapter is structured into three parts. The first part describes the current scenario, which differentiates large-scale waste generators from small-scale waste generators, with the aim of addressing the principal takeaways of each one. In the second part, selected good practices are described focused on the takeaways identified in the Kosovo reality. In the third part, this chapter recommends steps to improve the collection and transportation of CDW. The recommendations are developed to address steps along the waste management hierarchy, i.e. on-site separation, collection, transportation, and disposal.

2.2 State of Play

2.2.1 Large Construction and Demolition Projects

Methodology

The objective of the research on large scale construction sites was to gather information on what these construction companies do with their CDW. Nine construction sites were visited on May 20th, 22nd and 23rd. At each of these sites brief semi-structured interviews with available employees were conducted, focused on the collection of qualitative information based on a set of predetermined inquiries adjusted according to the responses. The basic outline of the questions asked can be found in Appendix 2. The primary information obtained was on the typology of waste materials generated, whether these materials were sorted on site, and who transported the sorted or unsorted waste. Of the nine sites visited, five were in gray construction phase, two were in the early phase of foundation construction and two were active demolition sites. The second demolition meeting was not on site. The interviewer group consisted of a translator, an interviewer, and a photographer (see Photo. Interview at Mahalla e Muhaxhereve, Pristina). All of the interviewees will remain anonymous; none of the interviews were recorded but notes were written following translation. Interviews ranged from about 15 to 30 minutes.

Limitations/biases:

The primary limitation was the lack of time available for interviews. We recommend more interviews, especially with demolition companies since they are the primary waste generators by quantity. A further limitation was that the sites were primarily found by their close proximity to the GIZ office or personal knowledge of construction site locations, rather than randomly generated, i.e. none of the interviews took place in Fushe Kosova. When we approached the construction sites we were perceived to be inspectors, although we immediately clarified that we were students. Nevertheless, the high sensitivity of this
topic might have had an impact on the responses.

Results: Practices for sorting collection, transporta-
tion and disposal

The analysis of the interviews shows diversity in
the sorting, collection and transportation methods
across the various construction sites. In no case was
there a clear methodology as to how the items were
sorted, although it was apparent that all possibly
valuable materials were separated out for profit.
Generally, all of the leftover, non-valuable goods,
were put in a container that was then transported
by various actors (Ref. Photo Pastrimi container in
Dragodan). Depending on the phase of construc-
tion and, therefore, the amount of material being
removed, waste is transported daily or companies
are called when the containers are filled. Based on
the few companies we spoke to there was no clear
destination; waste was either transported to land-
fills, to private land or to illegal dumpsites. The ques-
tion of destination will be elaborated on later in this
chapter.

When asked to name the primary waste materials
produced on site, the answers, in order of frequency,
were concrete, soil, wood, bricks and insulation
material (see Photo. Mixed waste in Dragodan,
Pristina). In addition to these primary materials we
observed the generation of steel, aluminium, plastic,
plastic bags, roof tiles, styrofoam, pallets, and glass
waste. Based on interviews and personal observa-
tion, a lot of different materials were being sorted to
be recycled, sold or reused on site. However, these
tasks were mostly carried out manually and did not
seem to follow any specific procedure.

From the interviews there appeared to exist some
basic, informal procedures on every site for how the
material is sorted. According to the project manager
of the 3B Project construction company at demo-
lition Site 9, the initial phase of material removal
is carried out by the previous owners. When a
company purchases land on which there are houses,
residents are given a number of days to move out.
During this time, the former owners can retrieve
any parts of the house that they like. Buildings are,
therefore, generally stripped by their former owners
of anything of value, such as windows, doors, furni-
ture, metals, wire, ceramics, etc. If usable materials
are not taken by the former owners, they will most
likely be removed either by informal sector actors
or by the construction workers themselves (Ref.
Again, although there are no strict guidelines and no
written information available, it seems clear that the
valuable material is collected and sorted at the site

Once the initial clearing phase is completed, and
during site preparation, the primary type of mate-
rial generated is either concrete, asphalt or soil.
According to the supervisor for Kwimmo Concept
L.I.C. at Site 8, materials were sent to various desti-
nations. At Site 8 the fertile soil was sent to a park
within the municipality. Some portion of the
concrete/asphalt mix was given away as backfill to
a private actor and the rest was sold to a different
private actor looking to level their land. However,
the supervisor from site 8 mentioned that when
the landfill operators request CDW they transport
it to the landfill. Accordingly, these various external
Chapter 2  -  Operating model for collection and transport - existing and proposed

Construction and Demolition Waste in Kosovo

actors contact a demolition site when they need backfill material. Depending on the circumstances of these requests the construction company will either give away the waste material or ask for payment for the service. Other interviewees were not as clear. The supervisor for Driloni on construction Site 4 and the supervisor for Objektia Punekryesi on Site 7, both stated that demolition was subcontracted to another company and that they were therefore unaware of where the demolition and site preparation waste was being taken. The interviewee at Site 4 added that waste was being taken to the Mirash landfill during the construction phase.

During the construction process there were many methods for sorting through, reusing, recycling or donating CDW material. On site we observed the reuse of concrete and wood. The concrete was used as an infill material in areas that had holes, were uneven or would later be paved (see Photo: Concrete reuse for infill at site in Mahalla e Muhaxhereve, Pristina).

Wood was found all over the construction sites being used as extra scaffolding or to build formwork (Ref. Photo: Wood reuse as scaffolding stabilizer in Dragodan, Pristina). According to Site 2, pieces of wood smaller than a meter wide could not be reused on site and would be given away as firewood to people in need or burned on site (see Photo: Wood burning and wood sorting in Dragodan, Pristina).

As mentioned above, valuable materials such as metals are more carefully sorted and are either sold by the company, sold by the workers or given away to informal collectors (Ref. Photo. Informal metal collection in Fushe Kosova). A civil engineer at Site 6 mentioned paper (cardboard) being collected by the workers who sell it to a recycling company for a small profit.

There are also many different modes of transportation being used. Primary modes include transportation by the construction company itself (Sites 4, 5, 8), by a company subcontracted by the construction company (Sites 1, 6), via a specialized contract with Pastrimi (Sites 2, 3, 9) or by informal collection (Ref. Photos of transportation vehicles). Subsection 3.2.3 elaborates on the role of Pastrimi. Site 6 reported that they paid 80 € per their 8-10 cubic meter containers.

While some materials are collected by informal actors, sent to recycling companies or reused on site, most materials are still transported elsewhere. Interviewees said they would like to take their waste to landfills if possible, but the Mirash landfill does not officially accept CDW. According to the manager of Mirash, CDW is sometimes accepted to build retaining walls and secure the foundation of the landfill. In these cases, Mirash requests construction companies to supply their need (Ref. Photo. Mirash Landfill, Kosovë). However, the amount of waste that Mirash receives is estimated to be low compared to the amount generated by construction and demolition activities in Pristina, which lead us to the conclusion that there is a considerable amount of waste disposed of in unknown locations. As mentioned in the limitations of the research section of this chapter, illegal dumping is a sensitive topic since companies will be fined for discarding CDW in illegal dumpsites. It is, therefore, likely that workers gave us an underestimation of the waste sent to illegal dumpsites, especially if they thought we were official inspectors.

In conclusion, the trails of CDW disposal are still unclear. Clearly, waste is going to landfills - Mirash or Mitrovica - or to private land or illegal sites. Based on the information above, the flow of CDW from source to final destination involves different actors and scenarios, as Figure 16 shows.
2.2.2 Small-scale Renovation Projects

Methodology

The research was based on semi-structured short interviews, conducted in two phases: first, 8 interviews conducted by phone on May 22th; second, 14 face-to-face interviews at the GIZ premises and the Sonder Restaurant on May 23rd (cf. list of interviews in Annex).

The research objective was to understand what individuals do with waste generated by renovation works at household level. Interviewers started by asking if individuals had already carried out renovation projects in Priština or Fushe Kosova. If yes, they were then asked what they had done with the waste generated. If not, they were asked what they would do and whom they would contact if they were to renovate. This dual approach aimed at gathering information on past practices as well as on individual perceptions of which actors are responsible for the management of CDW.

Interviewees were a mix of students, friends and relatives of students, GIZ employees and one artisan. Ages ranged from 20 to 53 years old. All interviewees demanded to be anonymous (designated N.N. for No. Names from 1 to 22) and only some allowed the interview to be recorded. This may be explained by the sensitivity of the topic and an unwillingness to admit to using illegal dumpsites.

Possible limitations and bias

Many of the interviewees had a high level of education (students, GIZ employees). No data could be collected from people living in Fushe Kosova. The results include some data from Peć, a city 85 kilometers from Priština, as three interviewees were from there and mentioned very similar patterns to those in Priština. Interviews were conducted by three different interviewers and the amount of information collected varied among them. In addition, care should be taken with the content as interviews were held in English, a non-native language for both interviewer and interviewee. Given the time constraints, we recommend further data collection through a quantitative survey to ensure higher representativity of the results. This survey should differentiate between the types of materials and ensure representativity of the various socio-economic groups and locations.

Despite these limitations, we believe that our interviews provided some good insights into the practices and perceptions of households, as similar transport and disposal choices were repeatedly found across several interviewees.

Results:

Practices

The interviews revealed a high diversity of options for the collection, transportation and disposal of...
waste generated during small-scale renovation proj-
eted by Pastrimi was a single pattern but rather a coex-
istence of various modalities, as shown in Figure 17.
They depend on the type of waste and volumes generated.

Some forms of use or disposal of waste happen in the vicinity of the house. The burning of part or all of the waste near the house was practiced by several interviewees (N.N.1, 7, 9, 12, 13, 17), either for discarding or heating purposes, e.g. in the case of wood.

In nearly all cases, dumping some portion of the waste in front of the house for later collection by Pastrimi or depositing it near one of Pastrimi’s municipal waste containers was practiced. Another option for households was to give the waste away to relatives or to donate or sell it to informal waste pickers (N.N.1, 2, 3, 5, 9, 10, 13, 17, 22). In one case, waste was given away to a road construction company (N.N.3). In another case, a company on the company and the volumes involved.

Perceptions
First, a paradox can be identified in the issue of the location of waste disposal. When answering the question of destination, several interviewees stated that they had little or no idea where the waste was transported to (N.N.2, 6, 9, 15, 17, 20). However, reasonable doubt can be cast on such assertions, as the waste is sometimes dumped near houses or on the edge of villages (N.N.13). As stated by N.N.21, people ‘see the trash dumped everywhere, so they know it doesn’t go to the place it is supposed to’.

Claims not to know where the waste ends up are likely due to a reluctance to officially admit that the waste is illegally dumped. One exception was an interviewee who said he knew that the waste had been transported to the Mirash landfill (N.N.4) and two other interviewees indicated that waste transported by private companies was used for filling purposes on private land (N.N.16, 21).

Second, questions related to the destination of waste revealed a lack of environmental awareness. Several interviewees claimed that people in general ‘don’t care’ about the environment and illegal dumping (N.N.18, 21, 22). One stated: ‘I don’t really care where it goes, I have bigger problems than this.’ (N.N.15).

Dumping of household waste has become a practice considered to be ‘normal’ (N.N.22). This seems to confirm the findings in Chapter 1 of a rise in small dumping areas. Lack of environmental awareness also extends to burning: one interviewee mentioned knowing that styrofoam should not be burned, but said that he would still sometimes do it (N.N.17).

Third, the interviewers attempted to uncover perceptions of individual responsibility with regard to CDW management. Several interviewees designated municipalities as the responsible actors for CDW (N.N.15, 19, 22). One argument given was that municipalities should designate a location for the storing and dumping of CDW, which is currently not done.

Several interviewees considered that responsibility for CDW fell to Pastrimi, the publicly owned enterprise in charge of municipal solid waste management. They believed that the collection and transportation of CDW was included in the monthly fee they pay for municipal waste collection (N.N.13, 14, 19) and claimed that they would call Pastrimi in the event of future renovations (N.N.12, 22).

2.2.3. The Role of Pastrimi
This section is based on information gathered during a meeting with Fatmire A. Hajdini, Head of Unit at Pastrimi, on May 21, 2019, as well as interviews with construction site workers (see section 3.2.1) and other individuals (see section 3.2.2). Caution must be exercised with the information obtained as exchanges required translation between Albanian and English.

According to the Pastrimi representative, the company is currently not licensed to carry CDW, but only municipal waste. The reason for this is that CDW has different characteristics, such as greater weight (e.g. concrete), and requires additional machinery and human resources. Pastrimi made it clear that CDW was ‘not in the nature of the company’, exceeding its responsibilities and competences.

However, in the absence of other licensed private transport companies, Pastrimi seems to fill the gap by collecting and transporting de facto some CDW, under three modalities detailed below.

First, Pastrimi currently has a special contract with Priftina and KLMC to remove 18,000 m³ of illegally dumped inert waste, which mostly includes CDW. This contract has a timespan of 6 months and will end on June 15th, 2019. In the context of this contract, Pastrimi can take CDW to landfills without paying fees. At the time of the meeting on May 21st, Pastrimi representatives indicated that they had removed 16,000 m³, but that 30,000 m³ of waste were still remaining on illegal sites.

Second, Pastrimi is obliged to take CDW left by individuals next to or inside municipal waste containers. Pastrimi kept track of this waste and removed it, without being subsidized for it. According to the Pastrimi representative, many people leave this waste in the container as they do not want to pay the €40 charged by Pastrimi for 7 m³. Interviews with individuals seem to confirm this statement,
even if some of them did choose to mandate and pay Pastrimi to remove their waste (see section 3.2.2).

Third, Pastrimi offers construction and demolition companies a waste collection service at 98 € per 7 m³ container. The waste is then sent to landfills. According to Pastrimi, few companies are willing to pay this fee and usually pay 20 € to someone to illegally drop it. Our limited number of interviews with construction companies revealed that only 3 out of the 9 sites did in fact use this service. Pastrimi also told us that there were limits on the amounts of concrete they could accept. The project engineer at Site 2 mentioned that the containers provided were meant for plastics and paper yet our observations revealed a mix of materials, primarily concrete (Ref. Photo. Pastrimi container with mixed waste in Dragodan, Priština.).

Last, Pastrimi has reported illegal practices, providing the names and addresses of the companies involved, but no further action has been taken.

### Issues

A first issue, not limited to CDW, is the absence of financial sustainability in the collection and transportation system of waste. For municipal waste—which, as we have seen, can include CDW deposited by householders near Pastrimi containers—Pastrimi is said to be paid 3 €/m³ by the Priština municipality to cover collection and transportation costs but then has to pay more than 5 €/m³ in gate fees at the landfill. This financial imbalance is said to be internally compensated by other Pastrimi activities, such as street cleaning. Furthermore, Pastrimi has not been subsidised to collect CDW, outside of the current specific contract.

A further issue is the discrepancy between Pastrimi’s reality and the expectation of individuals that CDW is included in municipal waste collection fees, as shown in Section 2.2.2.

### 2.3. Proposal

#### 2.3.1. Case Studies for Collection and Transportation of CDW

This section describes two practices to be considered as potential inspiration: one in São Paulo (Brazil) and the other in Buzău County (Romania). They were selected after a literature review. The outline of these practices focuses on the topics of this chapter, namely the sorting, collection, transportation, and disposal of CDW. Further dimensions of these practices such as recycling, prevention and legal aspects will be addressed in Chapters 3 and 5.

#### 2.3.2. Transferability of Case Studies

Transferability is assessed by listing similarities and dissimilarities of the two aforementioned case studies against the collection and transportation patterns identified in Priština. In a second stage, opportunities and potential risks can be identified.

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**Table 9: Model of CDW Management in São Paulo, Brazil**

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<th>Context pre-project:</th>
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<tr>
<td>- Increasingly full landfills,</td>
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<tr>
<td>- Waste carried for long distances,</td>
</tr>
<tr>
<td>- Improper disposal of construction waste into vacant lots, roadides, public spaces, streams (Jacobi and Besen 2011, p.141).</td>
</tr>
</tbody>
</table>

**Characteristics of the project**

- General description:
  - The current model for managing construction and demolition waste in São Paulo is the result of integrated work between different actors in the city’s construction guild. The Environmental Chamber of Construction Industry of the State of São Paulo was created in 2000. From this initiative emerged a Technical Group on construction and demolition waste constituted by representatives from different sectors that included local authorities, environmental agencies, building contractors, construction and demolition transportation companies and researchers. This group has participated in preparing draft standards and promoting regulations on CDW management (M. Joch et al. 2004, p.6).

