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Scaling WASH & Climate-resilient enterprises

ASSESSMENT OF THE PUBLIC PRIVATE PARTNERSHIPS POLICY FRAMEWORK IN UGANDA'S WASH SECTOR

REPORT

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List of Acronyms

AfDB	African Development Bank
ATC	Appropriate Technology Centre
B2B	Business to Business
B2C	Business to Customer
BMGF	Bill and Melinda Gates Foundation
BOO	Build Own and Operate
BOT	Build Operate and Transfer
BOW	Best of Waste
C&T	Collection and Transportation
CEDAT	College of Engineering, Design, Art and Technology, Makerere University
CIDI	Community Integrated Development Initiatives
CREEC	Centre of Research in Energy and Energy Conservation
DBFM	Design Build Finance and Manage
DBFOM	Design Build Finance Operate and Manage
DEFAST	Decentralised Faecal Sludge Treatment Plant
EAWAG	Swiss Federal Institute of Aquatic Science and Technology
ENWASS	Enhanced Water Security and Sanitation
FS	Faecal Sludge
FSM	Faecal Sludge Management
GDC	German Development Cooperation
IWMI	International Water Management Institute
KALOCODE	Kasubi Parish Local Community Development Initiative
KCCA	Kampala Capital City Authority
KEA	Kampala Pit Emptiers Association
KEEP	Kyebando Energy and Environment Project
KFSM:	Kampala Faecal Sludge Management
LUCHACOS	Lubaga Charcoal Briquettes Cooperative Society (LUCHACOS) Ltd
MoWE	Ministry of Water and Environment
MUBS	Makerere University Business School
NEMA	National Environment Management Authority
NSWC	National Water and Sewerage Corporation
O&M	Operation and Maintenance
PEAU	Private Pit Emptiers Association of Uganda
PFMA	Public Finance Management Act
PPP	Public Private Partnership
PPPs	Public Private Partnerships
PPPU	Public Private Partnership Unit
PSP	Private Sector Participation
RRR	Resource Recovery and Safe Reuse
RUWASS	Reform Uganda Water and Sanitation Sector
SAWA	Saniwaste Solutions
SDC	Swiss Development Cooperation
SDGs	Sustainable Development Goals
SEACO	Sustainable Energy Answers Co-operative (SEACO) Ltd
SLAs	Service Level Agreements
SPV	Special Purpose Vehicle
SSP	Sanitation Safety Planning
STP	Faecal Sludge Treatment Plant
UBOS	Uganda Bureau of Statistics
UNBS	Uganda National Bureau of Standards
VFM	Value for Money
WAI	WASH Alliance International
WASH	Water, Sanitation and Hygiene
WAU	WASH Alliance Uganda
WfP	Water for People

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1 BACKGROUND AND CONTEXT OF THE PPPs ASSESSMENT

1.1 Introduction

Many African economies continue to be characterised by poor state of infrastructure, especially economic infrastructure, such as power, transport, telecommunications, and water and sanitation. However, while the desire of greater efficiency and better services is there, the capacity to respond is curtailed by the limited volume of public resources available to finance such services. This has generally seen the public-private partnerships (PPPs) approach being embraced as one of the strategies to ensure that resources can be harnessed within the local economies from the private sector by allowing the sector to invest in areas traditionally reserved for the public sector. This also includes funding the public social sectors such as health, education, water and sanitation among others following for example cases of disease outbreaks whose control often goes beyond the government's response capacity.

1.1.1 Uganda: A brief overview and the present challenges

Uganda is geographically situated in East Africa and is primarily a landlocked country covering an area of 241550.7 km^2. It borders a variety of countries with serious political, economic and social differences, such as Kenya, South Sudan, Tanzania, Rwanda and the Democratic Republic of Congo.

Over the years, with regard to the social welfare and economic growth, there have been significant positive changes in the country. According to the latest available statistics, poverty has been significantly reduced over the years, from 56% in 1993 to 31.8% in 2016 or 19.7%, depending on different international standards in dollar terms by 2016 (Ggoobi 2016[1]; World Bank 2017[2]), whilst life expectancy jumped from 50.5 to 64.3 years for women and 45.7 to 60.3 years for men between 1991 and 2015 (World Health Organization 2017[3]).
These achievements occurred whilst Uganda's gross domestic product (GDP) stood at about 7% for the 2017/2018 financial year (Ggoobi 2016; National Budget Speech F/Y 2018/2019; World Bank 2017).

Despite these steps forward in terms of social and economic outlook throughout the decades, the dilemmas and realities of a key element of sustainable development, public infrastructure has not been given the priority that it deserves. This reality can be realised by the existence of a financial and investment budget of US$1.4 billion annually (approximately 6% of the annual budget). This has been exacerbated by the loss of approximately US$300 million in inefficiencies evident in infrastructure and US$1.2bn in transport costs per annum (World Bank 2017).

Given the commitment of the government towards the transformation of Uganda from a 'peasant to a modern and prosperous society by 2040', it becomes evident that the country's efforts for an expanded and sustainable public infrastructure, and especially road infrastructure, are urgent; in this regard, commitment from investors, government and all stakeholders will be invaluable for the creation of a wide alliance spearheading the vision and mission. The most recent report by the World Bank (2014) indicated that in Uganda, the road subsector is the most dominant transport mode. It carries over 90% of the country's passenger and freight traffic and is the only transport means for semi rural and rural communities. This has become evident in the analysis of the budgetary increases for the financial years from 2014/2015 to 2018/2019, which increased by 15.9% in the first, 18.2% for the second, 18.7% for the third, 20.8% for the fourth and 20.3%. Whilst the efforts for infrastructure improvement have continued, the reality remains that most of the road infrastructure continues to

[1] Ggoobi, R., 2016, 'Performance of Uganda's economy: Progress, opportunities, challenges and the way forward. An independent assessment of Uganda's economy', A presentation at the NRM MPs-Elect Retreat, 12th–20th March 2016 at the National Leadership Institute (NALI), Kyankwanzi.

[2] World Bank, 2017, *Infrastructure finance deficit: Can public-private partnership fill the gap?* Uganda's Economic Update, 9th edn., May 2017, Washington, DC.

[3] World Health Organisation, 2017, *Country cooperation strategy at a glance for Uganda*

be unaffordable, costly, substandard, unsatisfying, inaccessible and with high levels of travel time and accidents (Muhwezi & Ahimbisibwe 2015[4]; World Bank 2014.
These both positive and ambitious outlook call for more innovative ways of financing the ambitious investments by the government. The Public Private Partnership is one such sure window.

In the African region, the African Development Bank Group (AfDB) has been involved in supporting PPPs, serving as an important backer of PPP projects to give potential investors confidence that PPP s remain a viable platform in Africa. The AfDB has also served as lender and advisor to African countries in supporting PPPs, particularly in establishing basic infrastructure essential for Africa's economic development, such as transportation, energy generation and information and communications technologies (Ventures Africa, 2003)[5].
Despite general acceptance in Africa as well as existence of success stories, there are still some challenges in having PPPs fully embraced in the region. Such challenges include the following:

- inadequate legal and regulatory framework for PPPs;
- lack of technical skills to manage PPP programmes and projects;
- unfavourable investor perception of country risk,
- Africa's limited role in global trade and investment,
- small market size,
- Shallow financial markets[6]

Given the critical role that the envisaged PPPs are expected to play in development of the African economy, it is critical that a detailed focus on the scope for applying PPPs in the region be done. In particular, it is important to outline the current status of PPPs adoption in the region, paying particular attention to current projects, challenges and success stories that can be replicated across the region.

It is within this context that the WASH SDG Programme through WASH Alliance Uganda is conducting this study to assess the PPPs policy framework in Uganda's WASH Sector.

1.2 WASH SDG Programme

The WASH SDG Programme responds to the Dutch commitment to contribute to the Sustainable Development Goals, particularly SDG 6, with the aim to reach an improved WASH situation for all. The WASH SDG Programme aims to sustainably deliver access to, and use of, safe drinking water for at least 450,000 people; and improve access to, and use of, sanitation and improve hygiene behaviours for at least 2 million people in 7 countries in Africa and Asia.

The Programme is built on three core strategic objectives:

1. increasing demand for improved WASH facilities and practices
2. improving the quality-of-service provision
3. improving governance of the sector

Gender and social inclusion will be an area of specific attention in each of the three strategic objectives as well as climate vulnerability and resilience. Funded by the Dutch Ministry of Foreign Affairs, the 5-year programme will run from July 2017 to September 2022.
The WASH SDG Programme is implemented by the WASH SDG Consortium. This consortium exists of 3 partners:

- WASH Alliance International (WAI)
- SNV
- Plan Netherlands

The programme is implemented in Bangladesh, Ethiopia, Indonesia, Nepal, Tanzania, Uganda and Zambia, with two or more sub-national programmes per country. Each sub-national programme is led by one of the WASH SDG Consortium partners.

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[4] Muhwezi, M. & Ahimbisibwe, A., 2015, 'Contract management, inter functional coordination, trust and contract performance of works contracts in Ugandan public procuring and disposing entities', *European Journal of Business and Management* 7(20), 76, 86.

[5] Ventures Africa, 2003, The Role of Public-Private Partnerships in Africa, found online at http://venturesafrica.com/role-public-private-partnerships-building-industries-thrive/

[6] African Development Bank at its website http://www.afdb.org/en/topics-and-sectors/sectors/private-sector/areasof-focus/public-private-partnerships

1.3 Wash SDG Programme in Uganda

The WASH SDG Programme in Uganda is implemented by two WASH SDG Consortium partners the Uganda WASH Alliance International through WASH Alliance Uganda and Plan Uganda. The Uganda WASH Alliance is in the lead in Uganda. Plan Uganda and the Uganda WASH Alliance are implementing separate sub-programmes and learn together on national level. The Uganda WASH Alliance sub-programme in Agago.

1.3.1 Goal

The goal of the Uganda WASH Alliance sub programme is to contribute to increased and sustained access to and use of safe water and sanitation services and improved hygiene practices.

1.3.2 Objectives

1. Facilitating behavioural change at community and household levels.
2. Improving WASH service provision by facilitating the creation of a functional WASH market.
3. Improving WASH governance and thereby creating an enabling environment for access to WASH.

The Implementation of interventions to achieve the three strategic objectives is being done by a consortium of 5 local and 6 Dutch partner organizations which include; Simavi (Lead), Amref Flying Doctors, Aidenvironment/RAIN, Hivos/RUAF,IRC, Practica, Agency for Sustainable Rural Transformation (AFSRT), Health through Water and Sanitation (HEWASA), Joint Effort to Save the Environment (JESE), Network for Water and Sanitation Uganda (NETWAS Uganda) and Water and Sanitation Entrepreneurs Association Uganda (WASEU).

The Uganda WASH Alliance sub-programme is being implemented in the Agago district in Northern Uganda. Implementation started in July 2018 and the sub-programme will be entering its second phase from July 2020 to September 2022. During the first implementation phase, achievements have been registered in increased access to sanitation through behaviour change, creation of associations of WASH entrepreneurs and increased engagement of the public sector for better WASH governance.

1.4 Country context and rationale for the assessment

The WASH sector in Uganda is affected by issues like rapid urbanization and associated challenges, lack of appropriate financing mechanisms, non meaningful private sector engagement, ineffective management systems and poor technological innovation call for a different way of doing business in the WASH sector. For example, new forms of governance, that integrate sectors and scales, and involves multiple actors are required. A good example are the synergies between water, sanitation, agriculture and energy and the environment. Integrated WASH, as well as, resource recovery and reuse (RRR) is needed and requires innovative solutions. Another example are Public Private Partnerships (PPPs).

Although definitions differ, a Public Private Partnership arrangement refers to a contractual agreement between a public and private sector entity to develop and deliver a public good or service, by sharing both resources and risks. For PPPs (and WASH businesses in general) to succeed, they need to sit within a conducive regulatory, financial and institutional framework, that supports private sector participation[7].

The Concept of PPPs is not new to Uganda[8]. In the 1990s, Uganda pioneered the Private Sector Participation (PSP) model for small town water supply. By 2010, the number of towns using this model had grown to 90. The goal of this model was to improved the sustainability and efficiency of piped water systems by hiring private operators for their management, while keeping the infrastructure in the hands of the government. Although the mandate of Private operators was expanded in 2011 to include sanitation services, they are barely involved in this space. Considering that the success of PPP approaches depends on how enabling the policy framework is for private participation, this

[7] Water and Sanitation for the Urban Poor (WSUP). (2017). *Public-Private Partnerships explained: Urban sanitation service delivery in Kenya*.

[8] Hirn, M. (2013). *Private Sector Participation in the Ugandan Water Sector*.

consultancy assignment seeks to conduct a detailed assessment of the same, with a bias to the WASH sector.

1.5 Purpose of the assignment

The purpose of this consultancy is to assess the policy framework for PPPs in the WASH sector in Uganda.

1.6 Specific objectives of the assignment

The specific objectives of this assignment are:

1. **PPPs Policy framework assessment** - Conduct an assessment of the national and local policy and legislation to support (or not) PPPs in general and for WASH more specifically.
2. **Mapping PPP initiatives** - Map existing PPPs (past and ongoing) in WASH, both water and sanitation sector and analyse these experiences and document key lessons learned
3. **Capacity building** - Suggest key issues for a training on PPPs in WASH sector in Uganda, and key private partners and local authorities to target
4. **Policy Brief Preparation** - Prepare a Policy brief summarizing the key issues identified in the report

1.7 Scope of the work

1. Review existing policy context, PPP Policy Framework, relevant sectoral policies, legislation, and support mechanisms of financing facilities in Uganda.
2. If a PPP policy exists, describe how it operates' (infrastructure, project support, other); and
    - Assess its functioning based on reports and/or interviews
    - Assessment of PPP Experiences
    - List of PPPs (past and ongoing) experiences, in WASH sector
    - List of key stakeholders at national and local level (including location: authorities and private sector)
    - Types, using the Typology (UNDP 2005, UNESCAP 2011) from minimal to maximum private sector participation (investment versus risk and obligations): from service contracts to joint ventures.
    - Benefits and Challenges
3. Type of enterprises
4. Identify the existing opportunities for PPPs in the WASH sector-with lessons from previous experiences.

1.8 Assessment approach and methodology

ISIU's methodology and approach in undertaking this assignment included the qualitative methods:

1.8.1 Internal desk research

The consulting team started by reviewing project documents (relating both to the WASH SDG programme and the Water Land and Ecosystems project) that relate to any Public -Private Partnership (PPP) interventions in WASH. Implementing partners were requested to share any information that is relevant to PPPs in the WASH sector. The main advantage here in performing internal desk research is that it involved internal and existing project resources. Secondly, this method is comparatively very cheap and effective as internal recourses are deputed and the expenditure in getting data is less.

1.8.2 External desk research

The consulting team also undertook external Desk Research which entailed exploring secondary sources outside the scope of the WASH SDG Programme and the Water Land and Ecosystems project.

This External Desk Research involved:

1.8.2.1 Online desk research

There is incredible amount of information on PPPs available online. The consulting team tried to access this information by using search techniques that enabled them to get the most relevant and up to date information.

1.8.2.2 Government published data

The Government of Uganda usually publishes a great extent of data online that can be used in the research process. The Consulting team accessed this information through the various Government websites and portals.

1.8.2.3 Other data

A lot of Non-Governmental Organizations (NGOs) engaged in the WASH sector periodically produce reports on their work. The consulting team accessed and reviewed these reports and studies, in order to enrich their work. These was for both locally externally based organisations.

2 GENERAL UNDERSTANDING OF PPPs

2.1 What is a PPP?

PPPs involve an arrangement where the government invites the private sector to supply infrastructure assets and services that traditionally have been provided by the government (IMF, 2004) [9] with some risk being placed on the private sector as well. As a result, PPPs are different from the general public procurement contracts, where government enters into a service contract or a construction contract where the private sector just performs the service for a fee. PPPs are therefore legally binding contracts between government and business for the provision of assets and the delivery of services that also allocates responsibilities and business risks to both the private sector and public sector players involved in the partnership (Partnerships British Colombia, 2003)[10].

PPPs are mostly undertaken as a way of tapping into the private sector resources as well as expertise in infrastructure provision. This generally implies that resource constraints on the part of the public sector as well as lack of the requisite expertise (skills) mostly push governments into inviting private sector participation in areas that should have been their sole responsibility in providing the infrastructure services. Properly structured PPP frameworks produce benefits to both the private sector and public sector players. They allow the government to pass operational roles to efficient private sector operators while retaining and improving focus on core public sector responsibilities, such as regulation and supervision (Asian Development Bank (ADB), 2008)[11]. The government therefore enjoys benefits from an improvement in service delivery and cost effectiveness arising from the private sector's innovative ideas and experience. The opportunity to implement huge infrastructure projects, which the government would also not have been able to afford such as investment public hospitals, schools, highways and utility infrastructure, is also an anticipated benefit on the part of government.

The private sector players also gain business opportunities in sectors that traditionally would have been closed off. Revenues from fees collected from users (e.g., tollgates) once the structure is completed as well as some fees that could be paid by government make investment by the private sector players into the projects worthwhile.

PPPs, however, also have their own disadvantages, which makes it critical that they be properly structured. CEDR (2009)[12] for example identifies about six disadvantages of PPPs as follows:

- Since private finance is used in PPPs, financial costs are usually higher due to the fact that private companies normally have lower credit ratings than public authorities and sovereign debt.
- High transaction costs, given that a PPP tender process is longer and generally more complex compared to the process required for traditional public procurement contracts.
- Reliance on users for cost recovery rather than taxpayers generally implies that a heavy burden is placed on the public than normal projects funded from the national budget. Examples include toll fees, where motorists who are already paying for fuel and other vehicle taxes have to pay for using roads that have been developed using PPPs.
- The procedure for resolving conflicts in the event that the private sector player fails to comply with the terms of the contract are generally more complex and cumbersome compared to the general procurement contracts, which often makes them risky.
- The various parties involved in PPPs also imply that the contractual framework that is needed to ensure that all responsibilities, risks, and covenants are taken into account can be very complex.
- Given the nature of the PPPs schemes, financial failure on the part of the contractor (private sector player) is generally more disruptive compared to the traditional construction contracts.

