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# WATER SECTOR TRUST FUND

## Up-scaling Basic Sanitation for the Urban Poor

### Integrating the Sanitation Teams in the UBSUP programme

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### List of Acronyms and Abbreviations

BMGF	Bill and Melinda Gates Foundation
EMCA	Environmental Management and Coordination Act
EWASCO	Embu Water and Sewerage Company
GIZ	German International Cooperation
KfW	German Development Bank
MPP	Mobile Pre-Processor
MOU	Memorandum of Understanding
NAWASSCO	Nakuru Water and Sanitation Company Limited
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organizations
PHO	Public Health Officer
UBSUP	Up-scaling of basic sanitation for the urban poor
UDDTs	Urine Diversion Dehydrating Toilets
WAGs	Water Actions Groups
WRMA	Water Resource Management Authority
WSP	Water Services Provider
WSTF	Water Sector Trust Fund
WSUP	Water and Sanitation for the urban poor

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## Acknowledgement

Up-scaling of Basic Sanitation for the Urban Poor (UBSUP) is a five year program (which has been extended to 2018) which aims at improving the living conditions of the urban poor by offering access to sustainable sanitation for residents in urban low income areas in Kenya.

UBSUP is being implemented jointly by the Water Sector Trust Fund (WSTF) and the German International Cooperation (GIZ) in a bi-partite model. WSTF is the principal implementer and GIZ is the key provider of technical support. Some of the objectives of the UBSUP programme include the provision of sustainable sanitation for at least 600,000 people through the construction and rehabilitation of 60,000 toilets, development of a sanitation up-scaling concept in line with the water sector reform in Kenya, establishment of a monitoring system for tracking access, construction of decentralised treatment facilities and establishment of emptying and transportation services (private). Within the latter objective above, the UBSUP programme will ensure successful integration of manual emptiers (Sanitation teams) within the UBSUP programme. The manual emptiers will be known as Sanitation Teams and will be integrated in all the UBSUP projects that will be implemented by the water services providers.

Manual emptiers are indispensable in the provision of sanitation services. However, because they are currently undertaking the emptying activities without any supportive legal documents in many underserved areas, manual emptiers are often ostracised, stigmatised, undergo harsh conditions and lack appropriate protective equipment while working. The UBSUP programme plans to mitigate the challenges that they face by setting standards, regulating and formalising their activities to ensure their protection and safety in line with the institutional frameworks of the water, health and labour sector.

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## Executive Summary

The Up-scaling Basic Sanitation for the Urban Poor (UBSUP-Kenya) Project is a joint programme of the Bill and Melinda Gates Foundation, KfW, GIZ, and WSTF, aiming at improving access to basic sanitation to 600,000 people in the low income urban areas of Kenya. This will be achieved through the construction of 60,000 toilets. There is a menu of standardised sanitation technologies that the households can choose from. These technologies include Urine Diversion Dehydrating toilet (UDDTs), pour flush connected to septic tank and cistern flush connected to septic tank or main sewer network. To ensure sustainable faecal management of the dry toilets, manual emptiers (SafiSan operators) will be engaged by the water service providers within the UBSUP programme to ensure that the dry toilets (UDDTs) are emptied on a regular basis and the dehydrated faeces safely transported to the decentralised treatment facilities. In addition, the emptiers will be involved in collecting solid waste in the plots that have SafiSan toilets.

This UBSUP document highlights the methodologies, procedures and current legal framework to be followed when integrating manual emptiers within the UBSUP programme. It also provides a procedure for anchoring the emptying services in the pro-poor unit of the WSP. These emptiers will also be trained to act as watch dogs for the water service providers and public health officers by identifying and reporting to the public health office illegal emptiers and illegal dumping within their jurisdiction.

Many small scale providers and individuals in low income areas make a living by emptying pit latrines. In most of the situations, this is the only form of faecal de-sludging due to the lack of pathways for mechanical de-sludging. Manual emptiers are therefore indispensable stakeholders in the sanitation value chain system and provide an essential service particularly in densely populated underserved areas. However a majority of the population do not see their benefits. Manual emptiers are often ostracised and stigmatised, have deplorable working conditions receiving no support from any institution or government body. Due to the hazardous nature of their jobs, it is therefore paramount to establish specific guidelines that can formalise and integrate them within the institutional and legal framework of the water and health sector in Kenya.

Both the health and water sector do not systematically collect official statistical data on manual emptier. There is therefore no socio-economic statistical data regarding appropriate health standards for manual emptiers. In addition, due to the seasonal nature of their work, it has been difficult to collect data regarding the health impact the job has had on them as many of them are involved in other forms of income generating activities.

Manual emptiers are vital and make positive contributions to the society. They improve the public health of the residents by ensuring that the pits do not overflow especially during the rainy season, they de-sludge pits and received very minimal pay from the toilet owner. However due to lack of transportation and treatment facilities close to the low income areas, they are forced to dump the waste in river and streams.

