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Enabling the sustainable Faecal Sludge Management service delivery chain—A case study of dense settlements in Kigali, Rwanda

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ABSTRACT

The lack of access to basic sanitation is a global concern and alarmingly prevalent in low- and middle-income countries. In the densely populated settlements of these countries, on-site sanitation systems are usually the only feasible option because dwellers there have no sewers in place to connect to. Using on-site sanitation facilities results in an accumulation of faecal sludge which needs to be properly managed to ensure the well-being of the users as well as the surrounding environment. Unfortunately, often the conditions for faecal sludge management (FSM) within dense settlements are adverse and thus hamper sustainable FSM. We use the normative framework of the FSM enabling environment to gather empirical evidence from densely populated settlements of Kigali city in Rwanda to examine current FSM practices and the extent to which these are being influenced and affected by the setting within which they are taking place. The analysis of the study findings confirms that the existing conditions for FSM in these settlements are inadequate. The specific constraints that hinder the achievement of sustainable FSM include limited government focus on the sanitation sector, high turnover of staff in relevant government institutions, pit sludge management is not placed on the sanitation projects agenda, the existing relevant bylaws are not pro-poor oriented, a lack of clear responsibilities, a lack of relevant local professional training opportunities, unaffordability of FSM services and an inhibition to discuss FSM. Drawing on the involved stakeholders' own perceptions and suggestions, we identify possible approaches to overcome the identified constraints and to allow all actors in the FSM chain to contribute effectively to the management of faecal sludge in densely populated low-income urban settlements. Finally, our study also presents a contribution to the theoretical conceptualisation of the enabling environment for sustainable FSM.

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1. Introduction

Dense settlements can be defined as “the settlements which are characterised by increasing densification due to backyards and other hitherto ‘open’ spaces being occupied by informal houses or shacks. They include informal (squatter) as well as formal settlements with inadequate services in urban areas” (Department of Water Affairs and Forestry–Republic of South Africa, 2001, p.12). For the majority of people living in dense low-income urban settings, universal coverage with conventional sewerage is so far out of reach as to be a counterproductive ambition (McGranahan, 2013). As a result, the common types of sanitation facilities in such areas tend to be on-site sanitation systems such as unimproved pit latrines, bucket

latrines, chemical toilets, and Ventilated Improved Pit (VIP) latrines, pour flush latrines, aquaprivies, and septic tanks for a privileged few. Of these technologies, the ordinary unimproved pit latrine is the most common form of sanitation system used in low-income areas because it is affordable, simple to build and serves the purpose of excreta disposal (Jenkins et al., 2015). A WHO/UNICEF report from 2008 on sanitation showed that unimproved pit-latrines were used by as many as 201 million people across Africa (WHO/UNICEF, 2008).

The problem, however, with on-site sanitation systems is that they fill up at some point. The solution for some people is to dig new pit-latrines but for those residents with limited space in their yards (which is the case in most densely populated low-income urban communities), the sensible option is to have the sanitation facility emptied (faecal sludge emptying).

If faecal sludge is not adequately managed, it could potentially cause negative impacts on public health and environment. For

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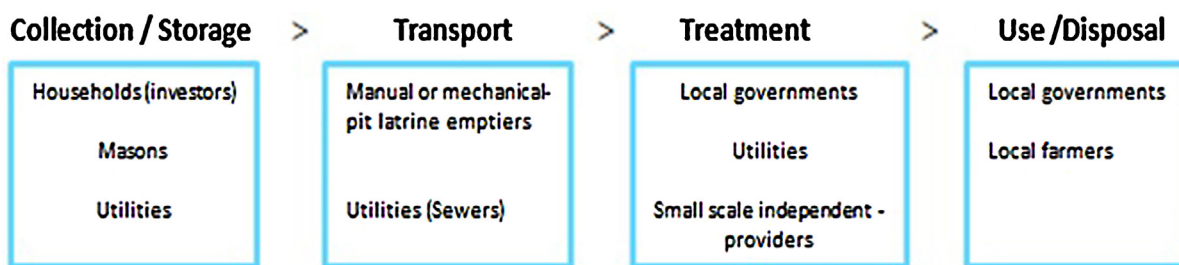


Fig. 1. The sanitation and faecal sludge management service chain.

Source: Based on Parkinson et al. (2013) cited in (Strande et al., 2014)

instance, it is estimated that currently 1.8 billion people in the world use a faecally contaminated drinking water source as a result of poor FSM (WHO and UNICEF, 2014). Diseases related to inadequate excreta disposal constitute a major burden on the health of people in the developing world and are among the leading causes of ill-health (UNICEF, 2005).

The organised management of faecal sludge from these onsite sanitation systems has been grossly neglected in most countries until fairly recently (Strande et al., 2014). In principle, the on-site sanitation service delivery chain that takes place in Faecal Sludge Management (FSM) includes the storage, collection, transport and safe end use or disposal. The latter stage adds to the complexity in practice. FSM can involve a variety of actors in the service chain, namely households, utilities, service providers (pit latrine emptiers), local government and local farmers, as illustrated in Fig. 1 below. The conceptualisation of the enabling environment for FSM by Strande et al. (2014) explicitly comprises six components, namely government support, legal framework, institutional arrangements, skills and capacities, financial arrangements and socio-cultural acceptance.

The major challenge to plan and implement FSM in many countries is the lack of an adequate enabling environments (Lüthi et al., 2011a,b). This is also in line with Mwanza (2002) (cited in (Mulenga, 2009)) who argued that a major cause of poor performance in the sanitation sector is not necessarily of a technical nature, but rather the result of weaknesses in the institutional, legislative, and organisational framework of the sector.

In Kigali, the capital and largest city of Rwanda, one of the most densely populated countries in Africa with an average of 470.60 people per sq.km (based on 2015 figures), 95% of the population uses on-site sanitation systems, of which 80% of them are pit latrines (SGI-Projema 2008) cited in (Hohne, 2011). However, it has been reported in an earlier assessment that only 2% of the households in Kigali city empty the sludge from their pit latrines (Tsinda et al., 2013).

The main objective of this study is to go beyond normative calls for an enabling environment for FSM by providing deeper insights into the actual conditions for FSM in dense settlements so as to identify how these conditions can be improved concretely. To this end, the study addresses the following research questions: i) What are the current FSM practices in Kigali, Rwanda?; ii) What are the perspectives of the different stakeholders with respect to FSM?; iii) What recommendations can be made for creating an enabling environment for FSM?; and iv) Is the conceptual framework helpful for making practical policy recommendations?

Based on a qualitative research design using previous relevant studies and empirical evidence consisting of interviews with key stakeholders related to two dense settlements (Umuganda and Biryogo) in Kigali city, we examine current FSM practices and the perspectives of these different stakeholders regarding FSM. Using a deductive but critical approach based on the current normative conceptualisation of the enabling environment for FSM in (Strande

et al., 2014), we identify the prevailing key issues as well as possible approaches that allow all actors in the FSM chain in these dense settlements to contribute effectively to the FSM process.