[9] IMF, (2004), Public-Private Partnerships, International Monetary Fund Fiscal Affairs Department
[10] Partnerships British Colombia (2003), An Introduction to Public Private Partnerships, Partnership British Colombia
[11] ADB (2008), Public Private Partnership Handbook, ADB Working Paper, 2008
[12] CEDR (2009), Public Private Partnerships (PPP), Conference of European Directors of Roads (CEDR) Secretariat General, CEDR report 2009/01

2.1.1 The Characteristics of the Public Private Partnership

1. **Commercial transaction**: Under a PPP agreement the private contractor offers services on the basis of a commercial contract with a government agency.
2. **Private Party**: The Private Party of a PPP is to be constituted as a special purpose company (SPC) incorporated under Ugandan law.
3. **Contracting Authority function**: The objective of a PPP is the performance of a public function, i.e., the provision of a public service or a public infrastructure.
4. **Use of Contracting Authority property, equipment or other resource**: In many PPP projects the Contracting Authority makes available to the private contractor resources that it owns, or controls and that the private contractor needs to carry out the project. That is very often the case with public land, but also other types of assets may be made available to the private contractor under a PPP agreement. In general, these assets remain government property, and only the user rights are transferred to the Private Party for the duration of the PPP agreement.
5. **Substantial risk transfer to Private Party**: Under a PPP agreement the private contractor assumes substantial financial, technical, and operational risks in undertaking the project and delivering the public service.
6. **Remuneration mechanisms**: In a PPP arrangement three types of remuneration for the Private Party are considered:
    - a fee paid by the Contracting Authority;
    - a fee paid by the users or customers of the service; or
    - a combination of both.
7. **PPP is not privatisation**: Under a PPP agreement the Contracting Authority remains ultimately responsible for the provision public services in its area of competence. However, instead of carrying out itself the activities that are needed to ensure the provision of public services, it subcontracts these activities to a private service provider. Through the provis ions in the PPP agreement the Contracting Authority retains, however, the control over the quantity, quality, and price of services. Furthermore, all assets used or produced for purpose of the PPP project are owned by the government, or their ownership reverts to the government upon the expiry of the PPP agreement

2.1.2 Types of PPP agreements

Although all PPPs involve a private sector player and the public sector, there are various methods that can be used to operationalise the arrangement. However, all the schemes eventually see the government assuming ownership of the infrastructure at completion, although the manner and timing would differ. However, on the basis of two key characteristics four main PPP models can be distinguished (Figure 1 below). The two key characteristics are:

1. the identity of the payer of the services: either the private user of the services (user-pays PPP) or the Contracting Authority (government pays PPP);
2. the extent of private investments, which may be large (most or all of the infrast ructure and equipment) or limited (at most investments in equipment)

Figure 1: Main PPP Models

		Extent of Private Investment	
		Limited (at most equipment)	*Large (infrastructure and equipment)*
Who Pays	**Contracting Authority**	Management Contract (O and M)	DBFM DBFOM BOT/BTO
	Users	Operating Concession, Lease, Affermage	BOT Concession BOO DBFOM

1. **Management contract/operations and management (O&M) contract**: In this model the entire maintenance and operation of a public infrastructure is outsourced to a Private Party through a management contract. In contrast with the model of conventional public procurement the private contractor does not carry out narrowly defined maintenance and operational activities under the supervision of the Contracting Authority but manages and performs a range of activities aimed at

supplying an integrated, performance-based service (for instance running a water utility). Under this modality, the Contracting Authority pays to the contractor a performance-related service or management fee for the services. Performance indicators could include the number of users, response times, or efficiency gains compared to a benchmark. The contract periods are 2-5 years.

2. **DBFOM and variants (DBFM, BOT, BTO)**: Instead of outsourcing the engineering, construction, and maintenance/operations of an asset with separate contracts, these services, as well as the financing of the asset are procured with a single integrated contract - a Design, Build, Finance, Operate and Maintain (DBFOM) contract. Hence, the private contractor (usually a consortium of specialised firms covering the required areas of expertise) finances, designs, constructs, maintains and often also operates the infrastructure, all according to the specifications of the Contracting Authority. The contractor does not sell its services directly to the end-user, but to the Contracting Authority. The contract period must be sufficiently long to amortize the investments in the fixed assets. Typical contract periods are 15-30 years, but longer durations also occur (50 years and more).

3. **Concession / Lease, affermage, develop and operate**: In this PPP model the public sector (usually the Contracting Authority) finances and constructs the infrastructure through a conventional public procurement procedure. Once built, the facilities are leased or given in concession to a private operator for a specified period. The operator operates the facilities on a commercial basis, selling the infrastructure services directly to the end-user.
   In return for the right to operate the facility on a commercial basis the operator pays a concession or lease fee to the Contracting Authority, which remains owner of the facilities. Depending on the contractual agreements the concession payment may take the form of a one-off lump sum, periodic fixed payments (lease) or a variable payment in function of the level of use. The Contracting Authority also imposes operational requirements on the concessionaire in the concession agreement, notably tariff rules and service quality standards. In this way the Contracting Authority can ensure that the interests of users and the society at large are safeguarded. Operating concessions typically vary from 10-15 years.

4. **BOT concession:** In a BOT concession the Private Party finances, designs, and constructs the public infrastructure. Once built the Private Party maintains and operates the facilities on a commercial basis, selling the infrastructure services directly to the users. The Contracting Authority imposes operational requirements on the concessionaire in the PPP Agreement (with respect to tariffs, service coverage and quality, among others). In this way the Contracting Authority ensures that public interests are safeguarded. The BOT concession model strongly resembles the DBFOM model described above but differs from the latter in one essential respect: the private concession holder sells its services directly to the users and assumes the commercial risk. It is not paid by the Contracting Authority. In contrast, it often pays a concession fee to the Contracting Authority for the right to operate the facility on a commercial basis. BOT concessions also resemble operating concessions: both are user-pays PPPs. However, BOT concessions differ from operating concessions in the fact that the latter do not involve private finance and construction of infrastructure, but only operations (possibly including limited investments in equipment).

   Important to Note: The labels BOT, BOOT, ROT and DBFOM are often used to designate user-pays as well as government-pays PPP contracts. However, these are different forms of PPP. The contract period of a BOT concession must be sufficiently long to amortize the investments in the fixed assets usually 15 – 30 years or even more.

5. **BOO agreement:** In addition to the four basic PPP models described above, it is useful to consider a fifth model that is the build, own and operate (BOO) agreement. Under this type of PPP agreement, a private contractor builds a new infrastructure, and then owns and operates the facility at its own risk and for its own profit. While the facility is private the government is partner in the contract and may provide support in the form of subsidies or a commitment to buy a certain volume of services at an agreed tariff. This offtake agreement reduces the commercial risk of the private investor and enhances the financial feasibility of the project.

In contrast with a BOT concession the facility built under a BOO agreement is privately owned and is not transferred to the government at the end of the agreement. A BOO arrangement is therefore situated on the border between PPP and privatization. During the contract period of the BOO agreement, it is a PPP, but upon the expiry of the agreement the service is privatised.

Table 1:Summary of the main types of PPP arrangements

	Conventional public Procurement	Management Contract	DFMO and Variants	Operating Concession	BOT Concession	BOO
Names used to indicate the type of PPP agreement	Short term construction and service Contracts	Management and operation Contracts	DBFM, DBFMO, BOT, BOOT, BTO, BLT, ROT	Concession, Lease, affermage	Concession, BOT, BOOT, BLT, ROT	BOO
Typical duration of agreement	0-2 years	2-5 years	15-30 years (and longer)	10 – 15 years (and longer)	15 – 30 years (and longer)	15 -30 years
Ownership of assets	Public	Public	Public (or private transferred to public at end of contract)	Public	Public (or private transferred to public at end of contract)	Private
Responsibility						
Finance	Public	Public	Private	Public	Private	Private
Design/Build	Public	Public	Private	Public	Private	Private
Maintain/Operate	Public	Private	Private	Private	Private	Private
Payment by	Contracting authority	Contracting authority	Contracting authority	Users	Users	Users

Source: *Uganda national public-private partnerships guidelines (2019)*

It is therefore important at this point to note that as we discuss the potential of PPPs in the WASH sector to bear in mind these different formats. We shall identify and discuss examples of a selected PPPs in the WASH sector in Uganda and beyond and analyse their sstrengths, weaknesses, opportunities, and threats (SWOT) in terms their ability to accelerate the attainment of the WASH sector goals as well as SDG 6: Water and Sanitation services for all. It is based on this analysis that we can be in position to recommend what best works for what subsector within the WASH sector.

2.1.3 Why Public Private Partnerships?

The main reason why most public institutions or governments go for PPP arrangements is largely due to value for money.

2.1.3.1 Value for Money of PPP: This refers to benefits in terms of cost, quality and quantity of project and risk transfer.

Experience across the world has shown that PPP can contribute to achieving service delivery with a better price to quality ratio than traditional public service delivery through the use of private sector management skills and competencies.

PPPs are able to deliver VFM by:

- **increasing the speed of implementation of projects**. Some governments find it difficult to accelerate the development of infrastructure, even if funding is available. This is mainly caused by limited project development and implementation capacity in national and local governments. Introducing PPP expands the implementation capacity through the mobilization of additional human and financial resources from the private sector.
- **increasing efficiency**. Through better risk allocation, whole life costing and stronger incentives to perform, PPPs can increase the cost efficiency of public infrastructure provision. This in turn allows to lower the cost to taxpayers or users. Further efficiency gains may derive from economies of scale (if the Private Party develops and operates several projects) and the deployment of specialized technical and managerial expertise that is not yet present within the Contracting Authority.
- **increasing the quality of service**. Experience shows that PPPs contribute to ensure the quality of service. This results from the better integration of services with supporting assets, the introduction of innovations in service delivery, and a higher responsiveness of the private sector to users' needs. The performance-related remuneration mechanism incorporated in a

PPP contract provides strong incentives for the private contractor to meet the contractually agreed service quality standards.

- **generating commercial value from public sector assets**. The private sector can assist in unlocking the commercial value of public sector assets. The private sector's entrepreneurship and creativity will push it to exploit the full commercial potential of a project in addition to its public service function. This generates additional revenues that can be used for covering (part of) the costs of the public services produced by the project.

2.1.3.2 Drivers of Value for Money

VFM derives from a number of specific characteristics of PPP agreements as explained below;

- **Output-based contracting**: The use of performance-oriented (or outcome-based) specifications is an important lever for creating value in PPP contracts. A shift away from input contracting to output contracting.
- **Optimal risk allocation**: The basic principle of optimal risk allocation is that risks should be held by those parties best able to manage them. For instance, the building contractor has the strongest control over the management of construction activities ensuring a delivery on time and within budget. Therefore, the contractor should assume the construction risk and receive a financial penalty in case delivery is late or over budget. Transfer of all risks from the public sector to the party most able to manage them.
- **Private outsourcing**: Through PPP the Contracting Authority can mobilize the human and technical resources of the private sector in order to complement the resources of the public sector
- **Lifecycle optimisation**: Integrating the design, construction and operating stages of public infrastructure reduces interface problems. A contractor who is responsible for all stages of the project life cycle has an incentive to minimize life-cycle costs
- **Performance-based payments**: In PPP projects the contractor is only paid upon delivery of the service. This is obvious in the case of a user-pays PPP. However, also in government-pays PPPs the payment of the availability fee is conditional on the facility being available in good condition and the services being provided according to the agreed quantities and quality standards.
- **Private financing**: Private financing has a similar effect as performance-based payments. It sharpens the incentives by increasing the financial stakes. In this manner pushes private contractors to deliver on time and according to specifications.

2.2 Success factors for public private partnerships

Despite these promising merits, PPPs are complex constructs that require detailed analysis and planning as well as high levels of technical expertise in areas such as financial and economic analysis, commercial contractual law, procurement, budgeting, engineering and construction, investment due diligence and project management. For this reason, developed and developing countries alike grapple with how and when to engage in PPPs. A lack of experience and significant capacity constraints often prevent PPPs from delivering the expected results.

Therefore, a successful PPP depends on a capable private sector, a capable and engaged public sector, an enabling legal framework for PPP and a judicial system capable of redressing grievances. Below are a set of pre-requisites for a successful PPP.

2.2.1 The political support and buy-in

Political vision for and understanding of PPP must be in place at the decision-making level. PPP should be seen both as one of the sources of financing available to fund the construction of public assets and as a way in which public infrastructure can be operated and maintained in a more efficient manner.

2.2.2 Institutional and legal frameworks for PPPs

A solid PPP framework is an essential precondition for successful PPPs. A PPP framework includes clear identification and procurement processes, a public finance management act with solid regulations for PPPs and a reliable and transparent judiciary to handle potential complaints.

2.2.3 The role of the private sector

On the side of the private sector, there must be commercial potential in the project i.e., demand for the service associated with the investment object and an ability on behalf of users to pay for this service. The private sector must also see an advantage in engaging in long-term investment opportunities. One of the main reasons why PPPs are slow to start is the lack of long-term private sector financing sources (banks and private equity) and also not enough 'easily bankable' projects i.e., projects that the private sector could easily turn a profit on.

2.2.4 Preparing and planning PPPs

It is important to conduct thorough and comprehensive feasibility studies for any potential PPP project. While each country has its own standards and processes, they all include common elements such as a needs analysis, an option analysis, a legal due diligence exercise and a comparison with a public sector model. PPP projects without a solid feasibility study also make it much harder for the government to manage the project properly and to assess whether it has generated value for money. Many aspects of feasibility studies such as life-cycle costing and calculating the net present value for concession contracts require advanced technical capacities. For this reason, it is common practice to hire technical advisers to undertake feasibility studies. A transparent and thorough procurement process must also be in place.

2.2.5 Public sector capacity and commitment

The skills required to identify, assess, procure, and implement PPP projects are advanced and in high demand in government and, especially, in the private sector. Developing and retaining these skills within government institutions can be expensive and difficult. The private sector, with more generous salaries, will often be a much more attractive employer for many people with PPP-relevant skills and expertise. Countries wanting to implement PPPs therefore often face considerable challenges when it comes to developing the capacity needed to realise PPPs.

2.2.6 Managing risk

Like any project, PPP initiatives involve risks. One of the features that sets PPPs apart from traditional government projects is that some risks are transferred to the private sector. Risk identification and allocation of risks to the parties best suited to manage them is therefore a crucial element of the feasibility assessment and project design. Design, procurement, and construction risks, for instance, are often best managed by private sector actors, while legal and regulatory risks should stay with the public sector.

2.2.7 Financing PPP processes

It is costly and time consuming to manage PPP processes. Despite problems and challenges with PPPs, these transaction costs are outweighed by efficiency gains, lower prices, and the ability to develop public assets with less public financing. Costs relate to the need to develop the PPP capacity of requesting entities and the government more broadly, but also to managing specific PPP processes.

2.2.8 Ensuring a positive local impact

PPPs should be designed to ensure a positive impact locally in terms of local economic growth and employment. In addition, PPPs can be designed to contractually ensure that a project is delivered using, for example, local materials and labour. Local companies, if technically qualified, have the added advantage of local knowledge and they can often draw on cheaper labour. However, some projects may need the experience and technical expertise that international companies can bring. There might therefore often be a trade-off between favouring the local private sector on the one hand and getting a PPP arrangement that delivers the best service and the lowest price, on the other hand.

2.2.9 Citizen engagement

Involvement of citizens throughout the preparation and implementation of PPP projects is important to ensure public acceptance of a project. Lack of citizen consultation and awareness can easily backfire and compromise a project. Public resistance over PPPs can grow to an extent where projects have to be shelved. Laws therefore can be put into place designed to address these problems for instance, a law can specify that 80% of the affected population under a PPP must agree to a certain project when it involves land acquisition.

2.3 Operational framework for PPPs

The operational frameworks for PPPs differ depending on the project. There are three elements to the operational framework for PPPs to include; stakeholders, policy and institutions and risk analysis as explained below;

2.3.1 Stakeholders in PPPs

There are critical stakeholders that play a role in PPPs, especially during the negotiation process and implementation of the projects. CEDR (2009) identifies the following stakeholders as critical in the PPPs process and defines their roles in the process as follows:

2.3.1.1 The public authority

Each PPP project needs a public entity responsible for the project and for the decision to carry out and design the PPP scheme. At the preparation stage, the public authority prepares the tender documents, manages the tender process, including selecting the winning bid and formalizing the contractual framework. During implementation of the project, the public authority ensures that the terms of the contract are followed, without duplicating or replacing other regulatory authorities that could also perform their oversight roles. The public authority is also normally responsible for managing the transfer process at the end of the PPP tenure when the private sector hands over the infrastructure. In this case, the role could include arranging alternative management or operation of the infrastructure.

2.3.1.2 The PPP contractor

The PPP contractor is the private sector player responsible for the development of the project, as specified in the contract. The PPP contractor is the main player in the PPP project, tasked with the delivering of the services, either directly or through hiring the services of other third parties as the contractor deems fit. Although the project PPP contractor can be a company that exists before the PPP project, it is also possible for the contractor to be a company set up specifically for the development of the project. Such contractors set up as part of the implementation of the project are more common where PPP projects are structured as 'project finance' schemes, where the future expected cash flows from the project are the only means of finance (CEDR, 2009). These are often referred to as special purpose vehicles (SPV). The SPV is a legal entity which facilitates the allocation and diversification of risk and financing requirements to more than one party.

2.3.1.3 The operator

Although the PPP contractor can operate the PPP project, there are situations where some specialized technical knowledge might be needed, which the contractor might not possess. In that case, an independent company, known as the operator, can be engaged by the contractor to operate the project on behalf of the project PPP contractor. This would call for a specific contract that binds the relationship between the contractor and the operator.

2.3.1.4 Financial agents

PPP projects require an initial investment which has to be recovered later through the expected income streams. Sources of finance for PPP include the capital provided by the project PPP contractor (equity), loans provided by banks, and securities or bonds sold on capital markets as an investment product. A sound finance scheme is central to the success of the PPP project.

2.3.1.5 Funding agents

These are those expected to provide future income streams on which the project feasibility rests. This includes users of the facility who have to pay the user fees or toll fees.

2.3.1.6 The regulatory authority

In addition to the public authority, other regulatory authorities still continue to exercise their regulatory oversight during the operation of the PPP project. This includes both technical regulations, for example an energy regulator in the case of energy PPP projects.

2.3.2 Policy and institutions for PPPs

A clearly laid down policy and institutional framework for PPPs is a critical determinant of the success of the PPP project. The policy framework on PPP guides the PPP process and makes it easy for investors to predict the environment with respect to PPPs.

Also critical is the public authority to oversee the whole process, normally referred to as a PPP Unit. Given that a PPP Unit helps in project preparation; helps in the selection and management of specific advisors; ensures that the project fits into the overall PPP policy and also plays a role in project approval and quality assurance (Dube and Chigumira, 2010), then it is important for such an institution to be seen to be professional and free from political interference and corruption.

Also critical in the framework is the legislation governing PPPs, which can give some form of assurance to investors that government is committed to the projects. A stand-alone piece of legislation to govern PPPs is often preferred compared to having scattered pieces of legislation. Such legislation would also provide for the regulatory institution to regulate PPPs. Many countries have opted for a standalone legislation including Uganda (The Public Private Partnership Act, 2015).

