Studying NGO- Rapid Assessment Framework Toolkits for promoting SWM in Kohalpur, Nepal: Whose reality counts?

Master Thesis (GEO4-2321)

Alejandro Martin Rojas (5004853) a.martinrojas@students.uu.nl

Supervisors; Janwillem Liebrand and Ranna Abdulhadi

February 6, 2023 Utrecht University, Faculty of Geosciences

Utrecht University

In collaboration with: WASTE NL

Supervisors: Stan Maessen and Verele de Vreede

Summary

Waste generation has significantly increased over the past few decades, leading to negative impacts on both humans and the environment. Developing countries struggle to effectively manage waste due to inadequate protection and collection services. To address this issue, international aid has started investing in waste management systems. However, initial efforts focused solely on technical assistance proven to be ineffective as they lacked a full understanding of the factors affecting waste management. Nowadays, the focus has shifted to understanding what enables SWM interventions and analysing the enabling environment. To improve its waste management efforts, WASTE NL created the SQUAT tool, a rapid assessment framework toolkit to assess the enabling environment and increase the success of SWM interventions by focusing resources

The purpose of this study is to examine both informal and formal factors that enable waste management interventions in Kohalpur, Nepal, which are the actors involved in this scenario and assess their representation in the SQUAT tool. The study is based on the Integrated Sustainable Waste Management theory, which identifies six enabling components. This research focuses on the institutional, policy, and socio-cultural aspects of these components.

This study results reveal that in formal practices, a major factor enabling SWM interventions in Kohalpur, Nepal is the presence of an institutional body responsible for the SWM system and a national policy framework. In terms of socio-cultural factors, the enabling behaviour is influenced by various factors including the right to receive waste services, the perception of waste workers, and the social perception of generated waste. Most of the formal factors mentioned are captured by the tool, capturing partially the Kohalpur's enabling environment.

However, the informal practices were not considered by the tool. In Kohalpur, the citizens, due to a lack of waste collection services, must personally manage their waste through practices such as composting and burning. These practices are aided by the informal sector, which handles the plastic, glass, and cardboard generated.

Both formal and informal waste management practices are greatly influenced by the behaviours and commitment of key actors such as the informal sector, the formal sector, the municipality, and households. These actors play a crucial role in shaping the enabling environment and can have a significant impact on it.

Keywords: *Enabling Environment, SWM interventions, Kohalpur (Nepal), SQUAT tool, Policies, Institutions, Socio-cultural aspects.*

Acknowledgements

I am grateful to many individuals who have helped in the progress of this research. First, I would like to thank my supervisors from Utrecht University and Waste NL. Janwillem Liebrand and Ranna Abdulhadi, for their guidance and for providing a deeper analysis and new perspective. I am also grateful to Verele de Vreede and Stan Maesen for giving me the opportunity to work for WASTE NL and for their patience and support in my thesis. Secondly, I am thankful to Jeroen IJgosse for allowing me to have a valuable experience in Nepal and Pushkar, who helped me during all the process. Moreover, I highly appreciate the valuable contribution of all the participants, waste experts and citizens of Kohalpur, to this research. Finally, I would like to express my gratitude to my family and friends who have always supported and encouraged me.

Table of contents

List of tables

Table of abbreviations

N.A	No Answer
SW	Solid Waste
SWM	Solid Waste Management
MSWM	Municipal Solid Waste Management
ISWM	Integrated Solid Waste Management Theory
SWMA	Solid Waste Management ACT
WASH	Water Sanitation and Hygiene
WTS	Waste Transfer Station
WSP	Waste Strategic Plan
EE	Enabling Environment
RAFT	Rapid Assessment Frameworks and Toolkits
UN	United Nations
SQUAT tool	Smart Qualitative Urban Assessment tool
NGO	Non-Governmental Organizations
SDGs	Sustainable Development Goals
As	Assumption
I number	Interviewee X
GG	Good Governance
PPPs	Public-Private Partnerships
MSE	Micro-Small Bussiness

1. Introduction

1.1. Waste is a global concern

The generation of solid waste (SW) has increased in the last century. Nowadays, the world's cities generate around 1.3 billion tons of solid waste annually, which is expected to increase to 2.2 billion tonnes by 2025 (Hoornweg & Bhada-Tata, 2012). In the long-term vision, the situation is not encouraging either. Especially in low-income countries, it is foreseen that the SW generated will rise to double or even triple by 2050 (Hoornweg & Bhada-Tata, 2012). Therefore, SW reduction and the good management of the waste generated is seen as one of the century's biggest challenges, potentially becoming a full-scale crisis (Narayan et al., 2021; Scheinberg et al., 2010).

In development thinking, so-called, Solid Waste Management (SWM) models often take the design and operation of management systems of High-income countries as a point of reference. In the practice of technology transfer from developed to developing countries, the aim is to customize (or "re-design") components of the model (or some of these components) and make them "fit" into the local context. To make this happen, planners and intervening agencies such as governments and NGOs, supported by donors, make use of Rapid Assessment Frameworks and Toolkits (RAFT). The use of RAFT is believed to allow for an efficient design and made-to-fit implementation of new projects, such as, the improvement of SWM. Governments, NGOs and research organizations spend significant resources in getting the frameworks and toolkits "right". RAFT methodologies are meant to assess the context/environment of a given place, with a view of "enabling" the new technology or system to work, in this case SWM components. In other words, an important objective of RAFT methodologies is to assess the called Enabling Environment (EE) of the envisioned intervention. In order to be a rapid assessment, assumptions or categorizations for different realities are established, not considering all the magnitude of the local problems. In this thesis, I will investigate the waste (management) practices in Kohalpur (Nepal); and study how the diversity of practices is captured (or reflected) in the so-called *SQUAT toolkit.* The latter is a typical RAFT methodology developed by WASTE NL, the host company.

SWM and its environmental impact concerns increased over the last years. United Nations (UN) has developed the Sustainable Development Goals (SDGs) to counterbalance and reduce environmental degradation. The SDGs aim to mitigate global concerns of inequalities and environmental degradation, guiding development efforts toward ensuring the well-being of the upcoming generations (United Nations, n.d.). Due to the expected increment of SW generation, SDGs are directly related to reducing the SW and improving the SWM to undermine environmental degradation, but with any specific SDG proposed. There is a strategic importance of enhancing SWM towards contributing to progress for the

The amount of SW generated has increased over the previous years because of population growth and economic development (rise of consumerism and single-use plastics). The peak has not been reached yet. The growing population and the economic development in Asia and Africa will lead to the development of fast-growing cities and undoubtedly result in even more SW produced (Silpa et al., 2018). Hoornweg & Bhada-Tata (et al., 2012) support this idea, exposing that SW has a solid connection to urbanization and economic development; urbanization and the potential increase in welfare imply more consumption, hence, more SW. Consequently, the problem will worsen, threatening the environmental quality and human health (Snigdha, 2003). Unquestionably, SWM will become one of the biggest challenges in the coming years (Narayan et al., 2021; Scheinberg et al., 2010)

As a result, global aid concerns have focused on improving SWM systems (Caló et al.,2009, Halla et al., 2003). The dominant understanding in global development thinking is that “inadequate SWM” is common in the south globe and transition countries, and it is a challenge for governments thwarting economic, environmental and social development (Anschütz et al., 2004). Especially in the global south, the enhancement of SWM practices has long been under the scope of international aid companies. In the beginning, as Anschütz (et al., 2004) state, traditional international waste management interventions focused on introducing new technologies, such as improving the current landfill or providing better collection equipment. It pursued more engineering-based solutions rather than including concerns for disadvantaged groups or looking beyond the technical scarcities. Hence, traditional waste management plans or interventions assess the system's effectiveness and efficiency based on a particular pre-defined criteria, often technical and economic in nature, and a developed country's perception in which there are relatively less resources-constraints (Anschütz et al., 2004; Scheinberg et al., 2010).

For the last 40 years, developed countries have been investing in improving SWM, trying to fit the climates and social and economic conditions within the SWM system (Scheinberg et al., 2010). However, in developing countries, this was not the case. Concretely, financial constraints and the absence of effective and complete legislation for an extended time have led to structural gaps in the SWM sector (Debrah et al., 2021). Due to the SWM system’s unequal progress, it has been assumed that a system that works in a developed country can fit in a developing country with some minor adjustments. The understanding of the context rooted in the SWM system was not considered. This misconception has led to international cooperation in treating SWM systems in developing countries as imperfect or incomplete copies of an ideal system that operates in developed countries (Scheinberg et al., 2010). This incomprehension of the local situation facilitated the exclusion of different components belonging to the whole waste management picture reducing the impact of conventional external plans (Anschütz et al., 2004).

Consequently, a model assumed to be "inherently good" or successful in developed countries might fail if any effort is intended to understand the local conditions. Therefore, no appropriate answer or strategy in SWM can be applied to all cities and situations (Scheinberg et al., 2010). SWM measures should be adapted depending on the local context and the particular circumstances, following the dogma of; using what is there to build from it (Scheinberg et al., 2010). This concept has gained relevance in developing countries with limited resources and a high population growth rate (Ahmed & Ali, 2004). Hence, attentiveness to the local social needs and circumstances is crucial to creating a prosperous SWM system. The inclusion of social needs and local alternative waste systems opens a large variety of new models that can fit specific local conditions (Scheinberg et al., 2010). Pursuing this idea, the first step should be to understand the local features and the SWM system externalities to include them in a successful and efficient waste management model.

Calls have been produced to understand local conditions better, the so-called Enabling Environment (EE), to generate interventions with long-term benefits (Brinkerhoff, 2007). This situation has produced different strategies and tools developed by NGOs and development agencies. As Bamberger (et al., 2006) states, measuring the failure or success of NGO interventions has been one of the main concerns of international developers, creating different strategies or tools to measure their impact. SWM international practitioners and NGOs are not an exception. To assess the effectiveness of SWM intervention, their concerns are focused on the previous assessment to know which are the features of the local SWMs system; hence, the EE

The scope of this research is the Municipal Solid Waste Management (MSWM), defined as all the waste coming from the household and similar composition waste coming from other sources (Scheinberg et al., 2010). This study will be done in collaboration with WASTE NL, an international NGO focused on the intervention of SWM systems and Sanitation programs in developing countries. NGOs such as WASTE NL realized that the long-term impact of their SWM interventions was disturbed by the lack of understanding of the local context. This fact induced WASTE NL to develop a toolkit called the *SQUAT tool* (ST) that enables the visualisation of the local context features (the EE) in a municipal level, underlining SWM system strengths and weaknesses to fit with their possible interventions. This tool addresses governance, cultural aspects, and technical equipment and their role within the SWM system as part of the EE based on the Integrated Sustainable Waste Management (ISWM) theory. This research will extend the comprehension of the local factors involved in the EE of the MSWM sector and assess the ST's ability to visualize the opportunities for further intervention, using Kohalpur as a case study.

1.2. WASTE NL, the host company

This research will be conducted in collaboration with WASTE NL, a Dutch international non-governmental organization (NGO) based in The Hague (Netherlands). With a holistic approach, WASTE NL designs and implements innovative programs and system-thinking on SWM and Faecal Sludge, pursuing sustainable development.

WASTE NL has significantly contributed to understanding SWM in low and middle-income countries. For instance, in 2004, in collaboration with external partners, WASTE NL proposed ISWM as a model to fulfil international SWM interventions' social and technical aspects. It has gained attention from global donor companies, including as a crucial framework to develop international waste interventions by UN-Habitat 2010 (Scheinberg et al., 2010).

Based on the ISWM, ST aims to increase their efficiency intervention through a previous assessment. This study will provide a step forward for implementing this toolkit, exposing if it can visualize if the local environment enables a future intervention.

1.3. Research aim and questions

The present study features two aims. On the one hand, it aims to determine the capability of the ST, as a RAFT toolkit, to expose the EE in the SWM in Kohalpur (Nepal). The ST provides a rapid assessment before any SWM intervention considering the local context and needs to ensure a successful intervention with long-term impact. However, it might lack the inclusion of all components shaping the current system. Secondly, this research will further understand which components and actors are involved within the local environment enabling successful SWM interventions. As different research has pointed out (Brinkerhoff, 2007; McKague & Siddiquee, 2014), due to the difficulty of including all the particularities rooted in the context, the EE plays a crucial role in any external intervention but is far from being understood.

To achieve the aforementioned aims, the following questions has been developed.

What are the (in)formal solid waste management practices in Kohalpur (Nepal), and how are these practices captured in the RAFT methodology: the *SQUAT toolkit*?

- *What are the components that enable an integrated SWM intervention in socio-cultural, policies and institutional aspects, and who are the actors involved?*
- *To what extend does the outcome of the SQUAT Tool fully reflect the local conditions and the enabling environment of Kohalpur?*
- *Does the SQUAT tool provide enough information to allow for a proper assessment of the enabling environment in the solid waste value chain in general?*

1.4. Relevance

This research has both social and scientific relevance and will provide a further understanding of the EE concept regarding scientific significance. Developing a complete framework of the EE is not the core aim of this research. However, shedding light on the components of the local context and the potential relation with sustainable development in Kohalpur can help improve the current understanding and the importance of this concept. As different research states (Brinkerhoff, 2007; McKague & Siddiquee, 2014), the inclusion and understanding of the EE implies higher chances of success in any international intervention. Owing to the wide range of aspects included under the umbrella of the EE, it is challenging to develop a complete understanding. However, the expansion of the EE concept seems crucial for the long-term benefits of the SDGs. Therefore, this research's relevance will provide insight into the EE in SWM in Kohalpur, understanding their local SWM practices and creating a path to develop SWM interventions based on local context conditions, especially in developing countries.

In terms of social relevance, it can be seen as a clear contribution towards developing a RAFT tool that enables understanding the local conditions. This contribution can increase the effectiveness of further SWM international interventions. The disclosure of the local context and the relation with a sustainable intervention will bring to light the importance of these RAFT methodologies for urban planning and development in SWM and other sectors.

2. Kohalpur (Nepal) as a case study

The study case will be conducted in the Lumbini province of Nepal, concretely in Kohalpur municipality, close to the Indian border. Nepal is an Asian country located in the Himalayas mountain range, with low valleys, bordered by China (an autonomous region of Tibet) and India. Their population is 30752000, and their growth rate is 1.8% yearly (Karan. P.P (n.d.)).

Over the last decades, Nepal has experienced an increase in their economic status. Nepal achieved lower middle-income status in 2020 and is currently working to reach the graduation of Least Development Country status in 2026 (Hadad-Zervos, F. 2022). Nepal has successfully improved their access to electricity, secondary school, water and hygiene, and infant mortality over the last few years. All these improvements are linked to the reduction of national federalism, enhancing the power increase of the municipalities and local governance, and increasing citizens' perceptions of improvement in their lives (Hadad-Zervos, F. 2022). However, Nepal still has social and economic exclusion to encounter. As Asian Development Bank exposes in their report in 2022, Nepal still has widespread poverty with large inequalities depending on

the regions and between social groups without significant decline (Asian Development, 2002). As follows, social exclusion is institutionally driven following the basis of gender, ethnicity and caste.

Nepal has a diverse social, religious and ethnical composition, with a high predominance of Hinduist (81%), followed by Buddhist (4.5%), Muslim (3%), Kirant (1.4%) and other religions (Gautam et al.,2018). Even if it was formally abolished in 1962 (Bennet et al., 2005), Nepal is still following a social caste system, similar to India´s, that determines your social status, individual income and privileges linked to occupational practices, ethnicity and language (Gautam et al.,2018). As Udas et al., (2014) mentioned, there are apparent differences among the caste in Nepal. The Bahmin and Chhetri cast represents the social elite, working mainly in the governmental sector, whereas poverty is among the lowest cast, such as Tharu´s cast. It has been shown that poverty inequalities in Nepal are linked to access to basic resources (Asian Development, 2002). For instance, the caste system has different social impacts regarding water or educational access and gender. For the interest of this research, informal waste collectors, also called *Kwardis*, are mostly related to the lowest cast of Nepal. The cast division system and the discrimination against the different ethnicities force certain people to work in the waste sector as the only way to get a financial income.

Nepal has been politically moving towards more decentralised governance. Decentralisation was found as a solution for poverty alleviation, which is exposed in the Local Self-Management Act of 1999 (The World Bank n.d.). Therefore, as Chaudhary et al, (2019) exposed, Nepal had moved towards a federal political system with the idea of bringing back the power to local levels to increase development and localism. Therefore, a set of new municipalities has been established since the beginning of the century. From 1996 to 2015, 158 new municipalities were declared, increasing the number to 217 (Thapa, G. (2015)).

Moreover, in the last years Nepal has put the SWM as a political priority target to improve the whole country. Nepal's national governance had developed a set of policies to reach the next level of the SWM system, embedded in a Solid Waste Management Act (SWMA) (2011). This document exposes the guidelines on waste's final disposal and collection services. The main goals of the SWMA are (1) make SWM simple and effective, (2) reduce the impact on the environmental and health, (3) use waste as a potential resource, (4) increase private sector and (5) enhance public participation to increase awareness (Asian Development Bank, 2013).

This document aims to provide municipal guidelines in the decision-making process of the SWM system, allowing specific adaptability depending on the municipal circumstances. For instance, SWMA (Government, 2011) exposes on chapter 2 exposes that the municipality should own the SWM system, possessing all the power in the decision-making process of the area. In chapter 4, categorically mentions that local bodies should be accountable for bringing stakeholders into the system and adhering to the municipal waste plan. In addition, based on the necessity of building up a stakeholder's network, the SWNA exposes the need to have a transparent tendering process with the private sector to deliver the MSWM services.

Unfortunately, SWMA has not been implemented in an effective manner. "While the enactment of the SWMA 2011 was a major step towards improving SWM practices in Nepal, It has not been effectively translated into actions and results in ground" (Asian Development Bank, 2013 p.25). One of the majors challenges is that even though it was intended to strength municipality, these struggles to put in practice their guidelines due to the lack of technical and managerial skills (Asian Development Bank, 2013).

Additionally, SWM system in Nepal is economically talking deficient, consequently, it requires the involvement of the private sector. But municipalities does not have any managerial experience, creating problems of coordination and efficiency to ensure the stakeholders involvement (Asian Development Bank, 2013).

2.1. Kohalpur Municipality

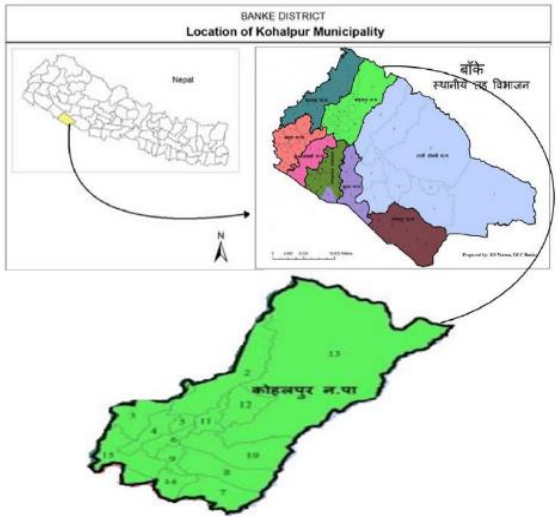


Figure 1: Kohalpur (Nepal). Source: (Kohalpur Municipality, 2018)

Kohalpur is within this new set of municipalities created by the Nepalese government. Kohalpur is a municipality settled in 2014 situated in the southeast of Nepal, in the Banke District of Lumbini province (Municipality Kohalpur n.d.). The city is located near the Indian border (approximately 20km). The municipality was formed joining two villages: Rajhena and Kohalpur (Municipality Kohalpur (n.d.)). The urban city growth is alongside the East-West highway (H01) and south-north road (H12). The junction of both roads (ward 11) is considered the city's commercial centre, but commercial activities are also distributed along these two roads. The structural organisation fades as far as it gets from the intersection point in any direction (Figure 2). These two roads make the city well connected with other urban areas of Nepal, especially Nepalgunj (16 km), which is a border city with India and provides the area's main airport.

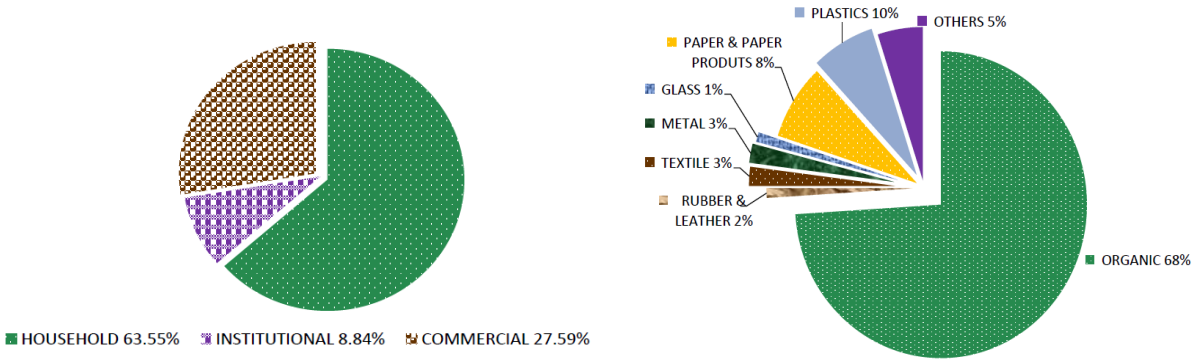
The municipality's total area is 184.26 km2 distributed in 15 wards, with two natural parks on the east and west sides (Banke National Park and Bardiya National Park), producing isolated areas within the municipality. The population in 2022 was 87300 with 15483 Households, having 6 people per house (Kohalpur Municipality, 2018). Nowadays, there is a high percentage of land for agricultural purposes, creating a big division between the urban and rural areas.

Because Kohalpur had experienced a fast urban growth, creates an unequal development, physically and economically. In the city centre, there are two poorer areas, which seem to lack municipal investment to pursue urbanisation, being considered informal settlements (Figure 2). In these areas the streets are no longer equipped with tarmac or any brick houses. Instead, narrow streets and constructions made of mud.

Figure 2: Map of Kohalpur's city Centre. Own source

2.1.1. Kohalpur's SWM reality

The previous assessment on MSWM in Kohalpur was done in 2018. It exposes that the total quantity of waste generated in Kohalpur is 15.46 tons/day, with 63% coming from households, 8.84% institutional and 27.59% from commercial practices. Based on this report, the households generation average is 0.755 (kg/HH/day), 68% organic waste, 10% plastic and 8% paper (Kohalpur Municipality, 2018).



Graphic 1: Waste and type of waste generation. Source: Kohalpur municipality 2018.

The report also assesses the collection services provided by the private sector. Within the 15 wards, the collection services are twice a week in wards 3, 10, 11, and 12 without home segregation and treatment. There is no landfill site and compost; therefore, the final disposal method is open dumping (Kohalpur Municipality, 2018). Due to the unreliable services, 52% of the population manage their waste with burning and composting as the main practices, 23% rely on municipal services, and 25% use open disposal. The same report also revealed that 78% of Kohalpur citizens have a problem with MSWM. However, insufficient knowledge was found, with 84% of the total population unaware of how Kohalpur municipality manages the waste generated and 74% absent public participation in MSWM activities (Kohalpur Municipality, 2018).

Kohalpur has already set up a few steps towards improving the system. An institutional body is held accountable for the system with a regular budget location and motivated institutional representative. Also, a few campaigns intended to assess whether citizens will pay taxes. However, even though the existence of municipal body, there is no proper plan to follow. Kohalpur aims to include the guidelines of the SWM act, but nothing has been done yet. This situation has led to poor coordination among the stakeholders and a lack of treatment of the waste collected (Kohalpur Municipality, 2018).

3. Theoretical background

The definition of a good waste management service can vary among countries due to different cultural, economic, and regulatory factors. However, as the importance of waste management has grown over the years, the definition of what constitutes a good service has become more refined. A good waste management service is one that protects citizens from the health and environmental impact, is willing to be paid for by citizens, and is transparent with stakeholders involved. This service prioritises human protection and avoids social exclusion. Additionally, the design and planning of the service should involve citizen participation. According to Scheinberg (2010), these are crucial elements that define a good waste

management service. Therefore, this research refers to this definition in its ambition to analyse the EE in the SWM.