- Focus on sorting:
  - The sorting process of construction and demolition waste is carried out in two stages: at the source and at the collection points.

- Collection and transportation
  - The online platform “Coletas Online” connects suppliers with demand for CDW transportation and facilitates the municipality’s control over CDW generation and disposal (Prefeitura de São Paulo 2017, n.p.).
  - Large generators must have waste management programs that specify amounts of waste generated and final disposal. These programs are submitted to the local authorities under the civil construction licensing process (Jacobi and Besen 2011, p.151).
  - Small generators are not allowed to dispose of rubble on public space. The city collects a maximum of 50kg of rubble per day per property (Ibid). Above this amount, the generator must contact a registered transport company for waste collection, which must prove the disposal of the waste in a proper place for this kind of material.
  - Citizens can dispose of waste at eco-points in different locations of the city or deliver it to stations of voluntary delivery of unservicable materials; these stations receive for free daily disposal up to 1m³ of rubble, wood, and large objects (Ibid, p.150).

- Focus on output:
  - The Transshipment and Screening Areas (ATT) are stations where collected materials are sorted. Mineral rubble (e.g. concrete) is sent to inert waste landfills, reusable waste is sold, and other waste delivered to sanitary landfills (Ibid).
  - Recycled aggregates from CDW are used in street pavement and maintenance works (Ibid).
2.3.3. Recommendations

As presented in previous sections, the three most pressing issues are the following:

1. Pristina has neither a treatment nor a disposal location for CDW, leading to illegal dumping practices;
2. There are no sorting practices for concrete and bricks, only informal sorting of valuable materials such as metal and wood;
3. There is a lack of implementation and enforcement of the legal framework.

Table 10: CDW Management Model in Buzău County, Romania
Source: Prepared by the authors

Table 11: Transferability (Pristina)
Source: Prepared by the authors

- Larger population in São Paulo State - 44,315,735 (Cesário, n.d., p.3) than in Kosovo 1.8 million (World Bank, n.d., p.6), greater distances.
- Integrated governance structure with the Technical Group
- Improved efficiency in the articulation of supply and demand of transport services for CDW.
- Inspiration for introduction of collection and recycling infrastructure system to households
- Strengthening of municipal control on tracking volumes of waste and circulation of licensed vehicles.
- Possible high implementation costs of online platform

Case study 2: CDW Management Model in Buzău County, Romania

Context pre-project:
- Serious issues of illegal dumping causing environmental damage,
- Existence of only one treatment plant, not properly working because of the reluctance of actors to pay access fees as well as collection and transportation fees in general,
- Backfilling on private land taking place without transparency,
- Absence of recycling options (Deloitte, 2016, pp.3-4).

Characteristics of the project:
- General description:
  - Creation of a treatment plant for Construction and demolition inert waste - understood as concrete, bricks, tiles and ceramics - operated by a private company selected after a public bid.
  - The project required an investment of €415,704 Euros and received EU financial support through the EU LIFE Programme (ibid., pp.3, 6, 10).
- Focus on sorting:
  - Sorting seems to take place in two successive steps. First, employees visually control that the content of the truck is inert CDW. Second, they manually sort other waste such as cardboard, plastics, wood into specific bins (ibid., p.11).
  - Collection and transport:
    - The project does not seem to modify transportation patterns, waste being delivered by private or public entities,
    - Focus on output:
      - Transportation of the products (recycled aggregates) is ensured by the buyers, not by the treatment plant. No information could be found on other materials sorted, such as cardboard, plastic or wood.

Some results of the project:
- Recovery of 1,700 tons of CDW between 2015 and 2016,
- Complementary removal of 1,907 tons of illegally dumped waste on circa 35km2.
To remedy these issues, it is proposed to implement a series of steps, organized in three stages: ‘short term: preparatory’, ‘medium term: implementation’ and ‘long term: incentives’, as shown in Figure 18 below. After the analysis of the case studies, it is necessary to consider intermediate stages for the collection and treatment of waste to improve efficiency in the recycling process and reduce the amount of material that ends in landfills. Therefore, the most essential phase is the medium-term one, i.e. the creation of a treatment plant and collection points.

Only once legal collection, treatment and disposal alternative options are available can additional, stricter requirements be realistically set in place.

1. **Short-term Goals: ‘Preparatory’**

1. Organize a study visit to the Buzludzha County treatment plant to further analyze opportunities and conditions for replication of the practices.

2. Set up a Stakeholder Group for CDW management gathering representatives of different actors (municipalities, KEPA, MESP, MVLC, Pastirmi, private transport companies, building contractors, researchers), based on the São Paulo example. The serious lack of understanding between different parties observed during the interviews points to the need for this stakeholder group. The group should prepare for implementation of collection points and the treatment plant, detailed below. It should also oversee the functioning of the system for a limited period. The following subgroups should be included:
   - Subgroup ‘Location’: identify location for the collection points and treatment center;
   - Subgroup ‘Finances’: determine financing options for the new facilities, plus a working group between municipalities and Pastirmi to determine ways to improve the financial sustainability of Pastirmi that de facto collects small-scale household CDW thrown into its container for municipal waste;
   - Subgroup ‘Legal’: analyze options for the selection of operators of the treatment plant and collection points, e.g. a PPP or a fully private operator contracted after a public bid (Buzludzha case).

3. Pristina and KLMC to consider extending their current special contract with Pastirmi to remove the remaining 30,000 cubic meters of illegally dumped CDW (meeting with Pastirmi representatives, May 21st). A similar further collection of CDW in illegal dumpsites was also carried out in the Buzludzha case (Deloitte 2016, p.3).

2. **Medium-term Goals: ‘Implementation’**

1. Set up one CDW Treatment Plant. Such a center is foreseen in Article 13 of Administrative Instruction 07/2015 and in the KEPA Report on Municipal Waste Management in Kosovo (MESP-KEPA and GZL 2018, p.103), for which 75,000 Euros of investment are indicated. It has however not yet been implemented. Such a center could focus on the sorting and recycling of inert CDW, including concrete and bricks (see Chapter 4 for further details on recycling). A study visit to Buzludzha County would determine whether sorting in 2 steps - visual inspection ensuring rough sorting of inert CDW followed by refined manual sorting at the treatment site - has good results. As shown in the Romanian example, high access fees should be avoided in order not to discourage stakeholders (Deloitte 2016, p.6).

The Technical Group should look at funding options, including using the remaining budget from Fasini Kosovo prize from the GIZ Clean Environmental Waste Race, or funds obtained through the EU Instrument for Pre-accession Assistance. The latter seems promising as the EU is advocating recycling and avoidance of (Illegal) dumpsites in Kosovo (European Commission 2019, pp.78-79) and the Romanian plant received support through the EU LIFE Programme.

At this stage, it seems premature to favor any transportation modality - public or private companies - as there is a diversity of options in use in Kosovo. This is also the case in Buzludzha County, where all companies may bring CDW to the plant. Furthermore, the treatment center could be used to classify and quantify waste materials. Following this first plan, the development of further recycling facilities should be promoted.
2. Establish collection points for household CDW similar to the São Paulo’s eco-points practice. These could be located in the inner city in the case of Pristina and/or on the outskirts of smaller neighboring agglomerations, where waste is often dumped. This would create an alternative option for households. Complementary are the following recommendations: work towards the formalization of informal waste collectors, who should bring waste to the collection points, and upgrade the vehicles used. Funding of the collection points could be similar to that recommended above for the treatment plant.

3. Based on the work of the Technical Group, consider a Temporary Storage Center for post-treatment center materials that are not to be reused or recycled. Ideally, a construction and demolition landfill would be avoided, in accordance with the EU goal of 70% of reused, recycled or recovered materials by 2020 Article 11.2b of Directive 2008/98/EC. In addition, a CDW landfill would create operating and maintenance costs. Evaluating the need for a Temporary Storage Center would require the ground observation of the volumes passing through the treatment plant.

4. Incentivize the use of recovered and recycled materials, for instance via an online platform matching demand and supply of second-hand building materials.

3. Long-term Goals: ‘Incentives versus sanctions’

1. Once the treatment plant and smaller scale collection points are in place, issue guidelines for on-site sorting requirements. If mandatory, they should be associated with sanctions and fines. If optional, sorting practices could be linked to incentives such as tax cuts.
2. Stringent control on backfilling practices on private land to ensure they are not ‘disguised landfilling’ (Dolcitte 2017, p.108).
3. Enforcement of rules concerning audits before demolitions, throughout the waste management plan and hazardous waste management, creating licensed CDW transport companies (see Chapter 5 on legal aspect) and ensure that all large-scale CDW is transported to treatment centers (see Chapter 5).
Chapter 3 - Prevention, reuse and recycling of CDW - status and outlook
3. Prevention, reuse and recycling of CDW - status and outlook

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3.1 Introduction

This chapter evaluates the current status and future trends in prevention, reuse and recycling of CDW in Kosovo. Overall, minimization of CDW at source, and reuse or recovery of materials are not common practices in the construction sector in Kosovo. This hinders the country's objectives to reap the potential gains from the recycling industry while keeping resources for the future (KEPA et al. 2018). By looking at best practices, this chapter provides recommendations towards the achievement of a comprehensive CDW management system for Kosovo.

In 2013, the National Strategy on Waste Management (MESP 2013) outlined objectives and measures to integrate actions on prevention, reuse and recycling. However, the strategy, when transferred to municipalities, failed to reach the implementation phase (interviews with Municipality of Fushe Kosova (MFK) and Municipality of Pristina (MP) representatives on May 21, 2019). As a result, valuable construction and demolition fractions are currently landfilled or illegally disposed of and negligible amounts are recovered to extend their life cycle.

The objectives of the research carried out in this chapter are:

1. To describe the current status of the CDW recycling value chain.
2. To look at case studies from nearby countries and extract their lessons.
3. To introduce recommendations and approaches that meet the required standards for the implementation of CDW management in Kosovo.
3.1.1 Research Methodology

The research had three elements:

1. Unstructured interviews were set up with representatives from the public sector: the Municipalities of Pristina and Fushe Kosova, the Ministry of Environment and Spatial Planning (MESP), and the public owned enterprise (PoE) Pastrimi. The objective of the interviews was to gather information about the current plans, strategies and legal framework on CDW collection and management, through a set of open questions.

2. Meetings were held with representatives from the private sector. The interviewees included managers of construction and manufacturing companies, as well as architects and representatives of the informal sector construction and demolition workers. The meetings aimed to identify existing practices and local innovations, as well as challenges to CDW recycling activities. In total, 18 interviews were conducted (Annex - list of interviews) during the four days of field research.

3. The information gathered was subsequently processed, resulting in the findings of this report. These findings were supported by literature, in a desk research in Kosovo and Berlin.

The study was constrained by the absence of quantitative data on the amount of recycled and reused CDW by sectors. Particularly important for this section was the question of the amount of inert waste recycling. This section was the question of the amount of inert CDW backfilled in the mining industry, since this was identified by the construction company managers as the major CDW recycling practice in the country. (Ndertimtari; Fidani-Beton, pers. comm., 23.05.19). For this research, primarily qualitative information on the local practices of CDW management and secondary data from available research were collected and analyzed.

3.1.2 Theoretical background: The Waste Hierarchy

The EU’s approach to waste management describes waste prevention and waste reduction as top priorities to decrease negative impacts on the environment. These aims should be combined with actions that lead to the creation of a resource-efficient economy (EU 2010).

In this regard, the Waste Hierarchy was introduced in the European Union’s Framework Directive (WFD Directive 2008/98/EC) to explain the optimal sequence in waste management, but also finds relevance in the treatment of CDW materials (Figure 20). It establishes that the primary environmental target should be the prevention of waste generation and source reduction, followed by reuse and recycling. Only if these options are exhausted should one rely on energy recovery and final disposal, the two least preferable options (Gharfalkar et al. 2015). So, for any given solution, all other things being equal, the preferred alternatives should follow this hierarchy:

Prevention > reduction > reuse > recycling > energy recovery

Other than prevention, reuse and recycling are the preferred options for social, economic and environmental sustainability reasons. These provide jobs, significantly reduce the external costs of landfilling or incineration, and help to save energy by reducing the need for quarrying raw and construction materials. The estimated number of jobs created in the construction and demolition recycling industry in comparison to landfilling is 25 to 1 (Winkler 2010, p. 3). Beyond this, practical considerations of transferability, cost and impacts for the local context should be factored in when selecting recommendations for CDW management.

3.2 Current status and future trends

Overall, a comprehensive process of CDW recycling according to the principles of integrated resource management is currently not practiced in Kosovo. According to stakeholders from the public sector, recycling and reuse of CDW happens in response to private market demand rather than in response to a top-down governmental framework (Interview with Fushe Kosova Municipality 2019). Currently, various stakeholders from both the public and private sectors participate in localized instances of CDW reuse and recycling, with some of them even investing in CDW treatment technologies. These stakeholders include municipal waste management companies, cement manufacturers, construction and demolition contractors, and the informal sector workers.

This section will assess the actions of the stakeholders and the state of CDW recycling and reuse currently in Kosovo. One particular limitation in this section is that the scale of prevention, reuse and recycling practices is not known, which makes their impact on the general scope of CDW management difficult to assess. Some estimations could be made from existing data such as company inventories, bills of sale, or landfill intakes but these only provide a partial picture.

Figure 20: The waste hierarchy. Source: prepared by the authors.

3.2.1 Prevention

An overlooked aspect of mitigating CDW is the minimizing of waste generation in the first place. The most evident means of reducing CDW are tied to the building process itself, namely in the amounts of materials used and building longevity. This is due to the tremendous amounts of energy and resources used by the construction sector in Europe, for example, the full-life cycle of buildings (including extraction, manufacture, transport, construction and end of life) is responsible for half of all energy...
use, 40% of all greenhouse gas emissions, 50% of all raw material extraction and a third of all water use (European Commission 2019 p.5). As a result, the EU has defined ambitious goals to improve “resource efficiency and circular material flows”. As Kosovo seeks to eventually join the EU, it should consider the adoption of these goals in improving its own generation of CDW.

Nevertheless, prevention is not currently a high priority in the context of CDW management in Kosovo. While the government has stated a commitment to working with municipalities in order to avoid waste generation and to reviewing ways to extend the functional lifespan of buildings (MESP 2013), there is little evidence it is being followed up with the necessary dialogue, legislation and actions to make it a reality.

On the other hand, a partial incentive for the prevention of CDW generation is presented by the activity of private construction companies. For instance, Izolimi Plast company (Priština) produces building materials from recycled plastic, while Ndertimtari (Peć region) produces clay bricks out of recycled inert material. Fidani-Beton and Ndertimtari, cement manufacturing companies, have installed equipment for recycling leftover concrete on building sites, to prevent it to be dumped into the environment. (Construction companies generally order at least 20% more concrete than is required.)

### 3.2.2 Reuse and Recycling

Recycling and reuse of CDW in Kosovo is conducted through cooperation between the private and informal sectors (Izolimi Plast; Informal Sector 2019). When developing a new site, private contractors will be engaged in demolition as part of a single-contracted “site preparation” activity. At this stage, they dismantle all possibly valuable recyclables such as metals, heating equipment, doors and windows (on agreement with the property owners) for further recycling (by themselves or by the informal sector). These materials may then be sold either by the owner or by the workers of the construction company (depending on the demolition contract) for recycling or reuse (Pastrimi 2009), although it is unclear who they are sold to.