2.3.3 Risk analysis in PPPs

Given that PPP projects are generally long term, uncertainties about future outcomes crop up. These result in different categories of risk, which need to be carefully anticipated and managed during the project implementation process. Risk analysis, which involves the assessment of the possible uncertain environment concerns and strategizing on managing them, needs to be undertaken. There is always risk that the time, the budget, anticipated revenues, and expenses, as well as forecasted targets might fail to materialise as originally expected. This can be a result of performance failure, insolvency, and external factors (e.g., political uncertainties). The success of a PPP project thus hinges largely on transferring risk to a party that is best suited to manage or minimise it (Chigumira and Dube, 2010). The IMF (2004) identifies the following types of risks and describes them as follows:

2.3.3.1 Construction risk

This type of risk arises from a number of sources related to the project construction. This includes infrastructure design problems, cost overruns that can arise in construction and from delays in project implementation.

2.3.3.2 Financial risk

Economies always face volatilities in some financial variables, which include interest rates and exchange rates. Due to the long-term nature of the projects, it might be difficult to carefully anticipate such volatilities. Thus, any PPP project is bound to have financial risk, which is the risk that movements of these key variables can threaten the implementation of the project.

2.3.3.3 Performance risk

Performance risk is the risk that the stakeholders might fail to perform as expected, resulting in the availability and quality of the services being compromised.

2.3.3.4 Demand/traffic risk

This is the risk that the demand for the service, as reflected by payments by the users after completion of the project, would not be adequate to compensate construction expenditure. This also includes the risk that the demand for the services could also fall after project completion, resulting in cost recoupment challenges. Demand risk is therefore bound to happen if anticipated benefits of the project to the users are overestimated.

2.3.3.5 Residual value risk

PPP projects are generally expected to be handed over to the government after a fixed term. The assumption is that the assets would still be in a good working order. However, there is a risk that the future market price of the assets might be overstated, making it of less value at the time of being handed over.

Risk management is therefore a central issue in PPP contract negotiations. The risks occur at different stages during the PPP project

3 THE PUBLIC PRIVATE PARTNERSHIP POLICY, LEGISLATIVE AND REGULATORY FRAMEWORK IN UGANDA

The policy, legal and regulatory environment is well established in Uganda to manage PPPs. The Government of Uganda has a policy, a law, regulations, and guidelines for the implementation of PPPs. It as well has other supportive legal frameworks and supportive infrastructure as detailed below;

3.1 Policy, Legal and Institutional Framework of PPPs

It is important to note that the PPP legislative and regulatory framework of Uganda was guaranteed prior to the policy by articles 178 (9b) and 189 (16A) of the country's Constitution as amended in 2005. The document supports PPPs as key in the alliance between the private and public sectors, working as enablers of protecting people's rights and extending equal and balanced development opportunities to the country's population in both rural and urban areas (Republic of Uganda [1995 as amended).

3.1.1 The PPP Policy (2010)

The PPP policy was adopted by the Government of Uganda in 2010. The policy creates a framework for the involvement of the private sector in provision of public infrastructure and services. As outlined in the policy document, the main objectives of the PPP Policy include to:

- put in place an enabling environment for stimulating investment in infrastructure and related services in Uganda;
- encourage private sector investment in critical infrastructure;
- ensure that the PPP procurement process is streamlined; and
- enhance accountability in PPP projects.

The PPP Policy document also shows that it was also espoused due to conviction on the part of the Ugandan government that PPPs had certain advantages compared to traditional public procurement projects. These include:

- that the net present cost of a service delivered under PPPs should be lower than that achieved under traditional procurement;
- that the quality of service delivered under a PPP should be equivalent or higher than that achieved under traditional procurement;
- that by allocating risk to the party best able to manage it and linking service payments to performance, PPPs deliver clear incentives for timeliness delivering of quality services compared to traditional procurement systems; and
- that by allowing the private sector to generate income using public assets, better asset utilisation would result while reducing the cost of public service provision.

The PPP Policy identifies examples of projects that are to benefit from PPP arrangements. These include physical assets such as economic infrastructure, which include roads, rail, ports, and communication. Also included is social infrastructure, such as correctional facilities, health care facilities, educational facilities, and accommodation facilities. Other related services which can also benefit from PPPs include non-core services such as maintenance, security, cleaning, laundry, grounds keeping and other support services.

3.1.2 Legislative Framework

3.1.2.1 The Public Private Partnership Act of 2015

The Public Private Partnership Act of 2015 is the legal foundation of all PPP projects planned and implemented under the country's National Development Plan and its key priorities. Such projects concentrate on the development of public infrastructure through a number of strategic and operational activities, such as designing, financing, building and operating agreements; concessions; leasing, developing and operating agreements; operation and maintenance agreements; as well as building ownerships. The Public Private Partnership Act of 2015 is clear with respect to how issues related to risk management and allocation, financing technicalities and operating impacts can be dealt with through carefully structured procedures and regulations, especially through the

operationalisation of stakeholder management and the description and highlights of the important responsibilities for the key PPP stakeholders.

3.1.2.2 Public Finance Management Act 2015

The Public Finance Management Act (PFMA) is the other supplementary legal framework for the PPPs adoption and implementation in Uganda. It provides for a clear, well-researched and widely accepted treatment of the basis of PPP principles with regard to agreements between parties in terms of grants and management of guarantees, auditing and accounting of public funds and public debt. It grants the Minister of Finance state authority to approve monetary grants, loans and guarantees of issues. The Act dictates strict controls, as well as accounting and auditing procedures and controls aimed at protecting from corruption, mismanagement, fraud and embezzlement of public funds.

3.1.3 Institutional Framework

The PPP Act provides for the establishment of the following institutions to support the operationalization of the policy;

3.1.3.1 The Public Private Partnerships Unit (PPP Unit)

This is the regulatory institution for PPP projects in Uganda. It is established under section 10 of the Act and is an independent body under the oversight of the Ministry responsible for Finance. The functions of the PPP Unit, as outlined in section 11 of the Act include:

- To serve as the secretariat and technical arm of the Public Private Partnerships Committee
- To provide technical, financial, and legal expertise to the Public Private Partnerships Committee and the Project Team;
- To serve as a resource centre on matters relating to PPPs;
- To conduct awareness campaigns on PPPs;
- To provide capacity building to stakeholders on PPPs;
- To maintain a register of PPPs and their performance ratings;
- To develop a process for PPP projects, ranging from the identification, implementation, and monitoring, as well as ensuring that the process is followed;
- Assist contracting authorities to design, identify, select, and prioritise PPP projects;
- Put in place measures to eliminate the challenges that prevent the realisation of the benefits that are expected from PPP projects.

3.1.3.2 Public Private Partnerships Committee

The PPP Committee is established under section 5 of the Act. It is composed of critical government institutions which have a role to play in PPP projects, including the legal aspects, as follows:

- The Attorney General or representative;
- The Permanent Secretary of the Ministry responsible for finance or representative;
- The Permanent Secretary in the office of the Prime Minister or a representative;
- A representative of the national Planning Authority;
- The Permanent Secretary of the Ministry responsible for lands or representative;
- The Permanent Secretary of the Ministry responsible for local government or representative;
- A Director of the PPP Unit (secretary of the PPP Committee); and
- **Four other people from the following institutions appointed by the Minister of Finance**:
    a) A representative of the Private sector Foundation;
    b) A representative of the Uganda Investment Authority;
    c) A representative of the academia;
    d) A retired judge

The PPP Committee was established to generally provide the oversight that is needed to guide the PPP Unit. The specific functions of the PPP Committee include:

- Formulate policies on PPPs;
- Approve project proposals from contracting authorities;
- Authorise allocations from the Project Development Facilitation Fund, established to fund the activities of the PPP Unit.
- To formulate standards, guidelines and regulations for PPPs;

- To review the legislative framework for PPPs; and
- Approve the structure of the PPP Unit.

3.1.3.3 Contracting Authorities

Contracting authorities, which are government ministries or departments mandated to act as the public authority in PPPs, also play an important role in the implementation of the projects. Under section 12 of the Act, contracting authorities should identify, appraise, develop, procure, and monitor a PPP. The contracting authorities can also participate in the financing of the project by making a monetary contribution to the capital or concessioning its asset to the private sector. The contracting authority might also participate in the implementation of the project, although the specific role to be played needs to be specified in the invitation to tender.

3.1.3.4 Public Private Partnerships Project Team

Under section 15, a contracting authority that intends to enter into a PPP arrangement with the private sector needs to establish a PPP Project Team. The PPP Project Team has to be composed of officials with the required technical skills from the staff of the contracting authority. The functions of the PPP Project Team include to identify, screen, and prioritise projects based on guidelines issues by the PPP Committee and to ensure that the parties to a PPP comply with the provisions of the Act. The PPP Project Team should also submit annual reports and any other reports to the PPP Unit and maintain a record of all documentation and agreements entered into by the contracting authority relating to the PPP project.

3.1.4 Regulations and Guidelines

Pursuant to the PPP Act, the Minister responsible for finance issued the Public Private Partnerships Regulations, 2019 and the Public Private Partnerships (Meetings of the Committee) Regulations, 2019 (together, the PPP Regulations 2019). The PPP Regulations prescribe the bidding methods and procedures for the selection of a Private Party. These are all very comprehensive and provide a robust regulatory framework supportive of PPPs in Uganda.

3.2 WASH Sector in Uganda

3.2.1 WASH Situation

This section covers the performance of the WASH with respect to investments, targets, achievements, outputs and challenges. It is based on Sector Performance Indicators. It covers water supplies, sanitation, and hygiene

3.2.1.1 Rural Water Supply

As of June 2020, the national safe water coverage in rural areas was estimated at 68%. There was a decline from 69% as of June 2019. This was attributed to low reporting of new water sources by districts (47%) effects of Covid-19 pandemic and the manual system of data capture and entry both at the district local government and at the centre. The percentage of rural villages with safe water supply increased from 66% in FY 2018/19 to 68%. The functionality for rural water supplies stagnated at 85%. The overall per capita cost for rural water supplies was USD 72.6 which was lower than USD 75 in FY 2018/19.

The main technology options used for water supply improvements in rural areas include deep boreholes (44.7%), shallow wells (23.1%), and protected springs (20.8%). Others include tap stands/kiosks of piped schemes and rainwater harvesting tanks (11.3%). The percentage of water points with functional water and sanitation committees increased from 89% in June 2019 to 90% in June 2020 (SPR, 2019/2020)

3.2.1.2 Urban Water Supply

The population using an improved drinking water source in urban areas reduced from 79% in June 2019 to 70.5% in June 2020. Access to safely managed water (available on premises) remained at 57.11% in urban areas.

Functionality of small towns and rural growth centres piped water supply systems reduced from 94.3% in June 2019 to 81.23%. This decline was as a result of taking over many schemes that were originally not functional at all. In large towns, the average hours of service were 18 hours per day. Non-Revenue Water (NRW) increased from 30.73% to 33.5% in large towns and from 33% to 37.78% in small towns and RGCs. The average per capita investment cost for the new water facilities was USD57.95 compared to USD 58 in FY 2018/19 (SPR, 2019/2020)

Despite this progress MoWE identifies the following constraints as affecting the Performance of the Urban Water Supply: Pollution and depletion of water resources which has resulted in water scarcity and increased cost of production due to the need to use more quantities of chemicals to purify water in the NWSC operated systems, unplanned settlement patterns which lead to difficulties in supply of water and sewerage services, inadequate institutional capacity including insufficient skilled human resources to effectively plan and manage the supply of safe water, weak local private sector players (contractors, consultants and private operators), high energy costs and an insufficient grid power network necessitating high cost alternatives, and low prioritization of sanitation and hygiene at all levels.

3.2.1.3 Sanitation and Hygiene

According to district reports, access to some form of sanitation in rural areas increased from 77.2% to 78%. The sanitation situation is worse in informal settlements and in rural areas where 16% of the female headed households are reported to be using the bush for toilets, compared to 10% of their male counterparts (UBOS, WASH Gender and water statistics profile, 2012). This partly contributes to WASH related diseases such as diarrhoea that account for 8% of neonatal deaths (WHO: 2015).

In urban areas, access to some form of sanitation also increased from 87.9% to 89.1%. Use of basic sanitation in rural areas increased from 16.6% to 18% and in urban from 42.8% to 44.8%. Use of safely managed sanitation in rural areas remained at 7.1% and in urban areas increased from 37.4% to 38.9%.

The national standards recommend a pupil to stance ratio of 40:1 in schools. According to district reports, the national pupil: stance ratio increased from 71:1 to 72:1. Access to hand washing facilities in schools increased from 42% in FY 2018/19 to 58%. District reports show that 22 % of the rural population were practising open defecation.

Three Faecal Sludge Management Facilities have been constructed to completion including Dzaipi, Kamuli, Nakasongola (under test running) (SPR, 2019/2020). The low sanitation coverage is often attributed to lack of demand, low priority setting among the communities and local governments, inappropriate toilet technologies and weak supply mechanisms.

3.2.1.4 Critical Issues for the Sector

- Inadequate financing to the sector remains a major challenge and affects the fulfilment of core functions.
- Capacity gaps in the sector remains a critical issue particularly in newly created local governments, Umbrella Authorities, and the ENR subsector.
- Inequity in water service coverage is another critical issue affecting the sector. 17 least served districts with less than 55% coverage require special attention. The majority of these districts fall in the dry cattle corridor with low surface and ground water potential and require expensive technologies like bulk piped water supply.

3.2.2 Policy, legal, and Institutional framework for the delivery of WASH in Uganda

The institutional framework for water supply and sanitation in Uganda is well defined. The Ministry of Water and Environment (MoWE) is responsible for determining priorities, setting policies and standards for water development as well as managing and regulating water resources.

Over 100 local governments are responsible for the implementation of rural water supply and sanitation programs at the district level. The National Water and Sewerage Corporation (NWSC) is a parastatal that provides water and sewerage services in 23 large urban centers. Local governments

play a significant role in overseeing piped water supplies while the private sector is increasingly taking up construction, operation, and maintenance roles in the sector. Further, Local governments with responsibility for water and environmental health services are able to appoint and manage private operators for urban piped water schemes that are outside the jurisdiction of the National Water and Sewerage Corporation. In these areas the urban council is appointed as a water authority and sets up a water supply and sanitation board. The water supply and sanitation boards can in turn contract private operators to operate and maintain these systems. Out of a total of 51 piped water supplies in these urban areas 20 are run by private operators, with the remainder of the schemes run by the water supply and sanitation boards themselves. Umbrella organizations provide back-up support, supervise, and monitor the water supply and sanitation boards.

Other smaller towns (defined as rural growth centres in Uganda) that have piped water supplies are appointed as water authorities themselves. There are 64 of these small rural towns. Of these, only eight use private operators with the remainder run by individual operators. While the private operators are companies, appointed through a tender process, the individual operators are individuals, appointed by a letter to run the smallest schemes.

The private sector also plays a significant role in the development of new services. Private firms undertake design and construction of water supply and sanitation infrastructure under contract to local and central government. Private companies and private artisans construct household sanitation facilities and sell items such as latrine slabs. Private handpump mechanics and scheme attendants provide maintenance services to water users in rural and peri-urban areas, and private retailers sell spare parts for handpumps and piped water supplies.

3.2.2.1 The Uganda Water Policy and Act

Uganda has a relatively robust national and water and sanitation policy framework that has led to tremendous improvement in access to water, sanitation and hygiene (WASH) services however, about 30% to 35% of Ugandans remain without access to water and sanitation services respectively. The current policy framework and delivery mechanisms are not adequately facilitating new initiatives as appropriate models for inclusive and equitable WASH service provision. Water and sanitation coverage in Uganda has not matched the national and global target.

3.2.2.2 The Gender Water Policy (2003, revised 2016)

Ministry of Water and Environment developed and launched its first WASH Sector Gender Mainstreaming Strategy in 2003. The Strategy committed the water sub sector to mainstreaming gender in all the four components of the water sector i.e., Rural Water Supply, Urban Water Supply, Water Resources Management and Water for Production. The revised version of the strategy (2008 and 2016) helps cater for the changes that have taken place in the sector from the gender perspective.

3.2.2.3 School Health Policy (2014)

The holder of this this policy is the Ministry of Education and Sports (MoES). The policy recognises the need for Public Private Partnerships (PPP) to enhance collaboration among different partners especially in the WASH sector. The policy recognises that much as the MoES has set the minimum standards for WASH in schools, the level of coverage is still low with the national latrine stance ratios of 71:1 (SPR, 2017) as compared to the standard ratio of 40:1. Only 35% of the pupils have access to handwashing facilities, which puts the lives of the pupils at risk of faecal related diseases leading to absenteeism. Many girls also fail to complete education due to lack of a decent toilet and bathrooms at school. Low policy prioritisation of sanitation and hygiene and low effort accorded to institutional coordination across sectors is a major hindrance to achieving meaningful progress. Improvements in hygiene and sanitation continue to be undermined by fragmented mandates and inadequate coordination across ministries of education, health and water and environment.

4 THE EXPERIENCE OF PPPs IN UGANDA

Uganda has been implementing PPPs since the 1990s. The implementation of PPPs in Uganda has has a mixed record of moderately positive outcomes in some sectors and completely unfavourable outcomes in other sectors[13]. The reasons for these vary from limited experience in PPPs because for example the concessions were either arising from privatisation or were sector driven. They were Ad hoc implementations or poorly coordinated. In addition, most of them were initiated before the policy and law were in place. However, even those PPPs that were implemented after the policy, legal and institutional regime is place have had their share of the challenges. Little has been done to translate the PPP policy, legal and institutional regime from paper to action.

Uganda has had about 30 PPP Projects reaching financial closure since 1990 with a total investment committed of $2,036million[14]. The active PPP projects (under construction or operation) are 25 with a total active investment of $1,608 (US$million).

The large proportion of these projects are in the energy and transport sector such as the Bujagali Hydro power project; Bugoye Hydro Power Project; Umeme Limited concession; Tororo Power Station; Aggreko Thermal Plant among others; Rift Valley Railways; Pioneer Bus Company for the Bus Rapid Transit (BRT). In addition to arrangements in the transport and energy sectors, Uganda has a number of PPP arrangements within the tourism and the telecommunications sectors, and for the construction and operation of office buildings and accommodation and social service sectors including the Water and Sanitation Sector. The vast majority of PPPs are still conducted at the national level, given the limited capacities and limitations on borrowing by sub-national governments.

4.1 The PPPs in the WASH sector

The PPPs in the WASH sector in Uganda have evolved over time from contracting the private sector to construct the water and sanitation facilities to procuring them to design, finance, build and operate. The core idea behind PSP centred reform in Uganda was to improve sustainability and efficiency of piped networks in small towns by hiring private operators (POs) for their commercial management.