The paper is structured as follows: The theoretical context and conceptual framework for this study are presented in section 2, followed in section 3 by the methodology for our empirical research. The case study results of dense settlements in Kigali city and their analysis are presented in section 4. Finally, we conclude the paper in section 5.

2. Theoretical context

2.1. An enabling environment for FSM

The enabling environment for the water sector in general is typically conceived to include policies, strategies, laws, regulations, coordination bodies, financial and fiscal arrangements, cultural and informal institutions, norms and standards that influence the way in which actors in the sector can function (Wehn de Montalvo and Alaerts, 2013). Lincklaen Arriëns and Wehn de Montalvo (2013) argue that not only organisations and individuals but also communities are relevant entities whose capacity to act is affected by the enabling environment. This distinction is relevant for FSM in dense urban settlements where the population typically does not live in stand-alone houses. Rather, some people own housing compound units which contain many households and which have and use one common latrine, i.e. de facto communities of users.

For the enabling environment of faecal sludge management specifically, the Household-Centred Environmental Sanitation (HCES) Model developed by EAWAG/SANDEC¹ consists of government support, legal framework, credit and other financial arrangements, institutional arrangements and required skills (SANDEC 2005). It has been proposed as a possible tool for improving the enabling environment for faecal sludge management (Nkansah, 2009), following a 10-step process. Similarly, Strande et al. (2014) identify six key dimensions of an enabling environment namely, government support, legal and regulatory framework, institutional arrangements, skills and capacities, financial arrangements, and socio-cultural acceptance. These dimensions have been adopted from the conceptual model of Community-Led Urban Environmental Sanitation (CLUES) in Lüthi et al. (2011a,b) (see Fig. 2).

Moreover, the HCES approach focuses entirely on the household level, leaving behind the understanding of community culture and societal beliefs; yet these are often reported as important factors in the sanitation sector (Lüthi et al., 2011a,b). In contrast, the conceptualisation of the enabling environment for FSM by Strande et al. (2014) building on (Lüthi et al., 2011a,b) explicitly includes the community dimension with the additional dimension of socio-

¹ Department Sanitation, Water and Solid Waste for Development of the Swiss Federal Institute of Aquatic Science and Technology

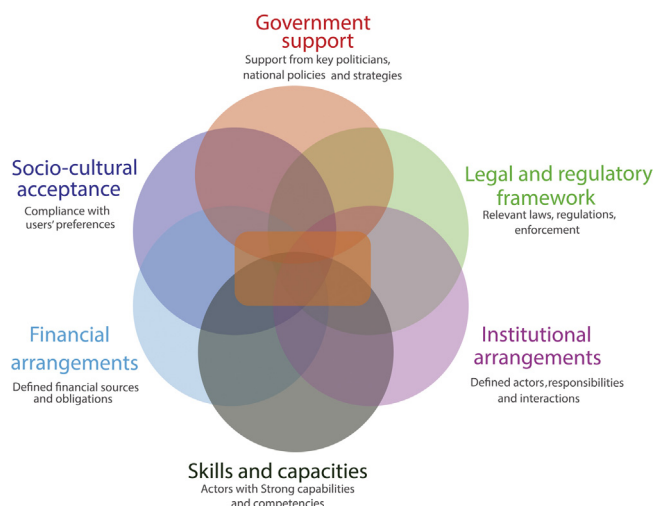


Fig. 2. Dimensions of the enabling environment for FSM in challenging urban settings.

Source: (Lüthi et al., 2011a,b)

cultural acceptance. This approach, albeit normative, is tailored to FSM and is therefore adopted as the conceptual framework for our research. The specific details and rationale for each dimension of the Strande approach are presented in more detail below.

- **Government support:** The support from key politicians as well as the policies and strategies of a nation together form government support, a key component of the enabling environment for FSM. The extent of government support can be assessed by critically analysing the national policy framework and see how it affects service provision (Lüthi et al., 2011a,b). It also includes assessing the existing sector strategies and to what extent local leaders and decision-makers are receptive towards FSM services (Strande et al., 2014). Ensuring such support for specific (FSM-related) projects requires sensitizing government officials, seniors and advisers to the potential impact of the project. This can be done via different channels such as seminars, demonstrations and presentations. Evidence suggests that if a sanitation project is not supported by municipal leaders, for example, it is not likely to be successful (Starkl et al., 2010).
- **Legal and regulatory framework:** Many lower-income countries have not yet implemented FSM relevant regulations and supporting standards, and even where such institutions exist, they are often not appropriately enforced and frequently based on those applied in industrialised countries, despite fundamentally differing conditions (Lüthi et al., 2011a,b).
- **Institutional arrangements:** A stakeholder analysis to identify relevant actors, such as, ministries, agencies in the field, and involved communities, together with their responsibilities and interactions is crucial to ensure effective and sustainable sanitation (Strande et al., 2014). This provides a basis for institutional arrangements, assigning roles and responsibilities to each stakeholder (both public and private institutions) based on their capacities, impact, and interest to improve the performance of sanitation services.
- **Skills and capacities:** The presence of relevant skills and capacities of all actors plays a crucial role in an enabling environment for any community-based sanitation project to be effective and sustainable (Dongier et al., 2003). Therefore, the skills and capacities of relevant key stakeholders need to be assessed and, if necessary, strengthened. Capacity development involves interactive efforts at multiple levels, from strengthening the competencies of indi-

viduals as well as the capabilities of organisations (Vallejo and Wehn, 2016).

- **Financial arrangements:** An adequate enabling financial environment for FSM can only be achieved if the users of the on-site sanitation facilities, government agencies, and private sector all comply with their financial obligations (Lüthi et al., 2011a,b). This includes clear and accountable service prices as well as a billing system to collect payment from service users.
- **Socio-cultural acceptance:** For sanitation technology to be sustainable, it should be adapted to socio-cultural values, practices and preferences of the local context (Nawab et al., 2006; Mulenga 2008). Explicit efforts (e.g. meetings between the service providers and the users) are required to ensure that each aspect of a sanitation system is socially and culturally accepted and that it indeed meets the preferences of the community (Strande et al., 2014).

3. Methodology

3.1. Case study method

Residents in dense settlements in low- and middle-income countries continue to deal with increasing amounts of faecal sludge using inadequate practices (Strande et al., 2014). To study in detail the status of the enabling environment for FSM in densely populated low-income settlements, a case study method was used.

According to Yin (2003), the case study method is the most suitable research method to use when researchers want to get an in-depth understanding of a particular situation or to make direct observations of real context. Yin (2003) further points out that the most distinctive features for the case study method are: identifying and defining the specific case, and use of multiple sources of evidence when collecting data, and analysing the case study data.

In this research, the case study method was used because the objective is to provide deeper insights into the conditions for FSM by drawing on empirical evidence from two dense settlements in Kigali city.

Based on the definition of dense settlements, two dense settlements in Kigali were selected for our empirical research, namely the Umuganda and Biryogo settlements, both located in the Nyarugenge district, the most densely populated district according to City of Kigali (2010). Purposive sampling was used in the selection of the two settlements because it was vital that the two were selected based on the characteristics that were key to the study (Smith, 1983). The unit of analysis for this research was the individual housing compound with the head of the compound as the unit of observation.