Given the overall lack of recycling and reuse of CDW, most stakeholders did not consider recycling construction debris, including bricks, concrete, tiles, etc., though there were some observed instances of it being recycled in Peć. Two local construction companies, Ndertimtari and Fidani-Beton, have integrated the recycling of these materials into their concrete manufacturing process. Fidani-Beton recycles certain fractions of CDW, such us concrete, bricks, tiles and mortar, through the use of a mobile crusher after partial demolition. The crushed gravel is then typically used for leveling construction and production sites. The company also reported a single case of using the recycled gravel to repair sidewalks in the city of Gjakova. Ndertimtari also produces a limited amount of building blocks from recycled clay fireplace bricks (Ndertimtari Fidani-Beton, 23.05.19), although it is unclear who they are sold to.

However, more typically, construction debris is disposed of either in illegal dumpsites or, on occasion, is collected by Pastrimi and deposited in landfill. Representatives of the Mirash landfill confirmed that the landfill accepted CDW when needed, using soil from excavations to cover waste heaps and inert fractions no larger than 30 cm as aggregate for building retaining walls around the landfill (Edmond Halimi, KLMC, 2019). Backfilling using both processed and unprocessed inert CDW is also practiced in the gravel mining industries (Ndertimtari and Fidani-Beton representatives, 23.05.19), and as a result, gravel manufacturers are often also demolition contractors. In other cases they may even buy mineral CDW for this purpose (Ndertimtari and Fidani-Beton, 23.05.19).

### 3.2.3 Informal recyclers

Private companies also have an interest in acquiring certain materials such as plastic and metal, and do so by purchasing collected fractions from informal waste pickers who play an important role in scavenging these materials from demolition sites. These laborers typically come from marginalized communities, particularly the Roma, Ashkali and Egyptians. They access demolition sites and informal dumpsites for a price and extract metals through manual labor. They can scavenge upwards of 150 kg/person/day, which they sell at 20-30c profit/kg (informal communities in Fushe Kosovo, 2019). For many of them this is their only source of income, other than state welfare (Ibid.). Aside from metals, they also scavenge wood to use for heating.
3.2.4 Findings

The current state of prevention, reuse and recycling of CDW in Kosovo is hindered by several challenges:

- In cities such as Pristina and Fushe Kosova, a demolition permit from the municipality requires up to two months to obtain. This makes it difficult for the aforementioned construction companies to access demolition sites within the city and collect the resulting CDW for further recycling. In the rural areas of the Peć region, where most companies operate, permits for demolition are not required.

- The informal sector is saddled with inefficiencies due to a lack of coordination. According to community leaders we met in Fushe Kruje (J Jashari 2019, Roma community representative, pers. comm., 23 May), the Roma, Ashkali and Egyptians, despite sharing some cultural similarities and doing similar work, do not have overarching leadership and coordination in overseeing their scavenging activities. Moreover, informal scavengers rely on only basic equipment and technology for their work and lack sufficient personal protective equipment (Ibid.)

- Demolition often destroys or mixes construction and demolition materials indiscriminately, hindering the opportunity for reuse and recycling.

- Existing markets do not harness the full scope of possibilities created through recycling and reuse of CDW. According to representatives of local construction companies: “Aggregate from construction and demolition waste has no particular market value in Kosovo” as its characteristics do not comply with the requirements set for building materials in the industry, and natural mineral resources are still widely available (Fidani-Beton and Ndertimtari companies in Peć, 2019).

This aversion to recycled material results from Kosovo’s abundance of natural resources and a concern for quality (Interviews with Architects 2019). However, there are several emergent realities that will inevitably challenge these attitudes. First, the EU’s Waste Framework Directive (2008/98/EC) specifies that at least 70% of CDW should be recycled or reused by 2020. Moreover, Kosovo’s reserves of sand and gravel will only last until 2031 at the outside according to the Kosovo Quarry Plan 2011. It is, therefore, necessary to acknowledge that reduction, recycling and reuse is not an option but rather an inevitability for Kosovo’s future.

Kosovo’s government therefore needs to take a proactive role in steering development, especially through incentives (see chapter 4). Presently, legislation on prevention, reuse and recycling of CDW is not binding but rather prescriptive and generalized with much room to improve implementation (MESP 2018).

Additional attention should be paid to the potential and capacities presented by the private sector. Construction companies interviewed in the Peć region reported a firm willingness to recycle CDW if the two main hindering factors were tackled: the absence of a construction and demolition recycled materials market; and the unregulated demolition activities in the cities. On the one hand, the market for recycled materials from CDW could possibly be promoted by the utilization of these materials in municipal works. On the other hand, the regulation and enforcement of the demolition process through permits and inspections could lead to more efficient separation on site and increase the ratio of CDW materials, which could then be recycled and reused.

Both companies, Fidani-Beton and Ndertimtari, already participate in the search for solutions to the problem of construction waste generation from leftover materials by installing recycling equipment for leftover liquid concrete, even though this is currently not required by the national waste and environmental legislation. Fidani-Beton also possesses demolition waste recycling equipment for internal use. However, as the manager of the company reported, it was also successfully used for municipal sidewalk repairs in Gjakova. (Fidani and Ndertimtari companies in Peć, 2019).

Current recycling capacities by private companies can serve as an entrypoint into possible solutions for CDW reuse and recycling. As of now they include mobile CDW crushers, such us the one in Peć region, under the ownership of Fidani-Beton (estimated cost of this machine including transportation was said to be about 201,000 €), which are being used to process existing fractions into a total of 100 m³ of recycled aggregate per day, and the stationary stone crushers in quarries, where the numbers and capacities are still to be estimated.
### 3.3. Case Studies

In this section, case studies from Slovenia and Croatia are presented for their potential improvement to the life cycle of CDW. Limitations that must be accounted for when Kosovo drafts its own waste management reforms are also mentioned.

<table>
<thead>
<tr>
<th>Legal measures</th>
<th>Slovenia</th>
<th>Croatia</th>
<th>Kosovo</th>
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<tbody>
<tr>
<td>The Waste Act of 2004 introduced permits for each part of the waste management cycle, determined facilities for storage such as recycling yards, and created a tendering system for waste management operations. (Bedekovic et al., p.123).</td>
<td>Poor implementation of legislation</td>
<td>Poor recycling and reuse practices and capacities leave much room for improving the life cycle of CDW</td>
<td>Illegal disposal sites do not facilitate waste separation</td>
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<td>Later, the Waste Management Strategy of the Republic of Croatia 2005-2023 defined a framework for the sustainable management of hazardous and non-hazardous waste, and created guidelines for recovery and disposal of waste, setting a goal for an 80% recycling rate (Ibdk.).</td>
<td>Has yet to meet EU goal of a 70% recycling rate by 2020</td>
<td>Poor reporting of CDW quantities</td>
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<td>The project was initiated by the Slovenian National Building and Civil Engineering Institute (a public research institute), the Chamber of Commerce and Industry of Slovenia, and other independent business organizations (EU financed Environment LIFE Programme). Although it provides guidance for proper CDW management, this manual is not legally binding.</td>
<td>A detailed guideline for sustainable demolition was prepared as part of the &quot;Rebirth&quot; project (2014), targeting developers, entrepreneurs, designers, collectors and transportation companies. While the rest of the cities have mobile treatment plants due to Zagreb’s larger role in producing CDW, (Bedekovic et al.,) the facility has a CDW fraction capacity of 80,000 t/y.</td>
<td>A detailed guideline for sustainable demolition was prepared as part of the &quot;Rebirth&quot; project (2014), targeting developers, entrepreneurs, designers, collectors and transportation companies. While the rest of the cities have mobile treatment plants due to Zagreb’s larger role in producing CDW (Bedekovic et al.,) the facility has a CDW fraction recycling capacity of 80,000 t/y.</td>
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<tr>
<td>In spite of the absence of binding legislation, municipalities need to respond quickly to the shortfall in capacities and finances in order to develop local treatment facilities, regulations, and procedures on CDW management. The delay in delivering solutions will intensify the problem of illegal dumping (MESP 2018).</td>
<td>Conversion of sanitary landfills to transfer stations for inert,</td>
<td>Conversion of sanitary landfills to transfer stations for inert,</td>
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<tr>
<td>While Kosovo has drafted instructions to manage the life cycle of CDW, there is a general absence of enforcement. For example, the Draft Manual for Construction and Demolition Waste (MESP 2018) was designed to implement an Administrative Instruction on &quot;management of wastes from construction and from demolition of the building objects&quot;: Although it provides guidance for proper CDW management, this manual is not legally binding.</td>
<td>Pre-treatment of CDW in transfer stations and treatment at existing landfills until WM centers could be established. Mobile treatment facilities used and concession holders would be responsible. Recycling was encouraged by proposing a fee for the acceptance of CDW for recovery ranging from 5 to 15 €/t, much lower than the waste disposal charge.</td>
<td>Pre-treatment of CDW in transfer stations and treatment at existing landfills until WM centers could be established. Mobile treatment facilities used and concession holders would be responsible. Recycling was encouraged by proposing a fee for the acceptance of CDW for recovery ranging from 5 to 15 €/t, much lower than the waste disposal charge.</td>
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Table 13: Case Studies of similar contexts that have implemented prevention, reuse and recycling of CDW

Source: Prepared by the authors
### 3.3.1 Transferability of best practices

<table>
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<th>Slovenia</th>
<th>Croatia</th>
<th>Kosovo</th>
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<tr>
<td><strong>Project highlights</strong></td>
<td><strong>Project highlights</strong></td>
<td><strong>Project highlights</strong></td>
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<tr>
<td>The Waste Management Strategy provides education, awareness, monitoring as well as the framework to incentivize the creation of a recycling market (Deloitte 2014b, p.18).</td>
<td>Financing for these projects was achieved through a combination of national, private and EU funding. The treatment plant in Zagreb, one of the more expensive items, was financed through a PPP. Introduction of 7 End-of-waste (EoW) status requirements for seven C&amp;D Waste types, including concrete, brick, wood, glass, plastic, asphalt, soils, insulation, asbestos etc. (Deloitte 2014b pp.4-5).</td>
<td>Projects in C&amp;DW recycling and recovery should include economic schemes, based on the willingness of the private sector to work jointly with the Municipalities, as stated in interviews with the management of construction and manufacturing companies (K. Avdyly, A. Rama, pers. Comm. May 2019).</td>
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### Table 14: Transferability of best practices

- Similar population (Kosovo = 1.83 million; Slovenia = 2 million)
- Lack of statistics on C&DW
- Incomplete statistics on C&DW generation
- CDW legislation, has been set and put into place
- Legislation is not consistently enforced

### Table 15: Lessons learned

- All efforts to improve C&DW management need to be supported by the proper legal framework.
- More importantly, enforcement of the legal framework is equally crucial and this is where both Croatia and Slovenia also struggle.
- The struggles with the legal framework are punctuated by the lack of sufficient data. Both case studies emphasize that current estimations of waste amounts are likely significantly less than the reality. Since construction and demolition activities are not static and tend to fluctuate greatly over time, it is also difficult to adjust the estimates into real amounts.
- Both case studies emphasized developing a greater capacity to Sustainable Aggregate Resource Management (SARM), highlighting the importance of addressing the destination of building material such as concrete after demolition.
- An additional strong emphasis on proper separation of C&DW fractions, either at the source or through machinery.
- Acknowledging the high costs of equipment upgrading and ensuring strategic location of limited resources to ensure cost, capacity and transport efficiencies.
- The RECLAIM project brought together professionals, authorities, industry representatives, and civil society around the topic of C&DW management. In a series of awareness-raising activities (meetings,

### 3.3.2 Lessons learned

<table>
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<tr>
<th>Dissimilarities to Kosovo case study:</th>
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<tr>
<td>• GDP higher in Slovenia - US$ 48.87 billion than in Kosovo - US$ 7.1 billion (World Bank, n.d., n.p.)</td>
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<td>• Slovenia joined the EU in 2004</td>
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<tr>
<th>Opportunities for implementation</th>
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<tr>
<td>• Certification of buildings</td>
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<td>• Pilot project to establish base for recycling C&amp;DW fractions</td>
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<td>• Strengthening cooperation between government departments and institutions and civil society</td>
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<td>• Incentives for using recycled construction material</td>
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<table>
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<tr>
<th>Risks</th>
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<tr>
<td>• End of waste criteria</td>
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<td>• Transport fees should be less costly due to Kosovo being more compact</td>
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<tr>
<td>• Lack of coordination in government structure</td>
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<td>• Public private partnerships are difficult to implement</td>
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</table>
workshops and practical demonstrations), all actors had the opportunity to broaden their knowledge and recognize new business opportunities in the field of CDW materials reuse and recycling.

- Later reports stated that by 2014, rates for CDW recycling in Slovenia increased up to 10%, and an estimated 1.3% of natural resources in aggregates were saved (Mačko et al. 2014). According to official data, a decrease of 30% CDW was registered in 2012 (534,154 tons) compared to 2011 (703,656 tons) (Deloitte 2015, p. 3).
- In Slovenia, coordination between the Slovenian statistical office and the environmental agency improved after the initiatives. However, a unified standard regulation and a reliable statistical CDW data collection system are still required.
- In both cases, mandatory CDW reuse and recycling is required in large-scale construction projects (currently it is in a tentative and optional). Despite active campaigning for CDW reuse and recycling, new clear strategies and action plans for enforcement and monitoring are required.

3.4 Recommendations

3.4.1 Recommendations for CDW prevention

Recommendations will be split into administrative and fiscal at one end of the spectrum, and technological upgrades at the other end. This will provide a small compendium of possible solutions to the problems of CDW management in Kosovo.

3.4.2 Administration-based recommendations

Possible solutions need to be evaluated in the context of stakeholders and capacities. First, however, we introduce recommendations for CDW reduction and prevention.

<table>
<thead>
<tr>
<th>Observation</th>
<th>Prerequisites</th>
<th>Impacts</th>
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<tbody>
<tr>
<td>Improve material and resource efficiency</td>
<td>- Optimize building design to maximize longevity/unit cost</td>
<td>Construction activities currently place a great demand on Kosovo’s natural reserves of sand and gravel, which are in limited supply and may be exhausted in the medium-term.</td>
</tr>
<tr>
<td>- Implement stricter standards and legislation for new buildings</td>
<td>Construction techniques and standards would be improved. New markets for recycled materials would be created. Investment costs could be higher (Guerrero et al. 2017 p.8). The goal would be a long-term reduction in new development and therefore a decrease in CDW generation.</td>
<td></td>
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<tr>
<td>- Select and maintain energy-efficient materials</td>
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<tr>
<td>Increase Retrofitting</td>
<td>- Evaluate potentials for retrofitting</td>
<td>Buildings are torn down after a certain point of utility</td>
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<tr>
<td>- Create incentives</td>
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<td>- Ensure new buildings are made with retrofitting in mind</td>
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<table>
<thead>
<tr>
<th>Observation</th>
<th>Prerequisites</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created specific legislation on prevention, reuse and recycling of CDW</td>
<td>- Provide legal definition to waste fractions, categories and end of waste (EoW) status</td>
<td>Current practices related to reduction, reuse and recycling of CDW are not backed by legislation</td>
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<td>- Harmonize legislation with EU directive to recycle 70% by 2020</td>
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<td>- Evaluate current legislation and determine where market-driven solutions could be improved.</td>
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<td>Clear legislation can enforce producer responsibility. However, it could also pressure the informal sector to maintain high standards for work and push for formalization. Private recyclers would be resistant if legislation produces additional costs without the benefits of a circular economy (54 et al. 2013, p.13).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification Schemes</td>
<td>- Certification of informal workers</td>
<td>Formalization should be attempted incrementally until a clearer picture of its economic effects emerges. Workers will only want to be formalized or cooperate if incomes do not decrease as a result (Kasinja &amp; Tilly 2018, p.13). Over time, these workers should be transitioned into an integrated system.</td>
</tr>
<tr>
<td>- Pilot projects for collective funding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Create a centralized data bank connecting workers to sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Determine number of informal waste pickers, current hierarchies, key leaders etc.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation</td>
<td>Prerequisites</td>
<td>Impacts</td>
</tr>
<tr>
<td>Decentralized demand for virgin aggregate will be one of the first outcomes (Ecorys 2016, p.36). Quality of recycled material will need to be monitored to ensure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 16: Recommendations for CDW prevention
Prepared by the authors

Table 17: Administration-based recommendations
Prepared by the authors
Selective Demolition (SD) as a legally mandated practice

Demolition is done inefficiently and much of the building material ends up in mixed fractions (MESP 2018), increasing the difficulty of treatment and separation as well as the risk of contamination.