Within the UBSUP programme, steps have been taken during the pilot phase to ensure that the Sanitation Teams are formalised and integrated within the legal and institutional framework. A step by step procedure has been developed to inform the different types of water service providers on how best to legally integrate manual emptiers within the UBSUP programme. This can be found on chapter 2 of this document.

Further benefits of regulating and formalising emptiers within the UBSUP programme are as follows

- It improves the quality of life for the Sanitation Teams. It increases their self-esteem and prevents them from being ostracised by the residents who are benefiting from the services that they providing
- It ensures that the emptiers are provided with designated dumping sites and regulates the type of facilities that can be emptied manually i.e. double vault UDDTs
- It improves their income by ensuring that set rules are available to avoid exploitation
- It helps in the development of networks which can lead to the formation of workers unions assisting workers to collectively fight for their rights.
- If approached as a business, manual emptying is a job opportunity for many youths in slum areas

Manual emptiers are indispensable in the provision of sanitation services. However because they are currently undertaking the activities without any supportive legal documents and have no designated locations to dump their waste, they are often ostracised, stigmatised, undergo harsh conditions and lack appropriate protective equipment while working. The UBSUP programme plans to mitigate the challenges that they face by setting standards, regulating and formalising their activities to ensure their protection and safety in line with the institutional framework of the water, health and labour sector.

**Chapter 1:** Introduces the problems and challenges of manual emptying in urban low income settlements. It points out the current emptying and transportation services in Kenya. The need for developing a national up scaling concept for emptying in urban household/plot level sanitation is also discussed in this chapter.

**Chapter 2:** Outlines and describes the various groups that have been identified in the three pilot areas. It covers the methodology of identification, the criteria and the stakeholders involved in the identification, registration and licensing of manual emptiers. It gives a step by step procedure on how to sustainably and legally integrate emptiers within the UBSUP programme.

**Chapter 3:** Documents the requirements and procedures for the public health in line with the Public Health Act of 2002. It provides an overview on the type of protective equipment required by the emptiers.

**Chapter 4:** Looks at the NEMA requirements, laws and procedures as per the Environment Act (EMCA 1999). It also highlights the process of obtaining a Waste Transportation Permit and the NEMA Tracking document

**Chapter 5:** Looks at the different technologies for emptying of wet toilets that the BMGF is currently developing and that will be adopted in the UBSUP programme once finalised to cater for the wet toilets

## 1. Introduction

This chapter introduces the problems and challenges Kenya is experiencing with regard to manual emptying in urban low income settlements. It also points out the current emptying and transportation services in Kenya. The need for developing a national up scaling concept for emptying in urban household/plot level sanitation is also discussed in this chapter.

### 1.1. Working conditions of manual emptiers

The working conditions that manual emptiers face on a daily basis in urban informal settlements are dangerous and although the manual emptiers are aware and understand the risks involved in handling faecal sludge without the right protective equipment, all the emptiers de-sludge toilets without observing any health and hygiene standards stipulated by the Ministry of Health (Department of Public Health and Sanitation) and the Ministry of Labour. Untreated faecal sludge however contains pathogens that can cause diseases and remain active for a long period of time. There is an urgent need to improve the working conditions of emptiers through regulation and making their work human by conforming to the basic health and hygiene standards. The rights of emptiers are violated as per Article 43 of the Constitution of Kenya with regards to attainable standards of health.



Figure 1: Emptying with a tin attached connected to a string and a bucket

As highlighted in the picture above, the waste is normally removed with a tin attached to a rope and poured into a plastic container. It is then transferred into a drum that is placed on a makeshift handcart. The collected waste is then transported and disposed of in a river, stream or surface area. A major concern with this method of emptying is the serious pollution of both surface and ground water. By emptying this faecal sludge directly into rivers and streams, pathogens for diseases like Cholera and Typhoid are spread at a rapid pace. These emptiers are also carriers of various diseases and none undergo any vaccinations to protect them. From observations, most looked unwell, have teary eyes, hoarse voices due to the toxic fumes and several cuts and bruises on their skin due to the solid waste that is found in faecal sludge.



Large amounts of faecal sludge from sanitation facilities are dumped into rivers, streams or surface areas with minimal concerns from Public Health Office, NEMA or WRMA in many counties. As a result of this, all the rivers passing through many urban informal settlements are polluted with solid waste and faecal sludge.



Figure 2: Dumping the untreated sludge in the river. Washing the tools in the river

The situation needs to be addressed urgently by providing better decentralised sludge disposal sites within the urban informal settlements and restricting the type of toilets that can be emptied manually.

Those involved in pit emptying are ostracized and stigmatized within their communities. Many emptiers indicate that they only carry out this type of work because they cannot find another job. The services offered are poorly paid (approximately KSh 150 for every drum of sludge emptied). There is a need to regulate these services and enforce health and hygiene standards in order to mitigate these issues. The emptiers should be properly licensed and legalised to ensure safe operation of their business. This will also ensure that the disposal of faecal sludge is controlled and done in an environmental friendly way as per the guidelines of NEMA, WRMA and the Public Health Office. Tariffs should be regulated to be in line with the requirements of the emptiers. The tariffs charged should allow them to buy the basic personal protective equipment like gumboots, gloves, masks, overalls and to ensure vaccinations. A proper tariff will protect them from exploitation and will ensure the provision of quality services for the residents of low income settlements.