3.1. Conceptual framework

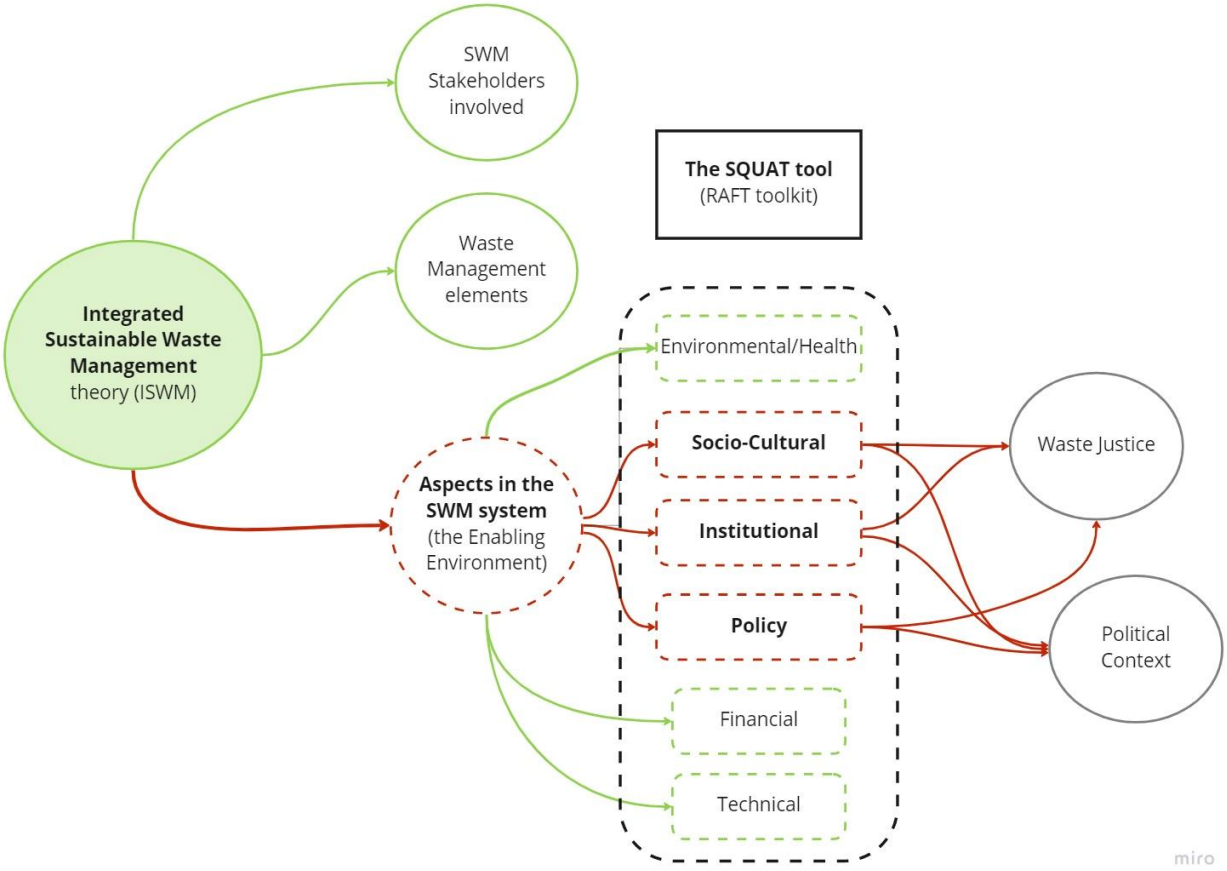


Figure 3: Theoretical framework path. Own source.

This research is based on the Integrated Sustainable Waste Management theory; this theory exposed six aspects that are considered part of the EE and has an impact on providing a good service. Within these six aspects, this research will focus on three (Socio-cultural, Institutional and Policies). The next step is to provide scientific relevance on three aspects as well as how these are captured in the SQUAT tool, the new RAFT toolkit. The path on the coming chapter is represented trough the red line.

3.2. Integrated Sustainable Waste Management Theory

When SWM was introduced as a framework, the management of solid waste was seen as a technical problem that should be contested by engineering solutions (Scheinberg et al., 2010). Therefore, as exposed, traditional waste management interventions were based on the engineering facilities' analysis, including just one part of the reality, disregarding other factors such socio/cultural and governmental that impact the SWM intervention (Anschütz et al., 2004). Over the years, it became clear that international interventions did not always have a long-term impact. This situation highlights the technological performance is depending on the local government, institutions and policy frameworks. These factors are extraordinarily complex and vary depending on the location (Scheinberg et al., 2010).

Nowadays, the consensus has changed, SWM framework includes the assessment of the technicalities and all the stakeholders involved in the process (Anschütz et al., 2004). Therefore, a new approach was needed that considers all the factors that play a role in the success or failure of any SWM interventions (Anschütz et al., 2004). Experts from WASTE NL, the host company, and others international organisations developed a specific planning framework called Integrated Sustainable Waste Management (ISWM). It was created to improve the SWM's performance and create a new path in the decision-making process of the waste management (Scheinberg et al., 2010). ISWM considers as essential for a good waste service the understanding of (1) the SWM stakeholders, (2) the practical and technical waste elements within the waste system and (3) other aspects, including; social (local and political), socio-cultural or financial, among other aspects related to the context (Anschütz et al., 2004). Theoretically, all these dimensions are crucial to addressing the EE of the SWM system in the local context (Scheinberg et al., 2010).

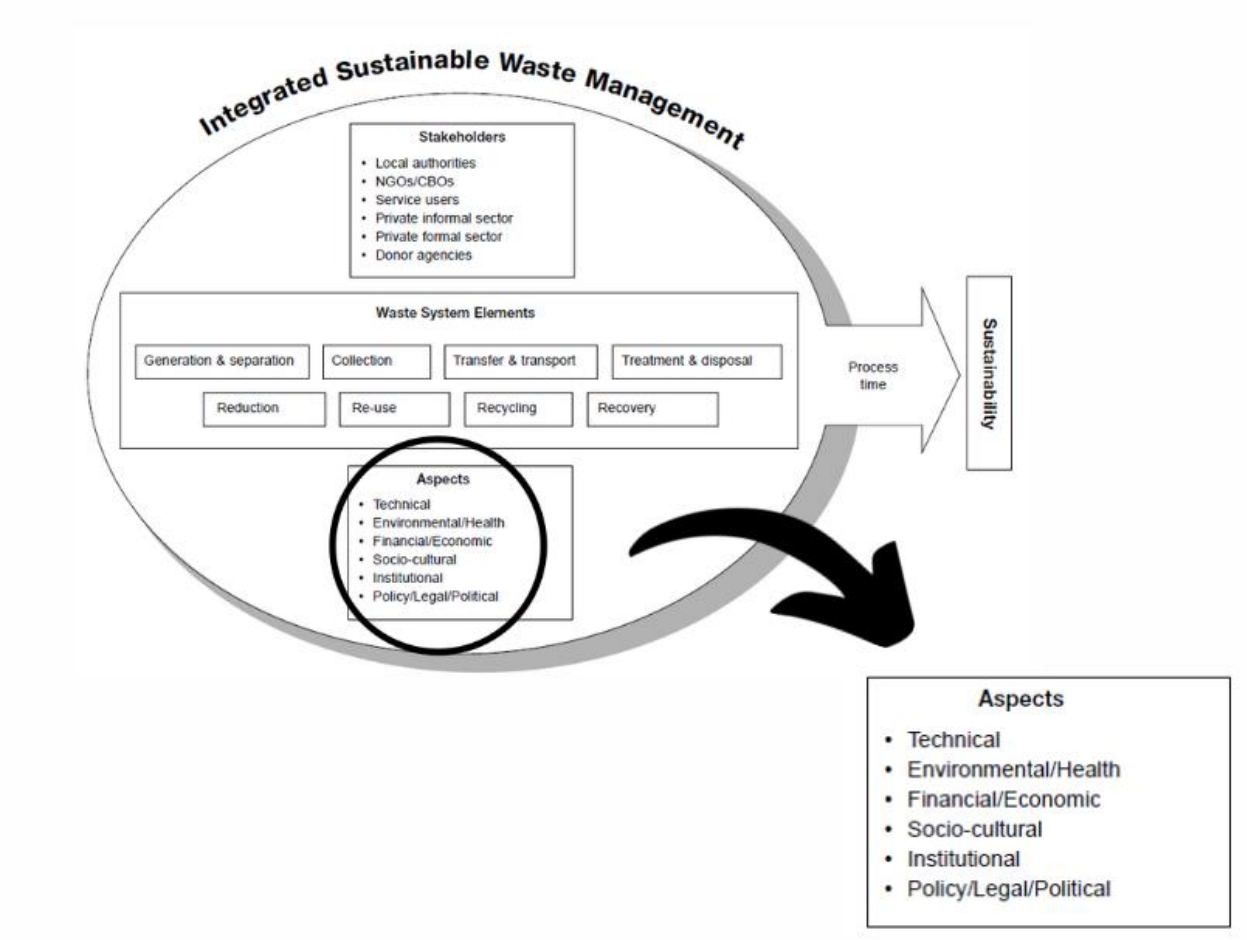


Figure 4: Egg of Integrated Sustainable Development. de Vreede et al., 2020

3.3. Enabling environment

There is ambiguity on how to define the EE for an NGO (Brinkerhoff, 2007; McKague & Siddiquee, 2014). Although the understanding of the EE slightly differs between the sectors aimed, all definitions follow the same pattern. Consequently, the EE can be understood as a; "set of interrelated conditions that are conducive to the facilitation of a desired outcome" (Thindwa et al., 2001, Sarker & Rahman, 2018). Depending on the definition applied, it can be widely considered a synonym of socioeconomic development or narrowly as an appropriate regulatory framework in any sector (Brinkerhoff, 2007). In general terms, economy, political-administrative system, socio-cultural aspects, and resources can be considered the key features that enables a long-term impact intervention (Brinkerhoff, 2007).

In the last few years, the EE concept has received increasing attention. Factors within the concept such policy or economic constrains are worldwide known, but the obstacle resides in the strong connection to the location applied. Every context has its own complexity, requiring deep insight to understand the situation entirely. An EE is recognised as one of the most crucial factors for achieving sanitation purposes due to the final performance depending not only on the physical infrastructure or the legislation but also social concepts and behaviour (Narayan et al., 2021).

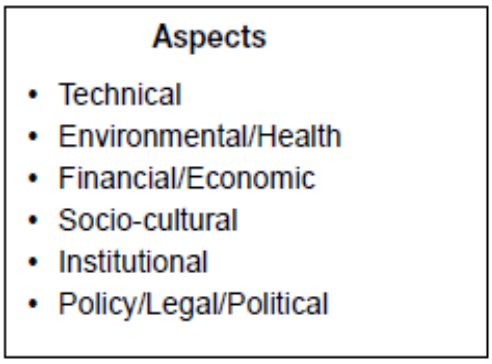


Figure 5: Enabling Environment aspects, from ISWM theory. de Vreede et al., 2020

The evolution of the SWM from an engineering approach to a wider, more holistic approach increases the importance of considering EE. Considering factors such as cultural aspects or the institutional complexities will lead to a higher potential long-term impact in any SWM intervention. A refined conceptualisation is needed to include the wide range of factors that are not considered but play a role in any SWM intervention (Scheinberg 2010). There are different socioeconomic situations, and SWM should be developed as a case-to-case approach depending on the community situation and needs (Narayan et al., 2021). Consequently, an integrated approach that includes stakeholders and social necessities along, with political support for developing SWM interventions, is crucial.

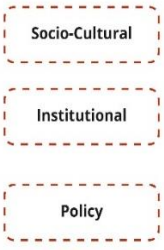


Figure 4: Aspects selected. Own source

ISWM tries to take up this challenge, considering that the EE has six aspects; Technical; which aims to understand the technical components depending on the location and current technicalities applied, Environmental/health; considering the different ways how environment and health must be protected in the area, Financial; having a deep analysis on how the SWM can be economically sustainable in the long-term, Socio-cultural; how the people perception and culture interaction with the waste, Institutional; the institutions settled and their performance on the current system, and policy; if the national and local policies aims to include all the process and ensures social inclusion and good services. These aspects can be applied in three different levels, national, municipal and local. Within a high interconnectivity and impact between them, ISWM aims to be applied in a municipal level. Therefore, this research will focus on the EE in Municipal SWM (MSWM).

The first step of this research was to unpack these factors and confirm their role in an SWM intervention. Therefore, a theoretical framework will develop that will support a precise assessment of the EE for the SQUAT toolkit. Due to time constraints and the magnitude topic address, this research aims to provide a remarkable insight into policy, institutional and socio-cultural factors that impact any SWM intervention. It must be said that first, there is a high interconnectivity among all the aspects.

3.3.1. Policies aspect

SWM policies can be implemented at different regulatory levels; international, national or local. Usually, when national or international policy frameworks are developed, municipalities must reach the proposed targets. When the international institutions implements, for instance, recycling targets, local governments respond faster than targets implemented by national government (Scheinberg et al., 2010). In the EU, waste legislation is imposed to target treatment and recycling. This policy framework succeeded in forcing the new members to update their waste management practices (Fischer, 2011).

If there is any international institutions, usually, the national government should lead the waste policy framework, as can be seen in Nepal. According to Lüthi et al.,(2011), the policy and regulatory framework is one critical element that shapes a location's EE. The EE change depending on governmental support and favourable national policies and strategies. "A national plan is compulsory to achieve success from an SWM project" (Fernando & Lalitha, 2019, p.201). However, national solid waste management (SWM) plans needs to be developed in a structured and comprehensive manner to ensure their effectiveness. One of the most common failures in the SWM system is the lack of a comprehensive policy framework (Scheinberg, Anne; van de Klundert, Arnold; Anschutz, 1995). Local authorities should develop a coherent policy plan with an integrated waste management program rather than focusing on collecting and disposing of the waste generated (Fernando, R; Lalitha, 2019). According to Easterly et al., (2000), a good policy framework improve the EE. In the SWM sector, policies should address a wide range of factors considering all the components and actors within the waste chain. National policies should establish the rules, regulations, supportive organisations, procedures and necessary resources (Fernando & Lalitha, 2019).

The regulatory framework should be revised according to social needs and contextual features (Fernando & Lalitha, 2019). A clear regulatory framework based on local needs and a higher political commitment to bettering the system would reduce one of the common threats that policies in SWM have namely a, lack of constancy. Policies in SWM can change when a new political party arrives in power, weakening the system's performance, but it can be a strengthened if this change in power prioritise to building upon the existing waste management procedure (Scheinberg et al., 2010). Constant and strict rules about managing waste are one of the best ways to change public behavior quickly (Scheinberg et al., 2010).

Especially in SWM, the new implementation of policies is a challenge, and not all countries have enforcement mechanisms or the institutional capacity to pursue improving the SWM system (Silpa et al., 2018). Therefore, a long-term clear and transparent policy framework would guide local authorities on the coming steps and better the EE in an external SWM intervention. Policies should ensure the highest impact as possible in the SWM system.

Therefore, the policy framework should aim to increase the partnerships and inclusivity with vital stakeholders thought contracts or agreements. On the one hand, stakeholders refer to all the people and organisations that have an interest in SWM and are involved directly or indirectly, either working with

waste or producing waste. The meaning of the stakeholders embraces enterprises, organisations, government (National or local) and Households (as a waste producer), among others (Joseph, 2006). On the other hand, inclusivity refers to considering the users and the wide range of service providers, being informal or formal, with any exception (Scheinber 2010). Partnerships with vital stakeholder can be seen as an opportunity to ensure local needs while sharing responsibility, creating a new window of opportunities vitals for the system (Verhagen et al., 2003).

3.3.1.1. Political context

ISWM theory includes the political context within the policy aspect, because of the high interconnectivity between policies, institutions and governance in the EE. Concretely, local authorities are responsible for ensuring public and environmental protection of all citizens (Scheinberg et al., 2010). As Mc Kague et al. (2014) exposed, NGO support in developing countries' governance helps to overcome obstacles such as policy updating or providing technical knowledge. Therefore, the interaction between the government, the policies and the institutions is a key factor for the EE in any intervention.

As many researchers have pointed out (Collier, 2001; Guillaumont & Chauvet, 2001; McGillivray, 2001; Uddin et al., 2017), an unfavourable political context reduces the success of international interventions aimed at promoting drivers for change or sustainable development. SWM interventions are not an exception. The political context is an essential factor within the EE. The government is the regulatory body that targets the SWM system's goals, practices and commitment. According to Scheinberg et al. (2010), the national government sets the policies and the financial and administrative framework in general terms. The municipal authorities are responsible for managing the cities based on the national government guidelines. Decentralised or centralised government refers to the national government's power and the grade of transferability in the decision-making to the municipal government (Keese & Argudo, 2006). If the governance is centralised, there will be a low range of freedom of policies and guidelines' adaptations to the local context. Instead, decentralised governance allows national policies to shape depending on the context, considering local administration and public participation (Keese & Argudo, 2006). The decentralisation government can be related to the Nepal political context, as exposed in the previous chapter.

In both cases, government commitment and leadership are vital for the system's long-term well-being. Scheinberg et al., (2010) mention that this lack of commitment has a higher impact than economic or technical feasibility. This governmental commitment should be reflected in providing financial sustainability and social inclusion services. As Scheinberg et al., (2010) follow, the three key governmental conditions that should be based on the political commitment to introduce ISWM are; 1) the inclusion and consideration of all the stakeholders involved in the SWM to develop a system, including the users, services providers and delivers. 2) Financial sustainability, making a service affordable and cost-effective balanced, and 3) the creation or improvement of institutions and proactive policies. Therefore, the EE is altered depending on the government commitment and leadership driving higher performance in the public sector and sanctioning bad management and performance (Boesen et al. (2011).

However, due to the magnitude of this SWM sector, the services required cannot only be delivered by the government, seeking local stakeholders (Scheinberg et al., 2010). Unfortunately, local conditions vary globally, creating a challenge in the sector (Keese & Argudo, 2006; Scheinberg et al., 2010). Because of the importance of the allies, the government's leadership and responsibility are key factors in the system. Government's commitment and responsibility aiming to involve the key stakeholders and financial

sustainability actively supporting the EE for capacity development (Boesen, Nils; Hradsky, James; Land, Anthony; Baser, Heather; Guizzardi, Silvia; Sorgenfrei, 2011). The government's role should be dominant to ensure the efficiency and financial sustainability that the SWM needs (Scheinberg et al., 2010).

Moreover; the government should focus on the inclusivity and transparency with all the stakeholders, including the citizens as users. "Good governance in SWM implies transparency in the decision-making processes and responsibility of the relevant actors" (Scheinberg et al., 2010, pg 187). Increasing the inclusivity would be easier to follow the dogma proposed by the ISWM, building a system from what is already in place (Scheinberg et al., 2010). The governmental capacity to increase the community and stakeholders' commitment is an essential precondition for an enabling environment (Lüthi et al., 2011).

Besides a government's behavior regarding the involvement of crucial stakeholders in the system, maximum user inclusivity should be aimed for. As Scheinberg et al., (2010) mention, the government should commit to increasing user inclusivity. Therefore, the government's role and policy in the highly inclusive implementation systems are vital (Oleribe & Taylor-Robinson, 2016).

3.3.2. Institutional aspect

Because local authorities are responsible for citizens' health protection, local and national authorities, thought specific institutions, should be responsible to manage the SWM system (Silpa et al., 2018). Because there is a wide range of factors to control, the creation of SWM institutions is common within the government structure over the years. According to Silpa et al. (2018), around 70% of the world countries had established those institutions aiming to increase control and partnerships with the different stakeholders. Based on literature review, Nepal and Kohalpur can be considered within this 70% of the worldwide countries that had established an institutional body to control the SWM system. The existence of these institutions is vital for the EE in this sector.

The governmental institutions focused on SWM at the national and local levels are part of the EE (Silpa et al., 2018). "Centralising SWM under a single entity ensures that planning processes are coordinated, resources are used efficiently, and redundancy in functions is avoided" (Silpa et al., (2018)p. 93). The existence of these institutions determines the long-term effectiveness of the system. If an effective SWM service is aimed for, the given city should build a capacity and organisational structure to manage all system features transparently, a clear responsibility structure and exchange lines between the users and the services (Scheinberg et al., 2010). Because their contribution to the SWM system is to coordinate and control the different factors, the institutional framework should be structured and transparent for the rest of the stakeholders (Scheinberg et al., 2010). Within a sector this implies a large chain of procedures and actors and cuts across different departments, required coordination to guarantee consistency on the different levels of government. Many institutional schemes are poorly structured, creating overlapping responsibilities and policies (Silpa et al., 2018).

The impact of the institutional scheme in the EE cannot be dismissed. As Scheinberg et al., (2010) mentioned, "The way institutions are organised may have more influence on the cleanliness of the city than the type of trucks or the location of the landfill, but they usually get far less attention" (P.185). Thus, due to the novelty of institutional bodies responsible for the SWM system, institutional fragmentation and administrative coherence absence might be found (Scheinberg et al., 2010). As can be expected, the EE in SWM is altered by the existence of these institutions and their composition. "Institutional fragmentation makes difficult to assign responsibilities or accountability" (Scheinberg et al., 2010, p. 185).

3.3.3. Sociocultural aspects

SWM´s evolution from a technical point of view to a more holistic resulted from the important role that society and culture have within this system. The EE's socio-cultural factors refer to; "the influence of culture on waste generation and management in the household and businesses and institutions; the community and its involvement in waste management; the relations between groups and communities, between people of various age, sex, ethnicity and the social conditions of waste workers" (Scheinberg, 1995, p.14).

Due to society's high impact on the waste generation chain, the absence of citizens' voices leaves the SWM system frustrating for the government and citizens (Minn, Z; Srisontisuk, S; Laohasiriwong, 2010). Therefore, including all the factors that might affect social perception and practices regarding this topic can be understood as part within the SWM´s EE concept. Socio-cultural factors shape SWM at the municipal level and should be considered as important as any other factors of the EE mentioned above. Agamuthu & Herat (2014) stated that SWM initiatives should be planned with a high-priority integration of the residents. The success of these interventions relies a large extent on community involvement and engagement rather than sophisticated technologies. At the same time, Ekere et al., (2009) stress that the involvement and inclusion of the population have a downstream effect on increasing the system's performance.

In the end, citizens are the final users. If a high performance of the SWM system is aimed for, the new implementation of SWM systems should be adapted to their considerations and practices, considering all of them as equal. ISWM aim to include all citizens as equal, adapting the SWM depending on the context and serving them equitably with their needs and preferences (Scheinberg et al., 2010). "Achieving socio-cultural acceptance depends on matching each aspect of the proposed environmental sanitation services as closely as possible to the users' preference" (Lüthi et al., 2011, p.65). Socio-cultural acceptance reduces the differences in citizens' attitudes towards the SWM and might increase their feeling of responsibility for the new system (Minn, Z; Srisontisuk, S; Laohasiriwong, 2010).

3.4. Waste justice

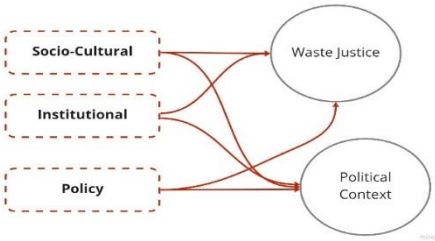


Figure 7: Theories related to each aspect. Own source

SWM is considered part of WASH programs due to their similarities and interconnections, there are more and more calls to join both sectors (Narayan et al., 2021). If both sectors are mistreated, there will be environmental and health consequences for human beings. "Poor SWM has a direct impact upon health, length of life and the urban environment" (Scheinberg et al., 2010, p. 87). Therefore, if sanitation is considered an SDG because of its health and environmental consequences, SWM services should also be included.