- Determine viable business model for selective demolition (SD)
- Calculate volume of demolitions and a local cost premium for SD
- Implement a pre-demolition audit, including separation of hazardous materials, reporting, and SD itself (EU CDW Protocol 2016, pp. 16-19)
- Audits should constitute a part of the construction tender and be performed before the demolition permit
- Investigate SD performed on the basis of possible single demolition and construction contract (Lauritzen 2019 pp. 174-175).

Positive effects of SD include isolation of hazardous materials (asbestos, lead-contaminated concrete and mortar, etc.) and securing valuable recyclables, such as bricks or tiles, PVC, wood, glass, metals on-site. Selective Demolition may be costlier than total demolition but becomes more feasible if disposal fees are higher (Coelho & Brito 2010, p. 710). This can be offset by reimbursement schemes and the use of salvaged materials in new constructions.

3.4.3 Technological and upgrading-based recommendations

**Table 18: Technological and upgrading-based recommendations**

<table>
<thead>
<tr>
<th>Observation</th>
<th>Prerequisites</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste is not separated upon disposal</td>
<td>Determine treatment capacities, separation needs: Separation at a plant should be the last line of defense before energy recovery, disposal.</td>
<td>Opportunities for jobs and economical revenues will appear, Plant capacity needs to be considered as too big a plant may not be financially feasible and put Kosovo in the position of needing to import waste to recoup investment.</td>
</tr>
<tr>
<td>Concrete Crushing Equipment</td>
<td>Currently recycled aggregate is a EDW product that is not being tapped by the market (Fidani-Beton and Ndertiritari, 2019), in order to be used, fractions need to be of a particular size and standard.</td>
<td>• Determine concrete segregation standards to ensure homogeneity before crushing. • Determine required capacities. • Find a way to integrate existing capacities and infrastructure such as those owned by Fidani-Beton and Ndertiritari</td>
</tr>
<tr>
<td>Small Scale Equipment Upgrading</td>
<td>Informal waste pickers lack personal protective equipment, Moreover, all metal scavenging is done by hand.</td>
<td>• Determine number of workers, typical site characteristics, speed of working a site, number of sites. • Statistics on number of sites that received service from informal workers vs. those with a formal company. • Viable financing schemes must be found to minimize costs to already-impepassed groups.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Workers can benefit from improved wages and working conditions. Government assistance as an intermediary may be necessary for ensuring fair interest rates, otherwise subsidies will be required. Moreover, technology upgrades require training and do not guarantee that they are not made obsolete by the economies of scale of bigger construction companies.</td>
</tr>
</tbody>
</table>

**Figure 21:** Process diagram for the single-recycling project, including selective demolition (Lauritzen 2019)
Source: Prepared by the authors
3.4.4 Sequence of implementation of recommendations

In order for Kosovo to address its CDW management problems, it must be proactive in both reducing the amount of waste created and in maximizing its transformation into usable products. This effort must be supported at each step by legislation that makes improvements to the waste management process: binding to the producers of waste, enforcing and incentivizing more responsible behavior.

1. **Start by considering the necessary legislation, particularly regarding the categorization of fractions and End-of-Waste (EoW) Status for Products. Legislation does not end here as a solution and can cross-cut various solutions. Select or design a certification scheme for recycled aggregate.**

2. **Make selective demolition mandatory. There is evidence that with the right combination of gate fees and a recycle and reuse market, partial demolition can be as economically viable as the traditional kind (Coelho et al 2010 p.709).**

3. **Enforce the demolition permit as a legally binding document with penalties in cases of infringement. Multiple infractions should result in the suspension of professional licensing for the demolition contractor. Inspections would also need to be mandatory.**

4. **Create fiscal incentives to encourage the recycling of material. In addition to offering comparable quality at a lower price, there needs to be a stronger impetus for people to invest in the infrastructure needed to make widespread commercial use of recycled material a reality.**

Beyond this, solutions will be either short or long term. Short-term solutions are low cost and avoid committing to a financially demanding solution. Shorter-term solutions should not be considered temporary but should rather enjoy shorter time frames for implementation, lower costs and reduced maintenance.

1. **Set up smaller-scale solutions, such as designated construction and demolition aggregate temporary storage, which will help in addressing the stated stakeholder inability to determine collective dumpsite locations for CDW (Interview with Municipality of Fushe Kosova, 2019).**

2. **Facilitate equipment upgrades for the informal sector, which is a low-cost way of improving productivity and earning potential for these communities.**

Long-term solutions will produce better results but may require more deliberation in figuring out operating models and financing. Political culture and attitudes need to be considered for this. In longer-term investment, care should be taken to align long-term capital expenditure with predicted needs for capacity.

3. **A treatment plant combined with smaller mobile on-site crushers can reduce landfillsing of soil and concrete debris and will go a long way towards creating a market for recycled aggregate, largely reducing the predominant construction and demolition fraction ending up in disposal.**
Chapter 4 - Incentives for prevention, reduction and reuse

4. Incentives for prevention, reduction and reuse

4.1.1 Current incentives: conditions and types

An incentive can be defined as ‘something that incites or has a tendency to incite to determination or action’ (Merriam Webster 2019), or ‘a payment or concession to stimulate greater output or investment’ (Oxford Dictionaries 2019). Currently, there is a lack of effective incentives in Pristina for the prevention or reduction of CDW at the initial stages of the construction process, including awareness, design, demand, and supply. The few incentives that do exist relate to the informal sector and have a limited, small-scale impact: for instance, the recycling of steel, the reuse of building elements such as windows and doors, and the use of wood for heating (K Zequiri, A Buzaku, A Kovaqi 2019, informal waste collectors, pers. comm., 23 May).

The focus of this chapter is on prevention, in line with the waste minimization hierarchy outlined in EU waste legislation which highlights prevention or reduction of waste at its source as the first priority of waste management (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives 2008). In suggesting potential prevention incentives for various actors within the local constraints of Pristina, this chapter considers more sensitive forms of urban development in a context of improved regulatory frameworks. These include the reuse of building materials, deterring the construction of empty ‘investment’ apartments, expanding the lifespan of old buildings through restoration, and various policy and market mechanisms.

4.1.2 Research question

The research question for this chapter is therefore: What viable incentives could more effectively...
prevent and reduce the generation of CDW in Prishtina, Kosovo?

4.1.3 Goal and Objectives

The overarching goal of this chapter is to identify the actors involved in the entire chain of CDW generation and the way in which they interact with each other, in order to propose effective incentives for the prevention and reduction of CDW. The objectives are defined as follows:

- To understand the current measures, challenges, and motivations of key actors in the prevention and reduction of CDW generation.
- To study local, regional, and global best practices.
- To suggest possible incentives that align with different actors’ capabilities and motivations, assessing the transferability or adaptability of the incentives to Prishtina.

4.2 Methodology

4.2.1 Survey

In order to understand the challenges and motivations of end users, a survey made up of closed questions in good condition (3 times).

- 61% showed an interest in buying features found in older constructions, while others have (1 time). With regards to the preferred selection of used properties, the majority of respondents would prefer to purchase a new property rather than a used property (Figure 22). This creates major challenges for the prevention of CDW with a continuous demand for new constructions. The reasons for preferring a new house, given by the respondents as a response to the open question, were the perceived higher quality of new constructions (mentioned 15 times), the possibility of customization (3 times), and easier maintenance (3 times). Respondents also cited perceived higher investment value (3 times). They also mentioned that newer buildings were more likely to be technically approved and therefore would not have the legal issues that older buildings might have (1 time). With regards to the preferred selection of used properties, the main reason given was that they are considered to be cheaper when compared with newer ones (9 times). Some people also claimed a preference for ‘classic’ style (twice), referring to features found in older constructions, while others stated that there are many available older apartments in good condition (3 times).

4.2.2 Interviews

Open questions were employed during a series of 16 meetings in various locations in Prishtina between 20th - 24th May 2019 with actors from civil society and the public and private sector. Subsequently, an assessment of the challenges and motivations of the main actors involved in the different stages of the CDW generation process was carried out in the form of an actor matrix.

4.2.3 Literature review

Furthermore, a literature review on best practices in the local context, as well as a potential base of reference for incentives for the context of Prishtina. The selected best practices were analyzed in terms of relevance for transferability and applicability relative to the identified local challenges and constraints, using OECD’s framework of best practice analysis (OECD 2001, p.34).

4.3 Actor Analysis

4.3.1 Home-owner perception survey analysis

The objective of the survey was to gain a better understanding of citizens’ perceptions of reused and recycled materials, as well as renovated buildings in Prishtina. In addition, the survey aimed to gain an insight into the respondents’ material preferences, specifically what the characteristics of these materials are that make them appealing. The survey was applied to a representative segment of the population of 71 people, with a mixed-gender group (51% men, 49% women) and focused on people aged between 20 and 69 years; however, most respondents were within the 20-34-year group (70%). Furthermore, 61% showed an interest in buying a house or apartment in the upcoming ten years, giving an indication of potential market activities.

4.3.2 Home-owner perception survey analysis

The majority of respondents would prefer to purchase a new property rather than a used property (Figure 22). This creates major challenges for the prevention of CDW with a continuous demand for new constructions. The reasons for preferring a new house, given by the respondents as a response to the open question, were the perceived higher quality of new constructions (mentioned 15 times), the possibility of customization (3 times), and easier maintenance (3 times). Respondents also cited perceived higher investment value (3 times). They also mentioned that newer buildings were more likely to be technically approved and therefore would not have the legal issues that older buildings might have (1 time). With regards to the preferred selection of used properties, the main reason given was that they are considered to be cheaper when compared with newer ones (9 times). Some people also claimed a preference for ‘classic’ style (twice), referring to features found in older constructions, while others stated that there are many available older apartments in good condition (3 times).

4.4.1 New or used property

The perception of recycling and reuse of construction materials was largely positive (49%), although a high percentage of those interviewed had no opinion (19%). This presents an opportunity to reinforce the market for these materials in Prishtina. Though the majority of positive answers was based on the possibility of getting better prices for used materials, energy efficiency and environmental protection were also considered to be important. Negative answers (32%) were related to the perception of ‘new’ products being better quality, as well as for reasons of possible risks and poor aesthetics. The answers from the remaining 19% showed a desire for a better understanding of materials in terms of resistance, quality, and price.

Survey takeaways

In general, respondents preferred the use of new materials, often associated with new ‘quality’, and thus durability. Used houses and materials were mostly perceived as cheap alternatives, the implication being that they were also of lower quality. Understanding material preferences and their associated positive characteristics helps in putting together proposals that would cater to prospective consumer demands, increasing the likelihood of...
of attracting users to a new market for recycled and reused products. The respondents’ willingness to use bricks instead of concrete is an opportunity since bricks are considered to be easier to manage and transport (F. Hajdini 2019, PoE Pastrimi, pers. comm., 23 May). However, other alternatives which could reduce the amount of waste, such as the use of gyppsum for partition walls have a bad reputation among respondents. One of the most significant findings of the survey is that a high percentage of respondents (49%) was willing to use previously used and recycled materials, but a lack of familiarity with recycled materials resulted in some non-opinion answers. Thus, an important takeaway is that further efforts are needed to raise awareness on the performance potential of more environmentally-friendly materials such as recycled or reusable materials, alongside the application of quality standards certification of reused materials, which could incentivize those who are undecided about trying new materials for construction.

4.3.2.2 Current challenges and limitations

The challenges stated by the stakeholders in the interviews led to the identification of key types of limitations for CDW prevention, reduction, and management. As mentioned above, Figure 28 illustrates the links between the groups of key actors and the challenges they face, in correlation with one or more of the categories outlined above (economic, social, environmental, political, and technological).

Economic Limitations

Underpinning all challenges are economic constraints at all scales, with a current dependence on international assistance and little cooperation among sectors: private, public and civil society. The private sector, in particular, expressed significant limitations relating to CDW. Its direct correlation with both civil society and the public sector represents the need to balance profit, market demand, and environmental concerns. For instance, using recycled materials in the construction of new buildings or for the restoration of existing buildings is not economically competitive in terms of cost when compared with conventional construction projects.
(A Bodeji-Canaj 2019, CEO of 3B Project, pers. comm., 23 May). Furthermore, actors from both the public and private sectors stated that the current housing market in Pristina is shaped by the low financial capacity of local potential buyers, with higher-end apartments being unaffordable to the majority. This results in apartments bought as investments or holiday homes for the diaspora standing empty, and in rental apartments being given to landowners by construction companies in exchange for land (S Goranci 2019, head of planning division of GIZ, pers. comm., and A Bodeji-Canaj 2019, CEO of 3B Project, pers. comm., 23 May).

Political Limitations

In the context of the past political situation in Kosovo, public sector actors explained that CDW management was not included in the political agenda of past administrations as more pressing issues demanded their attention (F. Matosi, Ministry of Environment and Spatial Planning, pers. comm., 22 May). This gave rise to a series of challenges to both the private and public sectors. Governmental departments responsible for setting out the framework and regulations claim to have a limited capacity to handle CDW management due to inadequate human, technological, and economic resources (D. Gashi, Head of Waste Management and Environment Sector Municipality of Pristina, pers. comm., and M. Baha, Director of the Directorate of Public Services, Defence and Rescue, pers. comm., 22 May). For the actors in the private sector, some keystone constraints are the complex bureaucratic process during the initial, design, stage and in the final, recycling, stage in the CDW chain, highlighting severe technological limitations. In terms of design, a lack of training and certification of material suppliers prevents construction companies from integrating alternative materials made from recycled components (A. Dermishi 2019, managing director of 4A Pika, pers. comm., 21 May). Similarly, private sector actors claimed that at the final, recycling, stage a lack of companies with the technical capacity for CDW treatment and recycling, due to the fact that these processes are currently non-economically appealing, represents a lost opportunity for CDW management (A. Nixha 2019, architect of Anarch, pers. comm., 23 May, R Avduli 2019, CEO of Rizah Trans, pers. comm., 22 May).

Environmental Limitations

The challenges mentioned so far all relate to some extent to environmental limitations. For the majority of private sector and civil society actors, making a profit often overrides environmental considerations in decision making. In the current context, CDW prevention still incurs high costs (Arij Dermishi, investor in 4A Pika, pers. comm., 21 May, F Hajdini 2019, Poë Pastrimi, pers. comm., 23 May). Nevertheless, personnel from Fushë Kosova and Pristina municipalities recognize that while there is a legal framework to manage CDW, there is no official location for its regular treatment and disposal (E. Qëntalla, Head of Public Services and Environment, pers. comm., 21 May and F. Matosi, Ministry of Environment and Spatial Planning, pers. comm., 22 May).

Overall, while the complexity of public sector regulations appears to be one of the strongest limitations for civil society and the private sector, economic constraints represent one of the greatest challenges to disrupting the status quo regarding CDW in Kosovo. It, therefore, follows that social, environmental, and technological limitations remain relevant to all actors, while also interacting with one another.

4.3.2.3 Drivers and Motivations leading to Incentives

The methodology used for the analysis of the actor matrix for challenges was also used to understand the actors’ drivers and motivations. Figure 29 shows an analysis of statements collected during meetings with the different actors. These enabled the identification of the stakeholders’ motivations, which facilitated the determination of adequate types of incentives involving the majority of actors.

Economic Drivers

As Figure 29 illustrates, economic considerations are the overarching motivation identified, highlighted most significantly in the private sector, but also cutting across almost all actors and sectors. However, the nature of these economic drivers differs between civil society and public and private actors. On the one hand, according to the surveys, civil society’s main focus is to acquire property in spite of their low financial capacity, while private actors such as construction, collection, and recycling companies, mainly driven by profit, face economic pressure through market competition without receiving additional support from the government (F. Hajdini 2019, head of Unit-Poë Pastrimi, pers. comm., 21 May and A. Nixha 2019, architect of Anarch, pers. comm., 23 May). On the other hand, public actors like municipalities pursue financial investment from national or international funds for the development of the basic infrastructure needed to dispose of and manage CDW (S Goranci 2019, head of planning division, Ministry of Environment and Spatial Planning, pers. comm., 22 May).