Figure 3: Manual emptiers in Korogocho, Nairobi



Training is vital and indispensable in ensuring that the emptiers will adhere to the health and hygiene standards stipulated by the Ministry of Health. Vaccinations should be a strict requirement and this should be confirmed by a health certificate. They should follow basic hygiene principles like washing hands and bodies with soap after work, not smoking, drinking and eating while emptying pits.

The services that emptiers offer are essential within the provision of sanitation services in low income urban areas therefore their work cannot be abolished. Drastic efforts need to be made to improve their work conditions. This can be done either by linking them to the water utilities or promoting them to work as service providers within the private sector. In addition, it is a job opportunity for many youths in slum areas. Approaching it as a business and taking steps to institutionalise it, will be a positive step in ascertaining dignity in the occupation.

Within the UBSUP programme, strides have been taken to ensure that the emptiers are formalised and integrated within the legal and institutional framework. A step by step procedure has also been developed to inform the different types of water utilities on how best to legally integrate manual emptiers within the UBSUP programme. The current emptying and transportation services in Kenya are highlighted in the chapter below.



Figure 4: Meeting manual emptiers in Free Area, Nakuru with the Public Health Officers

## 1.2. Current emptying and transportation services in Kenya

### 1.2.1. Manual services

Manual emptying services are found both in urban and rural areas of Kenya. The current situation involves manual emptying of pit latrines or septic tanks. As mentioned above, unfortunately most of the manual emptiers who are involved in this job do not have the right protective equipment and are susceptible to a variety of health risks. Full pit latrines pose huge health risks in areas with high water tables. They spill faecal waste to the environment during rainy seasons thus causing considerable pollution of water resources. This often leads to cholera outbreaks in rural and urban areas.

Low income urban areas in Kenya predominantly use on-site sanitation facilities most of which are traditional pit latrines with poor dilapidated superstructures. The toilet emptying is mostly done manually, using buckets and drums. The faecal sludge is transported on wheelbarrows or makeshift handcarts and disposed of in rivers. This is a major source of water resource pollution in many rivers flowing through the informal settlements of Kenya.

### 1.2.2. Exhauster trucks

Exhauster trucks offer faster and more efficient emptying and transport services of sludge from septic tanks and pit latrines. In the case of pit latrines, the sludge to be exhausted can sometimes be very dry and compacted making direct emptying impossible. Therefore watering of the pit must be done for exhaustion to be possible. In addition, solid waste must also be removed from the pits for easy emptying. The services are offered in most cities and towns either by licensed water utilities or private operators. The highest number of private operators is currently found in Nairobi.

Most exhausters cannot access pit latrines in low income urban areas due to the dense housing patterns which hinder accessibility. Many private exhauster operators discharge their load illegally in open water surfaces to avoid long distance drives to designated dumping points in order to reduce the operational cost (fuel, discharge levies). The other challenge facing the exhauster operators is the existence of cartels that impose illegal levies. There is an urgent need to develop more decentralised discharge points within the low income areas to reduce the distance to be covered by exhauster trucks. This will not only make this business more viable but will also contribute towards environmental protection by alleviating illegal dumping into open water surfaces.<sup>1</sup>UBSUP is currently constructed decentralised treatment facilities in low income areas to mitigate the problem if transportation.



Figure 5: Private exhaustion of a pit latrine at Dagoretti Corner Nairobi at a cost of KSh 10,000

In low income areas, many households and landlords are not able to afford the services of a private exhauster and thus have to contact the licensed water utility whose price is subsidised. Unfortunately most of water utilities in Kenya have a maximum of 2 exhausters and they prioritise their services to the needs of public schools and institutional facilities. Most residents therefore resort to manual pit emptying.

<sup>1</sup>Photo documentary on how exhauster operators work:<http://www.flickr.com/photos/gtzecosan/sets/72157629204908188/>

### Advantages and disadvantages of Exhauster operators

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>▪ Fast and efficient</li> <li>▪ Creates job opportunities</li> <li>▪ Provides an essential service in on site sanitation</li> <li>▪ Less health risks than human powered systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ High investment cost</li> <li>▪ High operation and maintenance cost</li> <li>▪ Cannot pump thick solid sludge</li> <li>▪ Suction pipes are prone to blockage</li> <li>▪ Difficulty in accessing densely populated areas with poor accessibility.</li> </ul>



Figure 6: Exhauster from Oloolaiser Water and Sewerage Company

### 1.2.3. Gulper

A gulper is a low cost effective solution for sludge emptying. The pump was originally designed and developed by Steve Sugden from the London School of Hygiene and Tropical Medicine. It was marketed as the Poo pump by Oxfam. Partners in Development and EThekweni Municipality in South Africa further developed the pump design. The pump works similar to a water pump. The bottom of the pipe is lowered to a pit latrine or a septic tank. The operator remains at the surface and pumps the sludge out. After the work has been done, the Gulper is taken apart and cleaned. The picture below was taken in Gatwekera, Kibera Tosha Bio Centre and shows a group of workers using a Gulper. The emptiers are from Kara Group in Nairobi, a CBO registered in the department of social welfare.