Given a period of two months to complete the field work in Kigali city, it was possible to select and conduct surveys in 28 housing compounds. Initially, we planned to use a systematic sampling method for compound selection; however, since the dense settlements did not have a numbering system and were not laid out in an organised manner, the methodology was adjusted to suit the existing conditions. The most structurally dense part in each of the settlements was identified using Google Maps. In order to obtain different views from different corners of the dense parts, each of the two parts was divided into 14 small clusters of equal intervals. In each cluster, the head (owner/landlord) of one housing compound was randomly selected to be interviewed.

3.2. Data collection instruments

The study involved both primary and secondary data collection to collect both quantitative and qualitative data. Secondary data sources included official reports, census data and other relevant

Table 1
Overview of interviews conducted per stakeholder category.

Stakeholder Category	ID	Organisation Name	# of Interviews
Public sector	PS1	Water & Sanitation Corporation (2)	9
	PS2	Municipality of Kigali	
	PS3	Rwanda Environment Management Authority	
	PS4	Rwanda Utilities Regulatory Agency	
	PS5	Ministry of Infrastructure	
	PS6	Rwanda Standards Board	
	PS7	Rwanda's Fund For The Environment and Climate Change	
	PS8	Ministry of Health	
FSM Service Providers	SP1	Sewage Technology Ltd	5
	SP2	Individual septic services provider	
	SP3	Kigali Septic Services	
	SP4	MINADEF septic services unit	
	SP5	Kanguka limited	
Local leaders	LLU	Leader of Umuganda settlement	2
	LLB	Leader of Biryogo settlement	
Compounds	C1-28	Landlords/Compound representatives(One compound comprising 16 people on average)	28
Development partners	DP1	Water for people	8
	DP2	Netherlands Development Organization (SNV)	
	DP3	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	
	DP4	Japan International Cooperation Agency	
	DP5	World Vision	
	DP6	UNICEF-Rwanda	
	DP7	World Bank-Rwanda	
	DP8	Water Aid-Rwanda	
Academia	AC1	University of Rwanda	1
Total			53

publications. The primary data collection included semi-structured and structured interviews and observations during the period, November 2014 to January 2015, all of which were guided by the elements of the conceptual framework. The interview protocol is presented in [Annex 1](#).

Interviewees included relevant public sector institutions, FSM service providers, and local leaders, landlords in the selected settlements, development partners and academia. An overview of the interviews conducted per stakeholder category is presented in [Table 1](#).

Structured interviews were used in order to effectively collect data from the individual compounds. This allowed the interviewers to effectively orient and maintain the focus. Moreover, in the city of Kigali, 15% of women and 14% of men are illiterate (Demographic and Health Survey (2005) cited in ([Kayitesi, 2008](#))). It was therefore important to use a data collection instrument that allowed illiterate residents in the selected representative area to feel comfortable and participate in the study at the same level as their fellow literate neighbours.

In all of the 28 compounds included in this study, the respondents were the owner/landlords of the compounds. The reason to interview the landlords and not the tenants was that, usually, the tenants tend to move to different settlements from time to time. It was therefore presumed in this research that the landlords of the two settlements could provide more in-depth insights about FSM practices in a particular compound.

To confirm the validity of the interview results, observations of FSM practices were conducted involving stakeholders at all phases of the FSM service chain (storage, collection, transport, treatment and disposal/reuse).

3.3. Approach to data analysis

The data collected during the empirical research were transcribed and analysed using a methodological triangulation approach, in line with the conceptual framework. In this research, both the quantitative and qualitative findings were analysed to identify specific constraints as well as perceived improvements and ways forward.

4. Results and analysis

4.1. Overview of existing sanitation systems

Currently, there is no central sewerage system in Kigali. In some of the high-income estates of Kigali city there are semi-centralized sewerage systems which drain the sewage from households to wastewater treatment units (WWTUs). Those semi-centralized sewerage systems and WWTUs are managed by the owners and household tenants complain about their efficacy. According to PS1, those systems are plagued with many functional problems such as clogging of the sewers, broken aerators, disconnection from the sewerage system, lack of financial recovery system from the users, regular maintenance of the system and the discharge parameters of the effluent that do not comply with the national required standards. There is an urgent need to rehabilitate and upgrade them, and its management is soon to be taken over by WASAC Ltd (Rwanda's national utility for water and sanitation services, which came into existence in 2014).

The most common sanitation facilities in Kigali city are pit latrines and septic tanks. More than 95% of the city's population uses on-site sanitation systems, 80% of which are pit latrines (SGI-Projema 2008) cited in ([Hohne, 2011](#)). However, only 2% of the households in Kigali city empty the sludge from their pit latrines ([Tsinda et al., 2013](#)). The management of on-site sanitation systems is under the responsibility of the municipality and when it comes to FSM for the on-site sanitation systems, the responsibility is mostly left to individual households and the informal private sector.

There are only few faecal sludge emptying operators available in Kigali city and they all operate commercially ([Sano, 2007](#)). These operators are not able to access most of the dense settlements, causing the settlements dwellers to opt for inadequate emptying practices which often lead to health, environmental and aesthetic problems. In addition to the emptying problems, the emptied faecal sludge is also not treated and dumped appropriately.

There is only one FS disposal site (NDUBA waste disposal site) approved and provided by the municipality of Kigali. The municipality of Kigali, in partnership with a renewable energy company called Pivot Ltd., constructed a factory in 2015 at NDUBA land-

fill for producing renewable fuel from the city's faecal sludge. The factory only takes the solid portion of the faecal sludge for making briquettes and all the liquid fractions and by-products of fuel production process are finally dumped in unlined holes which ultimately end up contaminating the ground water.

Another company which has stepped into the treatment of faecal sludge in Kigali so far is the Rwanda Environment Care (REC), a private company that operates five public urine-diverting dry toilets (UDDT) across the city and then uses the faeces from the toilets as composting material (Rao et al., 2016). The company was established in 2005, but until the time of writing, it had not provided any FSM services for individual households or businesses that depend on ordinary pit latrines or septic tanks.

Solid waste management in Kigali city is generally under the responsibility of local government. There are companies in place that collect solid wastes from households and transport them to NDUBA landfill. There is, however, no appropriate management of leachate in place which ends up polluting the ground and surface water (OAG, 2016).

4.2. Actual FSM practices in the studied dense settlements

The results of this study revealed that the actual FSM practices in the two dense settlements are not safe and are not covering the full FSM service delivery chain. There is a claim by local leaders that when pits are full, the majority of the residents just directly discharge the faecal sludge into the surrounding environment.

Out of the 28 compound respondents (landlords), 27 reported that they opt to use manual emptying services because these are more affordable; but the emptiers more often than not, dump the FS indiscriminately. The settlement leaders pointed out that sometimes they faced cases where the residents discharge the faecal sludge in the neighbouring channels at night or during heavy rains. As mentioned in the previous section, even the little fraction of FS that is transported away to the disposal site is finally disposed off in the unlined holes with no further treatment.