Because human rights consider life, water and health, poor SWM and sanitation deprive them of this right (United Nations, n.d.-b). Consequently, the importance of securing sanitation and environmental protection has been increasing over the years. In fact, as Hayward (2000) exposes, it starts to be recognised as an institutional issue in political spheres. Advocating as constitutional right the protection of the environment and human health, constitutional environmentalism has been increasing over the years. In most cases, by law, citizens should receive sanitation and waste services to prevent health and environmental consequences. It must be an urban service, and the owners belong to the municipality or

the national governance. However, in low or middle-income countries, rapid urbanisation often resulted in poor urban services and rising social inequalities (Scheinberg et al., 2010).

Calls for equal rights in society have been rising over the years. As a result, environmental justice has been a growing concept among scholars. Because environmental inequalities come from differences between incomes, races and cultures, environmental justice is understood as resolving them through advancing the equal treatment of all members of society from environmental programs, laws and policies (United Nations, n.d.-b).

In terms of SWM, environmental injustice is expressed in the services, and health protection received. Low services, usually exist in poorer areas rather than high-income areas. There is a correlation between income and education level regarding the municipal health protection from the SWM (Martuzzi et al., 2010). In most cases, as Scheinberg et al. (2010) exposes, waste collection rates are lower in low-income areas, ending with dumpsites on the streets, calling for wild animals, insects and rats, and consequently, diseases. Thus, economic and social status often alter the right to health and environmental protection. Thus, it can be assumed that, there is a high correlation between socioeconomic factors and the health and environmental protection received.

Inequalities regarding waste management practices have been visible to experts over the years, for instance, these inequalities can be observed in Kohalpur, based on the municipality report (2018). ISWM theory considers stakeholders, the users' providers, aiming to reduce the social exclusion produced by low collection services. All the waste generators, mostly households and small commerce, should receive services regularly and reliably, being the waste collected, treated and disposed of safely (Scheinberg et al., 2010).

Then, their participation in the system and their practices and perception matters. ISWM theory aims to involve waste generators in the decision-making planning, including households, to make the ISWM work (Scheinberg et al., 2010).

3.5. Rapid Assessment framework and toolkits of development agencies and NGOs

Due to NGO's limited resources and time constrictions, RAFT is used in many contexts, mainly in urban planning and development. Most of these methods are used as a part of the diagnostic phase and strategy planning, providing quick results for a preliminary design diagnosis (Garret & Downen, 2002). NGOs constantly search for new methods and tools to improve their RAFT (Kruse et al., 1997; Najam 1998).

In SWM development agencies and NGOs, understanding the local conditions is crucial. Therefore, a RAFT methodology that can provide a quick picture allows the decision of which intervention fits best in the local context Due to being based on in deepth research, RAFT allows communication channels between the government, the NGOs and the stakeholders involved (Garrett & Downen, 2002). RAFT uses semi-structured interviews or qualitative and quantitative methodologies as a methodlogy to gathered the data. The variety of the methods ensures a triangulation of the information obtained from different sources, coming from all the relevant stakeholders and their interests (Garrett & Downen, 2002).

3.5.1. The SQUAT tool (Smart Qualitative Urban Assessment tool), as a case study

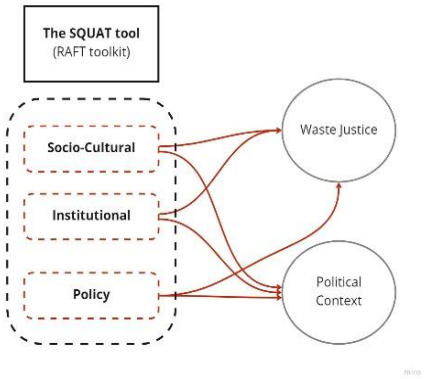


Figure 8: the SQUAT tool and the relation with the theories of each aspect. Own source.

The SQUAT tool enables the visualisation of the current situation of the given location (snapshot) to set up the most appropriate approach to ensuring long-term impact in the SWM sector. The outcome of this tool is a graphical presentation in the so-called "spider web" that exposes the current system's weaknesses and strengths, offering insights to discuss further with the relevant stakeholders the most effective interventions that should be implemented by WASTE NL (de Vreede et al., 2020). It intends to demonstrate the obstacles that an SWM practitioner might face in an MSWM intervention. If the EE is well understood, the use of the SQUAT tool will determine if the given country gathers the factors that enable the success of a proper SWM intervention. In the end, the SQUAT tool aims to assess the EE at a municipal level based on WASTE NL professional experience over the years, facilitating the choice of the intervention that fits in the respective context best. The final goal of this RAFT is the combination of faecal management and SWM.

The SQUAT tool is a rapid city (or urban area) assessment based on interviews with relevant stakeholders' and the observations of the current infrastructure and facilities (de Vreede et al., 2020). The complexity of the EE concept is one of the most significant challenges regarding the tool's development process. Although it has been tested in different scenarios such Malawi, the EE is complex and differs depending on the cities. It is difficult to confirm if it captures the local context's understanding. It is subject to 13 assumptions developed based on WASTE NL professional experience but lacking scientifically evaluated yet.

3.5.1.1. The SQUAT tool assumptions

The SQUAT tool is based on 13 assumptions responsible for the understanding the EE in the given location following the ISWM theory. The coming table exposes the goal of each assumption used in the SQUAT tool. In order to obtain the final outcome, these assumptions must be graded. They are graded through a set of questions exposed in the Appendix 1.

Table 1: Assumptions used in the SQUAT tool (de Vreede et al., 2020)

***SQUAT tool* assumptions**	
Demand for services *(As1)*	It assesses the real need of the citizens to ensure the proper functioning of the sector. Including the analysis of the paid facilities, the inclusion of all social groups, and the potential demand creation
Quality and Quantity *(As2)*	It assesses the demand offered by the service sector, focusing on the quantity and the quality requirements. For instance, if the facilities are socially accepted, inclusivity with all the social groups, the contribution to the public health and the facilities' reliability and reparability

Supply *(As3)*	The organisation of the professional Waste sector addresses if the local authorities/government s acknowledges the professionals waste workers, the standards of the services, the professional organisation (informal and formal) or the role of the NGOs
Service is reliable and affordable *(As4)*	This assumption addresses the ambiguity of the system. For instance, if the workers rely on agreements or if there is any feedback about the service provided.
Service is effective *(As5)*	It addresses if the service sector can process the materials obtained and how. It aims to provide information about technology or the reuse of the waste materials
Visibility and accessibility *(As6)*	It assesses the visibility and accessibility of the sector for the clients. It gathers information about the payment bills procedure or how the service contacts its clients.
Sector economic available *(As7)*	It aims to address the economic feasibility and the current profits. They provide information about the potential market of a secondary product, its price and the legislation supporting it.
Financial resources *(As8)*	This assumption addresses the possible sustainable growth of the sector. The sub-questions gather information about financial sources (governmental and non-governmental) for collection, disposal and reuse.
Transparency of the sector *(As9)*	It addresses the sector's transparency in planning, policy, and monitoring to know the stakeholders' participation.
Enabling government *(As10)*	This assumption addresses if the local government has a correct functioning of the sector through legislation, regulation or stimulation. It addresses the division of the task, the legal frameworks, and the MSW services' common perceptions.
Political support *(As11)*	This assumption is gathering information if the decision-makers support the sector. It uncovers information about the sector improvement in recent years or the policies or strategies applied to the previous years.
Physical infrastructure *(As12)*	It addresses all the physical infrastructure already in use or can be built. The question is focused on the facilities' state and the potential use of land to accommodate SWM and faecal management facilities.
SWM and Faecal combination *(As13)*	As mentioned, this tool aims the idea of providing combinative service on the SWM and Faecal Management. This paper focuses on SWM, and this assumption will not be considered.

3.5.1.2. The SQUAT tool Outcome

The outcome of the SQUAT tool is intended to give an idea about the EE in the SWM sector of the studied place. The spider web (Figure 9) exposes where the local context's strengths and weaknesses in each of the assumptions exposed. Due to traditional SWM interventions in previous years, if the SQUAT tool is done in developing countries, the spider web might be skewered, inducing an understanding of the system's unbalanced development. The spike is mostly found in the technology, whereas the political commitment and institutional performance might be visibly lower (de Vreede et al., 2020).

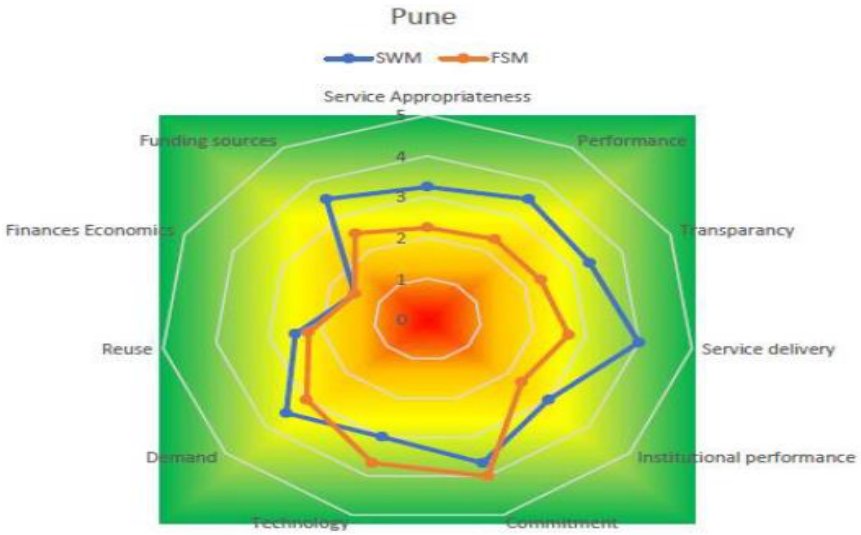


Figure 9: Sample of an outcome from the SQUAT tool (de Vreede et al., 2020).

4. Methodology

This study used a mixed-methods approach to investigate the factors that contribute to the success of an intervention in SWM, hence the factors that can be considered Enabling, and to determine how well these factors are captured by the SQUAT tool. The research question required information from various sources, using a mixed methodology, which combines different qualitative methods. Mixed qualitative approaches create new ways to generate the required information and address the complexities within the context of social research (Mason, 2006). Various methodologies were employed to gather information, including semi-structured interviews, analysis of the SQUAT tool, desk research, and rural appraisal method through interviews and observation in Kohalpur.

This research has three main goals; the formal and informal waste practices in Kohalpur, the factors that affect the EE in SWM intervention and the performance of the SQUAT tool. Therefore, this research was structured in three phases to gather all the information required. The first part was conducted in Kohalpur and aimed to gather information about local practices and conditions. This was done using rural appraisal methods, which included interviews with all the important formal actors, interviews with five households', conversations on the streets and personal observations. The obtained results exposed the factors that might have an enabling nature, shaping the EE of an SWM intervention. Moreover, the SQUAT tool was applied to assess its performance in a real-life context. The second phase aimed to gather information about the factors considered to enable SWM intervention by international waste practitioners. The main applied methods were semi-structured interviews, which provided vital information to understand to what extent the factors observed in Kohalpur are enabling and how this shapes the EE. The third phase is the analysis of the SQUAT tool's outcome obtained in Kohalpur. All the results obtained contributed to developing a further understanding of which factors can be considered enabling and to what extent these factors are linked to the formal and informal practices observed in Kohalpur and how this toolkit captures them.

Kohalpur was selected as a location to conduct the study due to the municipality's goals of improving MSWM and aligning with SWMA and the upcoming project of WASTE NL in this location. Therefore,

conducting the SQUAT tool as a preliminary assessment for an upcoming project provides valuable information for intervention planning while being tested. The fieldwork in Kohalpur took place from 20 October to 24 November 2022. During this period, the study aimed to gather information from all possible sources, such as; the municipality, the households and the private sector. Moreover, the SQUAT tool was conducted. All the information obtained contributed to the outcome of this research.

Therefore, the research will go as follows;

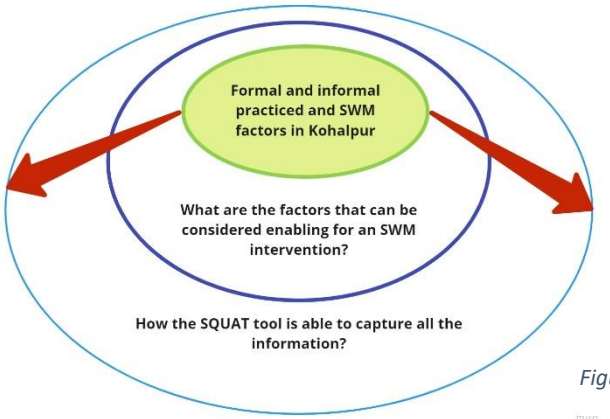


Figure 50: The three phases of the research. Own source

Table 2: Research questions and its methods applied.

Research questions	***Methods applied***
What are the (in)formal solid waste management practices in Kohalpur (Nepal), and how are these practices captured in the RAFT methodology: the *SQUAT toolkit*?	The SQUAT tool Rural appraisal methodologies
What are the components that enable an integrated SWM intervention in socio-cultural, policies and institutional aspects, and who are the actors involved?	Semi-structured interviews with international waste experts
To what extent does the outcome of the SQUAT Tool fully reflect the local conditions and the enabling environment of Kohalpur?	Rural appraisal methodologies The SQUAT tool outcome in Kohalpur
Does the SQUAT tool provide enough information to allow for a proper assessment of the enabling environment in the solid waste value chain in general?	Analysis of the results obtained from the other methodologies

4.1. Research methodologies

Qualitative research methods were selected to address social beliefs on a specific topic. It unfolds the social dimension, including observational research, interviews and analysis of the written records, giving importance and involving people's voices as the central subjects of the study (Pathak, Vibha; Jena, Bijayini; Kalra, 2013). In this case, this research seeks to understand waste practices and perceptions of Kohalpur, as well as develop a further understanding of which factors enables an SWM intervention based on the proposed toolkit. The data obtained from people's perceptions and the enabling factors cannot be numerical. Qualitative methods generate non-numerical data as the main source of the results, adding a

new dimension that cannot be obtained with the analysis of the single variables (Pathak, Vibha; Jena, Bijayini; Kalra, 2013).

Within these methods, an exploratory approach can be applied to explore the insights of the causes that lie in social phenomena and the interaction with the actors involved (Reiter, 2017). A social phenomenon in a specific topic, in this case, SWM practices, is based on social behavior or belief from the interaction between humans, their knowledge and the influence of past generations in a specific context (Markey, n.d.). The SWM system and its EE are created from the interaction between the system components and its actors, resulting in enabling factors depending on the local conditions.

The exploratory qualitative methods are applied to gather information about the SWM systems and compare it with the analysis of the SQUAT tool, the study case of the new RAFT proposed by WASTE NL. The study case methodologies enable to address of a phenomenon in a real-world framework as an illustrative study (Meyer, 2001). Case study studies have an intrinsic nature of reducing the complexity of a social phenomenon to feasible features that can be studied, enabling the researcher to understand the social interaction that develops around a complex phenomenon (Heale & Twycross, 2018).

4.1.1. SQUAT tool (Smart Qualitative Urban Assessment tool), as a case study

The SQUAT is used to answer to third question, regarding its performance and how it gathered information about the EE. The *SQUAT tool* enables the visualisation of the existing scenario (snapshot) to set up the most appropriate approach to ensure long-term impact interventions. The complexity of the EE concept is one of the significant challenges facing this tool's development process. Although it has been tested in different scenarios (for instance, Malawi), it is difficult to measure if the tool captures the entire understanding of the local context. The tool's outcome is subjected to 13 assumptions unfolded in different questions to gather information about the six aspects that form the EE. This research only assessed the institutional, policy, and socio-cultural aspects of the six aspects included in the theory. Therefore, table 3 exposes only the assumptions related to the pre-selected aspects abovementioned. The rest of the questions and assumptions are in Appendix 1. These questions were graded considering the Kohalpur's observations to obtain the outcome in order to compare it with the results obtained from the interviews and the observations obtained in Kohalpur.

Table 3: Assumptions and questions used in this research.

SQUAT tool		Questions
Assumption 1	Demand for services	1.2. Are constructed facilities and provided services socially differentiated so that all groups are included?
Assumption 2	Quality and Quantity	2.1 Are the provided facilities and services socially accepted? 2.2 Are the facilities and services financially inclusive for all income groups? 2.4 Do the facilities and/or services provided by the SWM sector contribute to public health of all inhabitants of the city? 2.5 Do the facilities and/or services provided by the SWM sector contribute to cleaner environment and living conditions throughout the city and its surroundings?
Assumption 3	Supply	3.1 Are the various SWM management professionals acknowledged (as professional sector) by the local government and financial sector, including the informal sector?

		3.2 Are there quality standards for the services? If yes, have providers been involved in setting the standards. Are they adhered to? 3.3 Are the professionals organised and represented in platforms, interest groups, unions and associations? 3.4 Are there NGOs active in the SWM sector?
Assumption 4	Service is reliable and affordable	4.1 Do service providers work based on written agreements that are understood by customers and based on realistic service offers? 4.2 Can customers give feedback about services to the providers and how? 4.3 Are customers involved in planning, service arrangement etc?
Assumption 6	Visibility and accessibility	6.1 Do people have access and trust in digital booking and/or paying bills for urban services using mobile phone applications (for households) as IT platforms provide a secure transaction environment? 6.3 How do service providers get into contact with their customers and vice versa? Mouth to mouth, etc.
Assumption 7	Sector economic available	7.1 Are there any legislation or regulations preventing sales of products?
Assumption 8	Financial resources	8.3 What percentage of all households and institutions are paying for SW collection services? 8.5 Are there financial mechanisms that are available for the very low income groups? 8.6 What SWM activities are subsidies by local government from regular tax (national) incomes?
Assumption 9	Transparency of the sector	9.1 Is the planning, budgeting and implementation of the local government policy transparent and inclusive? 9.2 Are service delivery, FS and SW treatment and recycling monitored according to contracts and can they be adapted if needed? 9.3 Are procurement procedures clear and operational service contracts/franchises, procured through open and transparent tendering?
Assumption 10	Enabling government	10.1 Does the (local) government has clear definition and division of tasks and responsibilities of different actors, either in written form or as mutual agreement and are these monitored and enforced? 10.2 Is the legal framework adequate and flexible enough to allow for realistic regulation, and encouragement of good service provision and financing of SWM services? 10.3 What are the common perceptions of municipal service delivery, private sector engagement, role of financing and the role of the customer (citizen) among the different actors?
Assumption 11	Political support	11.1 Has the City taken a significant initiative to improve MSW management in recent years/months? 11.2 Does the city prioritise own funds for SWM? 11.3 Has the city policies, strategies and/or plans for a city-wide

approach towards SWM? Or taken initiatives to such avail?

4.1.1.1. SQUAT tool procedure

Based on social research methodologies, the tool aims for a rapid assessment of the city (or urban area) through the primary stakeholders' interviews and the state observation of the current infrastructure and facilities (de Vreede et al., 2020).

To gather the information required to answer all the assumptions (Appendix 1), the *SQUAT tool* requires to develop a snowballing interview. The snowball technique consists of the first interviewee providing the information, creating a wave of the coming interviews (Etikan, 2016). The starting point should begin with the municipal SWM department. This should be followed by interviewing the other stakeholders involved to gather information on the amounts of generated waste and the procedures followed by the municipality. Upon completing the analysis of all information and visiting the used waste facilities, the final step is to assess and evaluate the assumptions made.

4.1.1.2. The SQUAT tool in Kohalpur

The first interviewee was the head of the municipal SWM department. The interview chain continued with the head of the private sector and the owner of the waste warehouse that works with the informal sector. Therefore, the interview chain was as shown in figure 11, and all the information about the interviewees is exposed in table 4.

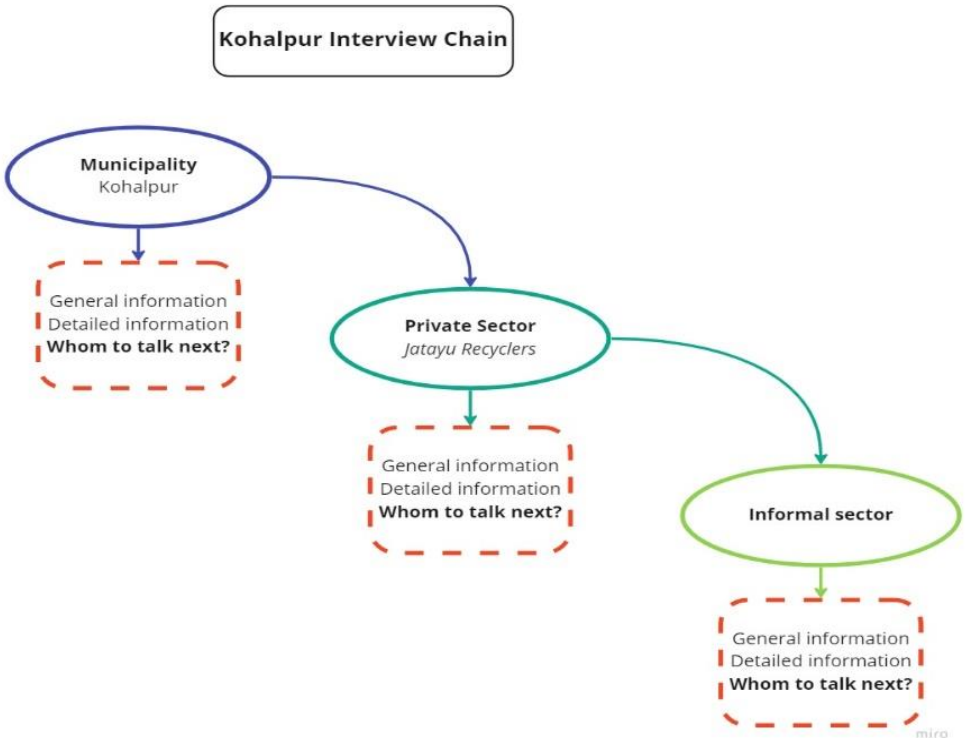


Figure 11: Interview chain develop in Kohalpur. Own source.

Table 4: Interviewees used in the SQUAT tool.

The SQUAT tool interviews		
Interviewee 11	WASH department in Kohalpur	An administrative worker that controls the WASH department of Kohalpur's municipality
Interviewee 12	Private company	Head of the private company that provides service delivery in Kohalpur's municipality
Interviewee 13	Informal sector Kohalpur	Owner of the biggest warehouse in Kohalpur Municipality. He also works in the informal sector association of the area.

4.1.2. Literature review

The literature review was conducted to provide previous information about Nepal's formal and informal practices and the enabling factors within the aspects chosen that might alter the EE in an SWM intervention. The literature review was done based on existing scientific articles, SWM interventions and policy documents. The literature review was not conducted following any systematic scheme because of the scarcity of the information available in all the aimed topics. The results obtained came from a snowballing technique. Therefore, the articles found and used linked my research towards other articles of interest.

The literature review was conducted between June and October, using Google Scholar, WorldCat, and Google as sources of information. This research required a variety of keys to gather the required information.

- Keywords for EE aspects: the starting point was the word *Enabling Environment in SWM*
    - Following words. *Policies, Institutions, Challenges of SWM systems, Socio-cultural factors, SWM developing countries.*
- Keywords for Nepal: the starting point was the word *SWM in Nepal*
    - Following words: *Kohalpur, Policies SWM Nepal, Enabling Environment Nepal, social exclusion in SWM*

The discovered literature about EE was limited due to the novelty of this topic. The goal was to find scientific relevance that exposes how these aspects affect an SWM in developing countries. The information obtained was used to guide which questions should be focused to prepare for the interviews with waste experts. In terms of waste management in Nepal, the information obtained was also limited but gave a previous idea about current policies, practices, challenges and the tendency towards improving the SWM systems. It reviewed the policies introduced in the previous years and new infrastructure and facilities (planned, in the process or already built). It provided information about the involved actors and how the services are delivered. Moreover, information about the informal pickers' work, their social perception, and if there is any social group that is socially excluded and can be excluded from the SWM system.