Driven by a profit motive, POs were expected to maximize revenue, minimize waste and maintain and expand networks in a sustainable manner. The small towns water management that recognized the economic value of water, involved private operators (POs), yet upheld the social principle of "some for all rather than all for some." To guard social objectives, infrastructure remained under government ownership and the introduction of POs was accompanied by a complex regulation as well as support framework. Customers pay for water in order to finance operation and maintenance (O&M) work, though O&M remains partly subsidized, and system construction and extensions are generally financed publicly. The private sector also plays a role in the design and construction of facilities under contract by local and central government. However, the major challenge to the management of piped water supply schemes in Uganda is financing. Private credit to finance piped water supply schemes is still rare in Uganda and has been limited to pilot projects led by the World Bank Global Partnership on Output-Based Aid (GPOBA) and the International Finance Corporation (IFC)[15].

The PPPs in the sanitation sector are extremely new and limited. They are largely facilitated by non-state actors for example GIZ, Swedish Development Cooperation (SDC); foundations such as the Bill and Melinda Gates Foundation (BMGF) and NGOs such as Water for People (WfP) that have supported for example the Kampala Faecal Sludge Programme, The Kitgum and Kole Decentralised Faecal Sludge treatment plants (DEFASTs) and other Resource Recovery for Safe Reuse (RRR) project in Kampala and other parts of Uganda.

[13] Uganda Economic Update Ninth Edition, June 2017, Infrastructure finance deficit: Can public-private partnerships fill the gap?

[14] https://pppknowledgelab.org/countries/uganda

[15] The Busembatia small towns piped water supply PPP in Uganda

In this report we expound more on the PPP arrangements in the WASH sector with a specific focus on sanitation subsector. We discuss the case of the Kampala Faecal Sludge Management Programme and use it to model other potential PPP arrangements within the sector but also at a local government level.

4.2 PPP Models in WASH Sector in Uganda: The case of the Kampala Faecal Sludge Management Programme (KFSM)

Sanitation issues are some of the most significant development challenges for Kampala City, Uganda. Kampala is experiencing rapid population and economic growth. However, provision of key services including adequate sanitation for the city population has not been in tandem with these developments. In addition, piped sanitation systems are available only to a very limited extent of the urban population.

In Kampala, about 90% of the people rely on on-site sanitation solutions[16], a greater proportion of which cannot be considered "improved" or "acceptable" in most cases. Many households share one toilet, leading to unhygienic conditions; pit-latrines are unlined, filled with solid wastes, and hard to access for emptying services, ultimately leading to filled-up facilities that are either abandoned or directly emptied into the environment, posing health and environmental risks for the city and its people.

High population growth rates and increasing urbanisation add to the fact that especially in poor urban areas and informal settlements, access to sanitation is inadequate and collection, transport as well as treatment of faecal sludge remain a great challenge.

It is estimated that 900m³ of faecal sludge are generated in Kampala every day, whereas only 390m³ are collected, representing a collection rate of 43%. The reasons for this include:

- The faecal sludge collection and transport (FS C&T) service providers currently operate in an environment that is informal and unregulated. This results in high price variations and unsatisfactory service delivery standards (response time, quality and completeness of service, appropriate discharging and treatment). As a further consequence of high prices, the services are often not affordable for large parts of the urban poor, harming their access and thus equity.
- Around 80% of Kampala's population relies on pit latrines, out of which most are not lined, making it hard for vacuum tankers to empty them. In many cases manual emptying is being practised, exposing workers and households to high health risks.
- Access to the toilets for FS C&T vehicles is a challenge in unplanned and congested areas and often not possible.
- Weak policy, legal and institutional framework regarding for example the regulation of FS C&Ts or infrastructural planning and provision of sufficient sanitary services.
- Only one treatment plant in the city is designed for faecal sludge management, which reached full capacity within the first month of operation.

Faecal sludge is only one waste stream that requires management/oversight through public institutions. Other waste streams usually refer to solid waste. The management of the latter similarly faced several challenges in the past, especially due to its informal and unregulated nature. However, the Kampala Capital City Authority (KCCA), the governing body of Kampala City, managed to tackle a considerable number of those issues; KCCA successfully divided the city into municipal solid waste collection zones and contracted private companies for the management through an open bidding process using a PPP model. Some of the lessons learned and experiences gained from this process can provide useful guidance also for FSM.

Therefore, it is against this background that Kampala Capital City Authority (KCCA) and its development partners, GIZ through the Reform for Urban Water and Sanitation Sector(RUWASS) and

[16] Source: KCCA (2014), Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda

Bill and Melinda Gate Foundation (BMGF) and DFID, developed and implemented a programme to improve Faecal Sludge Management (FSM) in the vulnerable urban poor areas of Kampala city based on a coordinated and holistic approach where FSM interventions are identified and planned along the entire sanitation service chain (containment, collection, transport and disposal, treatment and reuse) through an efficient and affordable private sector led service delivery model through the Project "Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda". The rationale for the FSM programme is that onsite sanitation is a mid- to long-term reality in Kampala, so FSM has a critical role in contributing to the citywide provision of sanitation services. The main principles followed in developing the programme include:

- Creating a strong legal and institutional framework with clear roles and responsibilities for sector stakeholders
- Private sector engagement and business development
- Capacity building and coordination of stakeholders
- Awareness and demand creation among user groups

The KFSM programme recognised that to ensure citywide service coverage, and to informal settlements in particular, KCCA needed to partner with the private sector, based on a viable business model. The KFSMP was a two phased programme that involved a research-based phase one that focused on assessing a private sector service delivery model for improving FSM in Kampala City. It profiled the Kampala sanitation market; analysed the existing policy, legal and institutional framework related to FSM; investigated the applicability of binding service level agreements (SLAs) as PPP engagement tool; and developed, recommended and piloted feasible business/financial models for FSM in Kampala.

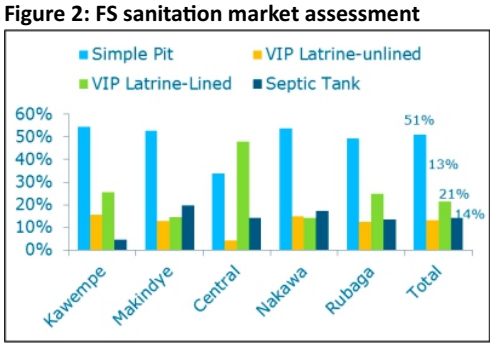
It was implemented by the National Water and Sewerage Corporation (NWSC), Reform for Urban Water and Sanitation Sector (RUWASS)-GIZ Uganda, and Makerere University. And Phase two focused on the scaling up and operationalisation of the business model developed in Phase one.

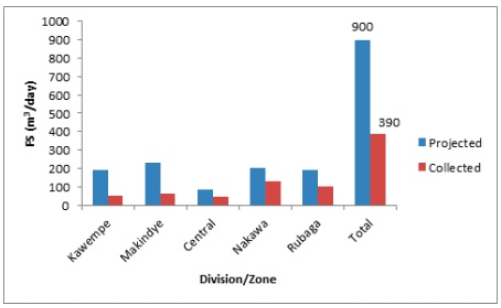
Phase one of the project concluded that there is value in FSM as demonstrated by the market size and potential; It is possible to engage the private sector through binding SLAs after fulfilling certain processes; KCCA can gazette operational territories that can be awarded based on the criteria specified and on competition and financial analyses showed that the FS C&T business is viable based the following studies and research outcomes on the basic private sector participation parameters.

4.2.1.1 Sanitation Market Assessment

The Sanitation market is based on the quantity of faecal sludge generated from households, institutions and commercial establishments in Kampala and its neighboring areas such Mukono and Wakiso. The study concluded that 64% of the households use unlined facilities that are difficult to empty, FS collection efficiency is low (43%), Services are affordable based on average household expenditure and but the willingness to pay was low based on the average market price. It was found out that more than 90% of households are willing to pay less than the current average emptying cost of USD 48 and therefore there was need for sensitization and awareness creation.

Figure 2: FS sanitation market assessment



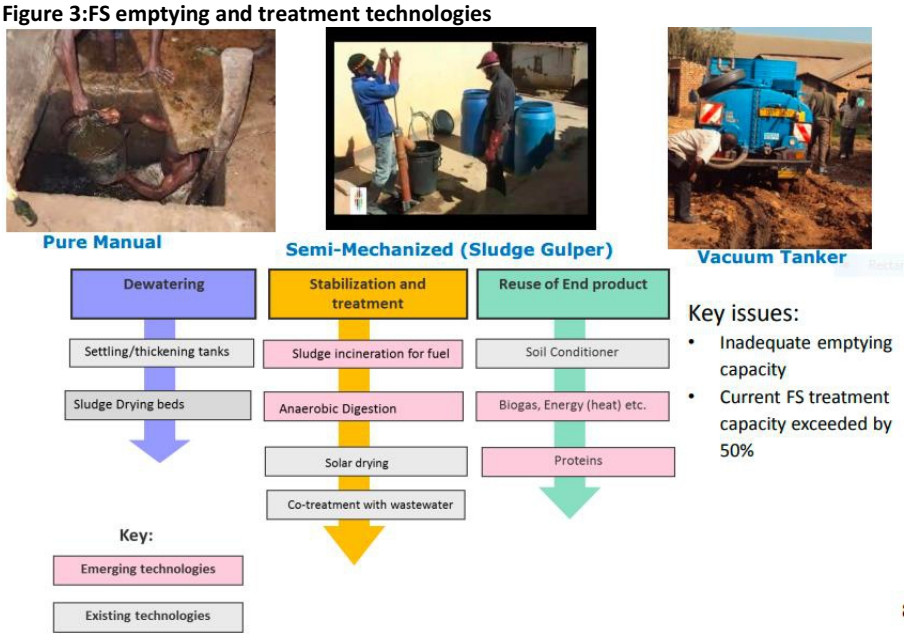


Source: KCCA (2014), Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda

4.2.1.2 Faecal Sludge Management Technologies

The main FS emptying technologies used in Kampala include: Pure manual pit emptying, semi-mechanized pit emptying mainly constituting the "Sludge Gulper" and the vacuum tankers which are mostly used for emptying of septic tanks and lined pits.

Figure 3:FS emptying and treatment technologies



Source: KCCA (2014), Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda

Faecal sludge in Kampala is currently treated at a single treatment plant whose design capacity is 400 m^3/day and 5,000 m^3/day for faecal sludge and wastewater treatment respectively. The FS treatment processes at the plant include sedimentation (settling tanks), co-treatment with wastewater (stabilization ponds) and solar drying (sludge drying beds). Treated sludge from drying beds is used as a soil conditioner and organic fertilizer, which is the only faecal sludge reuse option being implemented in Kampala on a moderate scale. However, there are a number of emerging reuse technologies in Kampala.

4.2.1.3 Policy, Regulatory and Institutional Analysis

The existing regulations that are relevant to faecal sludge (FS) management in Kampala include: The Public Health Act 1935 (Cap.281); The KCCA Act, 2010; The Local Government Act 1997 (Cap.243); The Local Governments Sanitation of Building Sites Byelaws; The Public Private Partnership Act, 2015; and The National Environment (Waste Management) Regulations S.I. No 52/1999.

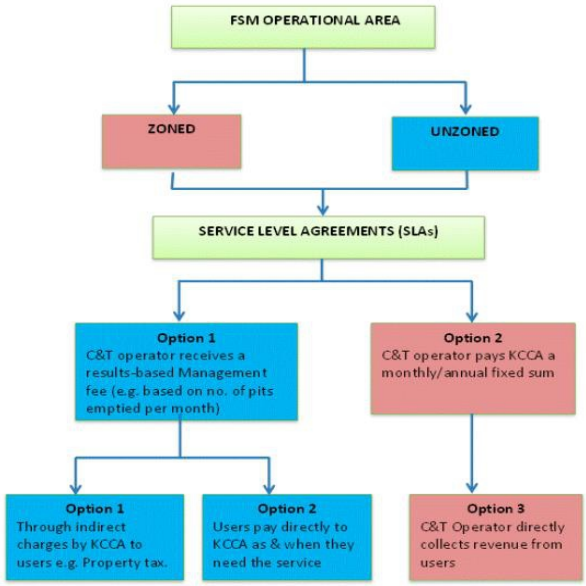
The institutional/operational framework included the following stakeholders: KCCA - responsible for regulation and setting of service level standards; NEMA - responsible for FS transportation licensing FS collection and transportation operators; NWSC in charge of FS treatment; users responsible for payment for FS C&T services and re-users of FS end products. Currently, the FS collection and transportation operators carry-out their business informally. In order to achieve a workable PPP (SLA) arrangement, the FS C&T operators had to constitute themselves into legal entities i.e., registered companies.

4.2.1.4 Business and Financial Models

Currently, the FS C&T service providers operate in an environment that is unrestricted and unregulated. In addition, no formal obligations exist between the service providers and KCCA and there are no minimum service level standards for the former to fulfil. The users pay for the services directly to the C&T operators as and when they need services.

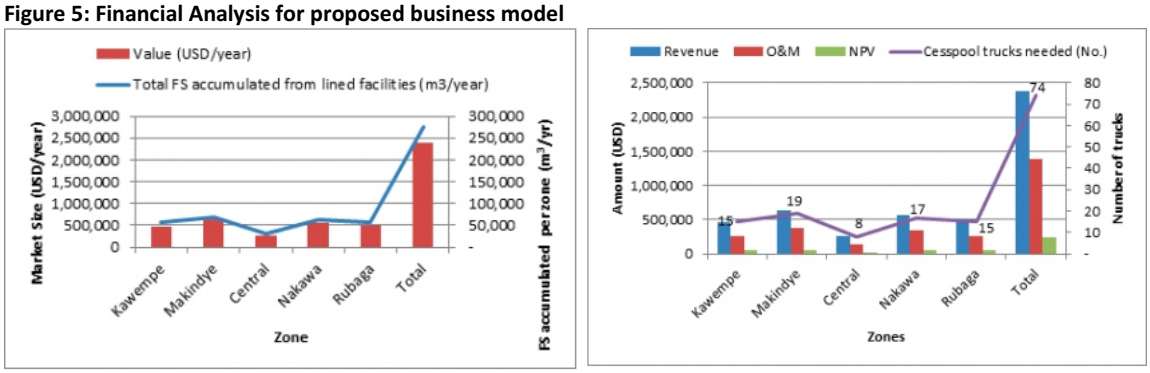
The following FSM business model was proposed for Kampala: Creation of operational territories based on the 5 divisions of Kampala city for FS C&T service providers; awarding service level contracts to FS C&T providers for the respective zones through a competitive bidding process. One of the bidding parameters was the unit FS emptying charge (USD/m^3) proposed by a C&T operator for a respective zone; and the collection of user fees by the service providers. The FS C&T operators would be required to remit a fixed (monthly or annual) operational fee to KCCA.

Figure 4: Business model options for FSM



Source: KCCA (2014), Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda

Figure 5: Financial Analysis for proposed business model



Source: KCCA (2014), Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda

From the above analysis the estimated unit C&T charge is between USD 8.4-9.0/m^3; the average market size per zone ranges between USD 250,000 and 632,000 per annum; the combined market size for Kampala is about USD 2.4 Million per annum. The analysis also indicated a Total NPV for FS C&T over 5 years of about USD 235,000 with the NPV for zones ranging between USD 25,000 and 60,000. The average cash flow per truck per month after taxes is USD 270 and it was concluded that the FS C&T business is reasonably viable with good returns on investment per operational zone considered.

4.2.1.5 Readiness of the Private Sector

An inventory of private emptiers was developed to facilitate mob ilization and engagement activities - The private operators, under two umbrella associations i.e., Kampala Emptiers Association (KEA) and Private Emptiers Association of Uganda (PEAU) were mapped out and engaged. The zoning and the establishment of SLAs with selected private operators was then tested in five pilot areas. Each ward was assigned two designated operators who worked under a memorandum of understanding with the objective of identifying the challenges of working in one specific area.

Furthermore, since treatment capacities were already exceeded and infrastructure projects take time, KCCA considered resource recovery and safe reuse (RRR) of faecal sludge. Six entrepreneurs that are adding value to the faecal sludge by producing briquettes, compost, biogas and other saleable materials were supported in this pilot phase.

4.2.1.6 Stakeholders

It was essential to bring together the various stakeholders and interests within the existing institutional and regulatory framework relevant to FSM in Kampala, to enable synergies and facilitate better planning. A high-level steering committee for sanitation projects in Kampala was established with representation from the key stakeholders. The committee met biannually to discuss developments and progress, and to provide strategic direction to FSM interventions in the city.

To guide the implementation of the pilot SLAs, KCCA with the support of GIZ and in collaboration with the private emptiers developed a memorandum of understanding between KCCA and the private service providers specifying their obligations, service delivery standards, targets and performance measurement.

To focus FSM at the divisions, five Sanitation coordination officers were recruited to support the public health section at divisional level by providing technical support and coordinating communities and local leaders in adopting good sanitation practices.

Further, KCCA established partnerships with key stakeholders such as NWSC, and NGOs such as Water for People (WfP) and Community Integrated Development Initiatives (CIDI), to supplement its capacity through the technical, social mobilization, academic or financial capacities of these organisations. For instance, the partnership with WfP supported and nurtured sanitation business start-ups particularly the small-scale Gulpers to self-sustaining businesses.

4.2.1.7 Development of an operational framework

An operational framework to guide service provision and sector regulation was developed. The framework comprises standards for onsite sanitation technologies, minimum health standards for sanitation-related processes, obligations for the safe collection and transport of faecal sludge, monitoring tools, incentives and penalties. These were developed using a consultative and integrative approach.

4.3 Refining and scaling up of the Private Sector engagement model on FSM in Kampala

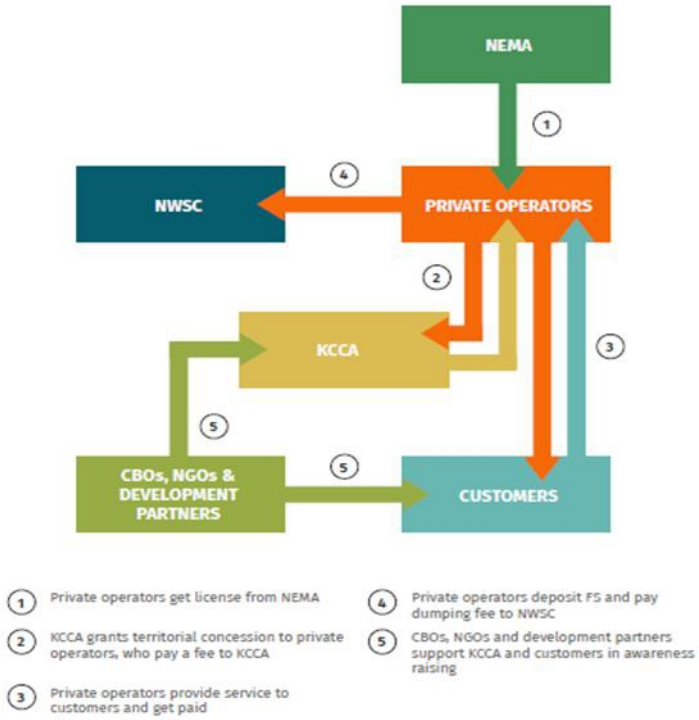
Phase two of the project was scaled up into a citywide programme known as the "**Kampala Faecal Sludge Management (KFSM) Programme"** under the overall coordination of KCCA from January 2017, with various partners contributing to the programme. This enabled more efficient use of the available resources, as well as minimizing duplication and learning times. It was based on the lessons from the pilot and recommendations from phase one of the project.