The unsafe FSM practices are known potential public health hazards because they lead to direct human contact with FS, especially for children, attract flies and spread excreta-related diseases, and water pollution as the runoff may take away the untreated faecal sludge into water bodies (Jenkins et al., 2015). The current FSM practices in the two settlements of Umuganda and Biryogo in Kigali city pose serious challenges to human health. It has been widely acknowledged that excreta-related diseases present a serious burden on the country and individual households (Rwanda Ministry of Health, 2008). For example, in the year 2012, at least 2119 diarrhoeal deaths were attributed to inadequate WASH practices in Rwanda (UN-Water, 2014).

In circumstances where pits fill up, some of the interviewed residents reported that they had opted to dig new pit latrines inside their houses because of lack of outdoor space in their yards, moving from one room to another. "Space has become a big problem; there is no more space available to dig a new pit latrine outside our houses. So when our pits fill up, we have no option other than using the rooms of our houses for digging new pits" (A landlord in Biryogo settlement). This desperate practice has, however, also, been reported to have resulted in serious incidents such as one in the Umuganda settlement where the foundation of a house that was built on a sloping area collapsed due to the penetration of the liquid content of a pit latrine (Umuganda dwellers, 2014, pers. Comm., 15 December). Fig. 3 shows a new pit latrine being dug inside the room of a house in the Biryogo settlement.

Fig. 4 shows a full pit latrine in the Biryogo settlement, which is used as a store of miscellaneous equipment next to a living room.



Fig. 3. Pit latrine being created inside the room of a house in Biryogo settlement.



Fig. 4. Full pit latrine in the Biryogo settlement (used as a store of miscellaneous equipment next to a living room).

4.3. Constraints for FSM in densely-populated settlements of Kigali

4.3.1. Government support: limited government involvement along FSM service delivery

Although FSM has always been among the concerns of national sanitation policies (MININFRA, 2010), the existing government involvement in FSM service delivery is still limited. For example, according to the newly developed national sanitation policy implementation strategy, the municipality of Kigali provides sludge emptying services to public institutions only, whereas the sludge emptying services for the rest of population are simply left in the hands of the unregulated private operators. The existing sanitation policy implementation strategy clearly propose a safe FSM service delivery chain for Kigali city, but that can only be achieved if the municipality is fully involved.

During the interview with the municipality of Kigali city, a big project was mentioned, focusing on "Conceptual design and performance specifications of septic tank sludge management & treatment plant for Kigali", which was expected to be soon followed by the final study & construction of the facilities. This project, however, is not tailored towards addressing FSM in all settlements, especially in dense settlements, as it only aims at managing septic tank sludge and leaving behind the sludge from pit latrines. Yet, 80% of Kigali city population depends on pit latrines (SGI-Projema 2008) cited in (Hohne, 2011). Pit latrines are generally the most preferred sanitation option compared to flush toilets in low-income urban areas, as a previous study in Uganda showed, because they are cheaper and can provide adequate sanitation values when well designed, constructed and maintained (Kulabako et al., 2010) cited in (Tsinda et al., 2013). There is therefore a need for the municipality to get explicitly involved in all the steps of FSM service delivery and ensure that all the population in need is adequately served.

4.3.2. Legal and regulatory framework: there is no enforcement framework in place

There is no comprehensive national sanitation legislation in place that addresses FSM service delivery chain. In 2012, the Rwanda Utilities Regulatory Agency (RURA) had put in place regulations for de-sludging, transport and disposal of sludge from decentralized waste water treatment systems (RURA, 2012), but the regulator does not use or enforce those regulations to control the existing FSM service delivery. The existing FSM services, wherever they exist, are not regulated and none of the existing operators in FSM were licensed.

Due to the lack of a clear FSM regulatory framework, the managers of the existing pit emptying companies said that they are not able to control what takes place between the drivers of the suction trucks and their clients. One manager pointed out that the drivers could easily be corrupted as it was difficult to monitor and control such practices. He explained: *“It is difficult to monitor and control what takes place between the drivers of the suction trucks and their clients because we have no reference formal regulatory framework to bound them. There is no procedure manual to be followed; our drivers compete with other drivers from other companies and deal with their clients on their own (independently). What matters is what they bring to the company as the outcome in terms of money. We simply trust them”*. Additionally, the lack of commonly known regulations favours unfair competition among the existing service providers. For example, some pit sludge emptying operators who work as companies pay taxes, whereas those who work as individuals often do not pay anything. Furthermore, it was also claimed that there is a problem with some operators who do not convey the sludge to the disposal site, but instead they discharge the FS into the normal drainage channels for runoff (personnel communication with PS 8).

4.3.3. Institutional arrangements: lack of clear responsibilities and interactions

Although currently the key institutions that govern the sanitation sector of Rwanda are well known, it is still rare to find institutions with a focus on FSM service delivery, be it at the national or local level. The existing institutions/players in FSM service delivery are the following:

- Emptying and transport: Informal operators, municipality of Kigali (partly involved to provide emptying to public institutions), service users
- Treatment: Pivot, Ltd removes solid fractions for fuel production, and no further treatment
- Disposal: Municipality provides a FS disposal site

The FSM specific roles and responsibilities are not well-defined and assigned to all relevant institutions that govern the sanitation sector. FSM service delivery, especially in dense settlements, is simply left to informal operators who are not bound by clearly defined responsibilities or legislation. There is a need to clearly allocate FSM-related responsibilities and interactions to the existing institutions (related stakeholders). The table below presents the existing key institutions that govern sanitation sector in Kigali city and their responsibilities (Table 2).

4.3.4. Skills & capacities: lack of skills and capacities of existing players

All the existing FSM service operators as well as the interviewed customers stated that they had never received any training about FSM either by the municipality or any other institution. One FSM service operator stated: *“Actually, I have been doing this work over the past five years and I have never heard of any faecal sludge-related training from the municipality or any other institution. In fact, we try to search for relevant basic knowledge by ourselves and give it to the*

Table 2

Existing key institutions that govern sanitation sector in Kigali city and their respective responsibilities.

Institutions	Responsibilities
Overall National Leading Institution	
Ministry of Infrastructure (MININFRA)	<ul style="list-style-type: none"> – Setting policies related to sanitation – lead the development of national sanitation law – Responsible for Sanitation infrastructure – Promote capacity development in the sanitation sector at the national level – National coordinator of sanitation activities
Regulatory Institutions	
Rwanda Environment Management Authority (REMA)	<ul style="list-style-type: none"> – Implementation body for environment-related policies – Monitor, inspect and ensure compliance with national environmental standards and regulations
Rwanda Utilities Regulatory Agency (RURA)	<ul style="list-style-type: none"> – Ensures that there are good conditions for fair competition in provision of services – Licensing – Legal enforcement
Sanitation Service Providing Institutions	
Water & Sanitation Corporation (WASAC) Ltd	<ul style="list-style-type: none"> – National Co-ordination of the implementation of all technical aspects related to sanitation policy – Capacity development about technical aspects in sanitation – Compliance with national sanitation law and relevant regulations
Other public and private operators	<ul style="list-style-type: none"> – Provide sanitation services (FSM services included) – Compliance with national sanitation law and relevant regulations
Development partners/NGOs	<ul style="list-style-type: none"> – Capacity development support in sanitation sector – Compliance with national sanitation law and relevant regulations
Public Sanitation Infrastructure Managing Institutions	
Ministry of Local government/Local leaders	<ul style="list-style-type: none"> – Responsible to support the sanitation services provision activities and manage infrastructure related to sanitation services in their territory – Compliance with national sanitation law and relevant regulations
Sanitation services users	
Individual compounds/households, Community	<ul style="list-style-type: none"> – Participate in sanitation services provision activities – Compliance with national sanitation law and relevant regulations

Source: Based on MININFRA (2010).

drivers of our suction trucks so that they can be able to do well their job of emptying.” The educational background of staff at key institutions were generally in water and environmental engineering, civil engineering and environmental technology and environmental management. However, in the past, this type of training had not yet involved FSM aspects and it is just recently that some institutions such as IHE Delft have started addressing FSM in their Sanitary Engineering courses.