4.1.3. Semi-structured interviews

Ten semi-structured interviews were conducted with international waste practitioners, 3 of whom are currently working in Nepal (interviewees 8, 9 and 10). The interviews had a duration between 45 to 70

minutes. As is exposed in table 6, the interviewees have waste working experience in Africa, Europe and Asia, and a few collaborate as a specialist partners with WASTE NL. Due to a wide range of factors that were expected, semi-structured interviews was decided to be the methods to use. This type of interview provides flexibility to the interviewer during the progress of the questions and follow-up questions (Henning et al., 2020).

The interview guide was based on the previous findings from the literature review. However, a wide range of new factors emerges from the different professional practitioner's perspectives due to the enabling factors being location dependent. Therefore, the question guideline was redefined, adding the emerging factors mentioned by the interviewees. The emerging factors exposed in table 5 were introduced to the questionnaire, and the last version of the questionnaire is exposed in Appendix 3.

The interviews aim to further understand the factors that can be considered within the EE concept. Because of the difficulty in framing the factors within this concept, international waste practitioners aimed to provide a broader understanding of this topic worldwide. At the same time, Nepal practitioners' interviews sought to thoroughly understand the EE that international waste practitioners might face in Nepal. However, both results are included in the EE and ST outcome accuracy analysis.

The interview process began at the beginning of September, and the last interview was in November. This research used two ways of contacting the interviewees. First, WASTE NL exposed my research of this tool in a webinar while they were presenting the last developments. Therefore, I was able to introduce myself and asked for permission to contact them. In this group belong interviewees one to seven. All the interviews were conducted through MS teams from September to the beginning of November. Secondly, interviewees 8, 9, and 10 were contacted when my travel to Nepal was settled. The Nepalese interviewees were or are currently involved with projects of WASTE NL in Nepal. These interviewees were conducted in person between 24 October to 20 November. Table 6 shows a summary of their working experience and background.

These interviews helped to get an idea of all the factors that can be considered Enabling, hence, changing the EE for an SWM intervention. The questions had a focus on the researched aspects (the policies, institutional and socio-cultural aspects). However, under the assumption that the political context affects the EE, a part of the questionnaire was set to look for this information. Gathering information from other waste practitioners provided insights into this topic's importance, which parts must be considered and the limiting factors that challenge international SWM interventions.

Table 5: Factors researched and emerging.

Topic	Factors researched	Emerging factors	Interviewees
General EE concept	Grade of factor's importance	Impact of the factors	Interviewee 2
Institutions	Challenges	Ownership	Interviewee 3
	Institutional body responsible	Technical skills	Interviewee 3
	Communication/coherence of the institutions		
	Power of the institutions		
Policies-political	Political commitment	Administrative-political power separation	Interviewee 1
	Centralisation/decentralisation	Tax performance	Interviewee 1

	Waste policies	Job volatility	Interviewee 5
	Enforcement	Municipal alliance	Interviewee 1
	Public contracts (tendering)		
	Political volatility		
Socio-cultural	Responsibility concept	Socio-cultural dimensions	Interviewee 7
	Governmental trust	Social leaders	Interviewees 1 and 5
	Social perception of waste workers	Cleaningless concept	Interviewee 7

Table 6: International waste experts' interviewees.

	Job position	Description
Interviewee 1	Independent waste consultant	International waste consultant with more than ten years of experience in the sector. He has been working in many countries, mostly Africa and South America.
Interviewee 2	Waste consultant (Africa)	Project manager in a waste NGO in Malawi. Her working expertise is SWM, circular economy and value chains in SWM systems
Interviewee 3	Independent Waste consultant/ Governmental advisor	Independent waste consultant with high experience in India, Bangladesh and Nepal. He works in direct SWM implementations, training administrators and field workers.
Interviewee 4	Waste consultant	Waste consultant with more than 5 years of experience. He is focused on SWM in Africa, especially in Malawi.
Interviewee 5	Independent waste consultant	He works in an international association of waste consultants. The association and he have been involved in SWM projects in over 70 countries in Europe, Africa and Asia.
Interviewee 6	Waste consultant	He has been an international waste consultant for a lot of years. Now is the director of a global waste association and Waste NGO based in the UK.
Interviewee 7	Environmental engineer	Environmental engineer specialised in waste management since 2002. Currently, he works in an international waste advisors association, and his expertise is ISWM strategies and planning.
Interviewee 8	Head of the Waste NGO in Nepal	Civil engineer, head of the waste NGO in Nepal. He has been working in Nepal for a lot years, implementing projects in the sector of WASH and SWM.
Interviewee 9	Waste manager	Nepalese waste consultant in SWM. Currently teaching in the technical university of Kathmandu and working in his association "Solid Waste Management Association Nepal (SWMAN)"
Interviewee 10	Civil engineer	Civil engineer with a few years in the field. He has been working in Kohalpur for the last two years, which has developed a good understanding of SWM systems in the city.

4.1.4. Rural appraisal methodologies

Rural appraisal methodologies are used to gather information about the informal waste practices that Kohalpur citizens use. This methodology was selected because it is an approach that enables the researcher to gather information about rural or household practices, living conditions and perceptions of a specific topic (Chambers, 1994). Moreover, because society can disregard the importance of waste management in general, rural appraisal methodologies can be used as a proxy to gather information about their awareness of this topic (Chambers, 1994).

The information obtained has been used to show the disparities between the observed formal and informal practices. The field research was based on participatory observation, including a spontaneous conversation on the streets (longer than 15 min) and in-depth analysis through of short interviews with five households within the municipality. Both practices enabled the analysis of current waste practices, how the citizens perceive the waste, and how waste is handled by the different social groups (Main research question). The Kohalpur citizens' perception provided crucial information about the realities of formal practices.

4.1.4.1. Participatory observation

The participatory observation realised through writing down notes of what I perceived during my stay in Kohalpur. All my observations are exposed in the results section such as any other part of the obtained results. A typology was developed to address social and governmental data collection, including social perceptions, possible individual waste practices, and governmental treatments. The information gathered is classified following the typology exposed below.

Table 7: Typology of the governmental and social waste practices and collection systems that will be used in the participatory observation

Collection system typology	
MSWM collection is separately	The waste is collected separately by each fraction, either from different dustbins, door-to-door or rickshaw system
MSWM dry and wet waste (segregation)	The waste is collected separately by the main segregation; dry and wet waste by the different municipal systems
MSWM waste collection non-separately and non-segregated	The waste is collected without any separation by dustbins, door-to-door or other systems.
MSWM collection services inclusion (full)	The MSWM can provide services to all areas and all social groups, reaching all the regions within the boundaries
MSWM collection services inclusion (partial)	The MSWM can provide services to the areas close to the main city but including all (or partially) social groups. Separation produces by social exclusion following social groups or locations.
MSWM collection services inclusion (low)	The MSWM provides services to the residential, high-income, and business districts of Kohalpur. Lack of inclusion, socially and spatially
Enforcement/Monitoring	The municipality has control over the current state of the services and the agreements among the different stakeholders.

MSWM effectiveness	Percentage of actual citizen's services by the municipality or the private sector under the municipality's contract.
MSWM centralised services	All the services are controlled by the local authorities, providing services to a high range of the population without any exclusion socially or spatially
MSWM de-centralised services	Some of all services are handed over via SLA contracts to private companies or the informal sector
MSWM depending on external services	The service is unreliable to all the citizens and depends on external help such as international organisations, NGOs or the informal sector
Informal sector	Group of people working picking up the services without being in the system. They take care of various waste flows such as bottles, organic waste, metals, etc.

Social typology	
Management of the waste (local citizens)	Citizens have their way of handling their waste within the public/private service. It includes municipal picking-up systems, dustbins or authorised dumps
No management of the waste (Local citizens	The waste is disposed of on the side of the roads, in unauthorised dumps or on the streets.
Own management of the waste	The citizens manage their waste on their own, either composting or reusing plastics or other materials.
Waste Social perception	The waste is seen as a resource, or it is seen as an unvalued element
Social awareness	The population is aware (entirely or partially) of all the potential impacts (environmental and healthy) that it has the waste.

Governance typology	
MG enabling governance	The government is open to changing its practices by introducing policies or investing in the service and facilities. The government can accept suggestions and discuss the coming steps. They can see potential economic value in the waste, trying to introduce reusing facilities.
MG non-enabling governance	The government has no intention of changing the current system because it is not a priority, or they do not see its importance.

Treatment and Secondary Market typology	
MSWM final disposal (technical facilities)	Authorised facilities. It includes all engineer-based facilities such as; landfills or crematories to control the environmental impact.
MSWM non-final disposal	None authorised facilities such as open dumbs without any environmental impact treatment, or it is agglomerated in different places over the city
MSWM treatment	There are different facilities for waste treatment, such as; Plastic plants, biogas production or composting
MSWM no treatment	The waste is not recycled or transformed to promote the second life of the material

Secondary markets or business	It is included all the facilities and markets that provide a second life or economic value to the waste generated. For example, composting facilities, bio-fuel generation, or plastic markets (informal pickers)

4.1.4.2. 5 household in-depth research

Figure 12: Map of the located households. Own source

The observations were supported by five interviews with different households located in Kohalpur. It is expected that the results obtained with this methods might not be significant for two reasons. First, just five households might not provide significant results of the Kohalpur citizens' perception, which is a small sample within the municipality. Secondly, language barriers increase the difficulty of gathering all the information related to their perception.

These methods aimed to unfold their waste practices, awareness and perceptions of the MSWM system. The chosen households were located in different wards, with diverse social backgrounds and lifestyles that might alter their perspective of the services, practices and awareness.

The only ward was represented by two households was ward 11 (city centre). Whereby one house was in the urban area, and the other one was in the peri-urban area.

Measuring social awareness on this topic is one of this method's goals. Therefore it is required to expose the different grades considered of waste awareness.

- Low awareness: When the interviewee did not have any knowledge or concerns about the environmental and health consequences of the bad treatment of the waste.
- Medium awareness: When the interviewee exposes small concerns about this topic and provides more developed answers on the waste impact.
- High awareness: When the interviewee is concerned and provides "detailed" answers about the environmental and health impact of the generated waste.

Table 8: The households' interviews description.

Households	Description of the area	Forecasting of the receives services
Ward 11	Urban area, is in the city centre.	It is expected that he receives services, also, because he owns a small shop.
Ward 11	Peri-urban area, partially isolated but not far from the city centre	It is expected that he receive services because the house is still in the main ward of the city. However, the service might be some chance that it does not come due to isolation
Ward 8	Rural area, really isolated.	It is not expected that he will receive services. A high level of self-management
Ward 12	Peri-urban area, the house is closely located to the main road.	It is expected that this house does not receive any service. However, this situation might change because of its proximity to the main road.

Ward 5	Peri-urban area, but with low density of houses nearby.	It is expected that this house does not receive any services.

4.2. Research planning

Figure 13: Research planning. Own source

4.3. Data analysis

Transcription

This research has required a large number of interviews. All the interviews were transcribed and coded to lead the results, following the topics of interest mentioned in table 5. The emerging issues were included when it were mentioned; therefore, the transcript and the applied interview guidelines were not equal among the different interviews.

Coding

When the interviews were transcribed, the content was coded depending on the discussed topic to establish connections and patterns with all the data obtained. Consequently, I created codes based on previous knowledge, for instance, a literature review and if there were any emerging factors. Therefore, deductive coding was used for the previous knowledge, and inductive coding for the discovered emerging factors (Fereday & Muir-Cochrane, 2006).

Triangulation

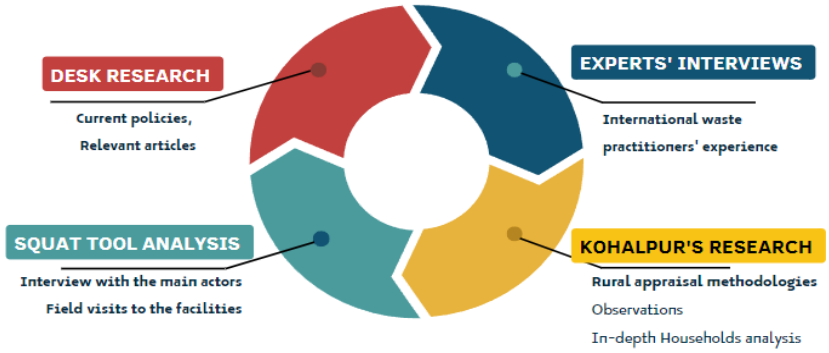


Figure 14. Triangulation methodologies. Own source

This research uses a combination of different methods and resources. Therefore, triangulation is the terminology that is used when multiple methods or data are used in qualitative research to understand the researched phenomena (Patton, 1999). Triangulation can be considered as valid strategy in qualitative research to efficiently use the obtained information (Carter et al., 2014). Methodology triangulation considers various qualitative research methods to collect data about the same topic (Carter et al., 2014). In this case, as previously explained, participatory observation, desk research, interviews and the use of the ST are the methodologies applied.

4.4. The ethics and the researched subjectivity.

The title of this thesis implies a lack of subjectivity in SWM interventions. However, the researcher acknowledges that their background and personal experiences, including their western culture and previous work in the field at a municipal level in Spain, may have unconsciously affected the objectivity of the research. Despite efforts to be objective, the results could be biased due to the researcher's personal beliefs, culture, and professional experiences. These preconceptions regarding the right to receive service, the priority of the sector, and the way of assessing work performance and business structures in the SWM sector, may have skewed the results. As a result, the researcher's findings and criticism may be viewed from a limited and biased perspective, not representative of the realities of the citizens of Kohalpur. The researcher acknowledges that their observations came from a subjective point of view, which cannot be completely excluded.

On top of that, the grading of the SQUAT tool deserves special attention in this topic. The grading of the tool is significantly impacted by the perception of the evaluator. As a result, subjectivity once again becomes a factor that impacts the accuracy of the obtained results. Furthermore, most of the international waste management experts consulted had a European background, making it possible that their perceptions of reality are closer to the researcher's European perspective than the Nepalese reality in this matter. Consequently, this also means that the information sources and the performance of the tool are influenced by a Western perspective and established waste management conditions.

Regarding confidentiality, this research was required to include different perceptions from waste experts, stakeholders and Kohalpur citizens. Some answers can be controversial; therefore, they will remain anonymous and are named by numbers, as seen in table 6. Consequently, all the participants were sufficiently informed about the research and were given the opportunity to ask questions. Their informed consent is attached in Appendix 9, and they were told that they could withdraw their consent of participating in this research at any time.

5. Realities on the ground: Kohalpur as a case study

The following chapter describes the SWM environment currently in Kohalpur and the actors shaping it that impacts the extent to which an environment can be considered "enabling" or not. It aims to provide vital information that is used to answer the main research question and sub question 2. Because the SWM sector connects national and local spheres, there are commonalities in the environment that can be related all over Nepal.

The Nepalese government seems to understand that the necessities changes depending on the location. Then, SWMA provides flexibility on how the municipality should apply the policies. However, as many experts pointed out, the results on the ground were not as expected. Municipalities lack technical knowledge, hence their understanding of the problems in their SWM system. On top of that, the SWMA addresses the SWM problem on a superficial level. The Nepalese government sets the spotlight on the collection system but lacks the technical investment to provide a completely safe service (I8). The absence of technical knowledge reduces the investment required from the general governance and settles superficial targets without considering the evolution of the whole system.

"Most political people just want their city clean, but they don't know how to make it clean. I mean, they just want they will just work in the surface. I mean from the collection point of view, they are only looking, this area is not collected. But after the collections, there are so many other things that have to be done. Which has not been addressed every time they think of inner city as full of waste" Interview 8.

Moreover, there is a problem with the lack of enforcement, human resources, economic investment and correct management at all levels, leading to technical flaws along the implementation process. Technical flaws are compensated for by including technical NGOs as consultancies, such as *Lumanthi* and *B-group*. However, economic and human resource constraints are more difficult to compensate for two reasons. First, SWMA imposes a contract duration of 5 to 6 years, reducing the opportunity for economic revenue in the investment (I8-I9). Secondly, the SWM sector in Nepal is not economically supported by any financial entity. None of the actors involved in the SWM sector can get loans from the banks to improve their services or invest in the required machinery. This creates a big challenge for the financial sustainability of the SWM sector because of relies on the citizen's fees and municipality investment.

Besides, Nepal has high position changes in administrative jobs, reducing the municipality's institutional strength and capabilities. This has a high impact on the SWM intervention. First, because the approaches and priorities have more chances to change; second, the information is not well transferred due to the lack of a recording system. Additionally, workers cannot develop any attachment to their job or the location, reducing their commitment.

5.1. Kohalpur

Kohalpur generates 1.2 kg/HH per day. However, the municipality does not have any monitoring mechanism; therefore, the data might not be accurate. This generated waste is collected and dumped 8 to 10 tonnes daily. Most of the collected waste is organic and single-use invaluable plastic.

At first sight, littering is a visible habit in Kohalpur. The streets contain different kinds of waste, primarily single-used plastics. Due to this littering, the waste is a cluster in small illegal dumpsites. These dumpsites are frequently seen everywhere but are predominant next to demolished buildings or unused parcels. These illegal dumpsites can be a waste-picking point for Kwardis interested in selling their waste. Due to

the high population in urban areas, the high quantity of waste on the streets is more noticeable. However, littering is also visible in rural areas.


Figure 15: Clogs drained and waste accumulated in unused areas. Own source.

No bins or small containers are placed in the streets; thus, most of the time, there is no other option than litter. Over the years, the use and trow of different items as common practices have become a strong habit. Even if people are concerned and aware, waste habits are difficult to change if enforcement and alternatives, like bins or small containers, are not implemented. This action led to clear visible consequences; not only a lack of the correct treatment, but the waste on the streets clogs the drain system and increases the chances of floats during the rainy season.

5.2. Waste Municipal services in Kohalpur, the formal practices

The municipal waste services in Kohalpur are executed by *Jatayu Recyclers* private company. They work under 15 years agreement with the municipality, which still has three to run. The main conditions of this agreement are that *Jatayu Recyclers* has to conduct the collection and final disposal services. The municipality provides 66.6% of the agreed expenses under the contract, and *Jatayu Recyclers* provides the other 33.3%. Nowadays, the final disposal is a temporary dumpsite in Kohalpur's community forest, next to Banke national park, until the municipality finishes the construction of a sanitary landfill. The private sector agreed with the municipality to provide services in the following manner:

Table 9: Schedule of the municipal services.

Municipal waste collection Schedule			
Every day	Commercial waste	**2 times per week**	Peri-urban areas
3 times per week	Ward 11 (city centre) and the main roads (H12 and H01)	**1 time per week**	Rural areas

Their services is around 10.000 households, primarily located in wards 1 and 11. They are also responsible for the fee collection for the services. The fee price imposed by them is 100 rupees/month per households, 150-250 for restaurants, and 500 or more hotels and restaurants with higher waste production.

5.2.1. Private sector

Jatayu Recyclers has 19 workers. They own three tractors used to provide the services. Three workers operate each tractor; the driver and two persons behind pick up the waste. Besides, the company has the following structure; the head manager, five money collectors, three administrative workers, and one operator. The company aims to improve their services delivery and reduce the final disposal waste as much as possible. Then, the municipality provided the facility for a Waste Transfer Station (WTS), but it is still unused due to economic constraints from the company.

Figure 16: truck used in the Collection services. Own source.

Based on its structure, the company's organisational set-up seems deficient. They have five economic controllers and two marketing workers to control the fee payment and increase the provided services. They offer services for 10.000 households, but the fees received are coming from 2.500 households approximately. So, they are getting paid 25% of the service provided. Based on the conversation with Kohalpur's citizens, 3 of 9 mentioned that they receive services regularly being two considered commercial waste with the owners' house on top. This factor gives an idea of what are *Jatayu Recyclers'* priorities. It seems they put on top commercial waste with higher economic fees rather than providing complete municipal services.

The findings expose a social exclusion depending on the households' locations, although they are willing to pay to receive waste collection services. In order to verify in situ, the tractor route was followed. Even in the city centre, certain streets were not done, especially the poorer areas next to the city centre. The tractor also avoided streets with several houses that were not completely urbanised. However, houses closer to the main road receive regular services. Consequently, there is a spatial exclusion with low reliability of the services provided, unfulfilling the tendering contract under the assumption that poorer houses will not pay for the services.

Hence, two points can be concluded. First, the job provided by the collection company is incomplete without reaching the full potential of all interested people. Secondly, either the company is not interested in pursuing their municipal agreement, or they are unaware that citizens are willing to pay the fee imposed to receive the waste collection services.

Figure 17: Areas that the service is provided by the municipality and private sector. Own source.

5.2.2. Municipality

The service provided is indirectly supported by the passive role of the municipality, which has no control or enforcement mechanism to verify the contract's performance. Because Kohalpur waste services are

under a PPP agreement and based on what SWMA exposes, the municipality is pivotal in ensuring the SWM service is delivered.

Figure 18: Official dump fill. Own source

Kohalpur municipality has designated an institutional body to be accounted for the MSWM, but with any power within the system. The SWM department is unfamiliar with the written agreements that the counterpart should do, the wards that were doing the collection services and complaints about the system. This factor has inevitable consequences; due to the absence of a monitoring mechanism, the institutional body cannot ensure the system's performance. The deficient responsibility and control from the municipality create a vacuum of power to change or improve the services if required. This situation reduces the institutional strength of Kolhapur municipality in this department.

5.2.3. NGOs involved

Lumanthi

Lumathi is a non-profit organisation focused on poverty alleviation in Nepal. They work in informal settlements and marginalised communities of Nepal, focused on WASH projects and SWM. They also provide technical support to the municipality in these two sectors and strengthen community organisations in both sectors (*Lumathi (n.d.)).*

Lumanthi was helping Kohalpur municipality to improve its SWM services. They provide technical and managerial skills to the system and act as intermediaries between the private and municipal sectors. Moreover, they also aimed to form a platform alliance with the informal sector to improve their conditions and potentially create an agreement with Kohalpur municipality. They organised a workshop with the administrative staff from the nearby cities on how the pump water system works and how important it is to integrate those systems.

B-group

In the research of the SWM actors in Kohalpur, B-group was mentioned as a non-profit organisation linked to the IS. B-group provides organisational help to increase job efficiency and social integration with the community. The IS sector is very active in Nepal, handling a high amount of generated waste. The B-group contribution was remarkable in the last years, visible within the IS working structure and conditions. Unfortunately, finding their webpage and cross-checking the information obtained was impossible. Based on the conversation, this NGO aims to increase awareness among the IS workers, helping them improve their working practices and being the intermediary with the private sector and municipal governance. All these activities are done through different workshops around different municipalities in Nepal.

5.3. The informality in the waste practices

Due to the unreliable collection services in the community, informal practices emerge in Kohalpur society to deal with the waste generated, being the main actors, the citizens and the informal sector.

5.3.1. Households Invisible practices

Kohalpur has 16 wards which 3 or 4 can be considered urban and peri-urban areas. Except in the urban area, most houses in Kohalpur have two levels, with a small or medium garden. This urban composition enables the citizens to produce compost for their gardens.

Figure 19: Compost of one of the houses interviewed. Own source.

Due to Kohalpur's rural nature, houses spread along the territory, creating isolated areas lacking communication and accessibility, increasing the high self-management. Organic waste is used for composting. Then, the problem resides in the non-organic waste generated. In this case, burning their non-organic waste is the most common practice. Their valuable items, primarily plastic and glass bottles, are given to the Kwardis of the area or left the waste in front of their door for them to pick it up.

The findings in household practices confirm the unreliability of municipal services. 8 of 9 persons manage their waste themselves. The lack of a strong service leads the citizens to create different alternatives and reuse techniques for the waste generated. Taking a general look around the city, citizens reused their plastic for planting pots or storing specific tools. Also, one interviewee pointed out that he uses plastic from bottles to craft products.