Political Drivers

It is clear that in the public sector responsible for CDW, after economic motivations, political motivations play a part in the adoption or otherwise of the tools required to improve the current situation. For instance, some political motivations look towards the economic benefits relating to international cooperation, while others are directly related to CDW reduction for environmental motives. It could also be that a potential link between the public and private sectors is currently disconnected. According to construction and design companies, the ongoing bureaucratic process around construction and demolition permits discourages proper compliance with established procedures (A Bodeji-Canaj 2019, CEO of 3B Project, pers. comm., 23 May, I Hetemi 2019, construction engineer of Nartel Construction, pers. comm., 22 May). According to D. Dumani, Head of Inspectorate of Fushë Kosova, this process also compromises the municipal capacity to evaluate the permits received as the law states that they have 45 days to deny or approve construction permits (pers. comm., 21 May).
and mostly concentrated in a fraction of the private sector that would be willing to integrate affordable recycled materials if the market generated enough demand and suppliers could guarantee their quality (J Avdyli 2019, CEO of Rizaht Trans, pers. comm., 22 May, A Nixha 2019, architect of Anarch, pers. comm., 23 May). It is relevant to state that for the majority of actors management of CDW is the main focus while there is a general disregard for prevention and reduction. Added to this, the actors’ motivations overall are a direct response to the challenges previously analyzed, emphasizing possible approaches for the implementation of incentives for the prevention, reduction, and recycling of CDW in Pristina.

Social and Environmental Drivers

Overall, social and environmental motivations were minimal, seen primarily in civil society and the public sector (see Figure 29). This finding is paradoxical when overlapping the private sector discourse on market-led construction materials and typologies (F Hajdini 2019, head of Unit- PoE Pastrimi, pers. comm., 21 May and A Nixha 2019, architect of Anarch, pers. comm., 23 May) with potential buyers’ favourable responses for recycled materials and reuse of existing buildings within the above home-owner perception survey. On a wider scope, members of the University of Pristina’s Faculty of Architecture displayed a keen interest in the preservation of the vernacular architectural typology located in the inner city as most of the new buildings are located on the periphery, presumably leading to further social and environmental negative consequences such as traffic congestion, air pollution and abandonment of the central area (I. Gjinolli and A. Byci, pers. comm., 23 May).

Though environmental aspects need to be addressed, it is clear that in order to overcome the negative impacts of the accelerated production and mismanagement of CDW the promotion of economic incentives through new political tools is required. This is apparent in the consistency of economic drivers as the leading drivers within civil society and the public and private sectors.

4.4 Best Practices

4.4.1 Transferability analysis

A series of best practice incentives was selected based on the categories identified in the actor matrix: economic, environmental, social, political, and innovation. The best practices were subsequently evaluated within a transferability and applicability framework in which the social, economic, political, and technological capacities, as well as the institutional preconditions of their success, were identified within their specific contexts, removing assumptions of equal applicability (Stead 2012, p.107). OECD’s identification of components of local development practices, and their further breakdown into different levels of visibility (OECD 2001, p.34), was adopted to form the assessment criteria. For example:

- Ideas and principles have low visibility; being rooted within a certain locale they are difficult to understand or specify, and thus difficult to transfer.
- Methods, know-how and operating rules have medium visibility and are most feasible to transfer (ibid.) as there is low reliance on embedded knowledge.
- Institutions and practitioners are highly visible and easy to understand but they remain difficult to transfer due to their local embeddedness.

For the analysis, two matrices were set up. The first matrix assesses the applicability of the practice in Pristina by rating the relevance of the transferability components to the current challenges and constraints identified through the actors’ matrix. Placing the practice within the current constraints and rating the overlap from low to high relevance highlights the constraints it would address.

The second matrix evaluates the local development of the practice’s components and their relevance to the conditions that reinforced their validity for transfer to Pristina. For example, rating the co-benefits of the practice to the local development compo-
nenents to identify where the highest impact would be. The optimum practice would have the highest impact on the most transferable components. This is demonstrated in Figures 30 and 31, using the example of Ankara, which will be described as Best Practice 1 in Section 4.4.3 below.

### 4.4.2 Local

Within Pristina, four best practices were highlighted to demonstrate existing potentials to incentivise the reuse of existing buildings:

1. Television network Klan Kosova’s building is one of Kosovo’s first examples of the transformation of an industrial building. Incentivised by both environmental concerns and architectural innovation, recycled CDW was used as construction materials, including bricks from houses burnt down during the war and recycled railway sleepers for the facade (ONUP Magazine 2016). Following its completion, a documentary was created with the aim of raising awareness of adaptive reuse of existing buildings (ibid.).

2. Similarly, Menza involved the revitalization of a 1960s canteen building. In terms of economic incentives, its conversion from a derelict building to a new restaurant enabled it to sell itself as a unique offering in Pristina (Travers 2019). A second motivation for the project was social empowerment: using local produce and hosting a platform for artists and musicians (ibid.).

3. Another project with a social impact is Ndërmarrjes Publike Banesore (Public Housing Enterprise), a program supporting housing associations within public housing to build more energy-efficient structures (Npbanesore.com 2019). The project has a clear economic incentive as renovations are achieved through resident co-funding, alongside financial support from the World Bank and the government, while the resulting higher energy efficiency lowers residents’ bills (ibid.). Furthermore, increasing the buildings’ lifespan avoids the unnecessary generation of CDW.

4. Lastly, Green Business Kosovo is a digital green energy platform encompassing environmental, social and innovative incentives. Supported by USAID and the Swedish Government, it acts as a network for sharing technical and innovative knowledge, connecting private companies, government agencies, and donors (Green Kosovo 2018). The ultimate aim is to raise awareness on measures to increase the longevity of buildings (ibid.).

The following describes the above projects’ impact on CDW prevention in Pristina, and their potential for expansion or replication. Both Klan Kosova and Menza present an opportunity to shift public perceptions on the reuse of building materials and buildings. While Klan Kosova is an example of creating a building of both environmental and architectural merit, Menza demonstrates the potential of preserving cultural and historical buildings. However, both currently cannot be easily replicated due to reliance on private funding and inefficiencies in construction times and costs. Ndërmarrjes Publike Banesore struggles with similar issues of perception, but the economic benefits of renovation provide an attractive alternative to new construction that could be implemented on a larger scale. While there remains limited public knowledge of these schemes, particularly in terms of available funding or donor support, Green Building Kosovo has great potential to become a low-cost but essential network for similar existing initiatives. This could help to address the lack of cooperation between actors and raise awareness of environmental issues such as CDW management.

For these types of projects to be replicated in Kosovo on a larger scale, the following actions are required:

- Diversify networks such as Green Business Kosovo to support other types of environmental projects, and use them to strengthen awareness and cooperation.
In Ankara, construction and demolition companies have developed a system for the reuse and recycling of CDW, motivated by profit. Disassembly techniques (also known as deconstruction) which consist of the removal of building elements in their original form already exist which offer these products at attractive prices. Moreover, an appreciation has developed for the added aesthetic value of some of these reused elements (Elias-Özkan, 2002, pp. 128-138).

The promotion of disassembly over demolition in Pristina could be possible if it does not rely on high investment from the public sector. Furthermore, it is effective in reducing CDW generation while simultaneously increasing employment due to its requirements for a larger labor force. Thus, the incentives for applying this practice are economic, environmental and social. Nevertheless, certain conditions need to be satisfied for this to be possible in Pristina.

The public sector should facilitate the creation of a market for reused materials through loans for small enterprises and tax reduction while increasing taxes on new materials.

- The public sector should create a procedure to differentiate between disassembling and demolition, offering benefits such as reduced fees.
- Private demolition companies should offer training in disassembly techniques.
- Private construction and demolition companies should be banned from disposing of reusable materials and should instead be required to offer them to recyclers on a direct agreement.
- NGOs or the public sector should train recyclers in the business of reused construction materials so that they recognize the potential for profit in alternative materials.

Best Practice 2 - Romania, Green Home Certificate & Green Mortgage

The non-profit organization, Romanian Green Building Council (RoGBC), developed the Green Mortgage facility within the Green Home Certification Program (GHCP), with the aim of encouraging the market, educational and legislative conditions to promote construction that is both sustainable and profitable (Borncamp et al 2017, p.7). This joint certification program provides local standardization of energy efficiency assessment in Romania through the GHCP while considering EU 2020 regulations in terms of: location, use of sustainable and durable materials, indoor air quality, bio-climatic design, and construction processes. Furthermore, the Green Mortgage system provides preferential green loans for residential buildings that meet the GHCP requirements of both investors and home-buyers (Borncamp et al 2017, p.7).

At the beginning of the mortgage process, investors or developers present concepts of green residential buildings to the council. The projects approved by the council are required to comply with the criteria within the pre-certification process. The marketing for pre-certified projects to potential buyers begins through partner banks that provide discounted loans, and subsequently, projects are detailed by investors or developers in order to achieve ‘integrated design standards’ under supervision of the council. The projects that meet these standards during the planning, detailing and construction processes are eligible for the certification.

The incentives for this project are social, environmental, and economic and could provide a useful basis for Pristina. The GIE Energy Efficiency department’s existing energy efficiency assessment criteria for buildings could provide the conditions for issuing green loans in Pristina. However, in order to implement a green loan system, the following conditions must be in place.

- A system for dialogue between different actors such as potential homebuyers, investors and banks, with different loan schemes provided for actors of varying economic backgrounds.
- Increased awareness of energy efficiency in
In terms of transferability to Priština, a national awareness campaign is a relatively low-cost first step in the prevention of CDW, with a focus on extending building lifespans. As well as being environmentally incentivized, the project would also draw on economic incentives in its promotion of energy efficiency technologies with compatible life cycle costs and decreased operational costs for public buildings. An easy win could be achieved by bringing together actors already active in the field, like civil society groups like CSO Let’s Do it Kosovo, and enabling a platform for outreach projects. However, as in Croatia, the adoption of new practices and materials would remain voluntary as well as costly. Considering that new ideas and principles are the most difficult component of projects to transfer (Stead 2012, p.108), an effective outcome of promotional work hinges on the following conditions:

- The maintenance and transparency of the certification and mortgage system should be supervised and monitored by auditors with sufficient capacity and knowledge in cooperation with the GIZ’s Energy Efficiency group.

Best Practice 3 - Croatia, National Awareness Campaign

Between 2005-2009 Croatia implemented a successful national energy efficiency awareness campaign (Kogalniceanu 2011, p.329). The project aimed at catalyzing the implementation of energy efficient technologies with competitive lifecycle costs through seminars, workshops, and consultations, targeting residents, services and the public sector. This was done through cooperation with international donors such as the UNDP and MINGORP, while funding came through the Global Environment Fund and the Environmental Protection and Energy Efficiency Fund (ZDOU) (Korčić 2013, p.841). The result was the implementation of Energy Efficiency standards, certification and labeling for equipment and buildings (Kogalniceanu 2011, p.328).

The project resulted in two additional projects: ‘systematic management of energy in towns and counties of the Republic of Croatia’ applying sustainable management of energy resources, and ‘Getting own house in order’ an energy management project targeting building stock owned by the government, such as schools. This has decreased the government’s operational costs, allowing for reallocations of budget. Over time, the majority of cities, counties, and local and national media campaigns involving local activities, presentations, public discussions, encouragements with experts and other meetings. Local energy efficiency information offices were set up showing cases of technologies, products, and system solutions for residential buildings (Korčić 2013, p.842).

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- The maintenance and transparency of the certification and mortgage system should be supervised and monitored by auditors with sufficient capacity and knowledge in cooperation with the GIZ’s Energy Efficiency group.

Best Practice 4 - EU Construction and Demolition Waste Management Guideline

In 2018, the EU Commission published a report on CDW management called Guidelines for the waste acceptance before demolition and renovation works of buildings. The document highlights that a major constraint on CDW recycling is a lack of awareness and trust in recycled material quality (European Commission 2018, p.4), a phenomenon also identified in Priština. Within the EU’s wider transition to a circular economy, and a target of 70% CDW recycling by 2020, this document supports national authorities by offering guidance on best practices for the assessment of construction and demolition waste streams prior to demolition or renovation of buildings and infrastructures, called “waste audit” (ibid.). The principle objective is to encourage the recovery of material for CDW recycling and reuse across EU member states, targeting public authorities, quality certification bodies, and industry practitioners (European Commission 2018, p.5). Waste audits assess material input in the CDW process in terms of both quantity and quality, subsequently suggesting their potential for reuse and recycling in terms of value, cost and energy savings (ibid.).

As the first step towards the introduction of recycling processes in Priština, waste audits allow the journey of CDW to be visible and traced, while being aware of its quantity and nature enables a more efficient process (ibid.). As a potential candidate for EU membership, Kosovo is incentivized to adhere to its international environmental standards. Thus, the motivation is primarily political, as well as environmental. In terms of transferrability to the local context, implementation of the EU waste audit requires conditions including:

- Political will, which already exists in Kosovo with its vision of eventually being integrated into the EU.
- Physical infrastructure to be in place or in process, such as CDW recycling facilities.
- Implementation of a quality certification body within the Ministry of Environment and Spatial Planning.
- Provision by the EU of training for local professionals in technical knowledge in CDW recycling.

Best Practice 5 - The United Kingdom, Green Public Procurement

Green Public Procurement (GPP) is a voluntary policy tool for the procurement of green goods, services, and works by the public sector which have a reducing environmental impact in comparison to alternatives of the same function (European Commission 2008, p.4). Considering that green goods are classifiable by their life cycle, GPP can influence practices along the supply chain of goods, in turn stimulating the green economy. This instrument was part of the EU’s action plan on sustainable consumption and production, and sustainable industrial policy in 2006 (European Commission 2008, p.3). Emphasis is put on the green product life cycle cost, from sourcing raw materials and reduced taxation on locally-sourced recycled materials.

The principal advantage of this tool is in generating strong economic incentives that result in creating added value for recycled materials, currently lacking in Priština. In terms of environmental incentives, this has the potential to catalyze the development of innovative sustainable production methods and technologies using CDW. The principal conditions for supporting this new market in Priština include:

- Substantial local political support, alongside an ongoing commitment to cooperation with international counterparts.
- The public sector to support local technical knowledge or environmental product criteria for application in the specification of products and services. This should be supported by the EU’s already established criteria for products and processes, as well as toolkits for the development of GPP.
- Active communication of knowledge to speed up the process of implementation.ICLEI (International Council for Local Environmental
Incentivizing this wide a range of actors in the prevention chain of CDW, with their varied associated constraints and motivations, requires more than isolated and actor-specific proposals. Thus, a holistic ‘incentive scheme’ is proposed for the short, medium, and long terms, based on findings from the actor matrix and best practice analysis. Considering the current difficulties of the public authorities in implementing the legal framework (refer to chapter 5), the proposed incentive scheme will minimize legal penalties and instead work with reward schemes to develop an integrated incentive scheme. This strategy aligns with current literature that demonstrates that incentives are more effective when penalties such as increased taxes are minimized and coupled with reward instruments like subsidies and loans along the activity chain (CIC, 2017; p.9; Jia et al. 2016, p.5). Thus, the incentives scheme aims to:

- Facilitate the establishment of a new market for environmentally-friendly goods and services
- Prevent CDW
- Reduce environmental degradation through the reduction of illegal disposal of CDW

4.5.1 Short-term (communication and promotional work)

In the short term, the incentive scheme looks at low cost and high impact proposals to ensure that the necessary frameworks and institutional structures are in place for more fundamental change to happen. Through communication and promotional projects, the focus is on the consolidation and strengthening of existing actions in Pristina, including networking between already-active actors, crosscutting the public sector, private sector, and civil society, such as CSOs and NGOs. Having established from the constraints analysis that the current primary motivations for actors in Pristina are economic, followed by political, these are the main types of incentives proposed to instigate change in the prevention and reduction of CDW in the short term.