This intervention was directly responding to the challenge of FS of 900 m^3/day generated in Kampala but with limited desludging equipment able to transport only 390m^3/day. Moreover, there is an additional demand of 150m^3/day which emanates from districts neighbouring Kampala (KCCA, 2014). In addition, the only FS treatment plant has a capacity of 400m^3/day; hence the treatment capacity is surpassed by 50%. Further, the long haulage distances (of up to 17km) to the treatment plant increases the cost of managing faecal sludge. Consequently, many parts of the city were un-served and the cost of FS collection and transportation (i.e., USD 9/m^3 and USD 60/m^3 for a cesspool truck and gulper, respectively) remained unaffordable for the urban poor. Additionally, there was limited information on the spatial distribution and location of sanitation facilities in Kampala which made enforcement of standards, planning for resource allocation and monitoring of service provision a challenge. And lastly, there was no systematic structure to disseminate information on FS desludging services to the public.

As a result, the urban poor (who make up 64% of Kampala's population) were the most affected by the above problems. Therefore, in the project, KCCA sought to invest in improving FSM in the vulnerable urban poor areas of Kampala city through an efficient and affordable private sector led service delivery model.

4.3.1 The Business Model for KFSM

Figure 6: The Business Model for KCCA FSM



Source: KCCA (2014), Improving Faecal Sludge Management (FSM) for On-Site Sanitation in Kampala City, Uganda

The above was a refined version of the model that was tested in Phase one of the project. It had the following main features:

1. FS collection and transport are entirely delegated to the private sector. This includes inspections to identify pits due for emptying and/or illegal disposing and respective reporting of non-compliance to KCCA.
2. The delegation for service provision to the private sector is according to predefined zones.
3. Legal basis for implementation is a specific Municipal Ordinance/By-law enabling KCCA to: Regulate prices, define zones, set terms and conditions of the SLA, carry out an appropriate tendering process, supervise, monitor and enforce compliance with regulations and set and collect penalties in case of non-compliance
4. During the procurement and tendering process there is competition for the market to provide service among private operators.
5. Market access is open only to licensed and incorporated operators. All service providers (e.g., gulper operators) must get under the umbrella of a licensed operator. This is decided at management level of KCCA with buy-in from NWSC-NEMA.
6. For demand mobilisation, especially among poor people the introduction of a voucher system for poor people is integrated.
7. The customers pay directly to the service provider, who in turn pays the dumping fee to NWSC.
8. In case of a voucher system, the beneficiaries would receive a voucher from KCCA. This voucher entitles them to service provision. Payment is made by KCCA against presentation of proof of deposit at NWSC. KCCA pays dumping fees to NWSC on a periodic basis. This is decided by KCCA management and approved by the political organs preferably at division level.
9. The contractual relationship between KCCA and the private service providers mater ialises in form of a Service Level Agreement.

10. Tariffs reflects differences in costs for providing the services, hence different tariffs for different zones are admissible.

4.3.2 Scale up activities of the business model

Based on the recommendations from the phase one of the project, the following activities were implemented in phase two in order to improve the role out and delivery of business model;

4.3.2.1 Citywide sanitation mapping

This served to guide sanitation investments in the city and to inform the zoning of the whole city into financially viable areas for use in the SLA model. Two hundred enumerators carried out a door-to-door assessment of sanitation in all five divisions of the city over the six-month period January to June 2017, and a geo-referenced database of all onsite sanitation facilities in the city was created. Local politicians played a critical community mobilisation role in this exercise, which was supervised in conjunction with KCCA's technical team. Local leaders, community opinion leaders and village health teams also mobilised communities and acted as local guides.

4.3.2.2 Capacity building for both public and private sector

KCCA received support from GIZ, including high level benchmark visits and trainings, to strengthen its supportive and regulatory role, and assistance in development of the framework for sanitation service delivery by the private sector. On the private sector side, much initial work was undertaken by WfP to develop small-scale service providers based on Gulpers and other manual tools. WfP recruited entrepreneurs and helped them develop into sustainable businesses, providing training and assistance with registration, licensing, and equipment procurement.

4.3.2.3 Demand creation and awareness raising

Sanitation marketing and promotion of emptying services was conducted in communities. Communication, awareness raising, and behaviour change messages were streamlined into a set of messages addressing three key behaviours identified by KCCA, namely: safe pit emptying; improved, and therefore emptiable toilets; and toilet hygiene. The approaches adopted were 1) constant engagement with the communities; 2) door-to-door engagement; and 3) enforcement or the threat of enforcement played a convincing role in behavioural change.

4.3.2.4 Business development

This activity was key to delivering a sustainable sanitation business sector, where products and services demanded by households and institutions were supplied in a well-regulated market. Business development and capacity-building of private emptiers was carried out to enable them to be licensed and subsequently regulated. To reinforce this, a service delivery framework and operational guidelines were developed in conjunction with the operators. This informed the capacity building programme and constituted the basis for compliance monitoring.

4.3.2.5 Infrastructure investment

A significant constraint on FSM in Kampala was the infrastructure, all the way from containment, to transportation and treatment facilities. KCCA has invested in schools and public sanitation facilities and has reduced pupil stance ratios in public primary schools from 118:1 in 2012 to 43:1 currently. Through partnerships with NWSC and NGOs such as WaterAid, AMReF and CIDI, significant investments have been made in public toilets and faecal sludge treatment capacity. The majority of household pit latrines in Kampala are unlined and would require upgrading to meet minimum standards. The approach that was adopted was to persuade landlords to provide facilities which meet the standards through awareness-raising and enforcement. And because this did not deal with all the toilets that needed upgrading, subsidy and/or credit financing for the remaining facilities was considered and implemented.

4.3.2.6 Coordination of the various stakeholders

KCCA prioritised the coordination of the various stakeholders in the city through the Kampala WASH forum, to share best practices, and to streamline and optimize the available resources to achieve

citywide sanitation. The forum, hosted by KCCA, has four thematic working groups: hygiene and public health education; appropriate technologies; knowledge management; and governance and policy.

4.3.2.7 Financial aspects

The main payment flows comprised emptying fees that were determined by the service provider after assessing the location, condition and size of the sanitation facility. The KFSM programme did not consciously regulate emptying fees but rather left it to the influence of competitive forces and increasing volume of work. At the start of the programme, emptying charges averaged USD 45.00/m^3 for Gulpers and USD 6.50/m^3 for vacuum trucks. Following the various interventions, a reduction in emptying charges was noted, to USD 40.00/m^3 for Gulpers and USD 5.00/m^3 for vacuum trucks. With the implementation of the planned zoning and engagement of the private sector through SLAs, it is envisaged that price regulation is yet to be introduced in a phased manner.

4.3.2.8 Project Innovations

New approaches were needed to overcome historically neglected FSM problems, and were developed in close collaboration and partnership with stakeholders, and included:

- **A sanitation call centre to coordinate service provision**. KCCA with the support of GIZ and BMGF established a sanitation call centre to strengthen the link between customers, service providers, and KCCA itself. Through a toll-free number, the centre offers customers a platform for inquiries and complaints, as well as a simple means to contact emptying service providers.
- **A GPS tracking system for service providers** to improve service efficiency and avoid illegal dumping. This was piloted for four months and showed that emptying was mainly taking place in the formal sections of the city.
- **Mobile transfer stations to reduce transportation distances for small scale service providers**. KCCA, in partnership with WfP and GIZ, converted a vacuum tank from an old truck to a trailer into which small operators can discharge their collected sludge for a small fee. Being mobile, the transfer tank can be located close to emptying operations in communities. It is then hauled by a tractor to the utility's faecal sludge treatment sites. Preliminary feedback is very positive, and it clearly stimulated demand for emptying in the informal settlements where it was stationed.
- **Promotion of small entrepreneurs using innovative technologies**. Technically, the use of Gulpers for pit emptying, the production of briquettes from faecal sludge, etc. are not recognised by the existing legislation. However, the city acknowledges the gap that they are filling, especially in inaccessible areas, and therefore promotes them where they are relevant, while also working with them in parallel towards legalising their operations.

4.3.3 The Project Impact of the Business Model

The programme achieved considerable results. For instance, access to formalised faecal sludge management services increased, and the private sector is in constant and institutionalised exchange with the city authority. Minimum standards for onsite sanitation have been developed and facilities are being upgraded or constructed to meet the standards. Streamlined behavioural change communication material has been developed and applied in a city-wide campaign. In addition, sanitation coordinators are in place in all five divisions of Kampala, and a sanitation call centre has been established and been in operation since mid November 2016.

4.3.3.1 Benefits from the implementation of the model

The other benefits derived from the implementation of this KFSM business model include;

1. **Clear mandates and responsibilities**: Each and every stakeholder is aware about its rights and obligations. These rights and obligation are governed by regulations. This leads to an overall framework of enhanced accountability.
2. **Incentives for private sector**: The incentives for the private sector are mainly given by the perspective to have the exclusive right to serve a zone. Furthermore, a voucher system provided an incentive to serve poor and hitherto unserved customers, as well as a subsidy funded out of a sanitation levy.

3. **Market mechanisms in place**: Market and competitive mechanisms were put in place for procurement and tendering. However, by consequent supervision and strict enforcement of regulations it is possible to uphold the competitive pressure after the granting of the concession.
4. **Transparency for the customer**: For the customer it is quite clear, what to do for consuming the service and how much it will cost. There are no hidden or other costs.
5. **Untapped customers served**: Through the voucher system and/or a sanitation levy a considerable part of the not-realised demand was mobilised. The system made the service affordable also for poor customers.
6. **Enhanced enforcement options**: Service providers helped in identifying non-complying customers and reported to KCCA for enforcement. This was successful because of the involvement of key stakeholders (KCCA, NWSC, NEMA) at the top levels.

4.3.4 Factors for Success

1. **KCCA was committed to reform the sector and willing to apply a stepwise approach, which included learning and revision process**
2. **Close collaboration with the private sector**: The private sector trust in and collaboration with KCCA was critical for the success of the programme. However, the more striking fact was that the private sector brought in valuable and significant inputs into the planning process, helping to avoid failures when strategies are implemented on the ground.
3. **Creation and dissemination of information**: The project produced a number of publications to inform the sector, such as an inventory of all private players in FSM and RRR and an analysis of the framework conditions for private sector participation in FSM, while GIZ and BMGF have supported KCCA in widening and improving its databases. For example, the exhaustive database of the state of household, institutional and public sanitation in Kampala and the maps of all public and community toilets including information about their sanitation, ownership and operation and maintenance status, have informed investment planning.

4.3.5 Lessons Learnt

1. **Coordination of stakeholders and activities is key to avoid duplication, create synergies, and pool funding**: Fora and steering committees that meet on a regular basis supported this. However, they need to have clear descriptions of their roles and responsibilities, such as terms of reference, and the outputs, outcomes and agreements of meetings need to be written down and circulated. A lead agency that invites and does the follow up is essential, and it should not be a donor or NGO but rather a local entity – KCCA in this case.
2. **Public private partnerships need close cooperation right from the start:** Regular meetings are not enough – the public sector needs to genuinely consider the concerns of and inputs from the private sector.
3. There can never be **too much** community engagement: Communities need to be constantly engaged right from the start of an intervention to ensure buy-in, continuity and sustainability.

5 THE POTENTIAL OF RESOURCE RECOVERY AND SAFE REUSE (RRR) IN UGANDA

Resource Recovery and Safe Reuse (RRR) promotes a paradigm shift in solid and liquid waste management from treatment for disposal to treatment for reuse based on research on generic RRR Business Models at different scales. It offers significant value beyond "ecological benefits" by offering viable options for cost recovery across the sanitation service chain and business opportunities that attract private capital.

5.1 Experiences in RRR in the WASH sector in Uganda

There is growing experience in RRR in Uganda. This experience is drawn from various interventions that have been piloted and implemented across the country.

The KFSM programme discussed in section 4.2 above complemented another programme "the Enhanced Water Security and Sanitation (ENWASS) Programme" implemented by GIZ in partnership with the Kampala Capital City Authority (KCCA), the Ministry of Water and Environment (MWE), the National Water and Sewerage Corporation (NWSC) and other key stakeholders that promoted private sector engagement in the sector through the support of Resource Recovery and Safe Reuse (RRR) business models that deal with faecal sludge (FS) as well as complementary waste streams with funding from the Swiss Development Cooperation (SDC) and a co-funding from the German Development Cooperation (GDC) is one such as a case.

The two interventions complemented and overlapped each other in the implementation. The KFSM programme was implemented from 2015 – 2019 while the ENHASS RRR project was implemented from 2011 – 2019. Both interventions aimed at addressing the sanitation and specifically faecal sludge challenge in Kampala city. The KFSM programme focused on private sector engagement in Capture, containment, collection and transportation and treatment of the FS while the ENHASS partnership programme focussed on promoting private sector engagement on the resource recovery and safe reuse (RRR) of nutrients, water, organic matter and energy from otherwise wasted resources along the Sanitation service chain.

These interventions enabled to strengthen the legal and institutional frameworks for FSM and creating an enabling environment for private sector engagement in the sanitation sector. This meant, setting up systems that ensured that:

a. Faecal sludge (FS) is safely captured and contained
b. FS is safely collected and transported to the treatment plant
c. FS is treated
d. FS is safely disposed of or reused

5.2 Business development support in resource recovery and reuse (RRR)

Business development support in Resource Recovery and safe Reuse (RRR) was implemented as part of the Enhanced Water Security and Sanitation (ENWASS) Programme implemented by GIZ working in collaboration with the Kampala Capital City Authority (KCCA), the Ministry of Water and Environment (MoWE), the National Water and Sewerage Corporation (NWSC) in Uganda.

The Resource Recovery and Reuse project was based on the realisation that a lack of business models in the sanitation-agriculture interface was a key gap limiting development. Another gap concerned applied options to safeguard public health where waste resources are reused, especially those with potential faecal contamination.

Like the KFSM, the project was a two phased with the first phase being a research dominated phase aimed at identifying existing reuse cases and developing RRR business models and Sanitation Safety Plans (December 2011 to November 2014). It was co-led by World Health Organization (WHO) and

International Water Management Institute (IWMI) with co-funding from the Swiss Agency for Development and Cooperation (SDC) and was part of a global programme implemented in India, Vietnam, Uganda and Peru.

The IWMI-led part aimed at identifying existing or emerging reuse cases of water, nutrients, organic matter and energy from domestic and agro-industrial waste streams to learn about their performance and analyse in depth the most promising and/or scalable cases. Under the aegis of IWMI a compendium on resource recovery from organic municipal, agro-industrial and food waste, wastewater and faecal sludge, supporting a diverse range of business models with potential for largescale out and up was compiled.

In tandem with identifying and analyzing reuse business models, during this phase, a Sanitation Safety Plan (SSP) Manual was developed to safeguard public health in the context of rapidly expanding use of wastewater, excreta and greywater in agriculture and aquaculture and protect vulnerable groups from specific health risks associated with this pattern of agricultural development.

The second phase of the RRR Project (RRR-II) in Uganda (October 2015 to July 2017) aimed to ensure that "safe and financially sustainable RRR business pilots were established in Kampala with a special focus on "coaching two to three start-up entrepreneurs to establish a RRR business". RRR-II in Uganda was implemented by GIZ Reform of the Urban Water and Sanitation Sector Programme (RUWASS) and KCCA and co-funded by SDC.

Implementation of activities and achievement of results was a team effort on the part of professionals from the College of Engineering, Design, Art and Technology (CEDAT) at Makerere University, CEWAS, the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) and Makerere University Business School (MUBS).

The second phase of the Resource Recovery and Reuse (RRR) project was extended (Extension RRR-II) from August 2018 to November 2019 to strengthen business capacities (profitability, business planning, licensing, FS product development and marketing) and technical capacities (skills, knowledge) of relevant RRR entrepreneurs reusing and recovering resources from faecal sludge in close collaboration with NWSC, and to have at least two RRR pilots reusing and recovering resources from faecal sludge waste streams implemented in Kampala and functioning safely and financially profitable. This was implemented by GIZ- ENWASS and co-funded by SDC.

Activities of Extension RRR II

- Determination of the market through a thorough market research for FS briquettes in Kampala, this provided leads into the market for FS briquettes.
- Training of RRR businesses in FS briquette production as an alternative product in addition to charcoal briquettes.
- Training on market pitching and understanding what the market says about one's product, and to follow the market trends.
- Training on money management (including saving for future investment).
- Mentorship and handholding on record keeping, target setting, sales and marketing of sanitation products.
- Performing financial analysis of selected micro and small sized briquette businesses and a carbonisation plant for FS in Kampala as well as Decentralized Faecal Sludge Treatment (DEFAST) and Reuse plants at Kole and Kitgum.

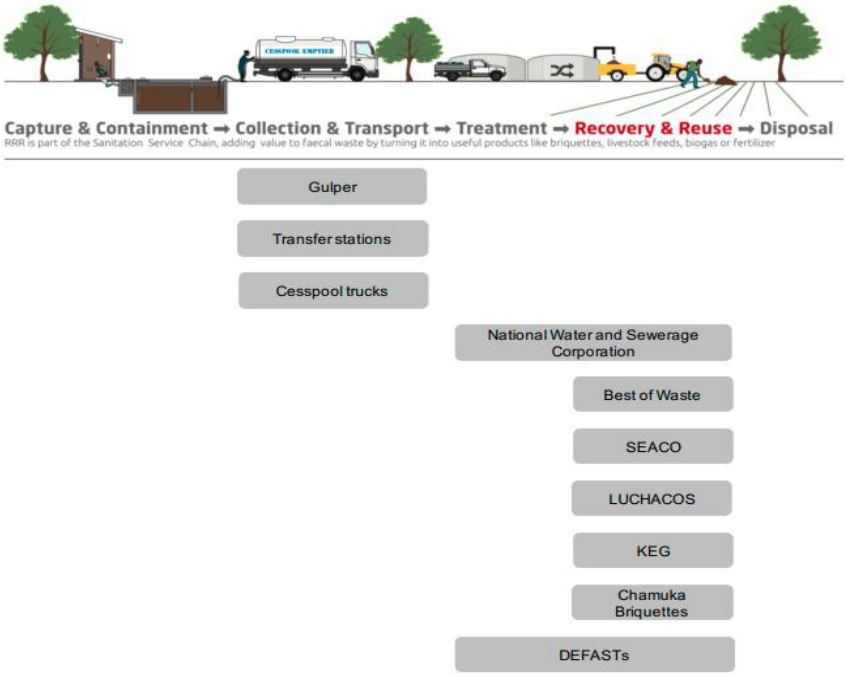
5.3 Experiences from selected RRR businesses across the sanitation service chain in Uganda

This section of the report shares the experiences of the implementation of the RRR Programme in FSM across the sanitation service value chain in Uganda.