Figure 7: Using the Gulper at Kibera slums Nairobi

The men were initially (manual pit emptiers) working independently in slums. They were then supported by an NGO called Water and Sanitation for the Urban Poor (WSUP) and Umande Trust to establish their business. The Gulper and protective clothing was initially provided by WSUP. They empty the containers with faecal sludge in a drum which is then placed on a cart and transported to a central emptying point. Pumping rate is 20 litres per 40 seconds.

#### Advantages and disadvantages of a Gulper

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>▪ Job creation for the youth.</li> <li>▪ Provides services to areas that cannot be accessed by exhausters</li> <li>▪ Can be built with locally available material</li> <li>▪ Low operating costs depending on discharge points</li> </ul>	<ul style="list-style-type: none"> <li>▪ If distance to a discharge point is far, the workers tend to dispose of the waste in nearby streams and rivers creating a health hazard</li> <li>▪ Spillages happen during pumping and transportation</li> <li>▪ Tested in few low income areas in Kenya.</li> </ul>

#### 1.2.4 Sewers systems

Sewer systems are only available in a limited number of cities and towns in Kenya. Rural areas have no sewer systems in Kenya. The connection to the sewer systems is low in many cities and towns due to inadequate enforcement of laws. Only 19.5% (about 665,000 households) of the urban households in Kenya are connected to sewer systems according to the 2009 Kenya population and housing census report.

Majority of wastewater treatment plants in Kenya are operating at 20% efficiency and need rehabilitation. The investment requirement is enormous and unaffordable. The future strategy of the Kenyan Government to increase sanitation coverage is therefore to develop sustainable low cost onsite sanitation systems as stipulated in the Water Sector Sanitation Implementation Plan 2009. <sup>2</sup>



Figure 8: Treatment plant in Nairobi

<sup>2</sup> Water Sector Sanitation Implementation Plan 2009



## 2. Procedure for integrating the Sanitation team (manual emptiers) within the UBSUP

**Chapter 2** outlines and describes the various groups that have been identified in the three pilot areas. It covers the methodology of identification, the criteria and the stakeholders involved in the identification, registration and licensing of manual emptiers. The name given to manual emptiers by the UBSUP/SafiSan programme is Sanitation Team. Due to the many negative connotations associated with the term “manual emptiers”, it was fundamental to change the names of the groups and incorporate that name in their protective equipment.

This chapter gives a step by step procedure on how to sustainably and legally integrate emptiers within the UBSUP programme so as to create a formalised emptying service provision. These emptiers are going to be trained to act as a watch dog for the water utilities and the authorities by identifying illegal emptiers and illegal dumping. These groups could be linked in future with the Water Action Group (WAGs).

### 2.1. Introduction

Within the UBSUP pilot areas, three different groups were identified for training to primarily cater for the emptying of the UDDTs constructed in the urban low income areas. Restrictions were made to train only for the manual emptying of UDDTs. Manual emptying of wet sanitation systems is illegal as per Chapter 242 of the Public Health Act 2002 and county by laws. The exhausters (private and utility owned) will be used for the emptying of septic and conservancy tanks. Further emptying technologies are currently being developed by BMGF (See chapter 5) and will be tested in Kenya. This document therefore only restricts itself to emptying of manual emptying.



Figure 9: Manual emptiers in Nakuru learning about the UBSUP programme

The priority of the UBSUP team is to integrate the existing illegal emptiers who are not registered in the low income areas to empty the dry sanitation facilities. However due to the lack of illegal emptiers in some pilot areas and other towns, as established in the UBSUP study report, the UBSUP team needed to diversify the type of manual emptiers to be identified, by also incorporating other groups to have different scenarios and methodologies and to understand what can work in different settings, particularly in areas where emptiers are non-existent. Therefore in the three pilot areas,

different characteristics of manual emptiers were identified with the help of the Public Health Officers on the ground and staff of the respective water companies.

<b>County</b>	<b>WSP</b>	<b>Type of Group</b>	<b>Who identified them?</b>	<b>Are they registered at the Department of Gender and Social Welfare?</b>
<b>Embu</b>	<b>Embu Water and Sewerage Company (EWASSCO)</b>	Registered group involved in solid waste management and composting	Staff of EWASCO and NEMA	Yes
<b>Oololaiser</b>	<b>Oololaiser Water and Sewerage Company</b>	Registered youth group in solid waste management	Staff of EWASCO	Yes
<b>Nakuru</b>	<b>Nakuru Water and Sanitation Company Ltd (NAWASSCO)</b>	Illegal emptiers in Free Area	Public Health Officers in Free Area	No

The Public Health Officers were paramount in the identification of the emptiers in the low income areas and were part and parcel in the development of the tools required for the identification, training, registration and certification of the emptiers of the UDDTs.