4.5.2 Medium-term (job creation and market competitiveness)

In the medium term, once the required networks and institutional frameworks are more developed, there remains a clear focus on economic incentives such as taxation, subsidization and cash competitions. The aim in this timeframe is to generate employment and a new competitive market for recycled and reused materials and buildings, as well as energy-efficient construction technologies and methods. This makes use of the strong public-private sector collaboration built up in the previous stages, while also encouraging innovation.

4.5.3 Long-term (fulfillment of EU obligations)

In the long term, as a more sustainable CDW process becomes established, the motivations of key actors are likely to progress from solely economic considerations. Thus other types of incentives can be introduced – environmental, social, and innovatory - while maintaining political incentives as an under-lying thread. Once awareness has been raised, along-side technical skills and infrastructure developed in the new market, the fulfillment of higher international standards for CDW prevention and reduction can be achieved in the longer term.
Chapter 4 - Incentives for prevention, reduction and reuse

Table 21: Short-term incentives
Prepared by the authors

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Table 22: Medium-term incentives
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Chapter 5 - Legal and policy framework
Chapter 5  -  Legal and policy framework

5.1  Introduction

This chapter evaluates the legal and policy frameworks related to the field of CDW Management in Kosovo. It offers recommendations and best practices that aim to bridge the gap between legal frameworks and implementation. Using a Gap Analysis, it asserts that in Kosovo there exists a significant contrast between written law and the reality of CDW management.

The methodology used in this chapter was designed to practically assess the shortcomings in the legal framework of Kosovo, but it is important to note that further legal work is required to assess the quality of the said framework. Furthermore, the language barrier, the brevity of the mission, along with the qualitative aspect of the data, all represent possible biases in the formulation of these results.

5.2  Methodology

There are three main sections to this chapter. The first is a review of existing and relevant legal and policy frameworks in Kosovo in the field of CDW management. Through the examination of these documents, an overview was generated of the legal hierarchy, a list of stakeholder competencies, and a brief legal operational flow of CDW. The second section is a Gap Analysis, which identifies gaps between the legal framework and the implementation and enforcement of policy in Kosovo. The majority of data used for this section resulted from the numerous interviews and meetings with different stakeholders in the four days in Priština. Thus, by comparing the data gathered in the legal review to the data gathered in the field research, the findings were acquired. The final section is a series of recommendations and best practices that seek to decrease the gaps previously identified in the Gap Analysis. The next section will...
describe the legal review and each of its resulting components.

5.3 Legal Review

The legal review is an extensive reading of all the legal documents related to CDW management, in order to identify direct legal references that prescribe the correct actions and competencies to be implemented. The different laws and sub-legal acts were analysed, annotating specific articles to construct flows and laws. For the full list of laws surveyed under the legal review, refer to Kosovar Code of Law.

5.3.1 Legal Hierarchy

This subsection describes the legal hierarchy framework that exists in Kosovo. The majority of Kosovarian legislation is taken from European Union (EU) or American (US) standards (A. Frenkaj, Advisor- Legal and Administration Reform Project, 21 May), with little change to its content. This is a possible source of ambiguity, as expressed by several of the interviewed stakeholders, as frameworks are not "contextualized" to adapt to Kosovo. "We have a law which is perfect in the eyes of the EU, but it does not address—and it’s fragmented, it doesn’t come as a package, but it comes as a law, which foresees fifty-five by-laws, which will maybe, maybe, be written in the next fifteen years. Where is the implementation of the law?" (F. Jerliu, 2019, Professor- University of Prishtina Faculty of Architecture, 23 May)."

Most of the legislation of the Republic of Kosovo is available in several languages—Albanian, Serbian, Bosnian, Turkish and English—on the website of the Official Gazette ("Official Gazette of the Republic of Kosovo," 2019), or through applications for IOS and Android cellphones. It is possible to consult the legislation at different institutional levels and realms—central, local and judicial—from European Union acquis, and per type of act—law, administrative instructions, and regulations. When searching for a document on the Gazette’s portal, the search will provide the legal base of the act, the different acts that are affected by it, and the sub-normative acts that follow. In this way, the Official Gazette brings transparency to the legal framework of Kosovo. Figure 32 describes the legal hierarchy of Kosovo with respect to CDW management.

The legal hierarchy is dominated by the Constitution of the Republic of Kosovo. As set forth by the Constitution, the Laws that govern Kosovo are approved by the Assembly, which is "the legislative institution of the Republic of Kosovo directly elected by the people" (Constitution of the Republic of Kosovo, Art. 63). The laws concerning CDW management include Law on Waste and Law on Construction. Also relevant is the Law on Local Self Government, which allows for the division of competencies between central and municipal levels. Additionally, sub-legal acts are drafted at a Central Government level—which includes the Prime Minister, the Deputy Prime Minister and the ministers. For CDW, these include landfill construction and waste storage management. The different laws advise upon the development of sub-legal acts; for CDW management, these sub-legal acts take the form of Administrative Instructions. Each ministry issues these Administrative Instructions, which inform municipalities on how to monitor and implement waste management procedures. The competent ministry in the case of CDW management is the Ministry of Environment and Spatial Planning (MESP). The laws also inform the municipalities and their competencies, which includes the drafting of different municipal plans and procedures. In the case of CDW management, the municipal plans can include: fee and payment regulation, municipal waste collection processes, and more.

5.3.2 Stakeholder Competencies

This subsection describes the different competencies of the legal stakeholders involved in CDW management. The complete responsibilities of the stakeholders are listed in Articles 14-21 of the Law on Waste (see Annex - Stakeholder Competencies).

At a ministry level, the Ministry of Environment and Spatial Planning (MESP) is responsible for drafting environmental legislation and monitoring the implementation of these policies (Law No.04/L-060 On Waste, Art.14.1, 2012). Furthermore, they are charged with overseeing and inspecting the law (Law No.04/L-060 On Waste, Art.14.6, 2012), as well as managing infrastructure that pertains to environmental protection (Regulation No.02/2011, Annex 13.6, 2011). Only the ministry can issue licenses for waste management (Law No.04/L-060 On Waste, Art.14.4, 2012). Further, it is the responsibility of the ministry to issue construction permits for Category III construction projects, that is, larger infrastructure projects (Law No.04/L-110 On Construction, Art.19.1, 2012).

The municipality, however, is the legal actor charged with the greatest responsibility in the management of CDW. It is responsible for implementing and enforcing legislation as determined by the ministry (Law No.04/L-110 On Waste, Art.15.1, 2012). Municipalities are also responsible for conducting inspections alongside ministry inspectors and implementing fines for infractions (Law No.04/L-110 On Construction, Art.29, 2012). Municipalities issue construction and demolition permits for Category I and II projects, that is, smaller infrastructure projects (Law No.04/L-110 On Construction, Art.19.2, 2012). Finally, it is the responsibility of the municipality to allocate land for future disposal sites for all kinds of waste in their waste management plans (Law No.04/L-060 On Waste, Art.10.6.14, 2012).

Article 16 of the Law on Waste establishes the responsibilities of waste owners; only licensed persons can follow the operational flow from collection to final deposit. As a licensed person, the waste owner must develop a waste management plan as recommended in Article 11 and 12 of the Law on Waste. Article 17 further expounds on the responsibilities of waste producers, who are also expected to create a waste management plan and finance and ensure the operational flow of waste from collection to final deposit. The waste producer, it is important to note, is charged with maintaining and inspecting the law (Law No.04/L-060 On Waste, Art.14.6, 2012), as well as managing infrastructure that pertains to environmental protection (Regulation No.02/2011, Annex 13.6, 2011). Only the ministry can issue licenses for waste management (Law No.04/L-060 On Waste, Art.14.4, 2012). Further, it is the responsibility of the ministry to issue construction permits for Category III construction projects, that is, larger infrastructure projects (Law No.04/L-110 On Construction, Art.19.1, 2012).

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Article 20 of the Law on Waste describes the responsibilities of waste treatment operators; they are also expected to create a waste management plan and to obtain a license from the ministry to legally operate.
5.3.3 Operational Flow

This subsection describes the detailed operational flow of CDW per the law, from its pre-production to its final disposal. It includes the process of applying for different permits to begin construction. In contrast with the operational flow of Chapter 2 of this report, this flow does not describe the reality of waste management in Kosovo, only the process that the law establishes. The description of the operational flow is requisite to better understand the gaps in implementation. The phases of the operational flow are pre-production, production, collection & transportation, treatment, and disposal.

In order to begin construction in Kosovo, there are a series of requisites and applications that the investor or developer—henceforth referred to as the Applicant—must follow. First, the Applicant must apply for terms of construction when no spatial planning document is in force (AI MESP 06/2017, Art.10, 2017). Then, the Applicant submits an application for a Construction Permit and a Demolition Permit (if demolition is required). A detailed description of the step-by-step pre-production process for these three documents can be found in Annex - Detailed application process for construction and demolition based on A.I. MESP 06/2017).

After the application process, construction and demolition at site (production) yield CDW, which then continues into collection and transportation. The waste generated on site should be managed by the Applicant, and it is the responsibility of the Applicant to organize the collection and transfer of said waste by a licensed person (AI MESP 07/2015, Art. 9, 2015). On site, the waste is collected by an operator, per a written agreement between the two parties (AI MESP 07/2015, Art. 9.4, 2015).

Although short, there exists some legislation on treatment of waste, indicating that the process must be conducted according to a specific sub-legal act or administrative instruction (AI MESP 07/2015, Art.10, 2015); however, this administrative instruction was not found. But the law still specifies that treatment and disposal should be done on a site as defined by the municipality (AI MESP 07/2015, Art.13, 2015); said site is determined by environmental regulations based on the total population of the municipality (more or less than 60,000 inhabitants) (AI MESP 07/2015, Art. 15.4, 2015). Figure 33 illustrates the operational flow per legal disposition.

5.3.4 Summary

The review of the existing legal and policy framework yielded three results. First, we described the hierarchical structure of law in Kosovo, and the pertinent documents that relate to CDW. Next, we defined competencies for different legal stakeholders, thus ensuring the responsibilities of each. Lastly, we presented an operational flow as prescribed by the law. The next section uses these three results as inputs to analyse the legal framework and identify possible discrepancies between said framework and the day-to-day reality in Kosovo.

5.4 Legal Gap Analysis

The Gap Analysis serves as a framework to analyse the legal and policy documents in Kosovo and contrast them to the implementation reality.

5.4.1 Methodology

Official data concerning CDW management is scarce in Kosovo. As detailed in Chapter 1 of this report, Kosovar authorities have yet to develop a resilient indicator system, and thus the majority of the data collected in this report stems from data estimation and interviews with relevant stakeholders. Data was also collected from online governmental sources, but it accounted for a fraction of the results.

This Gap Analysis uses specific articles from the legal and policy framework to detail the operational flow and the stakeholder competencies of CDW management in Kosovo. The operational flow dictates the activities that take place, and the stakeholder competencies dictates the actors involved. From this flow, we developed a set of yes and no questions which verify whether or not the legal framework is being implemented. A “no” answer pointed to a gap in the framework. Through interviews and meetings with stakeholders, we were able to ask and receive answers to the questions. In rare instances, some of the questions could be answered through online resources. Figure 34 exemplifies the format used for this analysis.

5.4.2 Findings

The main findings of the Gap Analysis underlined the inconsistencies between legal frameworks and their implementation. In nearly the entirety of question-and-answer sessions, the answers received from public officials and other relevant stakeholders were negative. Because the analysis was not quantitative, the questions were straightforward either true or false. It is important to note that in several cases, officials were not straightforward or responsive. In a particularly fruitful session with the Municipality of Pristina, not a single specific question from the Gap Analysis was answered.

Although the majority of these findings have been previously discussed in other chapters, here, findings are divided between the operational flow and the stakeholder competencies as defined by the law. For the full Gap Analysis, please refer to Annex - Gap Analysis.

With respect to the legally prescribed operational flow of CDW, several gaps were made clear. First, the construction book that should be present at each construction site is rarely inspected, or even filled out (A. Nixha 2019, Architect, Anarch company, meeting 23 May). This book is relevant to the daily construction activity and thus could serve as a ledger to record the amount of generated waste as, currently, there is no reliable quantitative data regarding CDW generation (see chapter 1 of this report). Additionally, the collection and transportation of CDW takes place with private and public parties who are not licensed as noted in the law (Ministry of Environment and Spatial Planning 2019, meeting 20 May).

This was further confirmed when the ministry informed us that there did not yet exist a single
Concerning possessors and operators of waste, these actors are not licensed to manage waste, given the fact that no process for licensing them exists. Furthermore, they do not keep records of the amount of waste generated on site.

A final note that concerns the municipality, the possessors and the operators of waste: none was able to provide the group with an example of a waste management plan, which all three stakeholders are expected to produce.

5.4.3 Summary
This section described the main findings of the Gap Analysis, focusing on the gaps in the operational flow and the stakeholder competencies. This was done through a comparison of the legal framework and reality. It identified discrepancies at every step of the process of CDW management, as well as deficiencies in the competences assigned to the relevant stakeholders.

5.5 Recommendations
The following list of recommendations seeks to close the gaps between the legal framework in Kosovo and implementation. Although there is a slight ambiguity with respect to written law—a result of indiscriminate transfer from European Union standard to a very different context—this report does not have the scope to recommend alterations to legal wording. Instead, it focuses on recommending legal mechanisms to fortify the implementation of the legal framework.

5.5.1 Effective Law Enforcement
Among several governance and democracy efforts set forth by GIZ, The Legal and Administration Reform Project (A. Prekaj 2019, Advisor—Legal and Administration Reform Project, 21 May) works on effective enforcement of laws in the country. Projects like this one could serve to improve inspection services and ensure a smoother legal process when it comes to CDW management.

5.5.2 Online permit system, Macedonia
One of the first gaps in CDW generation lies in the administrative permit process. Public officials refrain from issuing demolition permits, thereby creating a lack of accountability in the generation of CDW. An online permit system would not alleviate the lack of implementation, but would ensure a public and digital record of the process. For example, a transparent permit system is Macedonia’s online system, which has been in place since 2005 (Doing Business, 2011). The Doing Business report provides a series of indicators to judge the resiliency of business environments in different countries, with a specific set dedicated to construction (Doing Business, p. 10, 2019). Here, two indicators are worth mentioning: that all documentation be submitted through the online portal, and that all requisite inspection take place.

Table 1 compares a series of indicators that describe how construction permits compare in Macedonia to other territories.

5.5.3 CDW management system, São Paulo, Brazil
The municipality of São Paulo implemented a system to manage CDW called “Coletas Online” (AMLURB, 2019). The service of CDW transportation, reuse, treatment, recycling and final disposal is operated by private companies and all operators must be officially licensed for this type of activity (Resolution No 107/AMLURB/2017, 2017). The purpose to obtain a license to collect and transport CDW is described in Resolution No 107/AMLURB/2017, 2017. First, the CDW collectors register the company, the vehicles, and all the construction and demolition containers used in the operation. All containers receive an identification number. Every time the CDW collectors provide a collection service for, where and when the service will be provided; the type of material involved, the container identification number, and whether the container will be on a public road or inside the property. With this information, the system issues a CDW transportation control document that allows for service execution. The CDW generator receives an email link to track the service and the final disposal. Figure 35 shows the “Coletas Online” website that is open for the citizens to consult the licensed collectors of CDW.
After collection, the container with CDW is taken to a licensed CDW landfill or transfer area, where another electronic receipt is issued through the same online system. After the emission of the CDW transportation control document, the CDW collectors have four days to execute the service and obtain the electronic receipt, proving that the material was delivered properly, under penalty of fine.

In the case of flagrant illegal CDW containers and trucks, the Integrated Management Plan for Construction Waste and Bulk Waste (Law No 14.803 from 26 June 2008, 2008) prescribes fines, the seizure of trucks and containers and the suspension of the operational license. The equipment is only released after the payment of fines and taxes. Figure 5.4.3.2 describes the CDW management system flow.