Figure 7 below provides an overview of the position of selected RRR businesses and interventions in Uganda across the sanitation management chain. It illustrates an immense, largely untapped opportunities for provision of products and services across the sanitation service value chain such as emptying of pits, transportation and treatment of FS

and the recovery of water, nutrients, energy and organic compounds as experimented and implemented in the RRR Project. These are presented according to their positioning in the service value chain.

Figure 7: Position of RRR businesses in Uganda across the sanitation service chain



Source: GIZ etal (2020), Circular Economy for Sanitation - RRR Business Development Experience in Uganda

5.3.1 Collection and Transportation

5.3.1.1 Gulper

The Gulper is a simple direct lift pump which operates in a similar way to a borehole pump. It is designed to partially empty existing pit latrines of the supernatant layer at the top of the pit. The standard gulper will reach 1m-1.5m into the pit and the Extendable Gulper will reach up to 2m into the pit. The cost to an entrepreneur is a few hundred dollars which will fluctuate depending on the fabricator.

In Uganda, the technology was first piloted by Water for People (WfP) and has since been associated with pit emptiers similarly known as Gulper entrepreneurs. The technology has evolved from the initial Gulper 1 to the current Gulper 4 that is still under development. Of these gulper technologies, Gulper 1 has been the most widely used and most successful. The Gulper was developed to meet the demand for low-cost pit emptying services in unplanned urban areas. It can be manufactured by many fabricators found in urban areas, but it is useful to test the ability of the fabricator by getting them to produce one prototype first as some do not possess the required skill to make the butterfly valves to a high enough standard. But it is a simple technology to operate by a non-skilled workforce once a short training session has been conducted.

5.3.1.2 Transfer stations

Water for People in 2013 partnered with GIZ to increase access to sanitation coverage through promotion of sustainable sanitation technologies and scaling up the pit emptying business in 3 parishes; i.e., Bwaise I, Bwaise II and Nateete. Among the achievements of this engagement was the recruitment of 6 entrepreneurs and development of business plans for the entrepreneurs. The entrepreneurs could empty over 400 pit latrines by the end of the project period. One of the hindrances to the proliferation of the business and clientele during the 2013 project was the high costs of gulping. The business model implemented was deemed to be more expensive for some communities particularly due to transportation costs that are factored into the cost per trip made to

the dumping site, and thus borne by the client. The project recommended the need to have a system that will ensure affordable collection costs incurred by the client.

A pilot test of a small, fixed transfer tank system which would allow transport cost savings for manual pit latrine emptying businesses was initiated. However, the project failed due to land issues that are common in Kampala. Some landowners were not authentic; in other areas, the development plans would not allow permanent transfer tanks, while hiring private land or buying is not only expensive but unsustainable. Moreover, the fixed station would not eliminate the cost of primary transport and secondary transport. It is with this background that an idea of mobile sludge transfer tanks was conceived.

The mobile transfer tank consists of a tractor and a detachable 5.000 litre trailer tank. The detachable trailer consists of a 10-tonne walking beam axle and tires of size 12.5/80. The loading mechanism consists of a 200 litres trough suspended in fixed rail guides along one side of the tank body. The trough is connected to a 1 tonne winch by a cable that rans along two fixed pulleys on the tank body. During operation, the trough is lifted and lowered by operation and alternating of the winch functions.

This has been designed to support the gulper entrepreneurs to effectively serve the informal settlements at affordable costs.

5.3.2 Treatment and Recovery

5.3.2.1 National Water and Sewerage Corporation

Established in 1972, National Water and Sewerage Corporation (NWSC) is a public utility company and state-owned corporation mandated to operate and provide water and sewerage services . At present, NWSC's Sewerage Services Department (SSD) operates two Sewage Treatment Plants (STP) in Bugolobi and Lubigi, Kampala.

Commissioned in 2014, NWSC's Lubigi Faecal Sludge and Wastewater Treatment Plant is located on Lubigi wetland in Kawempe division, Kampala district along the northern bypass road. The plant receives and treats wastewater from a piped network as well as faecal sludge brought by private cesspool emptier trucks. It has the capacity to treat 400 m^3 of FS and 5000 m^3 of wastewater per day. Treatment is based on waste stabilisation ponds and unplanted sludge drying beds , see Figure 8 below.

Figure 8: Unplanted drying bed at Lubigi Faecal Sludge Treatment Plant in Kampala

Treated FS (that is after drying on sludge drying beds) is sold to farmers as a soil amendment with no further processing. NWSC generates a revenue of about UGX 6.000.000 per month from selling about 300 tonnes of dried FS (@ UGX 20.000 per ton).

5.3.3 Recovery and Reuse

5.3.3.1 Lubaga Charcoal Briquettes Cooperative Society (LUCHACOS) Ltd

LUCHACOS is a Cooperative Society by business form operating in the city division of Lubaga. The executive committee comprises of nine officials, who form the management team. LUCHACOS produces stick type briquettes as affordable and effective source of energy for cooking to institutions (poultry farms, schools, etc.) and low-income households. Their briquettes can be used in any type of cooking stove.

LUCHACOS grew slowly within the community and gradually registered as a cooperative organization. They depended on both, waste from the community as well as their market consisting of households and small firms in fast growing urban centres such as Kasubi and Nakulabye in Lubaga Division, Kampala City of Uganda. As LUCHACOS grew in size and business, they linked up and formed a partnership with Kasubi Parish Local Community Development Initiative (KALOCODE), which offered a bigger space in Nansana Village, Nansana Parish of Nabweru Subcounty in Wakiso District of Uganda where briquette production was to be undertaken. Upon agreeing on rent, leadership and sharing of proceeds and inputs, LUCHACOS closed their already squeezed workspace, moved and set-up their briquette making equipment in the new spacious workstation that was to be their new home and to work well with KALOCODE. The RRR-II Project Team emphasized issues of working together, trust and the need to document some of the decisions and agreements.

However, as time went on, disagreements arose, and mistrust grew between the new business partners: the key issue being harmonization of expectations. In June 2019, production at the new site was suspended due to disputes amongst the partners. The family that owns the land where LUCHACOS' briquette making machinery was installed and production was due to commence are the leaders of KALOCODE. They were unsure of what LUCHACOS made of their offer of the workspace and how both would mutually benefit from the joint material and expense investments. Therefore, LUCHACOS team finally decided to relocate to their own 8-acre land in Bulima Village, Kakiri Parish of Kakiri Subcounty in Wakiso District of Uganda. However, the new location is far from their original workstation within Rubaga Division of the city district that had become congested. On the other hand, KALOCODE determined to go on with briquette business. They recruited 5 people distributed at the different sites on part-time basis, by start of August 2019 and were trying to raise working capital for production to kick off.

The challenges for both groups remain working capital, lack of suitable equipment, of course costs of set up like LUCHACOS' new home being outside the city, transportation and construction of shelters to house the equipment is required in addition, to reaching out and discussing with Kakiri Town Council on possibilities of delivering the inputs (waste) at the site in Bulima, Kakiri. For KALOCODE, while the leadership and members are in Rubaga Division, the workspace that they had agreed to share with LUCHACOS is in Nansana Town Council and thus have issues with municipal authorities on licensing among others.

Within the scope of the extension phase of RRR-II, Water for People, an international NGO operating in Uganda, engaged with the company towards technical support to scale up integration of faecal sludge in their briquette production. Water for People reached out to LUCHACOS and later KALOCODE. Discussions were commenced, mobilization done, and technical guidance given in production. LUCHACOS post training was availed a marketing training which resulted in the segmentation of the target audience.

Nevertheless, the future for faecal sludge briquettes is bright if the bottlenecks could be undone. Especially the price for the carbonized faecal sludge (material) needs to be lowered to enable the producers to breakeven, consistence in availing the material at all-time where the material could be

accessed instantly. I foresee faecal sludge becoming one of the major ingredients in briquette production in near future.

5.3.3.2 Sustainable Energy Answers Co-operative (SEACO) Ltd

Sustainable Energy Answers Co-operative (SEACO) Limited was registered as company limited by shares in December 2016. It was among the firms supported in RRR Phase II. Located in Kiteezi Parish (Nabugabo Subcounty in Wakiso District of Uganda, a few kilometres outside of Kampala City boundaries, SEACO is a small enterprise owned by four entrepreneurs. SEACO manufactures briquettes from biomass waste providing a compact, smokeless, long burning and low-cost source of energy suitable for households, restaurants, institutions, bakers and poultry breeders as substitute to traditional sources of energy such as firewood, charcoal, kerosene, Liquefied Petroleum Gas (LPG) and electricity.

What became known as SEACO has grown from a very small initiative and unregistered business association of four persons that handled community wastes that were readily available. The group originally operated informally as friends collecting rubbish and turning it into usable products. Following KCCA's advise, a Community Based Organization (CBO) was formed that was later called by the name Kyebando Energy and Environment Project (KEEP). Some members dropped out along the way due to discouragements such as lack of machinery, slow market growth and working with dirty materials. Following KCCA enforcement policy of clearing unplanned structures from the city and its suburbs, the facilities that KEEP had set up were all brought down. Four of the original over 15 CBO members remained, reshaped the business idea and through some old acquaintances got a piece of farmland to rent just outside the boundaries of Kampala City in Kiteezi adjacent to the KCCA landfill in Nabugabo Subcounty and became the founders of SEACO with equal shares.

Currently, SEACO is in production for their old product line. Water for People has worked with them in the production of prototypes of briquettes using the 40% FS and 60% charcoal sludge compositions.

Figure 9: SEACO's Production shed (left) and briquette drying shed right at Kitezi in Wakiso district

The recent opinion was that the tests were promising and gradually a suitable formula would be attained. Water for People has further supported SEACO to open and operate a market stall at the neighbouring Kalerwe market. Results indicate slow market growth in sales from the stall. In July 2019, a market show was conducted with Water for People and CEWAS involving SEACO team with megaphones in busy market locations at Kalerwe, Kyebando Parish of Kawempe Division in Kampala city of Uganda and Busega, Rubaga Parish of Rubaga Division in Kampala city of Uganda. The enthusiasm of the public was encouraging. Through the money market training that was conducted by Water for People, SEACO increased their sale price from UGX 1.300 to 1.500 upon realisation that their monthly budget was not being met adequately. Water for People further supported the SEACO team with a sales training which training focused on the sales cycle. SEACO was tasked to set sales targets and is now set increase production from 1.000 honeycombs to producing 1.500 honeycombs and selling all at UGX 2.000 to enable a profit.

Figure 10: SEACO team being trained in FS inclusion as briquette input; Charles Kyamanywa holds one of honeycomb FS briquettes

5.3.3.3 Chamuka Briquettes: Joint Venture between Water for People and NWSC

Water for People is working in Uganda with KCCA and NWSC to provide sanitation solutions for non-sewered areas of the city. The goal is increase access to pit emptying services for approximately 0.5 million people that use 100.000 pit latrines in the informal settlements, safely manage their waste, repurpose the treated waste into marketable products, and create business opportunities wherever possible.

Following the success of setting up a faecal sludge briquette production plant in collaboration with Saniwaste Solution (SAWA) in Kole District at the Decentralised Faecal Sludge Treatment Plant in 2018, it was proposed to have the briquettes transported to Kampala given that it is a bigger market. However, with challenges of transport and packaging, it was agreed to support setting up a FS briquette production facility in Kampala to cater for the ever-increasing fuel demand in the city as well as combat the challenge of deforestation in the city.

Research was carried on two types of sludge that is top scum and bottom settled and the briquettes made from these with different compositions of charcoal dust. The compositions tested were 100%, 80%, 60%, 50% and 40% FS and these briquettes were made in partnership with SEACO. Fuel properties, emission and pathogen tests were carried out on the briquettes at the Centre of Research in Energy and Energy Conservation (CREEC), Central Government Laboratory, Wand egeya and College of Veterinary Medicine, Animal Resources and Biosecurity Microbiology Laboratory. The results indicated that the top scum briquettes performed better than bottom sludge briquettes with the organic emissions such as Polychlorinated Biphenyls (PCBs), Furans and Dioxins at nondetectable levels. Sulphur dioxide (SO_2), sulphur trioxide (SO_3) levels were at below 5%, nitrogen dioxide (NO_2) levels at below 1% and phosphorus pentoxide (P_2O_5) levels at below 10% reducing with decreasing FS composition. The briquettes tested negative for Faecal Coliforms, E. coli and Ascaris[17].

With a Memorandum of Understanding (MoU) signed between Water for People and NWSC to provide sludge, a briquette production facility was set up in October 2018 at Nyanama. The production facility was producing both stick and honeycomb briquettes with composition of 60% charcoal dust and 40% faecal sludge. Additionally, a carbonizer and sludge drying green house were set up at the treatment plant in Lubigi. To date, more than 10 tonnes of briquettes have been produced and more than 3 tonnes sold during market testing with current production averaging 1.5 tonnes per week and a staff of six employees.

[17] GIZ etal (2020), Circular Economy for Sanitation – Resource Recovery and Safe Reuse Business Development Experience in Uganda

Figure 11: Carbonisation unit at Lubigi NWSC site (left) and Carbonised sludge (right)

A market assessment study was carried out on faecal sludge briquettes in Kampala by Whitten Roy and Partnership which indicated that the potential market for eco-briquettes using faecal sludge as a component ingredient is large enough to accommodate any volume Chamuka Briquettes could produce in the near-term if not long-term. Both business and consumer markets appeared willing to adopt the product. The target market identified was B2B (Business to Business) market (chicken farmers) and one key B2C (Business to Customer) market (middle-class consumers purchasing in supermarkets) to start with.
Water for People has been involved in technical and marketing training of the RRR entrepreneurs with the production facility providing the carbonized sludge for the other entrepreneurs. The biggest challenge and bottleneck in the production of FS briquettes has been the carbonization process and a lot of research is still ongoing to make the process more effective and efficient as well as cost effectiv e so that carbonized sludge can be another source of char for other briquette manufacturers.

Water for People has over the past year operated 2 business model cycles that involve production and sale of briquettes and carbonisation and sale of carbonised sludge to RRR businesses. The model that is centred on carbonisation was developed to support RRR businesses that lack the capacity to carbonise. The supply of carbonised sludge has led to adoption of FS inclusion by SEACO, KEG, LUCHACOS and Best of Waste Ltd.
Carbonised sludge is currently sold at UGX 27.000 per 50 kg however over the past year, RRR businesses were availed the sludge at no cost to test the distribution chain and develop RRR business confidence in the use of FS.

There is great opportunity in FS briquettes with the market testing indicating a growing demand for a charcoal alternative. Chamuka Briquettes intends to grow its production rates to 10 tonnes per week and this will involve investments in new machinery, infrastructure such as more drying and carbonizer units as well as growing distributor and sales channels for the targeted market.

5.3.3.4 Best of Waste Ltd

Best of Waste Limited (BoW) was established in 2012 by Ms. Betty Kaddu to transform her community in Kiteezi. BoW mobilised women and youths to sort, dry and treat waste in their area which was then brought to the factory for recycling into briquettes. Currently Best of Waste produces 1 tonne of briquettes weekly and sells to households through an outlet in Wandegeya market and poultry farmers through linkages attained over the years. Best of Waste operates mechanised extruders that are powered by electricity. BoW production is steady and quality consistent which has enabled the company to grow in market share. To supplement the briquettes revenue stream, BoW also produces institutional stoves, household stoves and partners with SEACO where brooding kits are concerned. Best of Waste has invested in sales and marketing and currently has a sales force of 3 persons.

Water for People identified Best of Waste in July 2019 and has since conducted the technical training on inclusion of faecal sludge as an input with 5 staff. Best of Waste team was further trained in sales with a focus on the sales cycle in August 2019 by Water for People.

5.3.4 Treatment, Recovery and Reuse

5.3.4.1 Decentralised Faecal Sludge Treatment Plants (DEFASTs)

In 2013, Water for People Uganda partnered with ICCO (Interchurch Organization for Development Cooperation) to scale up Sanitation as a Business (SAAB) programme in Kitgum and Kole districts of Northern Uganda. The programme has been working with sanitation entrepreneurs and microfinance institutions as key drivers for ensuring sustainable sanitation services in their communities.

The SAAB vision was to implement a sustainable sanitation process where the sanitation value chain is supported, and all participants incentivized, to provide a variety of affordable sanitation products and services so that lower income households and communities are able to maintain 100% coverage over a prolonged period of time without ongoing external grant support. Water for People has been supporting the programme by promoting gulping technology in Kitgum Town Council. During the process of promoting gulping technology, Water for People also realized th at most of the pit latrines in Kitgum Town Council had poor structures with majority having squat hole open and very close to the household hence not proving effective barrier to faecal contamination.

5.3.4.1.1 Decentralised Faecal Sludge Treatment Plant (DEFAST) at Kole

The idea of the DEFAST project started from the research that was conducted by Bosco Odyek who developed the idea from his class research in his bio-systems engineering degree at Gulu University majoring in household waste management. In his research, he found that 97% of the town dwellers were not connected to the central sewer system. He wrote a proposal to Water for People and it was funded with Ugandan Shilling 60 million for start-up. Especially the double extruder which he acquired from local fabricators. Later, Water for People in partnership with the Agency for Sustainable Rural Transformation (AFSRT), ICCO and Kole District Local Government on September 7, 2016 commissioned a faecal sludge treatment plant to improve sanitation and create business opportunities especially for youth in the district.

It started with a capacity of 10 m^3 of faecal sludge per day and capital expense (CapEx) of USD 20,000. The plan was to attract private sector actors to invest in low-cost faecal sludge management systems like gulping of pits as well as transportation, treatment and reuse of faecal sludge to make briquettes, manure and animal feeds. Subsequently, the DEFAST plant in Kole was expected to yield a number of benefits as safe and hygienic pit emptying, direct employment, supporting DEFAST technology transfer, model plant for local benchmarking and supporting entrepreneurship groups.