To ensure that the emptiers are protected and carry out their duties according to the Public Health Act and EMCA 1999, public health officers and NEMA regional officers had to be on board to assist in defining the components of the training programme and identifying the legal documents, authorisation letters and permits from the different institutions that are required for the emptiers.

Below is the overall procedure identified to ensure formal integration of emptiers within the UBSUP programme.

## **2.2. Identifying, training and registration of manual emptiers**

### **2.2.1. Identification:**

- The PHOs with help from the WSP staff will identify organisations, self-help groups, or CBOs interested in emptying the toilets. To mitigate the current manual emptying situation in the low income areas, already existing groups that are classified as illegal emptiers should be prioritised. Existing groups that also carry out Solid Waste Management can also be incorporated
- The PHOs are the key stakeholders to approach in the identification of manual emptiers within the UBSUP areas and are key in identifying the emptier groups that are not registered



and structured. The key contact person is the county public health officer or sub-county public health officer

- During identification, the UBSUP project task team members, social marketers or landlords should also be encouraged by the WSP to be involved in the identification of potential emptiers in the low income areas
- When 15 – 20 emptiers<sup>3</sup> or **one group** have been registered, the WSPs should then plan for a training session together with the PHOs and NEMA officials
- Individuals interested in being trained can also be encouraged. (Groups however take preference). Individuals should ensure that they belong to a certain group after the training is done to ensure that they are registered in the department of social welfare.

### 2.2.2. Training

- The training will entail a theoretical component which includes an introduction to SafiSan, UDDTs and the dry toilet technology, awareness of the programme, training on hygiene and safety, disease transmission, updating emptiers on the conditions and requirement of the Health Bill/ sanitation and the law, constitution, illegal dumping, do's and don'ts when emptying and registration with the Public Health, registration as a group (differences in permits, should not be encouraged to get a business permit), customer care/PR, etiquette, pricing for emptying, code of conduct from public health, vaccination, mandatory first aid kit, HIV/AIDs, Alcohol and drug abuse, Role of the water company, How to identify other illegal emptiers and report them
- Practical aspects of the training will entail on job training (emptying, transportation, disposal and reuse) accompanied by the WSPs, UBSUP team members, PHOs and other partners involved in the sanitation service delivery.

The training package is included in the UBSUP Toolkit. See Appendix1 which has the training schedule.

- Training should be strictly led by the public health officers due to the legal structures.

### 2.2.3. Registration

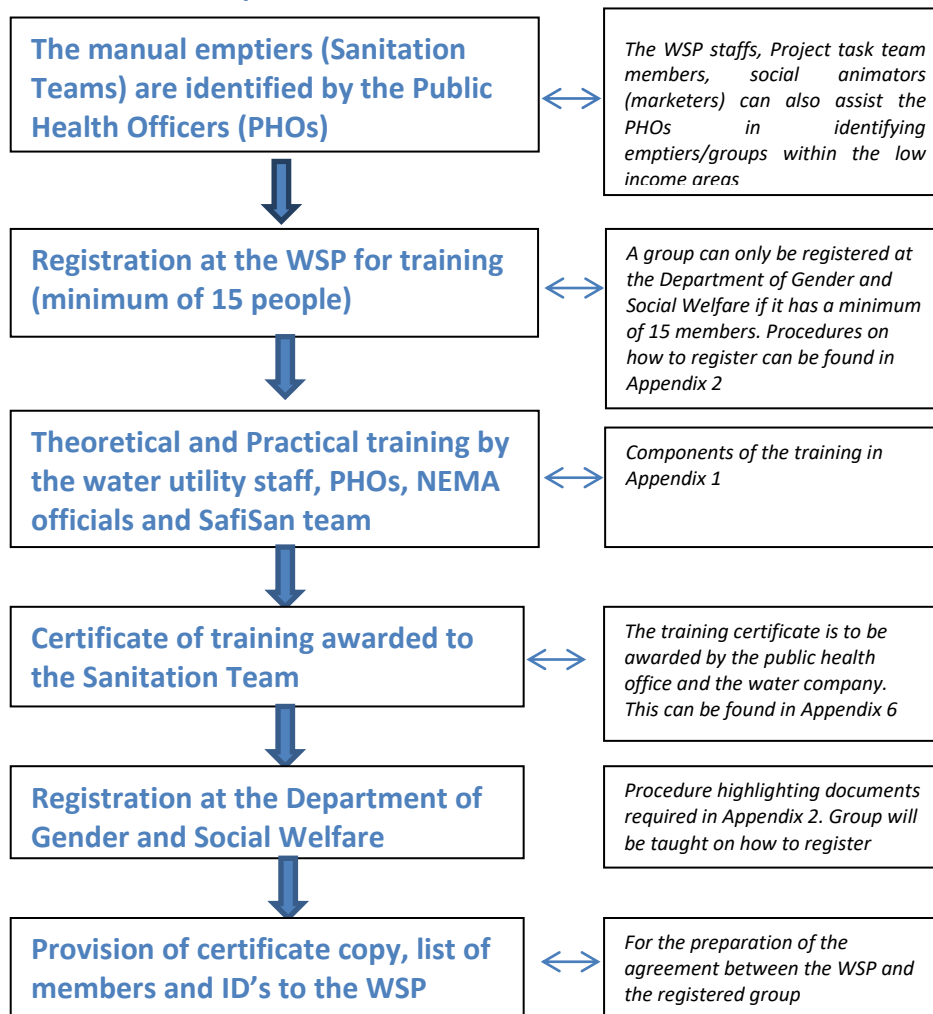
- First step after training is for the group to register at the department of social welfare as an organised group involved in either **sanitation in low income areas or (solid) waste management**. Registration can be done without mentioning the specific activities. Provision of a list of member, constitution, mandates and activities e.g. sanitation in the estates together with a supportive letter from the WSP
- Once the group has been registered, they should then provide their registration certificate together with a list of group members and their IDs to the WSP
- Once training and successful registration has been successfully completed, a MoU, or lease agreement is signed which clearly spells out the mandates of the emptiers within the UBSUP programme so that each party knows what to expect from the other (**a template is included in the Toolkit**). The license is valid for one year and can be renewed