The Constitution of the Republic of Kosovo ensures management and participation in decision making. The process of public participation is legally assured in Kosovo, but some experts note that the process can be improved upon.

A common misconception faced throughout the field research was that information was not available, or that the law was not clear. However, the Gap Analysis clearly proved that information and legal frameworks did exist. In fact, the Priština municipal website offers very clear infographics describing the construction permit process and points to the different resources available to citizens. It is, therefore, necessary to inform citizens and operators about CDW management, from pre-production of waste—permits and regulations—to the collection and storage of it. In the Annex is an example of one infographic detailing the construction permit process (Annex — Infographic).

**5.6 Conclusions**

Chapter 5 of this report has briefly described the legal and policy frameworks that govern Kosovo’s CDW management. It has provided a legal hierarchy of relevant laws, a thorough description of the operational flow, as prescribed by law, and the competencies of different stakeholders. After a series of interviews with said stakeholders, it has contrasted the processes detailed in the law to the implemented reality in Kosovo. The Gap Analysis demonstrates the discrepancies between law and implementation. A succinct list of recommendations tries to point the way for further research and efforts, but it is impor-
tant to note one overarching theme to this chapter.

As a result of many meetings with relevant stakeholders, and as a result of an examination of the law, it became apparent that the discrepancies stem from a lack of transparency and accountability at all levels of competency. The common narrative between all non-public stakeholders seemed to hint at these institutional deficiencies as the overarching theme in improper management. It was implied by the majority of interviewees that some version of corruption or mismanagement was at the root of the problem.

Lack of technical qualifications, a constant shift in regulation between European and American standards, a hesitant trust in public authority and a lack of empathy given the reality and limitations of Kosovo, all of these factors and more cement a fragile management ecosystem.

“There is a matter of lack of—or say, weak—transparency and accountability which surfaces in all spheres of life around here, thus also in this one” (F. Jerliu, Professor, University of Prishtina Faculty of Architecture, meeting 23 May).

E


G


Google Earth, 2019. 42°41′01″38″N, 21°10′31″15″E, elevation 3643 m. 3D map. URL https://earth.app.geo.gi/RxNHPU [accessed 11.6.19].

Google Earth, 2019. 42°41′17″47″N, 21°0′11″5″E, elevation 643m. 3D map. URL https://earth.app.geo.gi/RxNHPU [accessed 11.6.19].


H
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Priština: MESP, 2013. 27.05. 2019


Ministry of Environment and Spatial Planning and Management_in_Kosovo_Status_Report_2018.pdf


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</tr>
<tr>
<td>Visar Gashi</td>
<td>CEO-Center for Environment and Alternative Energy</td>
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<td>21.05.2019 16:00</td>
</tr>
<tr>
<td>Suzana Goranci</td>
<td>Head of Planning Division-Ministry of Environment and Spatial Planning</td>
<td>Ministry</td>
<td>22.05.2019 09:00</td>
</tr>
<tr>
<td>Muhamet Malsiu</td>
<td>Director of Environmental Protection and Water Department- Ministry of Environment and Spatial Planning</td>
<td>Ministry</td>
<td>22.05.2019 09:00</td>
</tr>
<tr>
<td>Vlora Osaj</td>
<td>Head of Legal Department-Ministry of Environment and Spatial</td>
<td>Ministry</td>
<td>22.05.2019 09:00</td>
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<tr>
<td>Florie Kqiku</td>
<td>Head of Urbanism-Ministry of Environment and Spatial Planning</td>
<td>Ministry</td>
<td>22.05.2019 00</td>
</tr>
<tr>
<td>Fatmir Matoshi</td>
<td>Minister of Environment and Spatial Planning</td>
<td>Ministry</td>
<td>22.05.2019 11:00</td>
</tr>
<tr>
<td>Edmond Halimi</td>
<td>Operational Manager- Kosovo Landfill Management Company</td>
<td>Landfill</td>
<td>22.05.2019 13:00</td>
</tr>
<tr>
<td>Fjolla Shishko</td>
<td>Environmental Lead- Bechtel&amp;Enka</td>
<td>GIZ small</td>
<td>22.05.2019 13:00</td>
</tr>
<tr>
<td>Dulagjin Gashi</td>
<td>Head of Waste Management and Environment Sector</td>
<td>Municipality of Pristina</td>
<td>22.05.2019 15:00</td>
</tr>
<tr>
<td>Medina Braha</td>
<td>Director of the Directorate of Public Services, Defense and Rescue</td>
<td>Municipality of Pristina</td>
<td>22.05.2019 15:00</td>
</tr>
<tr>
<td>Ilir Hetemi</td>
<td>Construction Engineer-Nartel construction company</td>
<td>Nartel construction site in Pristina</td>
<td>22.05.2019 15:00</td>
</tr>
<tr>
<td>Riza Avdili</td>
<td>CEO- Rizah Trans- concrete recycling company</td>
<td>GIZ small conference hall</td>
<td>22.05.2019 17:00</td>
</tr>
<tr>
<td>Alban Aftaj</td>
<td>Manager-Narteltiman construction company</td>
<td>Peja</td>
<td>23.05.2019 11:00</td>
</tr>
<tr>
<td>Durim Beqiraj</td>
<td>Financial Manager- Fidani beton</td>
<td>Junk</td>
<td>23.05.2019 14:00</td>
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<tr>
<td>Kuftim Zergri</td>
<td>informal waste collector</td>
<td>Fushe Kosova</td>
<td>23.05.2019 10:00</td>
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<tr>
<td>Abdullah Bazuku</td>
<td>informal waste collector</td>
<td>Fushe Kosova</td>
<td>23.05.2019 10:00</td>
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<tr>
<td>Anton Kovaqi</td>
<td>informal waste collector</td>
<td>Fushe Kosova</td>
<td>23.05.2019 10:00</td>
</tr>
<tr>
<td>Jeton Jashari</td>
<td>Representative of Roma community</td>
<td>Fushe Kosova</td>
<td>23.05.2019 10:00</td>
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<tr>
<td>Alban Rama</td>
<td>CEO- Izolimi Plast-recycling company</td>
<td>Izolimi Plast</td>
<td>23.05.2019 10:00</td>
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<tr>
<td>Ilir Gjinoll</td>
<td>Professor- University of Pristina</td>
<td>Faculty of Architecture-University of Pristina</td>
<td>23.05.2019 13:00</td>
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<tr>
<td>Ardit Byci</td>
<td>Professor- University of Pristina</td>
<td>Faculty of Architecture-University of Pristina</td>
<td>23.05.2019 13:00</td>
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<tr>
<td>Albiola Bodeci-Canaj</td>
<td>CEO- 3B Project- construction company</td>
<td>3B Project office</td>
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<td>Head of Kosovo Energy Efficiency Project-GIZ</td>
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<td>Astrit Nixa</td>
<td>Architect-Anarch company</td>
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<td>23.05.2019 15:45</td>
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</tbody>
</table>
Chapter 2

Site  Position, Date, Company Name, Neighborhood Name
1.  Supervisor, (2019, May 20), Alb Dizajin, Dragodan
2.  Project Engineer (2019, May 20), Iliria building fiterja, Dragodan
3.  Architecture and Supervisor, (2019, May 22), Pika, Mahalla e Muhaxhereve
4.  Supervisor (2019, May 22), Driloni, Mahalla e Muhaxhereve
5.  Supervisor (2019, May 22), Bostikimi, Mahalla e Muhaxhereve
6.  Civil Engineer (2019, May 22), Nartel, Larkishte
7.  Supervisor (2019, May 23), Objektia Punekryesi, Dardania
8.  Supervisor (2019, May 23), Kwimmo Concept L.L.C, Dardania
9.  Project Manager (2019, May 23), 3B Project, off-site

B) Template used

<table>
<thead>
<tr>
<th>Number</th>
<th>Name, date, company name if relevant, place</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anonymous, 2019, May 22, by phone</td>
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<tr>
<td>2.</td>
<td>Anonymous, 2019, May 22, by phone</td>
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<tr>
<td>3.</td>
<td>Anonymous, 2019, May 22, by phone</td>
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<td>4.</td>
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<td>7.</td>
<td>Anonymous, 2019, May 22, by phone</td>
</tr>
<tr>
<td>8.</td>
<td>Anonymous, 2019, May 22, by phone</td>
</tr>
<tr>
<td>10.</td>
<td>Anonymous, 2019, May 23, GIZ Office</td>
</tr>
<tr>
<td>11.</td>
<td>Anonymous, 2019, May 23, GIZ Office</td>
</tr>
<tr>
<td>17.</td>
<td>Anonymous, 2019, May 23, GIZ Office</td>
</tr>
<tr>
<td>22.</td>
<td>Anonymous, 2019, May 24, Sonder Restaurant</td>
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B) Template used

Interviews: C&D waste generated by large construction and demolition projects

<table>
<thead>
<tr>
<th>What is your position in this company?</th>
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</thead>
<tbody>
<tr>
<td>What is the primary waste material produced at this site? (personal opinion not quantitative)</td>
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</tbody>
</table>

Does the construction company sort any waste on site?
- Provided suggestions of metal, wood, glass etc.

Who collects the compiled waste materials and where is it transported to?

Does the construction company pay for this service? How much?

Does the construction company work with Pastrimi?

Does the construction company use any recycled materials?

What was the condition of the site before you began working here?

Through personal observation collected and assessed the name of the construction company and the type/phase of the construction.

Interviews: C&D waste generated by small-scale works, including households

<table>
<thead>
<tr>
<th>Gender: Approx. age:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date, place:</td>
</tr>
</tbody>
</table>

Have you renovated your home or even build it in Pristina or Fushë Kosova?

If yes, what did you with the waste?
A) Did you drop the waste:

- Near a Pastrimi container? □ Yes □ No
- Near your house? □ Yes □ No

B) Did you pay a company to collect and transport your waste?

- A private company? □ Yes □ No
  If yes: How much did you pay?
  Which vehicle did the company use?
  Do you know where it went? Is it important?
  □ By Pastrimi? □ Yes □ No
  If yes: How much did you pay?
  C) Did you burn the waste? □ Yes □ No
  D) Others (e.g. transporting yourself, giving away) □ Yes □ No
  If yes: Please detail what you did (e.g. giving materials or furniture etc.):

Further aspects: type of project, material generated etc.

If no, whom would you contact to collect and transport your waste if you were to do renovation works? Why? Who is responsible in your opinion?

Chapter 3

1. Meeting with representatives of the Ministry of Environment and Spatial Planning, 20.05.2019
2. Meeting with representatives of the Municipality of Fushe Kosova 21.05.2019 09:00
3. Meeting with representatives of Publically Owned Enterprise PASTRIMI 21.05.2019 13:00
4. Meeting with Adrian Prenkaj, Advisor to the Legal Administration Reform Project 21.05.2019 13:00
5. Meeting with Luan Hasanaj, Project Coordinator for Let’s do it Kosovo 21.05.2019 16:00
6. Meeting with representatives of the Center for Environment and Alternative Energy 21.05.2019 16:00
7. Meeting with directors and department heads of the Ministry of Environment and Spatial Planning 22.05.2019 09:00
8. Meeting with Fatmir Matoshi, the Minister of Environment and Spatial Planning 22.05.2019 11:00
9. Meeting with representatives of the Kosovo Landfill Management Company Landfill 22.05.2019 13:00
10. Meeting with Fjolla Shishko, Environmental Lead of Bechtel & Enka 22.05.2019 13:00
11. Meeting with various representatives of the Municipality of Prishtina 22.05.2019 15:00
12. Meeting with Ilir Hetemi, Construction Engineer at Nartel Construction company 22.05.2019 15:00
13. Meeting with Riza Avedyli, CEO- Rizah Trans- concrete recycling company 22.05.2019 17:00
14. Meeting with Alban Arifaj, Manager for Ndertimtari construction company in Peja, 23.05.2019 11:00
15. Meeting with Durim Beqiraj, Financial Manager for Fidani-Beton Junk 23.05.2019 14:00
16. Meeting with Informal waste collectors in Fushe Kosova 23.05.2019 10:00
17. Meeting with Jeton Jashari, a representative of the Roma Community in Fushe Kosova 23.05.2019 10:00
18. Meeting with Alban Rama CEO of Izolimi Plast-recycling company 23.05.2019 10:00

Section 3.2.2. Small-scale renovation projects

A) List of interviews

<table>
<thead>
<tr>
<th>Number</th>
<th>Name, date, company name if relevant, place</th>
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<tr>
<td>1.</td>
<td>Anonymous, 2019, May 22, by phone</td>
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<td>Anonymous, 2019, May 22, by phone</td>
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<td>Anonymous, 2019, May 22, by phone</td>
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<td>Anonymous, 2019, May 23, GIZ Office</td>
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<td>Anonymous, 2019, May 23, GIZ Office</td>
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<td>17.</td>
<td>Anonymous, 2019, May 23, GIZ Office</td>
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</tbody>
</table>

B) Template used

Interviews: C&D waste generated by small-scale works, including households

Gender: Approx. age:

Date, place:

Have you renovated your home or even build it in Pristina or Fushë Kosova?

If yes, what did you with the waste?

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  □ By Pastrimi? □ Yes □ No
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  D) Others (e.g. transporting yourself, giving away) □ Yes □ No
  If yes: Please detail what you did (e.g. giving materials or furniture etc.):
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Location</th>
<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td>Enver Tahiri</td>
<td>Head of waste and chemicals division</td>
<td>Ministry of Environment and Spatial Planning</td>
<td>GIZ big conference hall</td>
<td>20.05.2019</td>
<td>13:00</td>
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<tr>
<td>Afrim Berisha</td>
<td>Director for State of the Environment</td>
<td>Kosovo Environment Protection Agency</td>
<td>GIZ big conference hall</td>
<td>21.05.2019</td>
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<tr>
<td>Arif Demishi Investor</td>
<td></td>
<td>4A investment</td>
<td>GIZ</td>
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<td>09:00</td>
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<tr>
<td>Egip Osqilla</td>
<td>Head of Public Services and Environment-Waste management officer</td>
<td>Municipality of Fushe Kosova</td>
<td>Municipality of Fushe Kosova</td>
<td>21.05.2019</td>
<td>10:30</td>
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<tr>
<td>Antigona Konjusha-Sahiti</td>
<td>Head of Urbanism</td>
<td>Municipality of Fushe Kosova</td>
<td>Municipality of Fushe Kosova</td>
<td>21.05.2019</td>
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<tr>
<td>Fatmir Haximi</td>
<td>Head of Unit</td>
<td>PoE Pastrimi</td>
<td>PoE Pastrimi</td>
<td>21.05.2019</td>
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<td>Adrian Prenkaj Advisor</td>
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<td>Rudina Qerimi</td>
<td>Spatial planning advisor</td>
<td>GIZ Spatial planning and land management office</td>
<td>GIZ</td>
<td>21.05.2019</td>
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<td>Shkelqim Daci</td>
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<td>Luaz Hasaniq Project Coordinator</td>
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<tr>
<td>Arben Nika Manager</td>
<td>Center for Environment and Alternative Energy</td>
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<td>17:00</td>
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<tr>
<td>Visar Gashi CEO</td>
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<tr>
<td>Suzana Goranci Head of Planning Division</td>
<td>Ministry of Environment and Spatial Planning</td>
<td>Ministry</td>
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Chapter 5