However, the municipality of Kigali had in the past participated in a range of relevant workshops covering FSM issues. One of them was the workshop on FSM policy in developing countries, which took place on 9–12 May 2006 in Senegal. In addition, some of WASAC staff had also recently attended the training on FSM held in Kenya in 2014, while others were trained by IHE Delft.

Table 3
Recent reforms of the institution responsible for sanitation policy implementation.

Year	Event
2009	Rwanda Water and Sanitation Corporation (RWASCO) was launched
2010	Establishing the Energy, Water and Sanitation Authority (EWSA) which absorbed RWASCO
2014	Creation of the Water and Sanitation Corporation Ltd (WASAC Ltd)

Source: [The World Bank \(2012\)](#).

Table 4
The main institutions that participate in financing of sanitation in Kigali city.

Main institutions that participate in financing of sanitation sector in Kigali	
Ministry of Finance, Planning and Economic Development (MINECOFIN)	- Financing MININFRA/Sanitation sector on regular basis (annually)
Ministry of Local government/community leaders	- Mobilisation of funds for sanitation
Users/Beneficiary of a sanitation service	- Pay the cost for sanitation service
Development partners/NGOs	- Loans, grants, donations

Source: [\(Tsinda and Abbott, 2012\)](#).

This exposure and expertise should actually have led to improved acknowledgement of the need to improve FSM service delivery but this is clearly not yet the case. There is a need to put into place knowledge sharing frameworks and address the capacity needs of all relevant institutions/players (including pit emptying operators and service users).

Interviewees from development partners such as Water Aid-Rwanda and World Vision argued that the lack of organised and consistent knowledge sharing framework may be caused by the high staff turnover that often takes place in the relevant ministries. The frequent reforms of institutions such as the recently created Water and Sanitation Corporation (WASAC) that is in charge of implementing the technical aspects of national sanitation policy also have not helped the situation. [Table 3](#) below summarises the most recent institutional reforms:

4.3.5. Financial arrangements: there are no adequate financial arrangements in place

Although there is a sanitation financing framework in place in Rwanda, the approach for financing FSM as a field of sanitation is not clear. The main institutions that participate in financing of sanitation in Kigali city are presented in [Table 4](#).

No interviewee could identify any government financing mechanisms provided towards improving the existing FSM service delivery. It was reported that the proportion of the national budget allocated to sanitation sector has progressively and significantly fallen since 2008. This was deemed due to the fact that the sector has to compete with the other government priorities such as energy, agriculture and transport (personnel communication with DP8).

Nevertheless, the existing operators (at least those with mechanical emptying services) confirmed that they are obliged to pay taxes. They also pay 5000 Rwandan Francs each time they upload one tank/truck of FS. If these funds were appropriately utilised for FSM activities, this could in essence be a motivating factor for those who pay taxes.

There is also a need to establish tariff and billing systems which are transparent and acceptable for all relevant stakeholders. This

can help reduce the current cost of mechanical emptying which is not affordable to most compounds in dense settlements. Hence, the majority of the population in these settlements resort to manual emptying services.

As a consequence of the decreasing focus on the sanitation sector by the government, the relevant funding organisations that used to support the sanitation sector have also shifted towards the new government priorities. Others seem to have even completely withdrawn from the sector for the moment, such as GIZ-Rwanda which is no longer focusing on sanitation in the country. Some of the official development partners that currently still support the sanitation sector in Rwanda include ADB, JICA, and UNICEF, Dutch Government, Belgium Government, and European Union. The existing NGOs include Water for People, Water Aid among others. However, none of them work on the problematic issue of FSM in dense settlements of Kigali city.

4.3.6. Socio-cultural acceptance: population is willing, but there is no encouragement

All the respondents in the targeted compounds said that they were willing to provide affordable contributions to ensure that the existing FSM is improved. This is consistent with previous research, notably by Tsinda et al. (2013), which found that the population of Kigali and in the whole country were in need of FSM service improvement and that they were willing to participate. Experience in the district of BURERA in the Northern Province of Rwanda has shown that once the population becomes more informed about FSM and is allowed to use treated FS, socio-cultural acceptance is not a problem ([Urwibutso, 2008](#)).

On the other hand, the respondents argued that FSM continues to be looked at as a private/personal issue by their leaders in comparison to other sanitation aspects such as garbage and grey water management which are often discussed during regular meetings with their leaders (Biryogo dwellers, 2015, pers. Comm., 04 January). This is illustrated by the statement of one dweller: “Often in the meetings with our leaders, they are regularly encouraging us to properly manage garbage and grey water, but they don’t talk about the faecal sludge matter. Actually, there is a company in place which comes regularly, at least once a week, to pick up garbage in our houses and take them to disposal sites.” As a consequence of the limited focus on FSM by the local leaders, the respondents were not keen on participating in community meetings to discuss FSM matters. It is therefore imperative that the households and communities are informed, encouraged and involved in matters concerning sustainable FSM. There should be regular opportunities or communication whereby the customers or service users share their FSM views and preferences with other relevant stakeholders.

4.4. Fostering sustainable FSM in dense settlements of kigali

The current conditions and constraints for FSM covered in the previous sections have clearly shown that, generally, the FSM professional skills, legal and regulatory framework, financial arrangements and explicit government support are non-existent or ineffective. Therefore, there is a clear need to improve FSM in Kigali city, especially in dense settlements.

In order to achieve sustainable improvement, there is a need to establish an adequate ‘blueprint’, according to which all relevant players can be enabled to effectively contribute to FSM. The necessary conditions for sustainable FSM that resulted from our research are presented and discussed in the following.