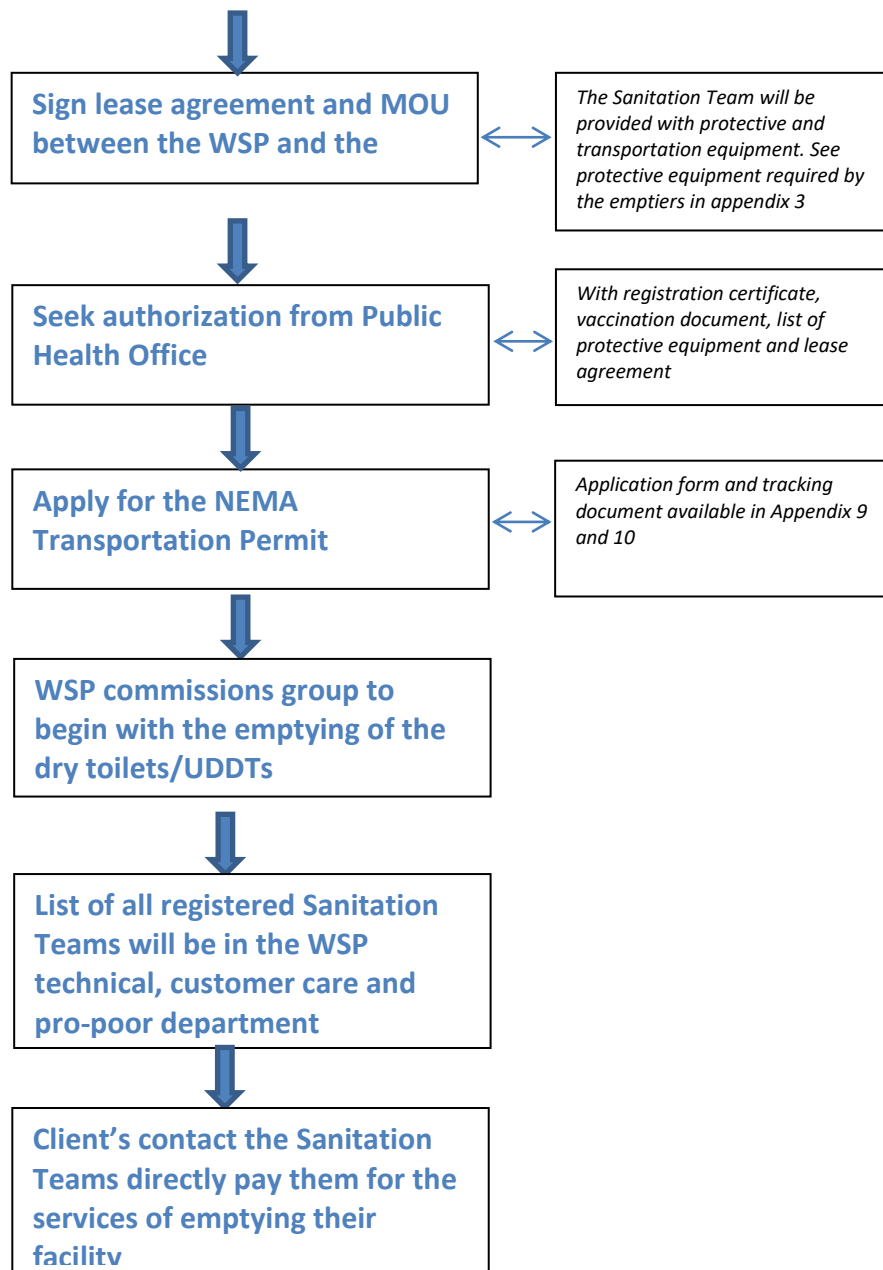
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<sup>3</sup>15 and above required for training. Registration can only be done by 15+ people in the Department of Gender and Social Welfare