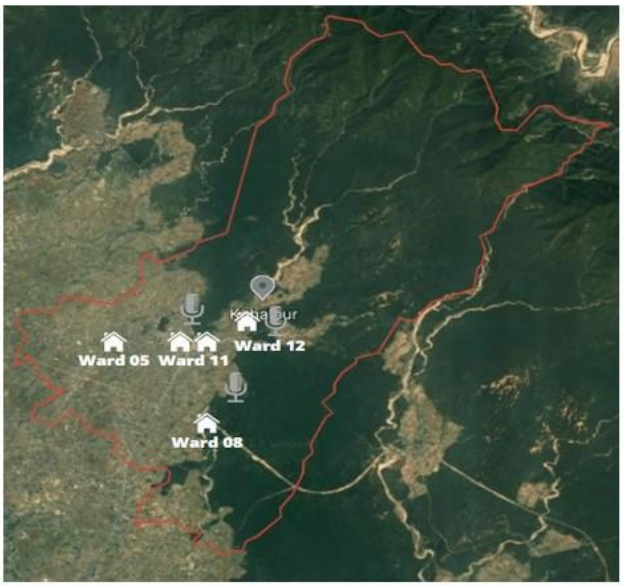


Figure 20: Left: Location and wards of the households interviewed. Right: Citizens burning their waste. Own source

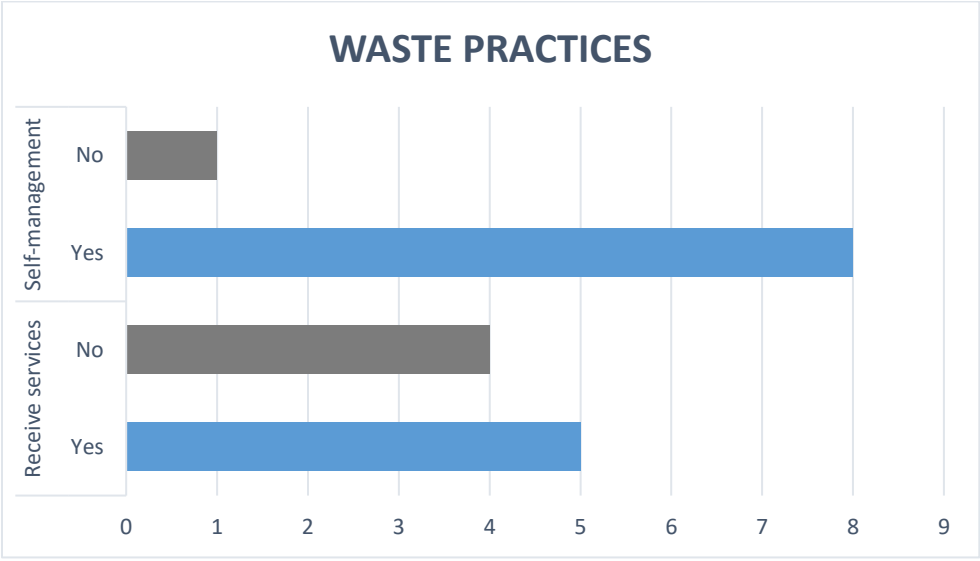
Although citizens succeed in dealing with the waste generated through these informal practices, there is a high discomfort in municipal services. The most common answer was that the municipality responsible

for the service provided should take a step ahead in this topic. Additionally, one of the interviewees mentioned that the biggest flaw is the lack of municipal proactive actions towards improvement in the system, hiding a mistrust towards the current government. Because the citizens assume that the municipality is responsible for the system, questions about their responsibility, perceptions and role within the waste chain were asked.

The results were remarkable in terms of the system perceptions; 7 of 9 exposed dissatisfaction with the service provided by the private sector (hired by the municipality). The 3 interviewees exposed very low perception, 2 low and 2 medium. The 2 positive answers, who receive services frequently also said that the service is unreliable, so they never know if it will be done next time, but because their house is located in the centre, the collection is once per week minimum. There is no complaining mechanism, and due to the lack of municipal accountability within the system, it is not easy to revert to the current situation.

However, not all citizens are willing to pay the fee. The answer obtained were varied. Of the five persons that received the services, 2 of them were willing to pay more, giving a price between 150 to 300 rupees/month, and the other three thought that the fee imposed was already high. However, the group that does not receive any service and would like to receive it consider that a price between 50 to 150 rupees per month is enough.

In terms of the responsibility concept, the responses obtained were uneven. The interviewees pointed out that the municipality is mainly responsible for the current situation, but just five of them understand that their responsibility as citizens is beyond their house boundaries. This factor might be connected with their awareness and willingness to pay for services because the answers coincide with low or medium/low perception and the high price of the fee imposed. All the information on the answers provided by the interviewees and conversations is in a table in Appendix 5.



Graphic 2. Waste practices in Kohalpur.

Graphic 3: Waste perceptions and Awareness responses.

5.3.2. Kwardis (Informal sector)

Because waste has value and the collection services are low, *Kwardis* appears as the hidden solution for the citizens, benefiting both parties. In Kohalpur, there are 16 waste warehouses used as sell-buying points for the waste collected by the informal sector. All of them have a similar selling price and profit revenue, being the exact final disposal for all of them. The waste is sold in Nepal factories (metal and glass bottles) or India (plastic), depending on the material. All the information obtained about the waste's selling and buying price and quantities is in Appendix 6.

In Kohalpur, there are around 800 waste pickers, and 500 of them are Indians commuting daily. All of them are affected by social discrimination such as; ethnicity, poor economic background and caste. They are independent workers, without providing a regular service to any warehouse in particular and just selling their waste depending on proximity and prices.

Figure 21: Informal picker going to sell waste. Own source.

Despite their collaboration in the SWM sector, the municipality is reluctant to trust the informal sector and include them in the services, even if their contribution is remarkable, arguing the high unreliability common in their practices. The municipality assumes they are unreliable because all the warehouses interviewed do not have a permanent staff or any record of the staff hired, and this fact might make the municipality reluctant to work with them.

Waste warehouses face different challenges. First, the same as the private sector, the waste sector is not receiving any loans from the banks. The absence of bank loans precludes the option of buying machinery or increasing their staff to improve their services and revenues. In addition, the government had become stricter with their activity. Thus, they do not feel recognised and supported by local authorities, even if they provide a good service to the community.

Secondly, there is low acceptance coming from society. Kwardis go from house to house picking up the waste, but society looks them down. Over the years, social acceptance has increased but not to the

required standards. They are not socially included, and their job is not accepted. However, even with this fact, daily Kwardis can be easily seen going around the city picking up different materials. Depending on their economic status, they can pick up waste with a rickshaw, bike or walk.

The social discrimination that they receive is visible. Even if Nepal's caste system is less intense, most waste pickers come from the same ethnicity, have a low economic background and have no access to other income sources. These factors make this group vulnerable to all of Nepal's new waste strategies. Their colleges from the municipality or private sector do not accept them. The interviews have brought to light the dispute between both sides, exposing a lack of tolerance. New strategies in SWM must not compromise the informal sector and the way of getting an economic income.

5.4. The problem of trust

The above results highlights the widespread problem of a lack of trust among various stakeholders in Kohalpur. This can impede effective collaboration and decision-making, negatively impacting the SWM development of the community. Kohalpur citizens do not trust the rest of the stakeholders, especially the municipality. The private sector does not trust the municipality and vice versa. The lack of trust can lead to challenges to achieve common goals, creating an aftereffect chain; there is not frequent communication or cooperation between the private sector and the municipality, weakening the service offered and increasing the social mistrust over the municipality. In the end, the trust and the relation between both parties are low, with solid arguments against and blaming each other for the system's current state.

- The municipality does not trust the private sector because political influences on the previous government led to some problems in the government transition.
- The private sector does not trust the current municipal governance because of unfulfilling political agreements with the previous government and lack of financial support.
- The citizens do not trust the government and the private sector.

Moreover, although the impact within the SWM environment is lower, the informal sector does not feel supported and consequently has low trust in the municipality and the private sector.

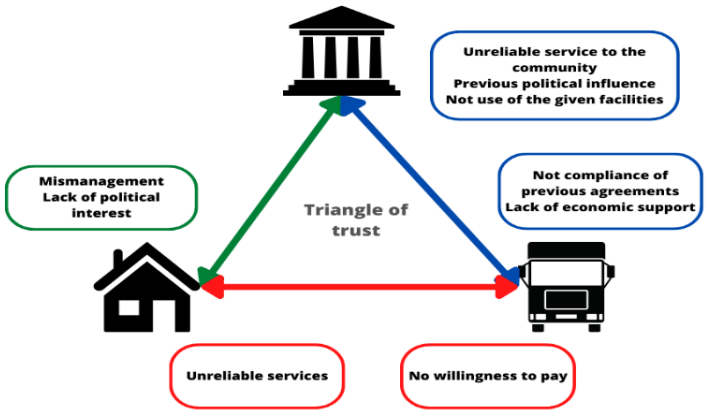


Figure 22: Triangle of trust in Kohalpur. Own source.

5.4. Typology results

Due to the methods used, the information gathered was related to the typology list exposed in table 7. In the comings tables, all the results obtained were related to each feature analysed in the typology.

Table 10: Results of the typology applied.

Collection system typology	
MSWM collection is separately	There is no segregation at home; the only segregation done by the services separates the valuable plastic and the hospital waste. The last one is done by an external company unrelated to the municipality.
MSWM dry and wet waste (segregation)	No dry and wet segregation was observed in Kohalpur municipality
MSWM waste collection non-separately and non-segregated	The waste is collected altogether from the households.
MSWM collection services inclusion (full)	NA
MSWM collection services inclusion (partial)	NA
MSWM collection services inclusion (low)	The exclusion is produced by economic income and spatial reasons. The waste is collected on the city's central areas and roads. The private companies assume that low-income groups would not pay for the services. Therefore, the service is not provided.
Enforcement/Monitoring	There is no enforcement or monitoring of the agreements and the service provided by the municipality.
MSWM effectiveness	Low effectiveness of the services. Many areas in the region are not receiving any services.
MSWM centralised services	Low centralisation of the services. The municipality owns the service legally but without any power or intention to change the current situation.
MSWM decentralised services	High decentralisation of the services. Low power of the municipality and lack of control and enforcement
MSWM depending on external services	The service is unreliable to all the citizens, but it does not depend on external help, for instance, NGOs. However, the contribution of the informal sector is remarkable.
Informal sector	High activity of the informal market and workers. There are 15 warehouses spread in the municipality, visibly active in the city.

Treatment and Secondary Market typology	
MSWM final disposal (technical facilities)	Temporary Authorised facilities. There is a close dumpsite where all the waste is disposed, waiting for the construction of an engineered landfill and WTS
MSWM non-final disposal	NA
MSWM treatment	NA

MSWM no treatment	There is one WTS but without any machinery required to treat the waste generated
Secondary markets or business	The informal sector has a different warehouse where the different type of waste is destined for treatment business and companies

Governance typology	
MG enabling governance	The government is aware that they have a problem with its waste management, and they know that its services and practices must change. However, there is a lack of interest and low power in the decision-making of the services provided. In addition, SWM lacks funding, relying on general governance and international donors.
MG non-enabling governance	NA

Social typology	
Management of the waste (local citizens)	There is low management of waste by the citizens. The houses might be clean. However, littering is a problem in all the areas of the city
No management of the waste (Local citizens)	The waste is disposed of everywhere. On the roads, main streets and natural parks, there are unauthorised dumps on the streets.
Own management of the waste	There is a high self-management of the waste generated at home. Composting is a standard practice among the interviewees and also their collaboration with the informal sector
Waste Social perception	Waste is not seen as a resource. There is a low perception of their potential management beyond the organic waste to produce compost
Social awareness	People are partially aware of the consequences of the lack of waste management, and good habits are missing.

6. The Enabling Environment

The following chapter assesses the extent to which an SWM environment can be considered "*enabling*". The following section exposes the most important factors that *enable* an SWM intervention within the aspects studied in this research and proposed by the ISWM theory. This section attemps to answer sub-question one.

6.1. Policy Aspects

The policies have a strong connection to most of the factors, having an enabling nature. Therefore, the importance of the policies in including all the key drivers of the sector and the correct standards for the service can be considered one of the most essential *"Enabling"* factors.

"Everything is connected. You can turn it around and have a different pyramid, but the policy is the mother ship. You can give governments the power to make things happen or stop things from happening. So working on the policy and planning is key." Interviewee 5.

SWM is related to health and environmental protection. Therefore, policies must state clearly that SWM is under governmental responsibility (I3-I5-I6). Then, verifying if environmental and health protection is

included as governmental duty is the starting point to ensure its protection. Usually, the policies are developed in the responsible national ministry and transferred and implemented in the municipal body. Within the national policies, Waste Strategic Plan (WSP) rises as the most policy framework (I5).

"If you do not have a policy document at the national level, be at the waste management plan or strategy, it is impossible for municipalities to translate any policy direction. The strategic waste plan is the basis for providing services to the residents. Otherwise, you are just working in the dark and trying to figure out what to do, how to improve without planning any cohesive measures" Interviewee 5.

WSP should provide the guidelines required to ensure the SWM system and the coming steps. WSP should be specific to the country and include different national and municipal governance strategies (I1-I5). Gathering difference responses, at the national level, WSP should provide the reaching targets and parameters without forgetting the indispensable guidelines and orientation to deliver good services at a municipal level, where the implementation takes place. Together with the practical guidelines, WSP national level should also set the standards of user inclusivity, responsibility distribution, financial sustainability, penalties scheme and proactive capital funds addressing the definitions and responsibilities of the system.

On a municipal level, the WSP must ensure that the municipality owns and control the SWM within the boundaries, including guidelines in all the operational parts, including landfills, trucks or waste collection strategies. Therefore, WSP at the national level must adopt and expose flexibility without disregarding the targets and goals the system should reach in the coming years. Then, municipality should aim to reach these targets considering their local conditions and circumstances.

Sometimes, the targets set by the national government might be unattainable for municipal resources. SWM systems require allies at the local level to provide adequate waste services. WSP must include a set of guidelines for proactive policies with stakeholders, giving a clear view of whose responsibilities are within the system and a transparent scheme on the following goals. Then, the local stakeholders should discuss the feasibility and the actions to reach these targets. Here, the "*Enabling"* factor appears if the policies settled are oriented to increase communication and inclusivity with all the stakeholders in order to expose the responsibilities clearly (I5-I6). If either of these factors are not well addressed, the lack of coordination and cohesion between the stakeholders involved will be visible, ending with low services collection and a set of non-reached targets.

"It is key to understand the difference between the responsibilities to ensure services are provided. And the function of actually delivering the services. So those two things are separable." Interviewee 5.

6.1.1. Ownership of the system

The inclusion of stakeholders in the working responsibility might disturb the ownership of the system. The given local circumstances create a separation between institutional ownership and service ownership (I3). If there are no clearance on the policies and contracts concerning responsibilities of distribution, this may lead to a misunderstanding between both parties, resulting in a failing service. Therefore, the WSP should state clear that the ownership of the system always relies on the municipal body, taking the lead in coordinating and communicating role between the parties involved, and ensuring performance and meeting targets (I3).

"It is a public health and environmental work and looking at the kind of government structure we have, whether it is a, a federal type or democracy system, the ownership should formally remain with the urban local body or municipality" Interviewee 3.

6.1.2. Proactive policies

The national policies should include the option to build partnerships between the municipalities and the private sector. The municipalities are overloaded by the work that the SWM requires and lacks resources to cover most of the city's waste generation. Promoting sustainable development practices based on decentralised and self-governing multi-stakeholder cooperation seems crucial. The proactive policies in SWM should aim to include different stakeholders that might provide not only knowledge but also investment and solutions over the system. In low developed systems, establishing an operator network is crucial to cover all the procedures that the SWM system requires (I5). These actors might work in the collection services, in local/regional government, work in SWM NGOs, or any other organisation actively concerned about waste. The agreements among the private sector, micro-small enterprises (MSEs), the informal sector and the municipality are essential to enhance the system and reduce the cost and responsibility of the local authorities, increasing the service performance.

"I think one of the reasons is in, especially in fast-growing cities, municipalities, the public agencies know that they cannot cover the services for the growing. So they are, I think, more and more willing also to subcontract to the private sector." Interviewee 1.

Proactive policies aimed at engaging stakeholders play a crucial role in affecting economic outcomes in SWM. Therefore, due to the role within the SWM system, **the stakeholders**, but especially, **the private sector and the informal sector** can be considered actors that shape the EE. The presence and commitment of the private sector to SWM services is a critical factor that determines the success of proactive policies in delivering quality services. The informal sector within the SWM sector is a controversial issue as they contribute as much as private sector actors but lack recognition. If not integrated, changes in the SWM system could have a negative impact on their livelihoods, potentially causing displacement by private sector actors. For example, changes in collection systems and restrictions on landfill and waste treatment plant access could reduce their material and income.

6.1.2.1. Public-Private Partnerships and tendering process.

Within proactive policies to encourage the participation of the different stakeholders of the system and increase the system's performance, the PPPs can be seen as a win-win agreement for all the actors involved. These partnerships allow the other stakeholders to provide the job the municipality cannot do. Usually, this PPPs agreements are reach by an open tendering process. Ideally, the tendering process must considers equal to all the candidates, and the decision should be based on their business profile and working goals. However, this tendering process might lacks transparency (I4-I6).

"Transparency is a key issue. We have to find or create systems where PPPs could be made more transparent. I have seen many tenders looking at the tender, and I can say, Okay, this guy is already fixed. So they are just floating the tender in the newspaper or, or through some advertisement". Interviewee 2.

To succeed in the PPPs and tendering contracts, the agreed conditions within should be understandable and reachable for all the parties. Most municipalities aim for unattainable objectives and targets, hindering the stakeholder's labour. The mismatch between the different realities is due to the lack of communication and coordination, reducing the system's effectiveness (I6). Besides, the policy framework

should be clear on questions such as; who is the institution responsible for managing the fee collection, who should put the fees prices or whose paying or not. The policies should explain if the economic control is delivered to the private sector or is still controlled by the municipality.

However, factors such as the length, contract conditions, and policy framework should not be overlooked. The length of the tender should be the correct amount of time to enable the private sector to recollect their investment without compromising the quality of the service delivered (I5). If the contract is too short, the private sector will not have enough time to earn enough revenues to balance the initial investment. However, if the contract is for 10 or 15 years, the private sector would get too confident, reducing their performance over the years (I1). This balance is crucial to have a competitive market in the sector. Secondly, the contract conditions should be reachable and clear from both parties, trying to find a middle ground between what must be done and what can be done. The tender contract should not forget that SWM is a public service in favour of citizens' priorities, and the conditions exposed should be ensuring citizens' protection (I3).

6.1.2.2. Trust among the stakeholders

The tendering contracts have a common threat that makes one environment "*enabling"*: lack of trust among the stakeholders (I2, I4). If a municipality wants to ensure the inclusion of the stakeholders in the SWM sector, it must provide adequate communication channels. This communication might be altered or ineffective when there is mistrust. The mistrust can come from, for instance, lack of governmental trust from the citizens or mistrust from the private sector because unfulfilled promises. All the stakeholders want to secure their interests, and within a system with a divergence of interests, it becomes a problem.

"Just a little thing, the private sector did not trust governmental payment agreements. They do not want do their job. You have got this whole downstream effect now. You have got waste piles sitting in the markets, people illegally dumping." Interviewee 4.

6.1.2. Enforcement

Everything mentioned is of lower importance when legal enforcement takes place. The enforcement is not only related to the performance of the law, but also to the tax, fees and penalties control. Based on the international practitioner experience, excellent policy framework would be in vain without an enforcement mechanism (I5). Therefore, the grade of enforcement that the SWM policy has in a given place is a factor that alters the environment. A higher enforcement, higher performance of the policies, consequently, more *enabling* for a waste intervention.

Lack of enforcement can come from two angles. First, due to the lack of an institutional body responsible (I2). Secondly, if this institutional body is already in place, the lack of enforcement can come from low human and financial resources. Usually, financial constrains are common in the SWM sector. Then, most municipalities in developing countries cannot afford monitoring mechanisms and high human resources, declining the law enforcement performance (I4).

6.1.3. Political context

Based on the ISWM theory, the political context is within the policy aspect. However, the interviews brought to light the importance of understanding how the political context "*enables*" or not a SWM intervention. Therefore, the political factors has been included as a part of the results.

6.1.3.1. Good governance practices

Among all the answers gathered from the interviews, different governmental practices were mentioned as *enabling* factors, such as transparency, lack of corruption/nepotism, fair elective process, fair tendering process on SWM, commitment towards environmental and health protection, among others. All these factors are part of the Good Governance (GG) concept. The SWM quality has an impact health and environmental protection. Therefore, the government must ensure their quality and social welfare as a political priority within the GG concept.

"The waste governance deficit is huge in developing countries, both at the municipal and highest levels, which is the urban development department or the ministry environment. The second thing is a problem of coordination and communication explaining the realities of that particular state or municipality" Interviewee 3.

6.1.3.2. Centralised/Decentralised government

The grade of centralisation power within a country was another factor that can alter the intervention. Inconsistencies were found in which type of governance *enables* the extent of SWM intervention. Five interviewees mentioned that centralisation is a positive factor that helps to succeed in an SWM intervention. However, the other two mentioned that decentralised government has a higher impact on the SWM system. This suggest that from an international practitioner point of view, centralised government with fewer governmental barriers impact lower than decentralised government.

When a government is centralised, the decision-making process and the policymakers consider the country as one whole system, limiting the freedom to local governors. It seems that in centralised government, it is easier to work as an external waste practitioner because there are unique set of guidelines that the local authorities must follow, low inconsistency with the policy framework and less governmental barriers between institutions, policies and stakeholders.

In constrast, when the SWM intervention is in decentralised government, usually, the national level provides more or less "strong" guidelines to the local government, which can adapt and adjust them depending on their funds, local features and community needs (I1). Therefore, decentralisation *enables* the intervention to be adapted based on the area's features and characteristics, developing more detailed and efficient service delivery, being more effective and socially inclusive in the given location (I1).

"*Experience shows that particularly in primary services, decentralised structures tend to work better because they can adjust better, they have a better connection to local communities and many other beneficial factors. I mean, for primary services, I would always say keep it as close to involved communities as possible*" Interviewee 7.

6.1.3.3. Political commitment

Particularly in SWM interventions, the government plays an essential role in ensuring the system's long-term success. One of the major handicaps is the lack of governmental commitment towards improving the current situation. In certain countries, waste's traditional perspective, which waste does not have any economic value or negative impact on the environment, remains as government management. Thus, gathering information about waste perspectives among political players can be critical in understanding their system's priorities.

6.1.3.4. Political change or instability.

In this research, the term political instability refers exclusively to the tendency of change in the executive power. Based on the interviewees responses, political change highly impact SWM performance. For instance, I1 said that in settled democracies, when there is a change of power due to an election process, the interest in the SWM sector can be altered; either the interest is cut, and the public resources are reduced or emerges as a priority in the political agenda.

The new government's priorities within the SWM system are unpredictable, but, as different interviewees mentioned, if a SWM intervention is intended to be implemented in a developing country, election dates should always be considered (I2 and I3). For instance, it is common for municipalities to increase waste service performance during political elections to gain votes. Then, considering other political parties' opinions to create stability in the political agenda priorities might seem a factor to include in the study of the EE.

"If we're not taking other political parties into your planning process or into your communication or design process, the chances of failure of the plan is very high. The reason behind that it is inherently seen as position that they're not even making us part of something that everybody's entitled to" Interviewee 3.

6.1.3.5. Separation between the administrative and the political power.

The main factors that alters the SWM environment within the political context is the legal power separation between the administrative workers and the ruling political party. The fact that the administrative body is separated ensure that interest of the institutional body and the technical knowledge is not altered by any political interest. This separation increases the planning and policy framework management strength, drastically reducing the changes in the policies that might alter the services provided (I1). This factor also impacts the resilience of the administrative body over the effect of the political volatility and their priority agenda, dismissing the risk of change.

"The British system usually have a mayor and the town council and then totally separated from there is the town clerk and the employees. And that is done for a good, good reason because politicians can change every four years, but you want to make sure that your technical stuff doesn't change every four years" Interviewee 1.