4.4.1. Explicit support/full involvement from government in FSM

The government should fully acknowledge that the existing FSM service delivery in dense settlements is a big challenge. People’s lives are at risk from poor faecal sludge management and the gov-

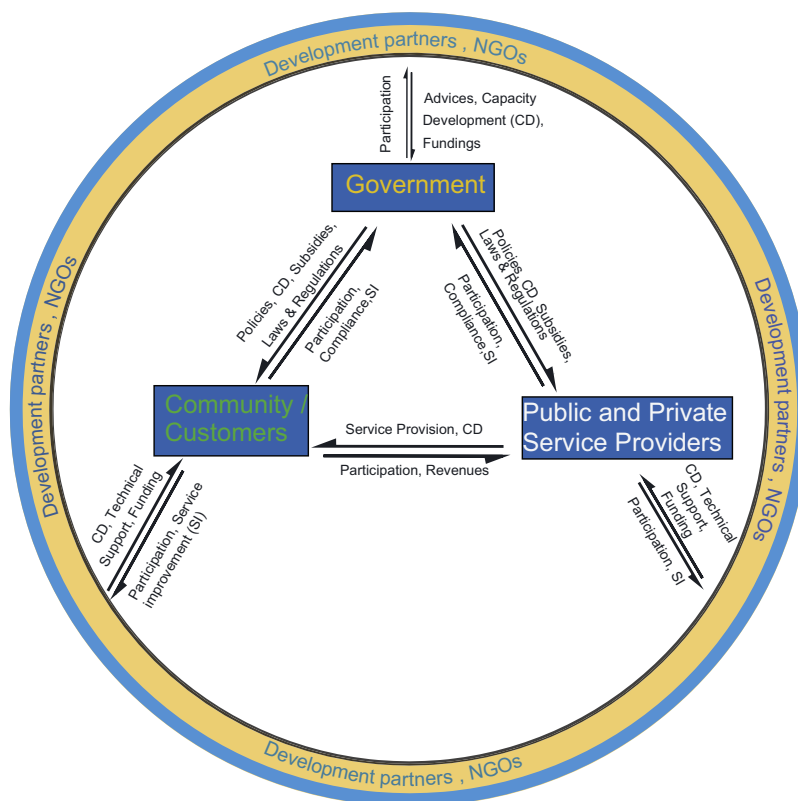


Fig. 5. Ideal stakeholder interactions for FSM in dense settlements of Kigali.

ernment has a role to play at every stage of the FSM service delivery chain, from collection through to final disposal/end use.

FSM is an affordable option that can bring vast improvements in sanitation for low-income settlements and lead to sustainable development. FSM can actually contribute to achieving the top three government priorities, namely energy, agriculture, and transport. In fact, the end products of FS treatment are potential sources of energy (Diener et al., 2014). For example, via biological on-site treatment of the dumped FS, methane (CH₄) gas can be generated cheaply. The biogas generated from FS treatment (CH₄) can be used as alternative cooking energy to reduce deforestation and it can also be used to produce electricity. Furthermore, FS can also be used to produce biodiesel which in return can be useful in the field of transportation. Well-treated FS has also been proven to be a good fertilizer for crops (Strande et al., 2014).

4.4.2. Enforcing FSM relevant laws and regulations

RURA should establish FSM relevant legislation, regulations, but more importantly enforce regulations by implementing sanctions and penalties to those who do not comply with regulations.

Apparently, the major problem is not that the law itself is not there but the biggest challenge is legal enforcement. In fact, if RURA could have taken a step to regulate the existing FSM services using some of the existing relevant regulations such as the regulation on decentralised waste water treatment systems in Rwanda, there could have been great improvements of the service.

4.4.3. FSM responsibilities and interactions between relevant institutions

There was consensus among the interviewed stakeholders that the FSM-related responsibilities between the existing stakeholders

and institutions that govern the sanitation service sector need to be clarified in order to ensure successful and sustainable FSM services in dense settlements (in general). Based on the current institutional setting in the sanitation sector in Kigali, the proposed FSM-related responsibilities which would best suit FSM in the city are presented below in Table 5.

The listed responsibilities constitute a combination of the core activities of the FSM chain presented above (see introduction), i.e. collection & storage, transport, treatment, disposal or reuse, together with specific dimensions of the enabling environment framework, namely policies and legislation, coordination as well as regulation of the sector, enforcement and monitoring thereof as well as capacity development. This presents the key role for WASAC along the entire FSM chain, on the one hand, but also the responsibility for capacity development across all key stakeholders, from policy levels to service providers to local leaders and compounds. Moreover, enforcement of regulation would be in the hands of both REMA and RURA.

The interactions between all FSM relevant actors need also to be facilitated and strengthened. Based on the analysis of our results, the interactions between relevant stakeholders that are necessary to ensure adequate and sustainable FSM services in Kigali city in an ideal setting can be as illustrated in Fig. 5.

The FSM service providers should ideally be involved in one or more of the FSM stages (collection, transport, treatment and safe disposal/reuse of treated faecal sludge). While implementing these four mandates, the service providers should explicitly involve the communities in order to ascertain their preferences, and hence work towards meeting them (Rao et al., 2016). In this context, existing informal FS-emptying service providers should be identified, recognized, supported and formalised since institutional

Table 5
Envisaged FSM-related responsibilities of existing institutions that govern the sanitation sector in Kigali.

Existing stakeholders who govern the sanitation sector in Kigali	Responsibilities								
	Policies & legislation	Coordination of the sector	Collection & Transport	Treatment	Disposal or Resource recovery	Regulations & Enforcement	Capacity development	Monitoring	Financial support
Ministry of Infrastructure (MININFRA) (Overall national leading Institution)	✓	✓					✓	✓	✓
Rwanda Environment Management Authority (REMA)						✓	✓		
Rwanda Utilities Regulatory Agency (RURA)						✓	✓		
Water & Sanitation Corporation (WASAC) Ltd (National Coordinator for the implementation of all technical aspects related to sanitation policy)			✓	✓	✓		✓		✓
Public and private service providers/operators			✓	✓	✓		✓		
Development partners/NGOs							✓		✓
Local leaders							✓		
Customers (individual compounds/households, Community)			✓				✓		

reform has been shown to be more successful if it starts by fitting in what already exists on the ground (Cleaver, 2005). Indeed, their willingness to step into the sector is a strong asset that should be acknowledged and supported.

4.4.4. FSM skills and capacity development

Existing local development organisations for sanitation can provide important contributions to capacity development at local level. Within their project boundaries, other stakeholders such as external development partners and NGOs, are also expected to play a crucial role in building a self-sustained FSM system. The capacity needs, emerging from our empirical research, of specific stakeholders and institutions contributing to distinct stages of FSM are summarised in Table 6. This highlights, again, the importance of taking a broader perspective, i.e. beyond the core stages in the FSM chain to its enabling environment where the coordination of the sector clearly needs to be strengthened. Addressing these capacity needs effectively will benefit from a systems-based perspective that conceives human and institutional capacity development as the process of facilitating individual and institutional learning (Vallejo and Wehn, 2016).

For the collection & transport, it is very important to design a regular emptying programme in order to solve the problem of some of the residents who request FSM services only once their pit latrines are already full. Small equipment (such as the vacutug) for pit emptying emerges is particularly appropriate so that inaccessible compounds could be included in the FSM service provision. Additionally, transfer stations or intermediate storage tanks could be placed at the nearest accessible areas where normal vacuum trucks can collect FS which has been transported there from dense settlements using portable desludging equipment.