5.3.4.1.2 Decentralised Faecal Sludge Treatment Plant (DEFAST) at Kitgum

The Kitgum plant is managed by WASH Consult Limited (WCL); a private registered company that deals in water, sanitation and hygiene. WCL signed a Memorandum of Understanding with Kitgum Municipal Council in February 2018 to manage sanitation facilities and the faecal sludge treatment plant. WCL was mandated to provide services for waste (faecal waste) management and disposal.

The main activities are to collect, manage and maintain a decentralised faecal sludge treatment plant, and collection of fees by working with gulper operators. WCL has three active groups, these groups are registered groups that inlude; Warib Cingwa, youth gulping group and water access. They use barrels, gulping machine and tricycle respectively to carry out their business for the last one year they have been in operation, they have so far emptied over 100 households in Kitgum municipality and neighbouring districts. WCL is collaborating with Water for People and Non-Governmental Organisations (NGOs) like the Lutheran World Federation (LWF), Restoration of Agricultural Livelihoods Northern Uganda Component (RULNUC) extension workers to attract a demand for compost in Kitgum district and neighbouring districts like Lamwo because the demand for compost is almost zero.

5.4 Financial assessment tools

5.4.1 Profit-Loss Analysis

An EXCEL tool allowing to perform broad brush Profit-Loss Analysis of micro, small and medium-sized businesses in RRR (with a special focus on briquette making businesses) based upon readily available financial and production related data collected from surveyed companies, was developed and tested.

The tool has deliberately been kept simple and geared to the abilities and needs of both, businesses and institutions, organisations and/or individuals supporting them to allow an easy and quick application. Application of and filling in the tool has been demonstrated using the example of a Ugandan small scale fuel briquette business. Comparing revenues, costs and expenses incurred during a specified period provides information about a company's ability or inability to generate profit. The tool uses actual monthly production and sales data, revenues earned from selling briquettes, fixed and variable operating costs and applicable costs towards depreciation, interests on loans and income tax to calculate the monthly and average profit/loss of a business[18].

5.4.2 Contribution Margin Analysis

Another EXCEL tool developed, tested and applied allows investigation of the difference between sales revenues (of a product) and the variable costs associated with its production and sales process. Sales revenues are the amount realised by a business from the sale of goods or services. Variable costs are costs that vary in direct proportion of the quantity of goods or services that a business produces (e.g., raw material costs, labor directly involved in the manufacturing process, packaging, etc.). The contribution margin represents the portion of sales revenues that is not used up by variable costs, and so contributes to covering fixed costs and to generate a potential profit.

For the briquette businesses Chamuka Briquettes, LUCHACOS and SEACOS contribution margin analysis were performed to inform businesses on the amount that each of their products actually contributes to covering their monthly fixed costs and potentially generating profit. This information can be used by the businesses to pursue strategies to reduce variable costs or explore possibilities of increasing unit prices to increase the contribution margin.

5.5 Opportunities and common challenges faced by emerging Ugandan micro, small and medium sized businesses in RRR sector

Some of opportunities and common challenges faced by emerging Ugandan micro, small and medium sized businesses working in the Ugandan RRR sector across the entire sanitation management chain include;

5.5.1 Opportunities

a) **Market:** Market for fuel briquettes in Kampala is huge; there is increasing pressure to abandon charcoal and firewood as they are direct products contributing to the worsening decline in forest cover countrywide. Environmental advocates have come up in arms to stop charcoal burning. Government has also expressed the same sentiment.
b) **Expansion to new markets:** Many briquette businesses focus primarily on household consumer and poultry farmers. This is in line with results of a market assessment conducted by Water for People that identified two main initial opportunities including the chicken farmer market and supermarkets catering to middle-class consumers. Aside of the above-mentioned market spaces, there is an opportunity to expand to bulk consumers such as commercial enterprise and factories who are large energy consumers for process heat production or institutions such as schools that require energy for daily preparation of meals, etc.
c) **Decreasing quantity and quality of charcoal:** The quality of charcoal is decreasing, and charcoal dust is now more freely available. The point would therefore be to the use faecal sludge as a binder

[18] See sample in Annex 1

and ingredient in briquettes production. This has not been achieved at large scale yet, as technical processes are required to ensure safety of the users and community.

d) **Business streams:** RRR business models involve quite a number of business streams, including but not limited to collection, transportation, sorting, new product innovations, marketing, among others. All these are welcome as they contribute to government's push for fighting household poverty.
e) **Funding for climate change:** Funding for climate change can be a great opportunity with a clear business model that indicates how RRR addresses the challenge of environmental degradation and Water, Sanitation and Hygiene (WASH)
f) **Product configuration:** Product configuration (quantity, size, appearance, quality) must be appropriate in function and appearance for effective transport, storage and market segment attraction. It is one of the key executable tactics that enables organizations to capture all the opportunities across the different customer segments. Honeycombs are the largest unit size accepted in the market currently. They burn longer and have a cost advantage. The downside is the size for certain stoves. They are appropriate for B2B customers and large households. The most common size adopted by the market is the 2.5kg honeycomb. Sticks briquettes are used for smaller stoves and consumers who cannot or will not purchase large quantities (lower income, lower usage)
g) **Technological advancements in Gulper technology and transfer stations:** Water for People together with Gulpers Association of Uganda are constantly improving the gulping technology that has seen four generations now with feedback from the field trials on effectiveness of pumping thick sludge, distance it can pump and ease of work. Transfer station has also undergone further improvements such as automation and further simplification of the design through its loading mechanism.
h) **Scaling up of Gulping technology and Transfer Stations:** With the boost and growth of these business, there is an opportunity for scaling up into other towns with gulping and having more transfer stations to meet the growing demand.
i) **Community engagement:** The DEFAST experience shows that the community, when mobilized, can be active participants in the business model that involves waste management; there are different value chains that they can participate in.
j) **Policy direction:** The insights from the DEFASTs provide policy directions for Local governments and even at the central government.

5.5.2 Challenges

a) **Competition:** Competition in the briquette making business is stiff and margins tight. Many informal firms are nowadays getting involved and without standardization everyone producing by his own requirements of the customer base.
b) **Low profit margins:** Small profits earned from selling rather small quantities of briquettes limit acquisition of modern equipment that could step up production and consequently increase sales.
c) **Product standardisation:** RRR businesses vary in size with the larger businesses having more controlled production processes, the quality of briquettes among small scale producers varies greatly from one entrepreneur to the next. This is due to the differing methods of production, and an absence of standardisation within the industry.
d) **Carbonisation process:** The carbonisation process has not yet reached 100% efficiency which process is still under testing.
e) **Lack of adequate equipment:** Majority of small-scale briquette making businesses are still heavily reliant on manually operated equipment which is a limiting factor to production at scale. There is heavy reliance on locally fabricated briquette machines which have not proved durable. This machinery is also not efficient in compacting non-carbonised materials.
a) **Customer awareness:** Briquettes though present in the market for the past couple of years still has high knowledge gap in what briquettes are and how they differ from charcoal. The lack of awareness and acceptance is predominant with household consumers.

b) **Product quality:** Often, briquettes are still of low quality. There is a need to stabilise with supplies, market leads and production model (quantity, packaging and frequency) to guarantee constant product quality.
c) **Certification:** Lack of certification from Uganda National Bureau of Standard (UNBS) limits companies to sell in supermarkets and to curious individual potential buyers.
d) **Working capital:** The firms are greatly strained without cash to meet short term liquidity requirements like operational expenses and ordering for material requirements. This kept them onlookers in a space that they see great business opportunities in.
e) **Market potential:** While the buyers are obvious and institutional buyers as well, the firms are not sure of whether these can be relied upon for market growth and sustainability of business.
f) **Cultural hinderances:** There are recorded sentiments from the community, principally individuals who have sworn that they will not use faecal sludge briquettes in preparing their family meals; it is assumed a ' dirty' energy source. There is fear of likely infections and detested perceived smell.
g) **Regulation and certification:** There are a number of regulatory agencies to which briquettes producers are expected to comply or get certification. These include KCCA, NEMA, UNBS among others. Many of the micro and small businesses supported in this project do not have the capacity to meet the standards and the costs involved in getting certified.
h) **Environmental concerns:** Many people are unwilling to not only use but also work closely with briquette business on issue for their unhygienic working conditions, health hazards etc. in handling waste, production and even products.
i) **Pricing:** Each RRR business has its own pricing strategy which has led to price confusion. Honeycombs by the smaller RRR businesses cost UGX 1.300 - 1.500 while the more established businesses charge a higher price UGX 2.000 - 2.500 some customers have failed to purchase because of the large disparity in pricing.
j) **Lack of Synergies:** The business players in the faecal sludge are still scattered; with each undertaking a small portion of the business, they would otherwise benefit from synergies if they were brought together.

5.5.3 Lessons learnt, emerging recommendations from for RRR technical and business development services

The lessons learnt, key recommendations emerging from and considerations for organisations aiming to offer effective technical and business development services to micro, small and medium sized businesses in RRR across the entire sanitation chain are highlighted below;

5.6 Key lessons learnt

a) **Landownership:** The challenge with many micro and small sized briquette making businesses in Kampala and its surroundings is lack of proper space to operate. For any business venture costs of acquiring own land could be untenable. Businesses might be advised to work with government authorities to be supported in acquiring land, even when on lease. Where there is no lease land for the business, there is need to develop strong market systems where there is production from distant places without affecting distribution. This can best be done through establishing joint points of sale under an umbrella brand to avoid unnecessary competition whilst benefiting from marketing economies of scale.
b) **Product development:** While this has been encouraging, from briquettes to honeycombs and the accompanying stoves, process is slow, and care is needed to avoid hazardous effects. Working capital needs have hampered business; most of these firms expected direct financial support alongside the business development support. There is need for further engagement on this aspect. Particularly, there is need for more appealing products and fast tracking UNBS approval for quality.
c) **Partnership:** We have learnt that the partnerships tried by firms under this study did not work out. There could have been gaps that were not addressed or several issues being taken for granted. This is a big lesson for policy people, policy makers and academics; that simple community agreements of running joint potential businesses did not hold up. One best way to

develop voluntary yet effective partnerships is to develop an attractive entrepreneurial ecosystem of sanitation businesses. This will improve their negotiation power both for markets and resources with potential clients such as the United Nations High Commissioner for Refugees (UNHR) which has emerged strategic because of their volumes of purchases for the refugees.

d) **Growth potential:** Companies must have reached a certain company size to break even and or continue in production. They need to grow slowly using the lean model, and where possible joint businesses would enable them growing the potential. They have the potential to grow but are slow to take advantage of their opportunities
e) **Management:** Companies need to have an established accounting system in place, basic management practices, etc. This is a lesson for firms that must come up, sustain their operations and growth. Hiring and training salespersons to lead with a problem led sales approach which focuses on helping customers discover, define and deepen the understanding of the problem and what it's costing the customer not to solve it will enable actualisation of profits. This is a missing component with all the sanitation businesses and once adopted, there will be growth within the businesses.
f) **Capacity Building:** With the work with gulping businesses, there is need for sufficient time to build the capacity and leadership of the businesses by organising them into an association. An association helps the authority build trust in the businesses and keeps them accountable.
g) **Occupational Safety and Health:** Gulpers make pit emptying easier and more hygienic due to the limited contact between the operator and faecal sludge.

5.7 Recommendations and considerations

1. Government agencies to subsidize or even waive off registration, certification and licensing fees to enable these small businesses to save and invest in their growth.
2. Entrepreneurs and business founders to put emphasis on basic management principles.
3. Banking institution to provide affordable business loans to micro and small enterprises.
4. Academic institutions should scale up research in the sector so as to identify and document business opportunities to enable business growth.
5. Faecal sludge potential in briquette making is high; but there are serious concerns with its collection, transportation and handling to the production spaces, as well as the products. We recommend government heavy investment in liquid waste treatment beyond the one NWSC plant at Lubigi. Small plants be built in suburbs and other parts of the country. Active enforcement of existing forestry and charcoal regulations to boost the uptake of briquettes.
6. Establish mechanisms in the sanitation and climate change sub-sectors for financing emerging SME integrating FS in briquettes production as success in their business is milestone in the ecosystem of enhancing environmental preservation.
7. More transfer stations across the country are needed to encourage pit emptying and safe management of faecal sludge
8. Develop policy guidelines and local government ordinances on faecal sludge treatment at local levels to enhance community engagement in health manner but also develop business among them for revenue streams
9. Sensitize the business communities countrywide of the business opportunities in RRR in various value chains as noted from collection, sorting, transporting, recycling etc.

6 AN ASSESMENT OF PPPs IN THE WASH SECTOR IN UGANDA

Experience shows that for any PPP arrangement to succeed there are critical considerations that must to be taken into account. These range from the legislation and policy framework, institutional arrangements, prior experience in PPPs, capacity of the public sector to contract and regulate the private service providers and capacity of the private sector to deliver the service. This section discusses the lessons learnt, challenges encountered in the PPP experiences implemented in Uganda and beyond and provides recommendations on the key considerations for private sector participation in the WASH sector in Uganda.

6.1 Legal and Policy environment

Uganda has a robust PPP policy and legal framework I.e., the PPP policy (2010) and the PPP Act (2015) which are critical foundations for all PPP projects in the country. They provide direction strategic and operational activities, such as designing, financing, building and operating agreements; concessions; leasing, developing and operating agreements; operation and maintenance agreements; as well as asset ownerships. These are complemented by the PFMA Act (2015) that provides a framework for the management of public funds, grants, debts and guarantees and clearly lays out the institutional accountability points.

In addition to these there are also other legal provisions with impact on the WASH and specifically the sanitation sector which include; Public Health Act 1935 (Cap.281) (Revised in 2000), the Local Government Act 1997 (Cap.243), the Local Governments section 39, Statutory Instrument 243-22; Physical Planning Act, 2010, the Occupational Health and Safety Act, 2006; Municipal authorities ordinances/bye laws; Kampala Capital City Act, 2010 and the MoU between Ministry of Water and Environment, Ministry of Health and the Ministry of Education and Sports of 2001.

Therefore, there is sufficient legal basis for management of sanitation and faecal sludge at both city, urban authorities and local government level. There is also sufficient legislation to guide the local/urban authorities to procurement, engage or work with private sector to deliver sanitation services albeit there is need to implement and enforce of these laws as well as adapt or develop context specific bye laws and ordinances.

When implementing these laws, based on experiences elsewhere and at the national, the urban/local authorities should be mindful of the consequences of violating these legal provisions. In some instances, for example where the law has been violated, procurement and tender awards significant delays in the award of contracts has been experienced because of non-compliance, administrative reviews and a large number of court cases among others (Ministry of Works and Transport, 2015). In other instances, there has been abandonment of work and poor workmanship and tender awards to incompetent contractors or construction firms having multiple running contracts with both the Uganda National Roads Authority (UNRA) and local government entities (Uganda Debt Network 2013) and other challenges like corruption scandals such as the case of the Mukono-Katosi, Kawempe-Kafu road (Uganda National NGO Forum, 2015)

6.2 Institutional Arrangements

The major actors in the WASH sector PPP arrangements are the public authorities; the private sector; research institutions; civil society (NGOs) and end users of the services. There mandates, obligations and expectations are summarised in the table below. Experiences have shown that stakeholder analysis and engagement is a critical element to the success of any PPP or private sector participation in service delivery. The Kampala Faecal Sludge Management by KCCA (2014) BMGF 2018, in Engaging with the Private Sector for Urban Onsite Sanitation Services: Lessons from six sub-Saharan African cities and Mansour, G etal (2021) in the Supporting Enterprises in Capturing Waste Value Lessons Learned from the CapVal Sanitation Project in Ghana projects emphasized and demonstrated the value of engaging the various actors along the value. KCCA for example even instituted a steering committee to oversee the implementation of the programme and WASH Forum where issues related to WASH were periodically reviewed and discussed. In the Mansour, G etal (2021), CaoVal was set up as a special purpose vehicle to deliver RRR interventions in Ghana.

Table 2: Institutional arrangements in the WASH/Sanitation FS Sector

Institution	Mandate	Stakeholder Objectives
Public Sector		▪ Leveraging Funding ▪ Accelerating Implementation ▪ Improving Service Levels ▪ Efficiency gains
Local/City authority	▪ Provision of services in their localities that enable residents and businesses operating in there to function in an environment that supports development and to ensure health and productivity of citizens, a clean, habitable and sustainable community for citizens	
National Water and Sewerage Corporation (NWSC)	▪ Developing, operating and maintaining water supply and sewerage services in urban areas of Uganda	
National Environmental Management Authority (NEMA)	▪ Oversee, coordinate and supervise environmental management in Uganda and responsible for ensuring that enterprises comply with various environmental regulations and standards. ▪ Responsible for issuing licenses to the companies dealing with hazardous waste and faecal sludge	
Ministry of Health (MoH)	▪ Promotion of household hygiene and sanitation	
Ministry of Education and Sports (MoES)	▪ Latrine construction and hygiene education in schools	
Ministry of Lands, Housing and Urban Development and The Ministry of Water and Environment (MoWE)	▪ Planning investments in sewerage services and public toilet facilities in urban areas	
Private Sector	▪ Service delivery on behalf of the local/urban authority. ▪ Assumes all the risks involved on behalf of government ▪ Efficient utilization and allocation of public funds, and delivery of quality public infrastructure or services, ▪ Private capital investment ▪ The public sector maintains the public interest	▪ Fair Profit ▪ Risk Mitigation ▪ Clear Legal / Regulatory Structure
Civil society organisations; academic /Research institutions, and donor organisations	▪ Capacity building for both the private sector and public sector ▪ Technology development and testing ▪ Provide TA assistance with upfront investments such as feasibility studies, development and piloting of business model and community or clientele mobilisation.	
End Users	▪ Consumers of services	▪ Services offered should be affordable, reliable, of good quality and availability

6.3 Market for Sanitation and Faecal Sludge Management

The Sanitation market is double edged, the supply side and the demand side. The supply side is based on the quantity of faecal sludge generated from households, institutions and commercial

establishments and its neighboring areas. And the demand side considers potential size of the market and the willingness and ability of the end users of the sanitation and FSM services to pay for the services.

Therefore, the experiences from KCCA FSM programme, the BMGF six cities project, the CapVal waste volarization projects and GIZ RUWASS and ENWASS RRR projects all supported detailed market studies the establish the market size and potential for business in sanitation and FSM. In all the cases it was established that the market potential for private engagement in sanitation and faecal sludge manage was high, the willingness to pay varied according the location and nature of market segment. On the other the faecal sludge generated demonstrated the need to address the sanitation problems. In all the cases referred to above, city authorities were grappling with how to manage the faecal sludge for example in Kampala and surrounding areas generated in excess of 1000m^3/day which provided business sense along the value service chain term of services, such as emptying, transport and treatment of faecal sludge (FS).