6.2. Institutions

The institutional factors are indirectly affected by the governmental context, especially important is the separation between the administrative and political spheres. However, based on the results obtained, within this aspect independently of the political context, there are two main *enabling* factors; the appearance of an institutional body responsible and accountable for the SWM system and the position stability within governmental administrative workers. Both of these factors directly impacts the country's institutional strength in SWM systems.

6.2.1. Institutional body responsible

In developing countries with financial constraints, the settlement of an institutional body responsible for the SWM system might be unlikely to be found. Therefore, the starting point in the analysis of the EE should be to verify the existence of an institutional body responsible of the SWM sector, and its power within the SWM system (I5). Its existence is an *enabling* ingredient in SWM intervention that has a downstream effect related to the policies, performance and enforcement.

The results obtained expose that this institutional body has a pivotal role in the SWM system. First, because these institutions is who have the responsibility of the system within the municipality holding the legal ownership to ensure equal service to all the community (I3). Secondly, because the application of the law, the enforcement and the stakeholders' supervision should remain under the control of the municipality, hence, this institutional body (I5). However, this factor is highly shaped by the centralisation grade of the power in the country. As interviewee 4 mentioned, descentralisation tend to create more institutions, and when there is a lousy distribution scheme, and no coordinative law exists, the institutions settled might overlap responsibilities. The lack of institutional coherence and communication will eventually create a disorder in terms of policies, roles and responsibilities, increasing the uncertainty of the guidelines (I4, I5). Because of the role of the municipality body within the system, **local municipality or government** can be considered as **an actor** that alters the EE in SWM interventions.

In order to ensure the success of the SWM systems, it is imperative to establish a robust institutional framework to ensure its effectiveness and sustainability. The institution responsible for the SWM system should be strengthened from the outset and have a clear legal mandate to perform its role and impact within the sector and with other stakeholders. This institution should have the authority exposed in the WSP to enforce the policies and regulations through a penalty scheme and have control over the taxes within the municipal boundaries (I6). This institutional presence is the foundation for a system based on tendering and enforcement, as the institution serves as the regulatory body that ensures the delivery of waste management services of high quality standards.

"But the first thing you realise is a there's maybe no department for solid waste management anyway. So who are you strengthening? It's the first, first issue, generally, identification, establishing the function as a municipal function" Interviewee 6.

Therefore, one of the main roles of this institutions should be to monitor and regulate the SWM system. However, in developing countries, this task is a challenge. The absence of any monitoring mechanism and the low economic resources reduce the possibility to regulate and enforce the low, impacting directly in the performance of the system.

6.2.2. Administrative position stability

The institutional body performance is affected by the stability of the administrative staff (I1, I4). If a given country has a high rate of job position changes within the administrative body, is a factor that *disables* the SWM intervention. Based on the interviews, two reasons can be related. First, the technical knowledge gathered is limited due to lack of meticulous transfer of the information (I1). The second factor is that the trust among the stakeholders or the other parties involved must be rebuilt again (I4). Additionally, the administrative workers do not feel attached to the location reducing their commitment and performance in their job, and consequently, the institutional body.

6.3. Socio-cultural aspects

Experts and field practitioners realised that a part of their failure was coming because the factors considered were far from all, expanding the number of SWM influential components beyond the technical or collection services aspects. Cultural and social influence in households is as significant as any other factor, but their influences are entirely unexplored. The worldwide cross-cultural divergence and the socio-economic complexity factors play a role in the social waste perception and practices increasing this

factor to a highly heterogeneous element on the SWM. This heterogeneity affects the environment faced by international practitioners and, consequently, the success of an SWM intervention.

All the interviewees had a clearer idea of the previous aspects researched, but in socio-cultural aspects, the responses were more misleading. Not all interviewees clarified their approach and the factors that enables the SWM intervention. Despite the inconclusive answers obtained, based on the answer provided by interviewee 7, the sociocultural aspects can be divided into in three spheres related to the *enabling* factors.

1. The right to receive the service should be universally equal: SWM services should be provided without any exclusion. However, depending on a given country's economic and technical constraints, this right might be a utopia
2. The social perception and recognition of waste workers change depending on the location and culture of the region. Waste workers, particularly those in the informal sector, are often stigmatized and marginalized in society due to negative perceptions of waste and its association with low incomes and social problems.
3. The local concept of waste: the grade of responsibility among the citizens and their awareness on the topic. Depending on the culture and location, citizens may understand that the waste responsibility is beyond (or not) their house directly affecting their eagerness to pay taxes or contribute to waste segregation at home.

The identification of socio-cultural factors in relation to solid waste management (SWM) interventions can be challenging. However, the impact of these factors is evident in the effectiveness of SWM interventions at the municipal level. Social acceptance is a key factor that plays a crucial role in the success of these interventions, and it is influenced by socio-cultural aspects (I1). This overlap with other areas of study in the research underscores the importance of seeking social acceptance and willingness to cooperate, which highlights **households as actors** in the SWM at the municipal level.

"If you are trying to implement a source separation. I think the behavior is right up front. If you don't convince the people, the households, to do that. Your whole, um, you know, project or implementation is going to fail. Yeah. So I would consider social cultural acceptance a key part of solid waste intervention" Interviewee 1.

The first two spheres are not developed because its strong link with the quality of the policies and the institutions' performance. The forthcoming chapter will unfold the third dimension, explaining the causes of the different public waste perceptions and responsibilities and why this factors increase the EE of a given location.

6.3.1. Waste responsibility

Depending on their culture, religion, beliefs and awareness of the citizens, the waste responsibility perception might have two possible scenarios (I4). First, where the citizens feel responsible and involved in the system, and their responsibility over the waste generated goes beyond their houses. There is a high appreciation for cleanliness and cooperation between them (I7). In this case, because the citizens are more aware and appreciate the concept of cleanliness in the city, they tend to have a higher will to pay for the services as well as are prone to be more participants in the changes imposed.

On the contrary, the second scenario is where citizens feel their responsibility is within their house boundaries. There is a low appreciation of cleanliness in the city and a lack of awareness and willingness to change the SWM system. Here, implementing changes within the system to increase performance is more challenging (I7). The socio-cultural factors based on low awareness and low responsibility reduce their cooperation and acceptance of the new changes imposed.

6.3.2. Concept of cleanliness and awareness

Interviewee 7 revealed that the different mindset could be attributed to two main reasons. One is the value of the concept of cleanliness. Depending on the country, it might be a low appreciation of cleanliness in the city. Probably, if the government did not prioritise the MSWM, the citizens would assume the perception of dirtiness and over the years, it ended up not appreciating the value of cleanliness in the city.

The second factor is public awareness about the consequences of waste pollution and the potential behavioural change. Not all developing countries' might be completely aware of the waste's environmental and healthy impact (I4). Because their unawareness, there is also little knowledge about the procedures and technicalities to handle it. Both of these factors reduce their willingness to change their practices.

6.3.3. Governmental trust

Another concept that enhances, the overlapping effect within all the aspects of the ISMW theory is the sociocultural connection with governmental practices. If there is low social acceptance of governmental practices, it will reflect on their trust when a change in the sector is implemented (I4).

"It falls into your politics and governance overlaps, but that trust of government, if the residents don't trust the government, they can't. They're not going to pay into any sort of social scheme to collect waste" Interviewee 4.

6.4. The Enabling Environment chain effect

The downstream effect in the SWM system has been observed based on the interviewees responses. The chain can be explained by the impact of different enabling factors. The two higher impact factors are the existence of an institutional body and a Waste Strategic Plan (Blue square), which have a chain effect on other enabling factors. These are influenced (Black circle) depending on the political context. The second level of impact is shaped by factors such as the option for a tender contract, legal municipal ownership, and proper health and human protection. This level is influenced by the existence and performance of waste stakeholders (Black circle). On the third level, the enforcement of the law, monitoring of stakeholders' performance, and tax-fines and responsibility distribution scheme are important factors. The performance of all factors in the chain is influenced by policy coherence, administrative position change, commitment, and political acceptance (Red Square). However, the results on the socio-cultural aspects were not sufficient to determine their impact on the chain.

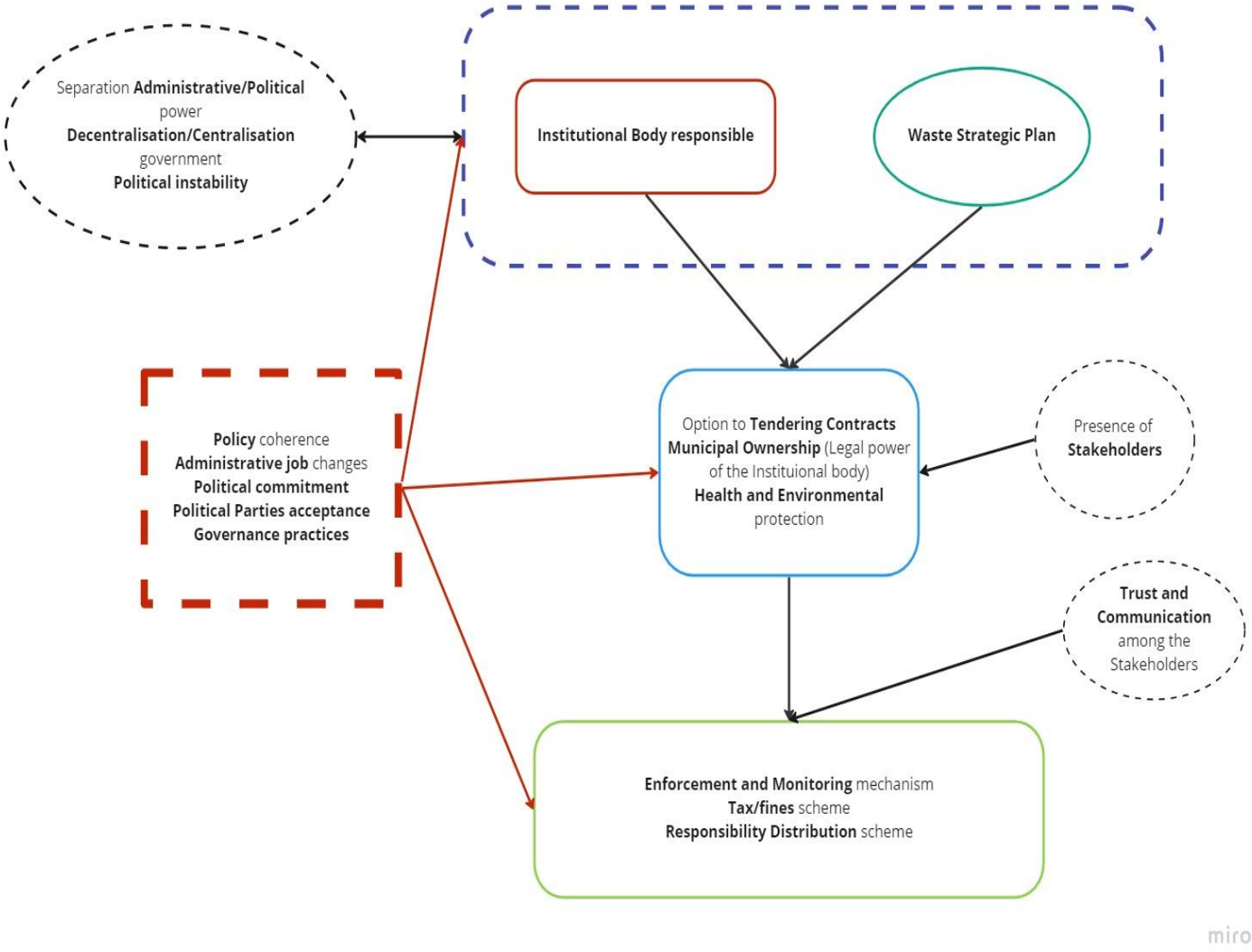


Figure 63: the downstream effect of the institutional and policy aspect. Own source

7. The SQUAT tool in Kohalpur

The last chapter of the results is the analysis of the SQUAT tool. It has two scopes. First the analysis of the outcome obtained in Kohalpur with the observations explained in chapter 4. Second, the analysis in its ability to capture the enabling factors mentioned by international waste experts. This chapter aims to answer sub-question 2 and 3.

7.1. Kohalpur's SQUAT tool outcome

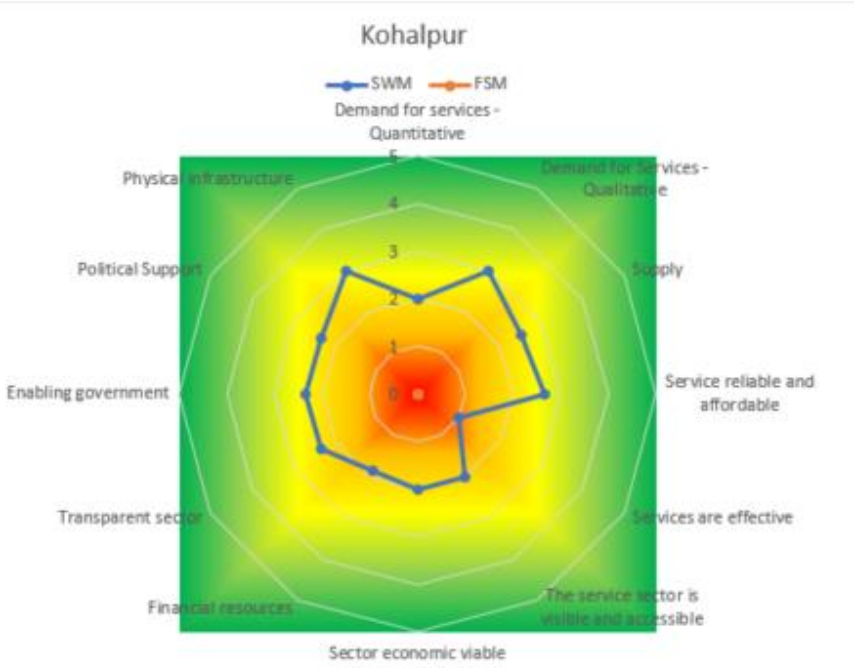


Figure 24: The SQUAT tool outcome in Kohalpur. Own source

The outcome obtained have some commonalities, however it does not capture all the observations done in Kohalpur. On the one hand, in terms of commonalities, there is a good representation of the municipal service effectiveness of Kohalpur. The graph exposes low efficiency, scoring 1 of 5. It was observed that the collection services are ineffective, leading to social exclusion. Secondly, Kohalpur's physical infrastructure is already there, not only because they have enough collection material to provide the service but also because they have already allocated the land for the landfill and the WTS. Therefore, the score 3 of 5 might seem close to reality. Third, transparency in Kohalpur scored low. The current tender was obtained because of the particular influence of the private sector with the previous municipality, then it can be assumed that the sector has a low transparency

On the other hand, incongruences can be found. First, the enabling government scores' do not match the reality. The government has an institutional body accountable for the system; however, their functions are close to none. The municipality does not have any power or ownership of the system, reducing its support and range of action. Therefore, the political support found in Kohalpur was low, low commitment was observed in the institutional body and lack of interest in changing the current situation. Then, the medium score obtained might not be accurate if it is compared with the Kohalpur's reality.

Within the all the outcome, there is one score that deserve special attention. One of the pikes is aiming to expose the reliability and the affordability of the sector. The score obtained is medium, 3 of 5. In this case, based on my observations in Kohalpur, is the middle the ground between these two factors. The service is affordable for all kinds of income groups in the city, being 100 rupees per month. However, the services provided are not regular and therefore unreliable. Then, the detail that both of these factor are analysed together, reduces the accuracy of the tool.

7.2. Is the SQUAT tool capturing the EE?

This part of the results compares the experts' responses about the factors that enables a SWM intervention with the questions used in the SQUAT tool. This part gives a deep insight into the accuracy of this tool in capturing the EE, and what factors should be included to improve this toolkit.

7.2.1. Policy analysis

The SQUAT tool stresses the importance of the sector's transparency, the standards in the writing agreements and tax control (assumptions 3, 8 and 9), matching with the answers provided by experts. In this case, although aims to know the transparency of the tendering process to involve the stakeholders, as well as the monitoring and enforcement, the SQUAT tool also misses two important factors. First, the enforcement is strictly related to a penalty scheme and fines. Thus, gathering basic information on this scheme, where the responsibility resides, and the current performance is indispensable. Second, the initial question in this topic should be to gather further understanding on the current state of the tendering contracts.

The SQUAT tool also misses basic information about the WNP and their guidelines. Therefore, aside from the question about the flexibility of the policies, a question about the WNP guidelines, targets and goals, as well as the power of the municipality, seems important to add. Moreover, assumption 9 shows the overlapping effect that different factors have, being exposed to the relation between GG practices, sociocultural factors and policies. Question 10.2 aims to gather more information about how the policies can be adapted within the context. However, this question might not be enough to determine if the policies can be adapted to the whole system or if it is mandatory to follow national guidelines.

7.2.1.1. Government analysis

Based on the interviews, the SQUAT tool's governmental questions are not entirely well addressed. There are questions (Assumptions 2 and 9 and question 8.5) considering the GG practices in the area, asking about the inclusivity of the service based on economic income, the public and environmental health protection and the transparency in the tendering process. In addition, questions 3.1 and 10.1 seek the analysis of the stakeholders involved, their task division, and how all of them are considered within the system, highlighting the importance of proactive policies and actors' inclusion in the government.

Having said that, the SQUAT tool misses two basic questions about the overall view of the system. First, the SQUAT tool does not ask specifically any question about the ownership of the system, which it seems assumed that belongs to the municipality. The ownership and responsibilities in the SWM system may be distributed among various actors. It is necessary to assess the municipal power in the system and the responsibilities of each actor. Second, a question about the political structure and the power separation between the institutions and the ruling political party is an enabling factor that must be considered.

Finally, even if there are straightforward questions about the political commitment (Assumption 11), looking for recent changes and improvements in policies, funds or strategies might seem insufficient. If

possible, the inclusion of other political parties' perceptions and the inclusion of the ruling party's current timeframe must be considered in the government's assumption of the SQUAT tool.

7.2.2. Institutions analysis

The SQUAT tool addresses questions around the assumption that an institutional body exists. For instance, questions (10.1) about monitoring, task, tender contracts and transparency are based on the idea that this institutional body is already settled. Compared with the result obtained from the interviews, all these questions are relevant for capturing the EE on the location; however, the existence of an institutional body cannot be assumed. Because of this assumption, the enabling study might be inaccurate. Questions about monitoring, responsibilities, fee control and skills and capabilities might be in vain when the location lacks an institutional body accountable for the system.

Based on what it was observed in Kohalpur, an disabling factor within the institutional body is the administrative position changes. Therefore, a question aiming if there is a high tendency for administrative job changes might be important to add.

7.2.3. Socio-cultural analysis

The first two sociocultural spheres are already addressed. Question 8.5 addresses the financial inclusion of all income groups to ensure the fee payment required for SWM service. Assumptions 1 and 2 and question 10.3 analyse the social acceptance, not only of the facilities but also the social acceptance of the sector's workers. Social involvement in city planning is also asked to ensure the social factors exposed in the EE. These questions aim directly or indirectly to provide information about the first and second spheres mentioned previously.

However, the study of the third sphere is not clear. The SQUAT tool misses a deep analysis in the households informal and formal practices as well as their perception of the system and workers. Question 10.3 is vague seeking information about the different perceptions between the actors involved. Moreover, based on the interviews, the SQUAT tool misses to target information about citizens responsibilities. Therefore, further information in the mindset of the citizens is required. In addition, factors such as their current practices, willingness to contribute to the new system and their awareness were not addressed.

Finally, further research on the governmental trust among the citizens is also required. This question seems important because it directly impacts their willingness to cooperate and contribute to separating waste or other initiatives introduced in their homes.

8. Discussion

In the coming chapter, the findings will be discussed and embedded in the theoretical background used in this research. The first section exposes a reflection of the factors obtained that can enable an SWM intervention and how it correlates with the reality observed in Kohalpur. The second section exposes the SQUAT tool's performance in capturing the EE of Kohalpur. The third and fourth sections expose the practitioners' reality and the consequences of increasing the understanding of EE. Moreover, the last part is the limitations found and the recommendations for further research.

However, a brief reflection of the methods used In order to answer the research questions and all the sub-questions, a mix-methodology approach was required based on desk research, rural appraisal methodologies, semi-structured interviews and the case study, the SQUAT tool. Therefore, the coming lines is a brief reflection of the methods used and how these performed in the outcome of the research.

Semi-structured interviews aimed to provide information about the factors that enable an SWM intervention in Policies, Institutions and Socio-cultural aspects exposed in the ISWM theory. Semi-structured interviews effectively captured the factors that affect an SWM intervention, having unanimous responses in various enabling factors, ending with a saturation of the results. Hence, there are factors such as national SWM policy framework and Institutional body responsible for the system that highly enables an SWM intervention while the impact of others is less clear.

Rural appraisal methodologies were utilised to provide the realities on the ground and gain a deeper understanding of the actual waste practices in Kohalpur and their enabling nature. Five houses located in different wards and various conversations on the streets were assessed to determine their perception of the system, awareness and waste practices. Finally, the SQUAT tool reflection and performance is expose in section 7.2

8.1. Uniting theory and reality: The Kohalpur Enabling Environment

Kohalpur aims to implement the national SWM guidelines established by SWMA. This policy framework stresses that the ownership of the system should rely on the municipality, which is responsible for ensuring the correct collection and treatment of the generated waste. According to the interviews, a comprehensive national SWM policy framework that assigns legal responsibility and authority to the municipality is one of the most frequently cited factors that significantly enhances the feasibility of SWM interventions from a policy perspective. This aligns with the existing literature found. The responses on the impact of the policies framework and their enabling nature on the SWM intervention are supported by Easterly et al. (2000), Scheinberg (2010) and Fernando & Lalitha et al. (2019). The SWMA contains similitude to the obtained results by the semi-structured interviews. The WSP, or in this case, SWMA, should provide a clear guidelines for the national and local systems. This policy framework should provide information about the tendering process, contracts, national and local responsibility and a transparent role scheme.

Although this policy framework was well intended, Kohalpur has not been able to translate it into reality. This observation agrees with the Asian Development Bank (2013), mentioning that the results on the ground were not as expected; Nepalese municipalities have severe challenges in fulfilling all the legal regulations and procedures exposed in this policy framework. Kohalpur, like many other municipalities in Nepal, faces challenges in implementing effective waste management systems due to the lack of enforcement and financial and human resources constraints. Multiple interviewees reported observing countries with comprehensive policy frameworks but no enforcement mechanisms in place. The impact of enforcement, including legal enforcement, stakeholder performance, and tax and penalty schemes, is supported by Silpa et al. (2018).

Because of the SWMA, Kohalpur settled an institutional body responsible for the SWM sector. According to the answers provided by the experts, the existence of this institutional body can be seen as the primary enabling drive within the institutional aspect factors. The impact of this institutional body accountable for the system aligns with the literature review. Its importance is also enlightened by Silpa et al. (2018) and Scheinberg (2010), who stated that this institutional body ensures higher efficiency in the resources as well as higher performance in the system.

Despite the fact that in Nepal, SWMA legally supports this institutional body's responsibility and role in the SWM system, the reality on the ground differs. In Kohalpur, the institutional body has no power within

the system to ensure the correct standards for the collection and treatment services. Therefore, the SWM sector belongs legally to the municipality, but the institutional body lacks actual authority and controls over it, contradicting the interview responses and the literature review. For this reason, it can be concluded that the enabling factor is not only attributed to the existence of the institutional body, but also its power and influence over the system.

The institutional body performance in Kohalpur has a downstream effect on the system. There is any monitoring or enforcement mechanism, incapacitating the control over the service provided by the formal sector, reducing its leadership role. Consequently, the low performance of the institutional body in factor which are seen enabling by waste practitioners, can impact an SWM intervention in Kohalpur. This consideration align with the theoretical background (Scheinberg (2010), Silpa et al.(2018)). Moreover, the lack of commitment enhances the municipal body's low performance. Interviewees mentioned that political commitment is a factor that increases EE. Based on the observations, the institutional body is not acting to change the current situation, just waiting until the tender process expires. This finding contradicts the Kohalpur Municipality (2018) report, which exposes the institutional body's high commitment towards controlling the SWM sector. The interviews and Scheinberg (2010) and Boesen et al. (2011) support commitment as an enabling factor.