Potentially suitable/low-cost FS treatment options for developing countries are as follows: i) solids-Liquid separation; ii) settling/thickening tanks or ponds (non-mechanised, batch-operated); iii) unplanted drying beds; iv) constructed wetlands; v) pond treatment of FS supernatants or percolates; vi) combined composting (“Co-composting”) with organic solid waste; and vii) anaerobic digestion with biogas utilization (Koné and Strauss,

2004). However, although the above technologies have been proven to be suitable technologies for developing countries, it is recommended that a life cycle assessment be conducted before selecting one.

Human and institutional capacity can be strengthened via relevant external and internal trainings, as well as fostering knowledge sharing between various FSM stakeholders, e.g. by creating community-based clubs to effectively share concerns and possible solutions among households (Waterkeyn and Cairncross, 2005).

4.4.5. FSM financial sources and opportunities

The improvement of the current FSM in Kigali city is an urgent requirement, resulting in urgent financing needs. The existing financial sources/opportunities related to sanitation can be used to also improve the existing FSM as it is also part of the sanitation sector. For example MININFRA is entitled to obtain funds from the Ministry of Finance (MINECOFIN) every year for it to be able to carry out its responsibilities of sanitation. It should therefore recognize FSM service delivery as a potential sanitation solution for Kigali city, especially in dense settlements, and should therefore fund it similar to other sanitation projects. In addition, government funds exist for environment and climate change (FONERWA) that could also provide a great contribution. However, this fund is demand driven. People need to make proposals and be competent to obtain such support.

4.4.6. Recognition of, and compliance with, FSM customer preferences

A clear and urgent customer preference identified during this study is to find ways to reduce the odour that emerges during emptying. One way to reduce badly smelling emissions from waste is to use effective microorganisms (Okuda and Higa, 1995). Service providers need to learn about such odour reducing methods for example and need to include them in their cost models.

More generally, customers need to be better recognised as essential stakeholders in the provision of FSM services: without their explicit commitment to contribute to the improvement of the service, any effort by the remaining stakeholders cannot be sus-

Table 6
Capacity needs for FSM in Kigali.

Elements of an enabling environment for FSM	Actions for achieving an adequate enabling environment for sustainable FSM
<i>Government support</i>	<ul style="list-style-type: none"> ■ Policy implementation strategy: Government should put in place a clear FSM implementation strategy, and most importantly ensure that the implementation covers all the population in need.
<i>Legal and Regulatory Framework</i>	<ul style="list-style-type: none"> ■ Relevant FSM laws and regulations should be established ■ Also improve law enforcement and sanction and penalise those who do not comply with the regulations regarding the disposal of FS
<i>Institutional Arrangements</i>	<ul style="list-style-type: none"> ■ FSM-related responsibilities and interactions between ministries and other stakeholders need to be clarified
<i>Skills and Capacities</i>	<ul style="list-style-type: none"> ■ Capacity development: The existing organisations that govern the sanitation sector require training on FSM ■ Clear pit emptying program ■ Small emptying equipment that can be used in inaccessible compounds ■ Suitable technology for treating FS ■ Foster knowledge sharing on FS between various stakeholders and within communities
<i>Financial Arrangements</i>	<ul style="list-style-type: none"> ■ Existing financial resources for sanitation can also be used to improve the existing FSM as it is part of the sanitation sector ■ Significant subsidies from government as well as financial contribution from private sector ■ All steps of the FSM chain need to be adequately financed
<i>Socio-Cultural Acceptance</i>	<ul style="list-style-type: none"> ■ Awareness raising: Households in dense settlements need to be informed and encouraged on how to demand adequate FSM service provision ■ Dense settlements dwellers need opportunities to share their problems with policy makers and any other relevant organisations, e.g. collectively as a community through creation of community based clubs ■ Pit emptying service providers should work to meet their customers' preferences. The main customers' preference identified is that the pit emptying operators should try to reduce the odour which comes out during emptying.

tained easily. The participation of customers in the improvement of existing FSM services should therefore be encouraged by public sector actors, NGOs and the service providers. Community involvement is a key factor for the sustainability of FSM. Households might not have the appropriate skills and capacity to do the emptying, but they can inform relevant officials and service providers about the need to do so.

5. Conclusions

This study has examined current FSM practices in dense settlements of Kigali and the extent to which these are being influenced and affected by the enabling environment within which they are taking place. Our analysis based on the conceptual framework by [Strande et al. \(2014\)](#) examined the existing environment for FSM in the two dense settlements Umuganda and Biryogo. Our findings confirm that there is no explicit enabling government support available for FSM services, more particularly for FSM in dense settlements. It is clear that the existing conditions for FSM in dense settlements are neither adequate nor sustainable.

There is hence an urgent need to improve the existing FSM service provision in dense settlements of Kigali city to allow all actors in the FSM chain in dense settlements to contribute effectively to the FSM process. The specific constraints that hinder the achievement of adequate enabling environment conditions for FSM include limited government focus on the sanitation sector, high turnover of staff in relevant government institutions, pit sludge management is not placed on the sanitation projects agenda, the existing relevant bylaws are not pro-poor oriented, a lack of clear responsibilities, a lack of relevant local professional training opportunities, unaffordability of FSM services and an inhibition to discuss FSM.

Based on the empirical evidence from the two dense settlements of Kigali city, this study has laid out key elements and provided recommendations for developing an enabling environment for FSM in which all stakeholders in FSM of dense settlements can effectively participate, not least of which the dwellers as customers. Implementing the proposed changes, especially those related to public sector commitment and enhanced stakeholder interactions, inevitably hinges on individual change agents as well as broad-based change efforts (as well as capacity development) and will be by no means easy. Pointing out that FSM can in fact contribute to achieving the top three government priorities, namely energy, agriculture, and transport, may provide some of the necessary leverage. Moreover, within the FSM chain, new value propositions can be created from nutrient recovery and reuse of faecal sludge, resulting in new business models and opportunities for sustainable FSM, yet also requiring new incentive systems and institutional settings ([Rao et al., 2016](#)).

While our findings and recommendations primarily pertain to Kigali city and the two dense settlements we studied in detail, other cities in developing countries suffering from similar challenges may find that these insights can serve as a useful benchmark against which to compare their own approach to FSM in dense settlements.

From a theoretical perspective, our study provides insights into application of the Strande framework for examining the enabling environment for FSM. In itself, the framework, although normative, has provided structure for a systematic analysis of different dimensions of the enabling environment which is able to capture essential aspects that are excluded from a traditional value chain analysis. Nevertheless, as is evident from our empirical findings where the (missing) interactions among actors in FSM saliently emerged, the Strande framework is clearly limited in conceptualising interactions between the identified dimensions. Future research would benefit from extending this framework with sounds concepts from the discourse on multi-level governance (e.g. [Pahl-Wostl, 2009](#)) and on sectoral innovation systems (e.g. [Malerba, 2002](#)) which stresses the importance of relations and interactions between actors to create the knowledge base for a functioning sector. These additional perspectives are needed for truly holistic policy recommendations for a sustainable FSM service delivery chain.

Acknowledgements

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Annex 1. Interview protocol

OPENING QUESTIONS

Questions for compound leader

1. How many people live in this household?
2. What is the type of toilet that you use?
3. How do you cope when your toilet is filled?
4. In your opinion, how an adequate FSM should be done?
5. What are the benefits that an adequate FSM service can bring to your household and your community?
6. What are the consequences that may result from poor/inadequate FSM?
7. What is your profession?