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<th>Process</th>
<th>Stakeholder</th>
<th>Question</th>
<th>Operational Flow</th>
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<tbody>
<tr>
<td>Production</td>
<td>Municipality</td>
<td>Are demolition permits being issued?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investor</td>
<td>Does there exist specifically for CAD Waste on construction site?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collectors</td>
<td>Are there licensed persons for collection?</td>
<td></td>
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<tr>
<td></td>
<td>Transporter</td>
<td>Is there a written agreement for transferring waste?</td>
<td></td>
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<tr>
<td></td>
<td>Waste Holder</td>
<td>Are there medium-term plans for the jurisdiction of the waste holder?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Producer (Owner) and Operator</td>
<td>Does the waste producer transport and deliver the CAD Waste in a designated place by the municipality?</td>
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</tr>
<tr>
<td></td>
<td>Operator</td>
<td>Is there an arterial agreement for transporting waste?</td>
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<tr>
<td>Collection</td>
<td>Municipality</td>
<td>Are there licensed persons for transport?</td>
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<tr>
<td></td>
<td>Waste Producer</td>
<td>Does the transport of CAD Waste be done under the care and responsibility of the waste holder?</td>
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<tr>
<td></td>
<td>Operator</td>
<td>Does the operator adhere to the classification of CAD Waste?</td>
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<tr>
<td></td>
<td>Municipality</td>
<td>Are there regulations concerning building with reused CAD Waste?</td>
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<tr>
<td></td>
<td>Operator</td>
<td>Does the operator adopt the regulations concerning building with reused CAD Waste?</td>
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<tr>
<td>Recycling</td>
<td>Municipality</td>
<td>Is a percentage of CAD Waste waste re-used?</td>
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<tr>
<td></td>
<td>Operator</td>
<td>Are there licensed persons for storage?</td>
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<tr>
<td>Treatment</td>
<td>Municipality</td>
<td>Is CAD Waste waste treated in Kosovo?</td>
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<td>Operator</td>
<td>Has municipality issued a sub-legislative for methods and technologies for treatment of CAD Waste?</td>
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<tr>
<td>Disposal</td>
<td>Municipality</td>
<td>Have the municipalities designated centers for collection?</td>
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<tr>
<td></td>
<td>Operator</td>
<td>Does the operator refer the article? (Referring to the article for the questions)</td>
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<tr>
<td></td>
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<td>Have the municipalities designated centers for treatment?</td>
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<td>Operator</td>
<td>Does the operator refer the article? (Referring to the article for the questions)</td>
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<tr>
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<td>Municipality</td>
<td>Is there a license process for potential CAD Waste waste managers?</td>
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<tr>
<td></td>
<td>Operator</td>
<td>Does the operator refer the article? (Referring to the article for the questions)</td>
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**YES/ NO** | **Law Reference** | **Source** |
---|---|---|
X | Municipality of Pristina | 22.05.2019 15:00 |
X | Ministry of Spatial Planning | 22.05.2019 09:00 |
X | AI MESP 06/2016 Article 18, Section 9.6.8 | |
X | AI MESP 06/2016 Article 24, Section 2 | |
X | AI MESP 08/2016 Article 23, Section 1 | |
X | Law of waste: Article 15, Section 1.7.40.1 and 40.2 | Municipality of Fushë Kosova 22.05.2019 15:00 |
X | AI MESP 07/2015 Article 7 | |
X | AI MESP 07/2015 Article 9, Section 2 | |
X | AI MESP 07/2015 Article 3, Section 3 | |
X | AI MESP 07/2015 Article 9, Section 4 | |
X | Municipality of Pristina | 22.05.2019 15:00 |
X | AI MESP 07/2015 Article 11, Section 1 | |
X | AI MESP 07/2015 Article 7 | MESP (22.05.2019 09:00) |
X | AI MESP 07/2015 Article 9, Section 5 | MESP (22.05.2019 09:00) |
X | Municipality of Fushë Kosova | 22.05.2019 15:00 |
X | Municipality of Pristina | 22.05.2019 15:00 |
X | Not read in any law | |
X | Not read in any law | |
X | Not mentioned in any law or interviews | |
X | AI MESP 07/2015 Article 10 | Not read in any law |
X | AI MESP 07/2015 Article 11, Section 2 | Not read in any law |
X | AI MESP 07/2015 Article 12 | |
X | Municipality of Fushë Kosova | 22.05.2019 15:00 |
X | AI MESP 07/2015 Article 13, Section 1 | |
X | Municipality of Fushë Kosova | 22.05.2019 15:00 |
X | Municipality of Fushë Kosova | 22.05.2019 15:00 |
X | AI MESP 07/2015 Article 15, Section 4 and Section 5 | Municipality Pristina 22.05.2019 15:00 |
X | AI MESP 07/2015 Article 15, Section 1.1 | MESP (22.05.2019 09:00) |
X | AI MESP 07/2015 Article 15, Section 1.2 | MESP (22.05.2019 09:00) |
X | AI MESP 07/2015 Article 15, Section 1.3 | MESP (22.05.2019 09:00) |
X | AI MESP 07/2015 Article 15, Section 1.4 | MESP (22.05.2019 09:00) |
X | AI MESP 07/2015 Article 15, Section 1.5 | MESP (22.05.2019 09:00) |
Landfill Permit

**Municipality**
For municipalities with over 60,000 inhabitants, is the landfill in accordance with the Law No. 03-L-214 on Environmental Protection in Kosovo?

**Administrative Instruction / Ministry**
Is there a system to prevent pollution by leaching in the landfill? Are leachate and leaching gas control devices installed?

**Ministry / Municipality**
Is the landfill in accordance with the Landfill Directive? What is the capacity of the landfill?

**Private body / Municipality**
Is it mentioned who will inspect the landfill; Ministry or municipality?

**Ministry / Municipality**
Is it mentioned under which department landfill operator will work?

**Municipality**
Is the stage for segregation and evaluation of waste finalized and complete?

**Inspectors**
Do Inspector stop construction of buildings and work of plants and equipments for waste management which do not meet the technical conditions and other requirements arising from this Law and other normative acts? 

**Public Sector**
Does the inspector verify and control implementation of waste management plans?

**Private body / Municipality**
Is there a system to prevent pollution by leaching in the landfill? Are leachate and leaching gas control devices installed?

**Municipality and Operator**
Are there buildings being constructed without construction permits? How many? Are these constructions being notified? Do the local authorities receive a report on supervision, measures, and action taken, respectively ordered to the municipality? Does the “permit tracking system” exist?

**Occupancy Permit**
Municipality
Does the “construction book” and diary exist?

Operator Contract

**Municipality and Operator**
Does the licensed operator dealing with the C&D Waste management submit an annual report to the Municipality?

**Municipality and construction owner**
Does the construction fee being paid?

**Municipality**
Are the technical conditions of landfill site to be suitable?

**Inspectors**
Is the location inspection and final inspection being done?

**General**
Does the operator submit the annual report to the Municipality?

**Inspectors**
Are there occupancy certificates approved by the ministry? Are the occupancy certificates approved by the ministry? Are there occupancy certificates approved by the ministry?

**Inspectors**
Do Inspectors put the results of each inspection into the online permit tracking system?

**Inspectors**
Does the operator submit the annual report to the Municipality?
**Personal Profiles**

**Heba Abu-Omar** received a Bachelor degree in Architecture from the German Jordanian University in Amman. Prior to joining TU Berlin’s Urban Management program, she worked on mixed-use architecture and urban planning projects in Kuwait, UAE, Bahrain, Egypt and Oman. Heba is currently interested in the spatial and economic impact of migration to Berlin and subsequently the city’s socio-economic integration policies and initiatives.

**Ana Carolina Adriano** is Brazilian and holds Bachelor degrees in law and geography by Universities of Ribeirao Preto and Sao Paulo. She is inspector of the Municipality of Sao Paulo with the duties of coordinating the enforcement of the building code, zoning, advertisement, and waste laws. She was co-responsible to specify and test the new inspection management system and train more than 500 public servants on it.

**Yllka Agusholl** is a student of University of Prishtina. Currently studying Environmental Engineering at the Faculty of Civil Engineering and Architecture. During her studies, she has been a part of many activities with environmental focus. Yllka is especially interested in human impact on environment and energy trends and developments in her country.

**Martin Alite** is an architect based in Tirana, Albania. After graduating from the University of Toronto, Martin worked in various architectural design and research based positions which fueled his curiosity in how issues of sustainability and growth could be addressed in increasingly complex urban conditions. He is currently working to complete his Masters in Urban Management seeking to gain more insight into these dilemmas.

**Gent Agoll** was born in Kosovo and is currently on his final year of his bachelor degree studying Environmental Engineering at the University of Prishtina. He has recently started working for a local environmental NGO in his hometown called “Let’s Do It Peja” in which he has been an active volunteer for the past few years.

**Maria Teresa Agurcia** Young professional working in the field of sustainable urban revitalization, particularly in Tegucigalpa’s Historical District. Interested in creative economies and creative people. Also interested in books and making her city a better place.

**Alejandro Alvarado Lima** is an architect who has collaborated with international companies developing social architecture projects in his home country Guatemala. He also contributed to develop education platforms aimed to reduce paper waste and worked as a University professor. He is currently pursuing the Urban Management master at TU Berlin and has interest in researching affordable housing and mobility alternatives in the Global South.

**Mohammad Arifuzzaman** is a Bangladeshi architect and faculty member of a public university in the discipline of Architecture. He has completed his bachelor's degree from the Architecture Department of Bangladesh University of Engineering and Technology (BUET). He is working as an academic, urban researcher and professional architect in Dhaka and he is involved in the development of both public and private sector projects in Bangladesh.
Maria Avilés obtained her bachelor degree in architecture from the ITESM in Mexico City, Mexico. Before joining the Urban Management program in TU Berlin, she worked in several architecture offices in the development of mixed-used, housing and restoration projects and also urban interventions in the periphery of Mexico City. She is currently interested in the research of land use management for Transit Oriented Development in Latin America.

Eljesa Belas interests are in Revit architecture software, and Architecture programs. She participated in various architecture competitions before attending University of Pristina and is eager to get involved with the architecture programs and workshops. She is a member of a NGO “Gjethi”, and has participated in various urban planning for the Spring 2019 events, which she recently attended.

Arbër Binaku is from Kosovo and has a Bachelor degree in Architecture and Urban Planning from the University of Business and Technology (UBT). During his studies he has worked for different construction cooperations regarding urban planning and collaborated with Kosovo Hope organization where he obtained his English language certificate. He also participated in many University research projects on green energy, urban planning and housing design.

Sofía Victoria Buganem, Architect graduated from the University of Buenos Aires (UBA), Faculty of Architecture, Design and Urbanism. After graduating she worked at the Housing Institute of the City of Buenos Aires where she developed social housing projects for low-income sectors of the population. Interested in sustainable urban development, affordable housing solutions and inclusive cities.

Edolind Bytyçi holds a Bachelor degree in Architecture and Urban Planning from the University of Business and Technology in Kosovo. During his studies he has worked at some different construction cooperations as architect assistant and participated in many University projects. He is currently interested in doing his Master degree in Urban planning.

Leontina Cena is a master student at the University of Pristina, majoring in the field of Architecture. Her research explores ways in which humans and artificial intelligence systems engage in a synergetic design process. In her work she is using machine learning methods to train systems that predict, evaluate and give feedback to design behaviors. Other recent projects include different Urban Plans on the area she is living.

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Eunice Doan received a Bachelor degree in Real Estate from National University of Singapore. Prior to joining the Urban Management program, she had five years of experience in Property Management in Singapore, specializing in Residential and Industrial estates. She gained sound knowledge of Building Operation, Maintenance and Facility Management focusing on industrial properties. Her primary interests are Land and Housing.

Camila Gálvez Petzoldt is a Peruvian architect. She lived in Lima and worked in urban and rural areas as an independent consultant for public institutions and non-profit organizations of her country. Her experience is related to community participation and culture, post-conflict contexts improvement and public health. She is interested in social development from a bottom-up approach and enjoys the multidisciplinary work inside the urban field.
Jolina Kenney received her bachelor’s degree in Environmental Science at Gettysburg College in the United States. Since then her work has been focused in ArcGIS mapping software, working in the Marine cartography department at the U.S. National Oceanic and Atmospheric Administration. To focus her skills in the city field, Jolina is currently working to complete her master’s degree in urban management hoping to improve the sustainability of transportation modes.

Jolina Kenney

Bhrigu Kalia obtained his bachelor’s degree in architecture from Delhi, India. Before joining the Urban Management course in TU Berlin, he worked in several fields in India, such as architecture, transportation, environmental planning, and urban design. Bhrigu has a keen interest in photography. In the future, he would like to work in the field of Urban Water Management.

Bhrigu Kalia

Vigan Iberdemaj is an engineer with a Bachelor degree in Renewable Energy from the University of Prishtina, Kosovo. Vigan is specialized in Photovoltaics and has more than 2 years of experience designing PV systems.

Vigan Iberdemaj

Myriam Jácome Guerra is an architect and urban planner from Quito, Ecuador. Before joining TU Berlin’s Urban Management program, she worked as an urban planner in a consultant team developing plans of land use and land management for municipalities. She has also worked on revitalization projects of Historic Centers with the Ministry of Culture and National Heritage of Ecuador. Myriam is currently interested in research the spatial and policy implications arisen by land use changes in developing countries.

Myriam Jácome Guerra

Deepta Joshi is an Architect from India. Her previous experience is in affordable housing design projects in the Planning and Development Authority in New Delhi. She is interested in resilient housing development and climate change.

Deepta Joshi

Juan José Henao Libreros is an economist and anthropologist from Medellín, Colombia. He has worked with Medellin Mayor’s Office as a Senior Knowledge Management Professional promoting foreign investment in the city. He has also worked as a consultant for local NGOs, and companies collaborating in different projects in the fields of economic development, innovation, and urban planning.

Juan José Henao Libreros

Khaled Karokhi is from Afghanistan. He received a bachelor degree from Civil Engineering department of engineering faculty of Kabul, Afghanistan university. He worked with the Ministry of Urban Development Housing and Land in Kabul and in Herat municipality as a head of construction department. With over ten years of experience in the area of engineering and having participating in more than 100 projects at the international level for the US Army and national level for public and private sector.

Khaled Karokhi

Vigan Iberdemaj

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Muhammad Osama Qasuria graduated as an architect from University of the Punjab Lahore, Pakistan in 2015. He is currently studying in the Urban Management Course in TU Berlin with focus on Transit Oriented Development and Urban Mobility. Previously he was majorly engaged in the design and execution of rehabilitation and mixed-use development projects in Lahore and participated in many National/International urban design competitions.

Win Htein Lin is from Myanmar (Burma), holds a Bachelor of Business (Maritime & Logistics Management) from Australian Maritime College (University of Tasmania). He has over 11 years of working experience from the United Nations World Food Programme, Shipping agency and to National Oil company in Myanmar before joining Master Urban Management at TU Berlin.

Ava Lynam has degrees in Architecture (University of Nottingham), and Urban Design (Bartlett School of Architecture, UCL). After having grown up in Southeast Asia, she most recently worked between London and Dublin as an urban designer in public realm, urban strategy, affordable housing, and community engagement projects. Ava recently joined the Urban Rural Assembly research team at Habitat Unit.

Babak Mahmoudi is an urban planner from Tehran, Iran. He finished his bachelor degree in Urban and Regional Planning. Later, he worked with municipality of Lahijan in fields related to urban planning, such as land-use planning and infrastructure development planning. Babak is interested in improving urban multi-modal mobility, and he is going to an internship with the Center for Technology and Science (ZTG) in the concept of Sustainable Urban Mobility Planning (SUMP).

Emilie Martin is a transportation policy consultant with 8 years of work experience in EU public relations and Masters in Political Science, Public Law and Public Economics. Passionate about cities, she decided to join the Urban Management Course to deepen her understanding of urban issues and urban mobility in the Global South. Born in France, she has lived in Belgium, Germany, Vietnam and will soon move to Kenya to research electric mobility in East African contexts.

Dhany Utami Ningtyas is a transport planner from Jakarta, Indonesia. She received a Bachelor degree in Civil Engineering from Catholic Parahyangan University in Bandung, Indonesia. Dhany worked for Indonesia Australia Partnership for Infrastructure (IAP) as a Program Officer. Her responsibility was given technical advisory and coordination with government of Indonesia in urban mobility policy and preparation for the road safety project.

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Construction and Demolition Waste in Kosovo

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Andrea Tapia is an architect and urban planner from Cusco, Peru. In recent years, she has worked on different architecture and city planning projects in Lima. Later, in her own studio, she developed projects on housing and industrial planning. Since 2016, Andrea has been engaged with a local architecture students’ movement, aiming to help raise awareness of the benefits of more inclusive urbanism.

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