Moreover, the high rate of job position changes in Nepal's administrative power exacerbates the low institutional performance. This frequent change leads to a decline in the commitment and knowledge of institutional workers, undermining institutional capabilities. Despite a lack of literature on the topic, interviews suggest that it is a factor that has a negative impact on SWM interventions, being one factor mentioned that alters the EE.

The identified enabling factors are originate from the perspectives of international waste management experts. However, the main findings coming from the realities on the ground determined high discomfort with the received services, and consequently, a high self-management of the generated waste, being burning and composting as the most common practices. These observations agree with the latest SWM report done in Kohalpur municipality in 2018. The labour of the informal sector supports these informal practices. Although low social acceptance among the informal waste workers, Kohalpur's citizens rely on the informal sector to eliminate their waste. This observantion align with Scheinberg (2010), that expose the challenges that the informal sector has to be accepted in developing countries despite the role in collection services.

Socio-cultural factors shape informal practices. All the interviewees had a clear vision of which enabling factors must be included in each of the other researched aspects, but results were inconclusive in this regard, exposing that socio-cultural factors are still disregarded. These ambiguous results matched the theoretical framework used in this research. Despite the lack of conclusive enabling factors that alter an SWM intervention, interviewees agreed on its impact. Because citizens are the final users, the consequences of the socio-cultural factors and citizens' behaviours have a upstream effect on the performance of the SWM system. This statement aligns with Agamuthu & Herat et al. (2014) and Ekere et al. (2009).

Based on the obtained results, the socio-cultural factors that alter the EE in SWM intervention can be unfolded in three spheres; (1) the universal right to receive SWM services, (2) the social perception and recognition of the waste workers and (3) the local concept of waste. In Kohalpur, the observed informal practices can be attributed to the inadequate provision of proper collection services. The causes and

underlying factors behind the insufficient collection services were also noted. The municipal service develops a social exclusion unfulfilling the first sphere. The observed situation goes against the right to receive sanitation and SWM services regardless the income or house location. Based on the theoretical framework, Scheinberg (2010) and Martuzzi et al. (2010) found that developing countries often create social exclusion in SWM services depending on income, social status or cultural factors. The second sphere is also not fulfilled in Kohalpur. Although citizens rely on the informal sector to handle the generated waste, waste workers are not accepted. The last sphere addresses all the citizens' perceptions in the SWM system, including awareness, waste responsibility level, cleanliness perception or governmental trust. Based on the rural appraisal methods, Kohalpur showed low awareness and perception of the municipal services and governmental trust. Kohalpur citizens blame the municipality for the current situation. Therefore, the third sphere expects to impact a coming SWM intervention.

Although the factors mentioned above provide new insights into the ISWM theory and its EE aspects, the results obtained in Kohalpur bring to light two new aspects to consider. First, in the current theory, the political context is within the policy aspect. According to the responses of the interviewees, the political context has a significant impact on EE. The separation between political and administrative power is particularly noteworthy, as it has an enabling effect by preserving technical and administrative knowledge over political interests. Hence, it is necessary to consider further separation of the political context and the policy aspect.

Second, in the ISWM theory, the stakeholders are in a separate "bubble" outside the EE aspects. However, the results from Kohalpur suggest that stakeholders play a crucial role in shaping the EE for waste management practitioners. The private sector's lack of commitment and low performance in collection services negatively impacts the EE in Kohalpur. Inefficient practices from the private sector exacerbate economic difficulties, leading to social exclusion, and reduce the potential benefits that waste management interventions could provide.

The results indicate that households, municipalities, and stakeholders (including the private sector and informal) are actors that can enable the mentioned factors. Their behaviour significantly impacts the outcome of the EE analysis and contributes to it.

8.1.1. The SQUAT tool, the new RAFT toolkit

The waste practitioners interviewed perceived the value of the EE. WASTE NL stepped ahead and created the SQUAT tool as a RAFT toolkit to capture the EE included in the theory and expose it in a "snapshot" to see the strengths and weaknesses of the given location. To gain an overview of the accuracy of the tool, it was tested in kohalpur by comparing the real life scenario with the provided outcome and the results obtained in the experts interviews.

At first sight, the tool has a clear economic and technical focus. Although the ISWM theory aims clearly for a broader point of view, most of the assumptions used in this tool still aim for technical and financial information. Fewer questions aim at socio-cultural factors; the SQUAT tool still has a certain grade of previous waste interventions with a focus on financial and technical goals.

The SQUAT tool data analysis was obtained with an interview chain from the SWM sector's relevant stakeholders in the given location. During the interviews, several challenges were noted that reduced the tool's precision. One of the challenges was the language barrier, which hindered effective communication and trust-building with the interviewees. As a result, the questions might not have been answered clearly,

affecting the scoring accuracy. This situation was solved with the help of our local partner and the visit to the used facilities, but it is still a limiting factor. Another challenge that affects the tool's accuracy is the interviewees' cooperation and willingness to participate. If the interviewee is not forthcoming, the information gathered may be unreliable, and the interview process may be disrupted. This not only impacts the quality of obtained information but also risks breaking the interview chain if the interviewee cannot refer to anyone else.

Additionally, the tool relies on expert experience within the SWM and also conducting interviews. There is a part of interpretation in the results that might seem inevitable and is subject to the practitioners' experience. Moreover, factors might be forgotten if the person conducting the interviews has low experience in the field.

Regarding its goal of capturing the EE, this research found that the outcome partially reflects reality. Specific factors mentioned by the experts and observed in Kohalpur are disregarded. For instance, the SQUAT tool assumes that there is an existing accountable institutional body with power in the decision-making process and the existence of involved stakeholders with high performance. Based on Kohalpur's observations, the institution's power and the private sector's performance might not be optimal to be considered as enabling.

The SQUAT tool analyses the existence of waste management policies and their monitoring system. Both of these factors were mentioned as crucial within the EE. However, if the whole amount of factors mentioned is considered, the SQUAT tool disregards essential questions such as the current state of the tender process or if the targets and goals exposed by the policies have been reached. Moreover, further analysis of the political context is required.

Finally, socio-cultural factors focused on analysing social acceptance within the facilities and their workers. Unfortunately, other mentioned factors by interviewees are not included. The tool should analyse information related to citizens' practices, awareness, perceptions, and willingness to pay. Moreover, based on the evidence, the SQUAT tool primarily focuses on formal practices and lacks consideration of informal practices originating from households or the informal sector. While the tool treats both formal and informal sectors equally, differences in their challenges and potential to be part of the system were observed. Hence, a deeper examination of informal practices is necessary.

8.2. The value of understanding the enabling environment

This research aimed to provide a more profound knowledge of EE and its impact on SWM interventions. This research's findings support the initial definition used in this research; "set of interrelated conditions that are conducive to the facilitation of a desired outcome" (Thindwa et al., 2001, Sarker & Rahman, 2018). Therefore, a solid EE can create growth opportunities and develop a better SWM system, while a weak EE can hinder progress and limit its potential.

Based on the results, not all the aspects mentioned by the interviewees were found in Kohalpur. Therefore, this research confirms that the EE is location-dependent. This highlights the importance of considering the specific context and location when evaluating and addressing the EE for SWM intervention.

Although there is a location dependency value that increases the performance of SWM interventions, based on the similitudes found between the responses, the theoretical framework, and the observations

in Kohalpur, the main drivers that enables an SWM intervention can be named. The factors considered enabling interfere with the desired outcome of providing an MSWM system to varying degrees. Some factors may be crucial for project success, while others may have a lower impact. By understanding the influence of each factor and their interplay, it is possible to prioritise resources and efforts for the most effective implementation of the MSWM system.

An increased understanding of the EE can have both positive and negative effects. On the one hand, the value of the EE resides in the ability to foresee future obstacles in SWM intervention. Based on this research, some factors enable or disable the environment within the context of an SWM intervention. Therefore, it can be understood that an appropiate analysis of the EE provides vital information for the waste practitioner to allocate their resources and attention to settle the base for a long-term impact. An understanding of the EE can increase the efficiency of SWM interventions by prioritising the factors that highly affect the SWM system and adapting the intervention to build upon the current base.

On the other hand, a higher understanding of an EE might develop a mind-set that seeks to face fewer challenges to ensure the effectiveness of their SWM intervention. If the EE is not correctly applied, it may create the perception that the location is not a viable investment opportunity, leading to a lack of international investment resources and potentially exacerbating segregation in international aid. International investment should seek help with the idea that everyone deserves the right to receive SWM services to be protected from their health and environmental impact, as a universal right. Therefore, it is vital to ensure that the information about the EE is accurately and effectively communicated to adapt the intervention to pursue the long-term impact in the SWM sector.

8.3. Waste practitioners' reality

It was anticipated that the outcome of the study would uncover a diverse range of enabling factors due to the differing perspective of the professionals and the fact that the EE of waste management is highly dependent on the local context. Nevertheless, while recognizing the expertise experience, and opinions of the professionals, it can be concluded that the enabling factors that alter the environment can be enumerated. Then, the evidence suggests that international waste practitioners continue to hold a mind-set based on Western examples, as the success of SWM systems is measured by transforming them into systems that function in developed countries, rather than allowing for the development of locally-suited structures.

Regarding the results obtained, this research provides clear evidence that an SWM intervention has moved beyond technical interventions. Nowadays, technical challenges are considered as important as institutional or policy frameworks. However, the same point of view is still applied. Instead of adapting their approach to the given location, international practitioners seem to have a broader view of what needs to be settled. The consideration that the structured development in western countries should work in other locations is still applied their intervention mind-set.

Based on the results, the concept of EE appears to originate from another categorisation of the unconsciously reality applied in the development sector. This categorisation stems from a Western mind-set based on preconceived ideas, leading to the consideration of intangible factors as enabling components. Therefore, the components of an EE and its study are not as straightforward as described by the ISWM theory. The factors cannot be studied in isolation as mere enabling components, as there is a direct interconnection between stakeholders and EE aspects. The actors' behavior determines whether

the factors are enabling or not, rather than the mere existence of the factors themselves. Kohalpur's institutional body serves as an example of an entity that initially may appear to facilitate positive enabling factors, but upon closer examination, its actors can undermine them.

8.4. Limitations and recommendations for further research

This research encountered several limitations. One of the main limitations was the language barrier between myself and the interviewees in Nepal, which could potentially reduce the accuracy of the results and skew their perceptions and understanding of the system. Furthermore, the sample size of only five households might not be sufficient to understand the Kohalpur situation comprehensively. However, due to time constraints and the need for a translator or interviewees who spoke English, it was not feasible to gather more data. As a result, further and deeper research is recommended to gain a better understanding of the perceptions and awareness of Kohalpur citizens on this topic.

Based on the ISWM theory, the EE is comprised of six aspects, but due to time constraints and the broad nature of the EE, only three were studied in depth. As a result, further research is needed to gain a better understanding of all the factors within each of the three studied aspects and their interconnections as enabling factors. During the research, interviewees mentioned factors such as economic stability, corruption, nepotism, or rapidly growing cities, but they were deliberately excluded due to their significant impact. Hence, a more comprehensive study that includes these factors is recommended. Of particular note is the influence of socio-cultural factors on SWM systems. Further research in this area to understand the impact of social taboos or gender discrimination on the EE, as various interviewees mentioned, and inform the development of more effective and sustainable interventions is crucial.

The SQUAT tool should be tested in other locations to assess its accuracy and versatility in capturing the EE. Unfortunately, the SQUAT tool has been tested in one municipality and in one country. Therefore more variety of the context and country is recommended to assess the accuracy of the tool.

Finally, this research assumed that the EE is rooted in a specific location and therefore relied on only nine interviews with experts with varying work experiences. This might not be enough to fully understand the factors within the three studied aspects, which is a significant limitation of the study. Further research that involves experts from diverse locations with varying experiences can help to determine the factors within the EE aspects more accurately. Additionally, it is recommended to further research to develop a theoretical framework for EE in SWM, with a clear distinction between the EE at the national, municipal, and household levels. This will contribute to a deeper understanding of the EE and its impact on SWM systems.

9. Conclusions of the research

This research aimed to further understand the factors that alter an SWM intervention by international waste practitioners, the so-called enabling environment, and how the new RAFT, the SQUAT tool, captures these factors. WASTE NL hosted this research, an NGO specialising in waste management intervention in developing countries and the developers of this new RAFT. Their interest is to apply this tool as a pre-assessment analysis to provide vital information about the current situation of a given location before the coming intervention. In order to conduct deep analysis, Kohalpur in Nepal was chosen as a test location to be able to verify the performance of this tool.

The present research aimed to answer the main question: **What are the (in)formal solid waste management practices in Kohalpur (Nepal), and how are these practices captured in the RAFT methodology: the *SQUAT toolkit*?** The formal practices found in Kohalpur were an unreliable service with deficient management from the Kohalpur municipality. Consequently, citizens have to manage their waste informally. In this case, burning, composting, and an active role of the informal sector were the practices found in Kohalpur.

The second part of the research aimed to determine the enabling factors in Kohalpur that impact international SWM interventions. The study found that the existence of an institutional body and a national waste plan were considered as the main drivers of successful interventions. The actors involved in the waste management system were identified as the municipality, the private sector, the informal sector, and households. The results of the study indicate that the SQUAT tool used partially captures the EE of SWM. The policies and institutional aspects were addressed except for the absence of fundamental questions assuming that the basic SWM structure is already settled. Although the tool aims to provide a broader perspective, it lacks questions on socio-cultural factors and requires further questions to capture all actors' perspectives on the SWM system.

In conclusion, the results of the study indicate that the SQUAT tool could not fully capture the EE of the Kohalpur waste management system. The outcome showed similarities and discrepancies, such as not reflecting the performance of the institutional body responsible for the system and the private sector providing collection services. Despite the inconsistencies, the tool is still in development and has the potential to have a significant impact on the international waste management sector.

10. References

Asian Development Bank. (2013). Solid Waste Management in Nepal. In *Abstracts of Papers of 7th World Congress on …*. http://cpfd.cnki.com.cn/Article/CPFDTOTAL-ZGKL200509001593.htm

Asian Development, B. (2002). Poverty Reduction in Nepal: Issues, Findings, and Approaches. *Asian Development Bank*, *March*. https://www.adb.org/sites/default/files/publication/27926/poverty-analysis.pdf

Anschütz, J., IJgosse, J., & Scheinberg, A. (2004). Putting integrated sustainable waste management into practice. In *Waste.Watsan.Net*. http://www.waste.watsan.net/content/download/561/4346/file/ISWM ass eng screen.pdf

Barron, P., Chingchit, S., Lau, B., Morel, A., & Tongfueng, P. (2017). The State of Conflict and Violence in Asia. In *The Asia Foundation*. https://asiafoundation.org/wp-content/uploads/2017/10/Indonesia-StateofConflictandViolence.pdf

Bennett, Lyn (2005), 'Gender, Caste and Ethnic exclusion in Nepal: Following the policy process from analysis to action', Paper presented at Arusha Conference, "New Frontiers of Social Policy" – December 12-15, 2005 available at http://siteresourcesworldbank.org/INTRANETSOCIALDEVELOPMENT/Resources/Bennett.rev.pdf

Boesen, Nils; Hradsky, James; Land, Anthony; Baser, Heather; Guizzardi, Silvia; Sorgenfrei, M. (2011). *Perspectives Note : The Enabling Environment for Capacity Development*. *January*, 1–28. www.oecd.org/development/accountable-effective-institutions/48315248.pdf

Brinkerhoff, D. W. (2007). The enabling environment for achieving the millennium development goals: Government actions to support NGOs. *NGOs and the Millennium Development Goals: Citizen Action to Reduce Poverty*, 83–101. https://doi.org/10.1057/9780230604933_5

Carter, N., Bryant-Lukosius, D., Dicenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, *41*(5), 545–547. https://doi.org/10.1188/14.ONF.545-547

Chambers, R. (1994). The origins and practice of participatory rural appraisal. *World Development*, *22*(7), 953–969. https://doi.org/10.1016/0305-750X(94)90141-4

Chaudhary, D. (2019). The Decentralization, Devolution and Local Governance Practices in Nepal: The Emerging Challenges and Concerns. *Journal of Political Science*, *19*, 43–64. https://doi.org/10.3126/jps.v19i0.26698

Collier, P. (2001). *Aid , Shocks , and Growth*.

Dahal, Dev Raj; Uprety, Hari; Subba, P. (2001). *Good Governance and Descentralization in Nepal*. *August*, 1–98.

de Vreede, V., Maessen, S., & Mahanta, S. (2020). *Complementary Local Urban Environmental Services Manual and guide for the use of the CLUES Tool*.

Environment & Public Health Organization. Enpho. (n.d.). Retrieved January 12, 2023, from https://enpho.org/about-us/

Etikan, I. (2016). Comparision of Snowball Sampling and Sequential Sampling Technique. *Biometrics & Biostatistics International Journal*, *3*(1), 1–2. https://doi.org/10.15406/bbij.2016.03.00055

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. *International Journal of Qualitative Methods*, *5*(1), 80–92. https://doi.org/10.1177/160940690600500107

Fernando, R; Lalitha, S. (2019). Solid waste management of local governments in the Western Province of Sri Lanka: An implementation analysis. *Waste Management*, *84*, 194–203. https://doi.org/10.1016/j.wasman.2018.11.030

Fischer, C. (2011). The development and achievements of EU waste policy. *Journal of Material Cycles and Waste Management*, *13*(1), 2–9. https://doi.org/10.1007/s10163-010-0311-z

Gautam, M.S., Georgeou, N., Phillips, M., Pyakurel, U., Wali, N., & Clayton, E. 2018. Women and WASH in Nepal: Key Issues and Challenges, Humanitarian and Development Research Initiative, Western Sydney University, 2018.

Government, N. national. (2011). Solid Waste Management Act , 2068 (2011) Short Title and Commencement : *Solid Waste Management Act*, *1*(4), 24.

Guillaumont, P., & Chauvet, L. (2001). Aid and performance: A reassessment. *Journal of Development Studies*, *37*(6), 66–92. https://doi.org/10.1080/713601083

Hadad-Zervos, F. (2022, December 12). Taking on poverty and inequality in Nepal. World Bank Blogs. Retrieved January 12, 2023, from https://blogs.worldbank.org/endpovertyinsouthasia/taking-poverty-and-inequality-nepal

Hayward, T. (2000). Constitutional environmental rights: A case for political analysis. *Political Studies*, *48*(3), 558–572. https://doi.org/10.1111/1467-9248.t01-1-00275

Heale, R., & Twycross, A. (2018). What is a case study? *Evidence-Based Nursing*, *21*(1), 7–8. https://doi.org/10.1136/eb-2017-102845

How does law protect in a war? (n.d.). Civil War in Nepal. Civil War in Nepal | How does law protect in war? - Online casebook. Retrieved January 12, 2023, from https://casebook.icrc.org/case-study/civil-war-nepal

Joseph, K. (2006). Stakeholder participation for sustainable waste management. *Habitat International*, *30*(4), 863–871. https://doi.org/10.1016/j.habitatint.2005.09.009

Karan, P. P. (n.d.). Nepal. Encyclopædia Britannica. Retrieved January 12, 2023, from https://www.britannica.com/place/Nepal

Keese, J. R., & Argudo, M. F. (2006). Decentralisation and NGO - Municipal government collaboration in Ecuador. *Development in Practice*, *16*(2), 114–127. https://doi.org/10.1080/09614520600562280

Lüthi, C., Morel, A., Tilley, E., & Ulrich, L. (2011). *Community-Led Urban Environmental Sanitation Planning: CLUES*. www.sandec.ch/CLUES

Markey, J. F. (n.d.). A Redefinition of Social Phenomena. *The American Journal of Sociology*, *31*(5), 733.

Martuzzi, M., Mitis, F., & Forastiere, F. (2010). Inequalities, inequities, environmental justice in waste management and health. *European Journal of Public Health*, *20*(1), 21–26. https://doi.org/10.1093/eurpub/ckp216

Mason, J. (2006). Mixing methods in a qualitatively driven way. *Qualitative Research*, *6*(1), 9–25.

https://doi.org/10.1177/1468794106058866

McGillivray, M. (2001). *Aid effectiveness and selectivity: Integrating multiple objectives into aid allocation*.

McKague, K., & Siddiquee, M. (2014). Making markets more inclusive: Lessons from CARE and the future of sustainability in agricultural value chain development. *Making Markets More Inclusive: Lessons From Care and the Future of Sustainability in Agricultural Value Chain Development*, *April 2019*, 1–242. https://doi.org/10.1057/9781137373755

Metych, M. (n.d.). Nepal earthquake of 2015. Encyclopædia Britannica. Retrieved January 12, 2023, from https://www.britannica.com/topic/Nepal-earthquake-of-2015

Meyer, C. B. (2001). A Case in Case Study Methodology. *Field Methods*, *13*(4), 329–352. https://doi.org/10.1177/1525822X0101300402

Minn, Z; Srisontisuk, S; Laohasiriwong, W. (2010). *Pormoting people participation in Solid Waste Management in Myamar*. Khon Kaen University, Thailand.

Municipality, kohalpur. (n.d.). Kohalpur Municipality: Office of Municipal Executivekohalpur, Bankelumbini Province, Nepalgovernment of Nepal. Kohalpur Municipality | Office of Municipal ExecutiveKohalpur, BankeLumbini Province, NepalGovernment of Nepal. Retrieved January 12, 2023, from https://kohalpurmun.gov.np/en

Municipality Kohalpur. (2018). Report on SCENARIO OF MUNICIPAL SOLID WASTE OF KOHALPUR MUNICIPALITY , BANKE. October.

Narayan, A. S., Marks, S. J., Meierhofer, R., Strande, L., Tilley, E., Zurbrügg, C., & Lüthi, C. (2021). Advancements in and Integration of Water, Sanitation, and Solid Waste for Low- And Middle-Income Countries. *Annual Review of Environment and Resources*, *46*, 193–219. https://doi.org/10.1146/annurev-environ-030620-042304

Oleribe, O. O., & Taylor-Robinson, S. D. (2016). Before sustainable development goals (SDG): Why Nigeria failed to achieve the millennium development goals (MDGs). *Pan African Medical Journal*, *24*, 1–4. https://doi.org/10.11604/pamj.2016.24.156.8447

Pathak, Vibha; Jena, Bijayini; Kalra, S. (2013). Qualitative Research. *Perspectives in Clinical Research*, *4*(3), 191. https://doi.org/10.4103/2229-3485.115387

Patton MQ. Enhancing the quality and credibility of qualitative analysis. Health Serv Res. 1999 Dec;34(5 Pt 2):1189-208.

Sarker, M., & Rahman, M. (2018). Assessment of Solid Waste Management Process in Rangpur City Corporation Area. *Journal of Geography, Environment and Earth Science International*, *16*(3), 1–10. https://doi.org/10.9734/jgeesi/2018/42225

Scheinberg, Anne; van de Klundert, Arnold; Anschutz, J. (1995). Integrated sustainable waste management. In *World Cities: Achieving Liveability and Vibrancy*. https://doi.org/10.1142/9789814280730_0005

Scheinberg, A. (1995). Financial and Economic Issues in Integrated Sustainable Waste Management. In *Tools for Decision-makers: Experiences from the Urban Waste Expertise Programme*. http://www.waste.nl/page/525

Scheinberg, A., Wilson, D. C., & Rodic, L. (2010). Solid Waste Management in the world's cities. In *Water*

(Vol. 26, Issue 1).

Silpa, K., Bhada-Tata, P., & Van Woerden, F. (2018). *What a waste 2.0, a Global Snapshot of Solid Waste Management to 2050*.

Stein, L., & Armitage, R. (2021, May 1). It was the massacre in a palace that no-one saw coming. but what drove a crown prince to murder his family remains a mystery. ABC News. Retrieved January 12, 2023, from https://www.abc.net.au/news/2021-05-01/how-a-lovesick-prince-wiped-out-nepals-royal-family/100056562

Support Group for shelter. Lumanti. (n.d.). Retrieved January 12, 2023, from http://lumanti.org.np/

Reiter, B. (2017). Theory and Methodology of exploratory social science research. *International Journal of Science and Research Methodology*, *5*, 129–150.