6.4 Market Regulation for Sanitation and FSM

Faecal Sludge Management (FSM) in Kampala and many African cities (for example Dakar, Accra, Blantyre, Durban and Freetown) that have had private sector participation in the FSM is characterized by relatively unregulated informal private operators with no or weak asset base, poor quality services particularly for low-income areas, and a lack of investment in infrastructure across the sanitation value chain. Most of these cities did not have Municipal/ City Ordinance or other by-law for Sanitation, which could regulate the sector at baseline time. In addition, the fines and penalties that existed were very low and were not enforced, a fact which did not provide incentive for the compliance with existing regulations, and which hindered enforcement. Also, the existing regulations were largely silent on issues of price regulation. In Uganda for example suppliers were not bound by any geographical restrictions nor by regulated prices. Although PEAU set some guidelines for prices, operators were free to negotiate in every single case. NWSC charged fixed prices for dumping. This led to a situation of numerous market failures. For example, very often "Cherry Picking" took place where private operators served only customers who were easy to access and who had the financial means to pay for their services. Hence, a large part of the customer base remained unserved which was against the objective of KCCA of delivery sanitation for services. The KFSM programme addressed this market regulation challenge by developing a business model that was private sector lead to support the FS collection and Transportation and partnered with NWSC in the area of disposal. Incentives to private sector to serve the poor were also discussed and implemented, the voucher system for example and registration support. The SWOT analysis of FSM market is shown is summarised in the table below;

Table 3: SWOT analysis of the current market features

Strengths	Weakness	Opportunities	Threats
▪ Private Sector Participation already in place ▪ KCCA committed to reform ▪ Present legislation allows for PSP/PPP ▪ Awareness among most stakeholders ▪ Sector has access to foreign assistance	▪ Completely unregulated market ▪ Heterogeneous structure of the private sector ▪ Large parts of customers are unserved ▪ High environmental and health risks ▪ Laws not fully conducive towards PSP ▪ Lack of regulatory framework and bylaws ▪ Lack of law enforcement	▪ Learn from experiences in other sectors ▪ Use pilots as a chance to learn	▪ Continuous deterioration of the situation ▪ Weak law enforcement

6.5 Faecal Sludge Management Technologies

These as well play a significant role in addressing the sanitation and FSM. The technologies available and current in use for example in Uganda for FS emptying are pure manual pit emptying, semi-

mechanized pit emptying mainly constituting the “Sludge Gulper” and the vacuum tankers which are mostly used for emptying of septic tanks and lined pits.

These technologies have their limitations for example manual pit emptying has health and safety risks; the gulper technology has transportation and depth limitation. The current gulper in the market can go up to 2 metres and this means may not be feasible for pit latrines and the cesspool emptiers have access challenges to informal settlements. However, important to note is that these technologies in the projects implemented have rather complemented each other. And other technology innovations have been developed for example the transfer tank/station to such the gulpers (KCCA, 2020).

6.6 Business and Financial Models

Private sector participation is motivate by commerce and profits. Therefore, financially viable business models need to be developed if private is to participate in the WASH and specifically sanitation and FSM service delivery. These business models vary depending at level of the value chain private sector participation is expected.

The KFSM programme focused on FS collection, transportation and treatment. Therefore, a business model for private sector led service delivery was developed after studies both on the practicability and financial viability. The business model involved Creation of operational territories based on the 5 divisions of Kampala city for FS C&T service providers; awarding service level contracts to FS C&T providers for the respective zones through a competitive bidding process. One of the bidding parameters was the unit FS emptying charge (USD/m^3) proposed by a C&T operator for a respective zone; and the collection of user fees by the service providers. The FS C&T operators would be required to remit a fixed (monthly or annual) operational fee to KCCA.

The financial viability analysis estimated a unit C&T charge as between USD 8.4-9.0/m^3; the average market size per zone ranges between USD 250,000 and 632,000 per annum; the combined market size for Kampala is about USD 2.4 Million per annum. The analysis also indicated a Total NPV for FS C&T over 5 years of about USD 235,000 with the NPV for zones ranging between USD 25,000 and 60,000. The average cash flow per truck per month after taxes was USD 270 and it was concluded that the FS C&T business is reasonably viable with good returns on investment per operational zone considered.

6.7 Readiness of the Private Sector

An inventory of private emptiers was developed to facilitate mobilization and engagement activities in which the private operators under two umbrella associations i.e., Kampala Emptiers Association (KEA) and Private Emptiers Association of Uganda (PEAU) were mapped out and engaged. The zoning and the establishment of SLAs with selected private operators was then tested in five pilot areas. Each ward was assigned two designated operators who worked under a memorandum of understanding with the objective of identifying the challenges of working in one specific area.

Furthermore, since treatment capacities were already exceeded and infrastructure projects take time, KCCA considered resource recovery and safe reuse (RRR) of faecal sludge. Six entrepreneurs that are adding value to the faecal sludge by producing briquettes, compost, biogas and other saleable materials were supported in this pilot phase.

An operational framework to guide private sector service provision and regulation was developed. The framework comprises standards for onsite sanitation technologies, minimum health standards for sanitation-related processes, obligations for the safe collection and transport of faecal sludge, monitoring tools, incentives and penalties. These were developed using a consultative and integrative approach.

6.8 Volarisation of Faecal Sludge

Using the KFSM Programme as an example, faecal sludge in Kampala is currently treated at a single treatment plant whose design capacity is 400 m^3/day and 5,000 m^3/day for faecal sludge and wastewater treatment respectively. The FS treatment processes at the plant include sedimentation

(settling tanks), co-treatment with wastewater (stabilization ponds) and solar drying (sludge drying beds). Treated sludge from drying beds is used as a soil conditioner and organic fertilizer, which was the only faecal sludge reuse option being implemented in Kampala during the Kampala FSM Programme implementation. However, overtime other reuse technologies have been piloted in Kampala and other parts of the country. The basic reason for value addition to the faecal sludge was in order to manage the excess capacity of the FS and to recover and safely reuse nutrients, water, organic matter and energy from otherwise wasted resources along the Sanitation service chain.

Several initiatives in Uganda and other countries have been piloted and implemented to volarise faecal sludge. These include among others composting products from the combined treatment of dried faecal sludge and municipal solid waste, fuel briquettes from organic waste and fish cultured in treated wastewater (IWMI 2014, 2016, 2021).

In the KFSM Programme NWSC volarises FS by treating it based on waste stabilisation ponds and unplanted sludge drying beds and sold as a soil amendment without any further processing. Lubaga Charcoal Briquettes Cooperative Society (LUCHACOS) Ltd and Best of Waste Ltd that produce stick type briquettes have been trained on how to integrate faecal sludge into their briquettes; Sustainable Energy Answers Co-operative (SEACO) Ltd partnered with Water for People an International NGO to prototypes of briquettes using the 40% FS and 60% charcoal sludge compositions; Chamuka Briquettes a Joint Venture between Water for People and NWSC set up production facility for both stick and honeycomb briquettes with composition of 60% charcoal dust and 40% faecal sludge and a carbonizer and sludge drying green house at the treatment plant in Lubigi in Kampala. It has produced 10 tonnes of briquettes and sold more than 3 tonnes during market testing with current production averaging 1.5 tonnes per week and it employs six staff.

This small and medium enterprises produce between 1 – 10 tons of briquettes and sell them to households, restaurants, institutions, bakers and poultry breeders. Two market streams have been identified B2B (Business to Business) market (chicken farmers) and B2C (Business to Customer) market (middle-class consumers purchasing in supermarkets). Economic viability studies indicate a great opportunity in FS briquettes. These examples of valorisation efforts also create an opportunity for broader waste management. Best of Waste limited for example sort, dry and treat waste which is taken to their factory for recycling into briquettes. SEACO on the other handmanufactures briquettes from biomass waste. Chamuka Briquettes manufactures briquettes by mixing FS and charcoal dust. These are all opportunities that available for harnessing.

At the continental level, Creating and Capturing Value: Supporting enterprises for urban liquid and solid wastes recycling for food, energy and clean environment (CapVal)[19]supported the commercialization of three liquid and solid waste derived by-products: (i) compost from the combined treatment of dry faecal sludge and municipal solid waste; (ii) fuel briquettes from organic waste; and (iii) fish cultured in treated wastewater.

CapVal constructed three production facilities at two sites in Akorley near Somanya, the administrative capital of Yilo Krobo Municipal Assembly (YKMA) and the second site is in the jurisdiction of the Kumasi Municipal Assembly (KMA). Akorley (Somanya) hosts both the composting and briquette facilities while the Kumasi site hosts the aquaculture site. The CapVal supported Joint Venture (JV) agreements between the two urban authorities in Ghana with local private sector companies.

One Join Venture agreement was between the Yilo Krobo Municipal Assembly (YKMA) and Jekora Venture Limited (JVL) signed for a 20-year period to transform up to 5,000 cubic meters (m^3) of faecal sludge and 300 tonnes of organic solid waste per year. Faecal waste is sourced from private and public

[19] Monsour, G: etal (2021) Supporting Enterprises in Capturing Waste Value Lessons Learned from the CapVal Sanitation Project in Ghana

onsite sanitation systems (pit latrines and septic tanks) in nearby communities and organic waste from local markets (mainly fruit and vegetables), poultry farms and sawmills. Briquettes are produced using sawdust and wood shavings (there are plans to add rice husks), and the waste fractions are collected from neighboring areas.

The second JV agreement is between Kumasi Municipal Assembly (KMA) and TriMark for a 15-year period to use the nutrient-rich wastewater to produce breeding fish which in turn produce fingerlings in onsite hatchers. Treated wastewater ponds are only used to grow the brood stock. Some fingerlings produced in the hatchery are transferred to onsite concrete tanks where they are fully grown using fresh underground water.

These are examples of how we can create a paradigm shift in solid and liquid waste including faecal management from treatment for disposal to treatment for reuse by adopting public private partnerships. They generate socioeconomic benefits, including jobs, boost in agricultural production as a result of market adoption of organic fertilizer (compost) to direct environmental benefits of sound waste management as well as attracting private capital.

6.9 Funding arrangements

As can be noted the funding for all these initiatives is a blend of public and private funds. In the case of the KFSM programme the funding was received from BMGF, SDC, DFID UK but some investment and funding came from the NWSC and end users. In the case of the RRR SMEs most of the business start capital was private though inadequate to invest in modern equipment but supplementary funds came in from NGOs in form of capacity building and training. The Chamuka briquettes for example was a JV between Water for People an NGO and NWSC a public utility. In the case of CapVal funding for the establishment and operation of the treatment and production plant came from a mixture of public and private funds, with all initial capital expenditure coming from public donors. IWMI and project partners, together with YKMA, covered all capital investments, from feasibility studies to construction and mains connections. The private enterprise (JVL) is in charge of all operational expenditures, including the initial working capital. However, as co-owner JVL holds joint responsibility for capital maintenance after construction.

6.10 Lessons from the Implementation of the PPPs in Uganda and beyond

1. **The private sector can be successfully attracted to deliver urban onsite sanitation services under PPP arrangements with service authorities.**
   Experiences show that PPP arrangements for urban onsite sanitation services can be brokered under the right conditions. The experiences show that opportunities in onsite sanitation services can attract well-organized SMEs, able to deliver services in a professional and efficient manner. Key ingredients of success include:
   - Clear rationale for PPP (i.e., contracting) in the delivery of basic services;
   - Early engagement with potential service providers;
   - Careful contract preparation to identify the optimum legal arrangement and risk allocation between contracting parties;
   - Flexible procurement arrangements that can be workable with local procurement procedures, which can adapt to the capacity of potential service providers and can address some innovative aspects of sanitation services to be provided.
2. **Most cities/Town council have limited experience in PPPs, therefore may require specific support to help them take on their roles as a client, regulator and enabler.**
   Currently many of the city/town councils undertake direct service provision, based on experience, shifting them away from this to a role of encouraging and regulating private sector service provision, requires new skills, and a clear strategic direction change by the city/town authorities. They should be supported to understand their roles and processes, and to build the requisite capacity and systems, for example in contract management, monitoring and enforcement. Whilst

external technical assistance can be effective, support can also be levered from PPP Unit to provide ongoing mentoring support to the city or town council.

3. **Standalone projects focusing on FSM are viable but there is greater potential in integrating FSM initiatives with solid and liquid waste management.**
   Focusing these projects specifically on FSM raised the awareness and capacity in the public and private sector on FSM. However, by having such a focused may have limited opportunities in some circumstances therefore to take a more integrated approach to urban sanitation services, for example considering both solid and liquid waste like the RRR intervention in Kampala and other areas could be value adding.
4. **Establishing standards for service levels is an important step, although PSP initiatives should also consider arrangements to ensure standards are monitored and enforced. Such enforcement is key to the private sector viability in FSM and models reliant on top-down enforcement can be augmented by innovative approaches.**
   Grant investments can be key to develop innovative and cost-effective monitoring and regulatory measures such as GPS tracking of vacuum trucks, and additional modes of monitoring and enforcement can complement the public sector efforts, such as tenants denouncing landlords who fail to provide services; associations denouncing noncompliant members or competitors; the public reporting violation among others. In KFSM there were also efforts to provide incentives to adopt such standards such as laying their adoption as pre-requisites to access loan guarantees, business development support, or to register with the regulator.
5. **Reaching the poor through PSP requires deliberate and concerted efforts, as well as political will to engage (and invest) in pro-poor services.**
   Whilst the KFSM focused on vacuum truck emptying services, there are various financial, physical barriers which made such services more difficult to access by the poor. The poorer market segments in the city seemed to be serviced predominantly by lower levels of emptying services, such as manual emptying and gulper services. There have been various efforts to address these barriers, including through transfer stations technology and voucher system.
6. **Getting the private sector to further engage in FSM can be challenging until the market is 'proven', and grant funding and public-sector investments can be key to help this process.**
   The experience is that in aspects of the FSM chain that are not yet 'proven' business models (such as for innovative treatment approaches, or BOT arrangements for public toilets), it can be challenging to encourage new players into the FSM space, or expect capital investments from the private sector or their financiers (e.g., banks and MFIs). Projects such as those which utilize grant funds to help gather market intelligence on the sub-sector, help to build the capacity of the private sector, and support the initial capital costs of 'pilot' initiatives, can be a key first step in preparing the sector and its local investors to progressively engage and invest in FSM. As governments are starting to engage with non-sewered sanitation services, investments need to be made not only in public infrastructure, but also in incentivizing the private sector in improving service levels and increasing access to the poor

7 CONCLUSIONS, KEY CONSIDERATIONS FOR PRIVATE SECTOR AND RECOMMENDATION FOR AGAGO TOWN COUNCIL

7.1 Conclusions

1. **Uganda has a robust policy, legal and institutional framework to support the Public Private Partnerships**. There is PPP policy (2010); the PPP Act (2015); the PFMA (2015) and the PPDA Act (2003). There are also are supplementary laws that are specifically relevant to the WASH sector. The Public Health Act 1935 (Cap.281); The KCCA Act, 2010; The Local Government Act 1997 (Cap.243); The Local Governments Sanitation of Building Sites Byelaws; and The National Environment (Waste Management) Regulations S.I. No 5 2/1999. There is also a well-established Institutional set up to support the implementation of the PPPs. However, work needs to be to ensure compliance, enforcement and implementation.

2. **Support mechanisms for financing PPPs are established at the National level**, however, very little at the City/Municipal and local government levels. They are still heavily reliant on external donor technical assistance to broker PPPs. There is urgent need for government investment in developing and implementing public private partnerships at the lower government levels.

3. **The Government of Uganda has developed quite a number of PPPs**, but these are limited to huge infrastructure projects. Little has been done to support PPPs at city, municipal and Town council as well as lower government levels. Little has been done at the social level especially the WASH sector. The most outstanding initiatives in the WASH sector include the Small -town water projects. Other projects are sector initiated such as the Kampala Faecal Sludge Management Programme, but also heavily donor funded with limited public sector funding.

4. **Tailored capacity building for both the public and private sector in Uganda needs to be developed.** The public sector capacity development areas include among others development, management and operation of PPPs. Private sector on the other hand requires to build capacity in PPP experts, financial capacity, essential equipment and technical skills.

5. **Stakeholders are a crucial element in the successful implementation of PPPs.** A good stakeholder analysis and engagement including of the private sector will provide a foundation for successful partners. Creating an enabling environment for private sector engage is as well key.

7.2 Considerations for Private Sector Participation (PSP) in sanitation

Private sector participation in service delivery is a way out of poor service delivery in Uganda especially at lower government levels. For private sector to stand up to the challenge of service delivery especially in the WASH sanitation/Faecal sludge management certain basic considerations need to be taken into.

These broadly include; building the knowledge base and market intelligence of FSM; building the capacity of public and private actors to take on their roles adequately in PSP; strengthening the customer base through public awareness campaigns; building public sector's capacity to plan onsite sanitation services; strengthening the dialogue between public and private stakeholders; building private sector capacity; and developing service standards.

Table 4 below sums up the key considerations that need to be managed and addressed for private sector to effectively engage in sanitation service provision public private partnerships.

Table 4: Summary of issues to be considered and options for Private Sector Participation in Sanitation FSM

	Issue	Generic Options	Key Assumptions
1.	Market Regulation	▪ Zoned ▪ Unzoned	▪ Zones must be attractive to generate private sector interest. (Zoned) ▪ Customers must be informed about the offers on the market. (Unzoned)
2.	Tariff and Price Setting	▪ Market forces ▪ Uniform or differentiated tariffs	i) affordability for customers ii) profitability for private operators must be safeguarded
3.	Payment Flows	▪ Direct Payment ▪ Voucher System	▪ Payment flows must be simple and transparent
4.	Risk Allocation	▪ Guarantee minimum business to private partner ▪ Full commercial risk at private partner	▪ Private partners need a clear perception about the risks they are incurring.
5.	Market Access and Competition	▪ Only to licensed companies ▪ To all companies	▪ Quality standards can be assured best under a license scheme
6.	Structure of Private Sector	▪ Incorporated companies ▪ All companies	▪ Accountability of the private operators must be safeguarded
7.	Legal set up	▪ Contract, Service Level Agreement ▪ Municipal/City Ordinance	▪ Legal set up must be clear right from the beginning
8.	Pro poor approach	▪ Voucher System ▪ Direct payment	▪ The amount of "pre-financing" by the poor should be limited, otherwise they may not make use of the service
9.	Monitoring, Supervision and Enforcement	▪ City/Municipal authority ▪ Other urban or local authorities	▪ A clear distinction between environmental monitoring (NEMA) and economic monitoring (local authority) is desirable
10.	Procurement Process and Tendering Criteria	▪ Price/Tariff ▪ Only technical criteria	▪ Technical criteria must be met by any successful bidder
11.	Demand Mobilisation	▪ Sanitation marketing and social mobilisation	▪ Services should be free of charge
12.	Pilot projects	▪ Only poor areas ▪ Other areas as well	▪ Pilot project must reflect bigger reality on the ground.

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