- The registered group then seeks possible authorisation from the Public Health Office to carry out emptying activities after vaccination from Hepatitis B, Tetanus, Typhoid, Cholera and purchase of protective equipment
- The group then applies for the Waste transportation permit at NEMA
- Upon registering and receiving the authorisation from the PHO, the WSP commissions the emptiers to start operating under the supervision of the PHOs
- A list of all registered and authorised emptiers with their contact details will be with the WSP technical and customer care department. The WSP register the emptiers by using the Emptiers Registration Form. The WSP will provide the list to all those signing up for new UBSUP toilets and will also ask the project task members, PHOs to circulate the list to all the UBSUP clients, beneficiaries and households
- The registered and authorised emptiers also monitor and ensure that no illegal emptying occurs within their LIAs
- The emptiers will be contacted either directly by the landlords, tenants or the WSPs
- See **Appendix 2** which has the procedures of registering at the Department of Gender and Social Welfare

### 2.3. Step Procedure in identifying, training and registration of manual emptiers (Sanitation Teams)





To ensure that the WSP and health officials understand the procedure, a poster has been developed (See Appendix 11)

### 3. Protective equipment for the Sanitation Teams

Occupational health standards for exhaustor operators and manual pit emptiers are paramount in ensuring safety of the workers during waste collection. Providing health guidelines that protect emptiers from dangers that lead to sicknesses is important in ensuring compliance with the public health standards and safety regulations. These measures would assist in making a meaningful difference to the health of those who are involved in the emptying, transportation and conveyance components of the sanitation value chain.

Those that empty UDDTs where treatment is not yet complete could be at risk from infection. Protective clothing such as nose masks is required to ensure protection. The clothing should be impervious and should be light to ensure ease of mobility. Gumboots and gloves should be tightly

fitting. The tools and equipment that are used should be rinsed, thoroughly dried and stored. Area of storage should be designated. In addition, the protective equipment should restrictively be used for the purpose of waste collection and emptying to avoid contamination. Appendix 3 highlights the protective equipment that should be purchased for the UBSUP programme.



### Protective equipment required for the Sanitation Team

- Gumboots
- Overalls
- Respirators
- Gloves
- Helmet
- Apron



Figure 10: UDDT emptying in BulBul, Ngong with Vision 2030 Sanitation Team

### 3.1. Faecal-oral diseases

If the protective equipment is not worn by the emptiers, a number of faecal oral diseases can be acquired. Faecal oral transmission can occur when pathogens in faecal matter pass from one host into the oral cavity of another host. This occurs when emptiers breathe in the contaminated dust

particles whilst emptying or come into direct contact with the faecal matter due to lack of gloves. This can be mitigated through proper use of the protective equipment such as the respirator. Below is a list of diseases that can be transmitted due to improper handling of the waste.

Diseases	Examples
Bacterial diseases	Cholera Typhoid and Paratyphoid Bacillary Dysentery
Protozoan diseases	Amoebic Dysentery
Viral diseases	Hepatitis B Poliomyelitis Gastro enteritis (affecting the cavity, stomach, intestines)
Parasitism	Tapeworms Roundworms Pinworms

The diseases above can affect the emptiers if they don't practice hygiene during work and at home.

### 3.2. Hygiene practices

<b>1. Personal Hygiene practices</b>	
Hand washing	The emptiers should be taught on how to thoroughly wash their hands with soap and water during the training
Nail care	Trim the nails. Use a brush to scrub your nails
Body care	Cleanliness of the whole body
<b>2. Domestic Hygiene</b>	
Protection of family	Cleanliness of their own homes to protect also their families (sweeping, washing, cleaning clothes, toilets, beddings)
Hygiene for animals	Pets at home, sheep, dogs etc.
<b>3. Household hygiene</b>	
Cleanliness in the home	For a clean and healthy house, all equipment should be cleaned regularly

## 4. Emptying and the Public Health Act 2012 CAP 242

Within the Public Health Act 2012, there are very minimal guidelines on how to dispose and transport waste. Sanitation is primarily mentioned in CAP 242, PART IX, section 118 with the heading **Sanitation and Housing**.