Thapa, G. (2015, September 19). Govt declares 26 new municipalities. The Kathmandu Post. Retrieved January 12, 2023, from https://kathmandupost.com/national/2015/09/19/govt-declares-26-new-municipalities

The World Bank. (n.d.). Decentralization in Nepal. Decentralization - Decentralization in Nepal. Retrieved January 12, 2023, from http://web.worldbank.org/archive/website01061/WEB/0__CO-16.HTM

Udas, PB (2014), Gendered participation in water management in Nepal: discourses, policies and practices in the irrigation and drinking water sectors, Wageningen University.

Uddin, M. A., Ali, M. H., & Masih, M. (2017). Political stability and growth: An application of dynamic GMM and quantile regression. *Economic Modelling*, *64*(April), 610–625. https://doi.org/10.1016/j.econmod.2017.04.028

United Nations. (n.d.-a). *The Sustainable Development Agenda*.

United Nations. (n.d.-b). *What is the Right to a Healthy Environment ? Information Note*.

Verhagen, H., Dorji, N., Biaou, G., & Abarca, L. (2003). Building Partnerships for Sustainable Community Development. *Lifelong Learning for Poverty Eradication*, *0*(20), 241–254. https://doi.org/10.1007/978-3-319-10548-2_13

11. Appendices

11.1. Appendix A: SQUAT tool Assumptions

General city Data

City	*City population*
City	*City population*
Country	*Population of metropolitan area/ commuters*
General description	*(Capital city/ regional city of country, where it is located, population growth, infrastructure).*

General city data	Solid waste management (SWM)

Amount generated (ton/a)
Amount collected/serviced (%)
Policy maker
Regulator
Entity responsible for service provision (client)
Revenue collector
Operator(s)
Type of relation between client/operator
Other key stakeholders
Collection systems
Transfer/pumping stations y/n type & state
Treatment facilities y/n type & state
Recycling/reuse activities
Final disposal
Costs, budgets and fees (please provide breakdown)
Law/ordinances
Specific criteria for selecting this city
Specific crises or development drivers
Current projects and funding
Key references

Waste Data
Map indicating the main points (FS plants, disposal site, etc)
Solid Waste Flow Diagram

SQUAT tool		Questions
Assumption 1	Demand for services	1.1. How many paid facilities were built and/or how many paid services were delivered the last year, the last 2 years or 5 years? 1.2. Are constructed facilities and provided services socially differentiated so that all groups are included? 1.3. Are demand creation and (social) marketing practiced?
Assumption 2	Quality and Quantity	2.1 Are the provided facilities and services socially accepted? 2.2 Are the facilities and services financially inclusive for all income groups? 2.3 Have the facilities and services sufficient quality in regards to reliability and reparability, facilitating its intended use and built-in continuity of the functionality? 2.4 Do the facilities and/or services provided by the SWM sector contribute to public health of all inhabitants of the city? 2.5 Do the facilities and/or services provided by the SWM sector

		contribute to cleaner environment and living conditions throughout the city and its surroundings?
Assumption 3	Supply	3.1 Are the various SWM management professionals acknowledged (as professional sector) by the local government and financial sector, including the informal sector? 3.2 Are there quality standards for the services? If yes, have providers been involved in setting the standards. Are they adhered to? 3.3 Are the professionals organised and represented in platforms, interest groups, unions and associations? 3.4 Are there NGOs active in the SWM sector?
Assumption 4	Service is reliable and affordable	4.1 Do service providers work based on written agreements that are understood by customers and based on realistic service offers? 4.2 Can customers give feedback about services to the providers and how? 4.3 Are customers involved in planning, service arrangement etc?
Assumption 5	Service is effective	5.1 Has the technology used for SWM been efficient, and have new technologies been adopted? 5.2 Does technology used for SWM been effective in capturing, treating and reusing waste materials?
Assumption 6	Visibility and accessibility	6.1 Do people have access and trust in digital booking and/or paying bills for urban services using mobile phone applications (for HH) as IT platforms provide a secure transaction environment? 6.2 Does the digital technology actually improve or enhance the existing service provision in terms of increased bookings and increased payment rates? 6.3 How do service providers get into contact with their customers and vice versa? Mouth to mouth, etc.
Assumption 7	Sector economic available	7.1 Are there any legislation or regulations preventing sales of products? 7.2 Are competitive products (fertiliser, gas, electricity) subsidised/having a low price? 7.3 Of the total waste generation, how much SW is currently getting treated with the technologies currently applied in the city? 7.4 Are there market potentials for reuse products for organic waste?
Assumption 8	Financial resources	8.1 What are the financial sources for SW collection and disposal? 8.2 What are the financial sources for SW treatment and processing? 8.3 What percentage of all households and institutions are paying for SW collection services? 8.4 What financial institutions (micro financing and banks) are investing in t the SWM sectors? 8.5 Are there financial mechanisms that are available for the very low income groups? 8.6 What SWM activities are subsidies by local government from regular tax (national) incomes? 8.7 Are there financial programs accessible for day laborers and small informal enterprises?

Assumption 9	Transparency of the sector	9.1 Is the planning, budgeting and implementation of the local government policy transparent and inclusive? 9.2 Are service delivery, FS and SW treatment and recycling monitored according to contracts and can they be adapted if needed? 9.3 Are procurement procedures clear and operational service contracts/franchises, procured through open and transparent tendering?
Assumption 10	Enabling government	10.1 Does the (local) government has clear definition and division of tasks and responsibilities of different actors, either in written form or as mutual agreement and are these monitored and enforced? 10.2 Is the legal framework adequate and flexible enough to allow for realistic regulation, and encouragement of good service provision and financing of SWM services? 10.3 What are the common perceptions of municipal service delivery, private sector engagement, role of financing and the role of the customer (citizen) among the different actors?
Assumption 11	Political support	11.1 Has the City taken a significant initiative to improve MSW management in recent years/months? 11.2 Does the city prioritise own funds for SWM? 11.3 Has the city policies, strategies and/or plans for a city-wide approach towards SWM? Or taken initiatives to such avail?
Assumption 12	Physical infrastructure	12.1 Does the city have land or the means to buy land to accommodate SWM facilities? 12.2 What state are the treatment facilities of SWM? 12.3 Do the treatment facilities include reuse options?

11.2. Appendix B: SQUAT tool procedure

SQUAT tool procedure	
Phase 1	A local expert (partner) hired who knows the field but is independent and tries to set up appointments with the key stakeholders. It starts with the top of the governmental chain, such as the city's Major, the head of sanitation, SWM, or the urban planner department.
Phase 2	Once the meetings are arranged. One waste specialist from WASTE NL is sent to the place too; a. Prepare the initial workshop with the stakeholders to expose the goals and procedure. b. Do the interviews and prearrange meetings with the main stakeholders. The sessions collaborate with the local partner to facilitate communication and help in terms of cultural differences. c. Gather information about the people in the lower position in the power chain to have further meetings in the coming days. d. Visit the facilities and NGOs working there and gather his/her personal observations.
Phase 3	Alongside the partner, it starts the interview process of the stakeholders (formal/informal workers and Secondary business) and community groups. It is a mouth-to-mouth process where person A mention the next relevant person, downgrading the stakeholder's chain. It is done through semi-structured interviews, adapting the questions depending on the

	previously uncovered information. This process is essential to gather daily information such as quantity, sources of waste, treatment, social perceptions of waste, working conditions, and the income the informal and formal workers are receiving. Due to the different information sources, discrepancies can be found in the data obtained. This lack of consistency is treated by a triangulation method.
Phase 4	The tool introduces all the information, answering the sub-questions related to each assumption. The final result is obtained as it is in Fig 3.
Phase 5	The last part is a validation workshop with the relevant stakeholders where the tool's outcome is discussed, and it is agreed on the future intervention that fits best with the local context.

11.3. Appendix C: Guideline of the interviews with experts

For research reasons, in order to make it easier to analyse and code the answer after the interview, I would like to record this interview.

Then, do you give the consent to record our interview and use the information obtained for my research?

Intro

As far as I know, you have been working in XX as an international waste practitioner right?

- Which factors would you consider as a part of the EE?
    - Can you name them?
    - All of them are equally important?
    - And all of them applicable worldwide?
- Which actors are involved in shaping the EE? Can you name them?
- Do you think that affects the EE to understand how old is the system?
- Do you think that it can be analyzed in one tool?
- Have you used the SQUAT tool?
- I don't know if you are familiar or not, but, critically talking, do you think that the Squat tool is able to gather the crucial information for the enabling environment?
    - What would you change on the tool?

1) Governance

a. What are the governance/government factors that you would include as part of the EE?
b. How much do you think that governance practices affects the EE for a SWM intervention?
c. What would be your approach to gather the information?
d. **What would you ask or consider to know more about the governance part of the EE**?
    i. To whom would you ask this questions?
e. Do you think that centralized governance or decentralized governance plays a role on the EE?
f. Another factor that it seems crucial from my point of view is the <u>political volatility</u>/<u>instability</u> of the place.
    i. And the separation of the power?
    ii. Administrative job movement
g. <u>Political commitment/support</u>; to ensure the long term success and increase the EE, it might be required a political commitment to collaborate and also a commitment between the different political parties
    i. How do you think it can be analyzed this long-term political commitment?
    ii. Based on your experience, what would be your approach/questions to know more about this willingness/commitment?
    iii. Do you think that is important to seek the agreement among the different political parties?
        1. Would you include the other political parties in the decision making process to evaluate the long-term political commitment?
h. <u>Corruption</u> seems also important.
i. <u>Policies and taxes;</u> it is understood that the policies related to SWM will not be updated

i. In terms of policy framework/policies/taxes, what are the aspects that it should be included to analyze the EE in SWM?
ii. How much it affects the EE?
iii. Do you think that APEX/COPEX should cover the taxes and finds?
1. And the national support?
iv. What are the key factors that affects the EE on the policies part?

j. Ownership
i. How do you think that it should be distributed the ownership of the system?

2) Institutions

- What will be the factors that you will address to know more about the EE in the instittuions?
- What are the big challenges/obstacles in the institutiosn?
- Which are the actors involved that you should ask the questions?
- Do you think that is important to have an institutional body responsible?
    - How many institutions should be there?
    - And how should them work?
- How do you understang the institutional strength?
    - How can be measured?
- Would you recommend to have a higher or lower number of institutions involved?
    - In terms of enforcement of the law, how affects the number of institutions involved?
- Would you consider the lack of communication between the different institutions involve is part of the EE?
- Do you think that the system should be based on national institutions or local?

3) Policies

- What will be the factors/facts that you will check to know how is the EE on the policy aspect?
- Do you think that descentralization/centralization of the government affects the policy aspect?
    - In your opinion, what do you think is better, power on the municipality or national?
- Do you think that being part of international aggreements (like EPA or EU environmental agreement) change the willingness and therefore the EE of the country?
- Which policies should be checked to have a clear idea about the current state of SWM?
    - Public health and environmental policies?
    - And the constitution of the country?
- How much is important to have a Waste strategic waste plan already developed?
    - Even if it is not enforced?
    - What it can be the difference between national or city level planning in terms of EE?
- How do you think that a policy based on tax/fines is important for the EE?
    - What would you ask to know about it?
    - How you will check it?
- What it should cover the policies and laws of a country in terms of SWM?
    - how can you know if there are laws that cover enough the SWM system?
    - Should it cover the proactive policies for the stakeholders?
        - Such tendering
        - How long should be the tendering?
        - How affects the length of the tendering?
- How do you think that it should be the policies with the stakeholders?

    - Proactive?
    - PPP important?
        - What should be the government behavior
    - What terms should be stipulated in terms of duration and responsibilities?
- What are the main obstacles that the SWM policies face?
- And the policies based on working conditions, why is important? And what you should check?

4) Stakeholders

a. Do you think that if the roles are defined and acknowledge by all the stakeholders increases the enabling environment?
    i. Writing agreements and policies?

b. Based on your experience, the introduction of the informal sector in the SWM system can have a positive impact?
    i. Do you think that the integration of the informal sector can be a contribution towards increase the enabling environment (or governance)?
    ii. Based on your experience, do you think that the introduction on the informal sector in the system is complicated?
    iii. Which aspects would you ask/address to have more information about it?
    iv. Is it possible to arrive to an agreement that satisfy both parts?

5) Social aspects

a. Which social features would you consider to be within the social aspects of the EE in SWM? Can you name them?
b. And, based on your experience, what would you ask/ do to know more about it?
c. How cultural or social behavior shape the EE?
d. Do you think that the social governmental trust should be considered as part of the EE?
e. Waste can be perceive differently, depending on the country, culture, or local context. How this difference can alter the EE?
f. Following the same idea, how important is it the social perceptions of waste workers in the EE?
g. And which questions would you ask to know more about this topic?
h. How can you measure the local awareness in SWM? What would you ask and to whom?
i. Would you address their perception of who is responsible of their own waste?
j. Will you address the social willingness to pay for the service?
k. How do you think that the percpetion of havign a city clean changes the waste practices?

11.4. Appendix D: Interviews SQUAT tool

Municipality questions

- What is the city population? How many households?
- How many households in total receive services?
- How many tns/kg are collected per day?
- Can you describe the waste system?
- What the people do when they do not receive the service?
- Are you responsible of the services? Or you rely on others (private sector)?
- Is the waste separated at home?
- How much they pay for the service?

- How many tractors/trucks to pick up the waste?
- Do you reach all the urban areas → middle-low income/ Isolated?
- Are any awareness campaings?
- What is the municipal waste procedure?
- Do you know If there is any transfer stations?
- Where is the final disposal? There is a control on this place?
- How much waste is dumped? All of the waste collected?
- Is it sell the recyclable waste?
- What is the current scenario?
- What are the challenges that the SWM and Faecal sludge are facing?
- Are there any political institutions (health or environmental department) that manage the waste/sludge services?
- Do you know if there is any business working in SWM? What they do?
- If you are not providing the service, and you rely on the private sector, is there any guidance to help them how to work?
- There is any kind of separation of the waste?
- Are they working on previous agreements?
- Are the task defined?
- Is there any kind of monitoring system?
- Are the services provided to all the city? Or just to certain areas?
- What is your perception of the system? What is should be improved?
- Is there any kind of data about the quantity of waste generated?
- How is the legal/regulatory framework? (Align with the constitutions/national laws)
- Is there any waste strategic national plan or national/local legislation that you can follow?
- Is there any taxes/fines enforcement scheme? Are applied to all the population?
- Are taxes adapted to all kind of incomes?
- Is there budget allocated for SWM and FSM? Has it been increased over the last years?
- Has the municipality increased the human resources for this cause?
- In your political priorities, do you prioritize the SWM/faecal sludge management?
- There is any plan under development or that will be implemented soon for these systems?
- With whom I should talk to know more about policies on SWM?
- And the service delivery system?
- What is the perception of kwardis and the people who wokrs in feacal and waste?

Private sector questions

- How many households are you providing services?
- How many tones/kg are collected?
- Can you describe the waste chain in the SWM?
- Is there any system to provide data about the quantity?
- How much they pay per HH?
- Do you reach all the urban areas? or
    - only High/midlle/low income areas
    - Close to the center
- How is your service promotion done?
- Do you know if there are more companies or NGOs working on the collection system?
- How is the sector organized?

- Hwo you organized your staff?
- How much waste is dumped? Is it dropped on the community forest?
- Is some waste reused/selled?
- Is there any transfer station?
- Are you working under an agreement with the municipality?
- What are this conditions?
- What are you doing?
- What are you doing with the waste collected?
- Is the waste separated? At HH or in other parts of the waste chain?
- Do you think that there is trust between private sector and the government?
- What the private sector needs from the government?
- How is the current scenario in SWM?
- Economically talking, is it profitable?
    - Expenses
    - Economic difficulties
    - How much it cost to maintain the facilities?
    - How is the dunfing distribution on the privat sector?
- What is your material to work and pick up the waste?
    - Tractors
    - Human protection
- What is the main challenges that the private sector is facing?
- What are the bussines actives in SWM?
- What is your perception about the waste pickers?
- Is there any NGO providing collection services?

Informal sector

- How many Kg of waste do you collect?
    - Per type?
- Where do you sell? What is the procedure?
- How much do they earn?
    - Selling / buying price
- How many warehouse are in the area?
- How many waste pickers are in the area?
    - Are all of them from Nepal?
- There is any association behind?
- Do you have regular staff?
- How people perceive you?
- How the other stakeholders perceive you?
- Are you working with any kind of agreements?
- Do you arrange meetings with the house to take their waste?

11.5. Appendix E: Households questionnaire

- How much waste do you generate per week?
- What do you do with it? What are your practices?

- Do you receive municipal services?
    - If yes, what do you think?
    - How much do you pay?
- Do you have any agreement or contact with the informal sector?
- What is your perception of the SWM municipal service?
- Would you pay more if they were more regular?
- Are you aware about the consequences of the lack of waste management?
- Do you trust the government?

11.6. Appendix F: Answers of the Households and conversations

	Ward	Waste practices	Municipal services	Service's perception	Awareness
Households 1	11 (urban area)	Municipal services He gave valuable waste to informal pickers Glass to the factory picking up services	Yes 200 rupees (house/small restaurant)	Regular; he mentioned that he receives services at least once per week (if it is compared with the other interviews, it can be assumed that it is regular)	Medium, he said that the service is essential, but the fees are high Not completely aware of the final consequences and the investment behind
Households 2	8 (rural area)	Self- management - Burn 2/week - Compost	No (He would like)	He understands that the municipal services can not reach as isolated areas as he lives, but he would like to receive them and is willing to cooperate	High, he mentioned that it is an important service and he would like to cooperate, throwing on certain points if the municipality decides to improve the current situation
Households 3	11 (peri-urban area)	Municipal services Self-management (just compost) Valuable plastic to the Informal sector	Yes 100 rupees	Irregular services, he receives services from time to time, it can be once per month or every two weeks without notification If the service improves, he might pay more	High awareness, he mentioned that he did not want to burn his waste because of the consequences, then he gathered the waste and separated it between the informal sector and municipal services
Households 4	12 (peri-urban area close to the main road)	Municipal services Self-management (compost and burn) Valuable waste to the informal sector	Yes 100 rupees	Irregular services can be once per week or per month. He does not like the services and the treatment from the company. He thinks the system is weak, with low enforcement by the municipality. The municipality should take the lead	Medium/High Awareness He would be willing to pay more if the services improve because he considers essential services.

Households 5	5 (peri-urban area)	Self-management (Burn and compost)	No	Bad perception, he does not receive services when he thinks that he should. (He lives in a peri-urban area but accessible for the truck with a medium density of houses)	Medium/low; not really interested, does not want to burn the waste because of the smell produced. He also mentioned that the prices that are currently imposed are high
Conversation 1	11 (peri-urban area)	Self- management (Burn and compost)	No He would like to pay; 150-250	The service is weak, and the municipality does not prioritise it. He would like to receive services	Medium awareness. He mentioned that he would like to receive services, but he perceives it as a way to avoid his practices rather than complete knowledge of the consequences
Conversation 2	11 (Urban)	Municipal services	Yes 250 (house/small shop)	He thinks that the service received is good (he receives services regularly)	Low, he is not interested, and he thinks that the fee imposed is high
Conversation 3	12 (Peri-urban, but on the main road)	Municipal services Self-management - compost - Craft materials from the plastic - Valuable plastic informal sector	Yes 150 rupees (he was not sure how much he pays)	He has a good perception of the services because he receives services regularly	Medium, he is partially aware of the waste consequences, but he thinks that the fee imposed is high
Conversation 4	10 (peri-urban area)	Self-management - Compost - Burns (2/week)	No	He does not receive services, but the street above him (closer to the main road) yes, and he would like to receive it	Medium-low Aware of the waste problem but not interested

11.7. Appendix G: Informal waste warehouse quantities

	Buying price	Selling price	Profit	Quantity*	Destination
Glass	20 rupees/kg bottle 1-2 rupees/bottle	22-24 rupees/kg bottle	Profit between 2-5 rupees per kg or piece	500-600 Kg/day (warehouse 2)	Nepal's Factories
Cartoon	25 rupees/ kg	27-30 rupees/kg			Factories

Metals	65 rupees/kg	70 rupees/ kg			Nepal's factories (Nepalgunj)
Galloon	25 rupees/ piece	27-30 rupees/ piece			Factories and India
Plastic	15 rupees/ kg	17-20 rupees/kg		100-200 Kg/day (Warehouse 2)	Mostly India

* The quantities were challenging to determine, but the most extensive warehouse in the area receives around 3-4 tonnes/day, including all types of waste materials.

11.8. Appendix H: interconnectivity between the factors

Aspects	Factors		Related to
Political context	Good Governance practices Centralised/Descentralised government Political commitment Political change/ instability		Institutions and Policies
Institutional aspect	Institutional body responsible	High communication and coherence	Ownership of the system Tendering contracts Enforcement of the policies
		Monitoring and regulation	
	Separation between administrative and political spheres		Political context
	Skills and capabilities		Commitment
Policy aspect	Waste Strategic Plan	Ownership of the system	Institutional body
			Centralisation grade
		Proactive policies	Institutional body
		PPPs	Institutional body
		Tendering contract	Institutional body
		Municipal alliance	Institutional body
		Enforcement of the law	Institutional body
		Tax/penalty scheme	Institutional body
	Trust among the Stakeholders		Political context and Institutions
Socio-cultural aspect	Right to receive services		Policies/ Political and Institutions
	Social perception and recognition of waste workers		
	Local waste concept	Waste responsibility	
		Awareness	
		Value of Cleanliness	
		Governmental trust	Political context and Institutions

11.9. Appendix I: Interviewees' consent.

Informed consent form (interview)

Thesis research – **Studying NGO- Rapid Assessment Framework Toolkits for promoting SWM in Kohalpur, Nepal, Whose reality counts?**

In this study we want to learn about **the Enabling Environment in SWM and Waste Management NGOs**. Participation in this interview is voluntary and you can quit the interview at any time without giving a reason and without penalty. Your answers to the questions will be shared with the research team. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Please respond to the questions honestly and feel free to say or write anything you like.

I confirm that:

- I am satisfied with the received information about the research;
- I have no further questions about the research at this moment;
- I had the opportunity to think carefully about participating in the study;
- I will give an honest answer to the questions asked.

I agree that:

- the data to be collected will be obtained and stored for scientific purposes;
- the collected, completely anonymous, research data can be shared and re-used by scientists to answer other research questions;

I understand that:

- I have the right to see the research report afterwards.

Do you agree to participate? o Yes o No

Name of participant: ___

Signature:_____ Date, place: _____/_____/_____,

Information Sheet **(interview)**

Introduction

You are invited to take part in this study on **Studying NGO- Rapid Assessment Framework Toolkits for promoting SWM in Kohalpur, Nepal, Whose reality counts?**

The purpose of the study is to learn about the Enabling Environment in SWM. The study is conducted by Alejandro Martin who is a student in the Msc programme **Sustainable Development (International Development)** at the Department of Sustainable Development, Utrecht University. The study is supervised by Janwillem Liebrant .

Participation

Your participation in this interview is completely voluntary. You can quit at any time without providing any reason and without any penalty. Your contribution to the study is very valuable to us and we greatly appreciate your time taken to complete this interview. We estimate that it will take approximately 60 minutes to complete the interview. The questions will be read out to you by the interviewer. Some of the questions require little time to complete, while other questions might need more careful consideration. Please feel free to skip questions you do not feel comfortable answering. You can also ask the interviewer to clarify or explain questions you find unclear before providing an answer. Your answers will be noted by the interviewer in an answer template. The data you provide will be used for writing a Master thesis report and may be used for other scientific purposes such as a publication in a scientific journal or presentation at academic conferences. Only patterns in the data will be reported through these outlets. Your individual responses will not be presented or published.

Data protection

The interview is also audio taped for transcription purposes. The audio recordings will be available to the Master student and academic supervisors. We will process your data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

11.10. Appendix J: Pictures of Nepal.