Questions for village leader

1. What is the population in your settlement?
2. What is the population growth rate in your settlement?
3. What is your view on FSM in your settlement?
4. What improvement could you suggest to the existing FSM in your settlement?
5. What is your profession?

Questions for other actors involved/relevant institutions

1. What is your opinion of the current situation regarding FSM in dense settlements in Kigali?
2. How would you describe your participation in the provision of FSM, especially to the dense settlements?
3. How many customers for your service do you have?

EXISTING CONDITIONS FOR FSM IN DENSE SETTLEMENTS

Government Support

Questions for MININFRA, MINISANTE, Municipality

1. What support does the government provide to improve FSM service in dense settlements? (In terms of political support, policies and strategies)

Questions for FSM service providers, community leaders, individual compounds

1. What support do you get from the government to improve the FSM in dense settlements? (the support from national level)
2. How would you describe the effectiveness of that support? (Choose the answer that best reflects your opinion)

Excellent

Good

Fair

Poor

No opinion

Legal and Regulatory Framework

Questions for Legal and Regulatory Authorities, Municipality, MININFRA & MINISANTE

1. What are the national laws and regulations that govern FSM?
2. How do you ensure the implementation of these laws and regulations in dense settlements?

Questions for FSM service providers, community leaders, individual compounds, NGOs

1. In your opinion, how would you describe the effectiveness of the existing national laws and regulations for FSM service, referring on the context of dense settlements? (Choose the answer that best reflects your opinion)

Excellent

Good

Fair

Poor

No opinion

Institutional Arrangements

Questions for Municipality, MININFRA & MINISANTE, Municipality, Legal and Regulatory Authorities and WASAC, FSM service providers, community leaders, individual compounds, individual compounds

1. Which other stakeholders in FSM do you deal with?
2. How would you describe these relationships?

Skills and Capacities

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, community leaders

1. What are the FSM related skills and capacities which are required in your entity?
2. How many employees in your entity have attended any training about FSM?
3. What was that training about, and who was the trainer?
4. How do you ensure the management of skills and capacities in your entity?
5. Considering your organisation's role in FSM in dense settlements, do you think your organisation has relevant and sufficient skills and capacity?
6. What are the missing relevant skills and capacities?

Questions for individual compounds

1. How do you cope when your toilet is filled?
2. In your own view, to what extent do you have adequate skills and capacity for dealing with FSM service provision for your compound/community?
3. What improvement could you suggest to the existing FSM in your settlement?

Questions for NGOs

1. Considering the FSM service on the ground in the context of dense settlements in Kigali, which stakeholders do you think have the biggest capacity gaps and why?
2. What are the skills and capacities about FSM that you provide to ensure that the existing FSM in dense settlements can be improved?

Financial Arrangements

Questions for Municipality, MININFRA & MINISANTE

1. Could you estimate how much money that you spend on sanitation either monthly/annually?
2. Who are the financial contributors towards sanitation in this settlement?
3. How do they contribute and how much do they contribute?

- Which percentage of this amount goes towards FSM service, especially in the dense settlements context?

Questions for FSM service providers

- What is the pricing model and possibly required subsidy for you to do FSM activities effectively?

Questions for community leaders

- What are the investment and possibly the subsidy required for you to do FSM activities effectively?

Questions for individual compounds

- What are your current monthly/annual compound expenses in dealing with FS?
- Are you capable to pay more, if the existing FSM service is to be improved? (Choose the answer that best reflects your opinion)

Yes

No

No opinion

- Could you please explain why you have chosen that answer?
- If you ever got a loan from banks or microfinances, what was the maximum amount you were allowed to get?

Questions for NGOs

- When do you provide donations to FSM in dense settlements and how do you do that?

Socio-Cultural Acceptance

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, NGOs

- In your opinion, how would you describe the participation of the dense settlements dwellers in your activities related to FSM/their willingness in adopting FSM service? What is the answer that best reflects your opinion among the following?

Excellent

Good

Fair

Poor

No opinion

- Please explain why you have chosen that answer?

Questions for community leaders

- How does your community participate in FSM that is provided to your community? Who provide the service?

Questions for individual compounds

- How do you participate in FSM that is provided to your compound and your community? Who provide the service?

MAJOR BARRIERS FOR SUSTAINABLE FSM IN DENSE SETTLEMENTS

Government Support

Questions for Municipality, MININFRA & MINISANTE

- What challenges do you face in supporting FSM in dense settlements?

Legal and Regulatory Framework

Questions for Legal and Regulatory Authorities

- What are the challenges that you face in implementing of these laws and regulations?

Institutional Arrangements

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, community leaders, individual compounds, NGOs

- In your opinion, what are the challenges that hinder a good collaboration between you and other relevant institutions?

Skills and Capacities

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers

- What challenges related to skills and capacities do you often face when contributing to FSM service improvement in dense settlements?

Questions for community leaders, individual compounds

- What challenges related to skills and capacities do you often face when contributing to FSM service improvement in your community?

Financial Arrangements

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers,

- What challenges related to financing do you often face when contributing to FSM service improvement in dense settlements?

Questions for community leaders, individual compounds

- What challenges related to financing do you often face when contributing to FSM service improvement in your community?

Questions for NGOs

- What challenges do you face while contributing to FSM in dense settlements?

Socio-Cultural Acceptance

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers,

- What challenges related to Socio-Cultural Acceptance do you often face when contributing to FSM service improvement in dense settlements?

Questions for community leaders, individual compounds

- What challenges related socio-cultural acceptance do you often face when contributing to FSM service improvement in your community?

Questions for NGOs

1. What challenges related to socio-cultural acceptance do you face while contributing to FSM in dense settlements?

NECESSARY CONDITIONS FOR FSM IN DENSE SETTLEMENTS

Government Support

Questions for FSM service providers, community leaders, individual compounds

1. How do you think this Government Support can be improved?
2. What could be your role in ensuring that this improvement is achieved?

Legal and Regulatory Framework

Questions for FSM service providers, community leaders, individual compounds

1. Which legal and regulatory agencies do you think should be improved and why?
2. How do you want these legal and regulatory agencies to be improved?
3. What could be your role in ensuring that this improvement is achieved?

Institutional Arrangements

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, community leaders, individual compounds, NGOs

1. What institutions do you think should contribute and how, in order to ensure that the current FSM is improved?

Skills and Capacities

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, community leaders, individual compounds

1. What do you suggest could be improved in those trainings?
2. In what other ways do you think you could improve your skills to deal with FS?

Financial Arrangements

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, community leaders, individual compounds

1. What plans do you have to overcome the existing financing challenges?
2. What could be the role of other players to ensure the achievement of your plans?

Socio-Cultural Acceptance

Questions for Municipality, MININFRA & MINISANTE, Legal and Regulatory Authorities, WASAC, FSM service providers, community leaders, NGOs

1. What would you want the participation of dense settlements dwellers to be?
2. What could be your role in achieving this participation?

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