Relevant sections in CAP 242, PART IX, section 118: What constitutes nuisance?	How is UBSUP addressing this section?
118 (1) (c) any street, road or any part thereof, any stream, hole, ditch, gutter, water course, sink, water-tank, cistern, water closet,	<ul style="list-style-type: none"> <li>- Sanitation teams are trained on appropriate emptying of UDDTs</li> <li>- Sanitation teams are trained on disposal of</li> </ul>

<p>earth closet, privy, urinal, cess-pool, soak-away pit, septic tank, cess-pit , soil pipe, waste pipe, drain, sewer, garbage receptacle, dustbin, dung pit, refuse it, slop tank, <b>ash pit or manure heaps</b> so foul or in such a state or so situated or constructed as in the medical officer of health to be offensive or to be injurious or dangerous to health</p>	<p>the waste in the designated decentralized treatment facilities</p> <ul style="list-style-type: none"> <li>- The Sanitation teams are trained on adding ash to UDDT waste that has not fully dried but has to be prematurely emptied so that there is no foul smell during transportation</li> <li>- The sanitation Teams are continuously monitored by the Public Health Officers</li> </ul>
<p>118 (1) (e) any <b>noxious matter</b>, or waste water, flowing or discharged from any premises wherever situated, into any public street, or into the gutter or side channel of any street, or into the nullah or water course, irrigation channel or bed thereof no approved for the reception of such discharge</p>	<ul style="list-style-type: none"> <li>- The Sanitation Teams go through vigorous training to ensure that they do not discharge the waste in public areas or streams. The training also ensures that they understand the designated emptying points of the Decentralised Treatment Facilities. These sites have been issued with licenses from NEMA (Environment Impact Assessments). The Sanitation Teams are educated on the location of the sites and are aware that these are the only sites they can use to dump the waste</li> </ul>
<p>118 (1) (n) any factory or trade premises not kept in a clean state and free from offensive smells arising from any drain, privy, water closet, earth closet or urinal, or not ventilated so as to destroy or render harmless and inoffensive as far as practicable any gases, vapours, dust or other impurities generated or so overcrowded or so badly lighted or ventilated as to be injurious or dangerous to the health of those employed therein</p>	<ul style="list-style-type: none"> <li>- The Sanitation teams are provided with protective equipment to protect them from any harmful pathogens entering their systems</li> <li>- The UDDTs in the UBSUP programme do not smell due to the construction of vent pipes and addition of ash in the waste</li> </ul>

#### 4.1. Nuisances prohibited and penalties applied as per the Public Health Act 2012

According to the Public Health Act CAP 242, Section 115, “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge of any nuisance or other condition liable to be injurious or dangerous to health.”

According to the Public Health Act CAP 242, Section 119 “ The medical officer of health if satisfied with existence of a nuisance, shall serve a notice on the author of the nuisance or, if he cannot be found, on the occupier or owner of the dwelling or premises on which the nuisance arises or continues, requiring him to remove it within the time specified in the notice, and to execute such work and do such things as may be necessary for that purpose, and, if the medical officer of health think it desirable (but not otherwise), specifying any work to be executed to prevent a recurrence of the said nuisance.”

According to the Public Health Act CAP 242, Section 121 Sub-section 1, if you do not comply with the notice, one is liable to a fine not exceeding 1,500 Kenya shillings for every day during which the default continues.



## 5. NEMA Laws on transportation and illegal dumping

### 5.1. NEMA and transportation

The type of transportation equipment to be used by the emptiers is regulated by the National Environment Management Authority (NEMA). The emptiers cannot begin working unless they have a waste transportation permit (license) as clearly stipulated in the Environmental Management and Coordination Act of 1999 (EMCA 1999).

The transport facilities will be owned by the WSPs or emptier group depending on their financial capability. There will be a MoU between the registered group and the WSP and a lease agreement (for the equipment) between the registered group and the WSP. **The waste transportation permit (license) can be customised to fit the needs of manual emptying of dry toilets. Therefore approval needs to be given by the waste compliance section at the NEMA office in Nairobi.**

The waste transportation permit (license) can only be given to the group once the following documents have been provided

- An authorisation letter from Public Health
- An authorisation and introduction letter from the WSP
- Registration certificate (self-help/youth group)
- Training certificate
- Mode of transportation (To get a waste transport permit (license) from NEMA, the emptier group should also show the type of transportation equipment they will use from Point A to Point B. A tracking document is issued with the permit. )

The permit is not yet customized to accommodate the equipment required for emptying dry toilets and because our emptiers are only emptying UDDTs, NEMA has taken into consideration the possibility of using enclosed handcart connected to a motorbike, a donkey or can be pulled by humans.

**Transportation such as bicycles and tricycles can only be considered once approval is received from the NEMA headquarters. UBSUP team needs to consider the weight to be transported and the distances between the UDDTs and the DTFs. The type of transportation equipment to be used by UBSUP is the SaniGo.**



Figure 11: Testing of SaniGo (UBSUP Transportation) in Bulbul, Ngong

## 5.2. The NEMA law on emptying and illegal dumping

The following sub-chapter provides an overview of the sections within the EMCA Act 1999 that specifically addresses issues related to emptying and waste transportation

### 5.2.1. Environmental Management and Coordination Act EMCA (1999)

Part viii of section 87(2) and b and section 88 (1), 91(4-5) of EMCA 1999 states that:

Relevant sections in EMCA 1999	How is UBSUP addressing this section?
<b>Section 87 (2) (a) and (b) of EMCA 1999</b>	
87(2) no person shall transport any waste other than (a) In accordance with a valid license to transport waste issued by the authority and (b) To a waste disposal site established in accordance with a license issued by the Authority	The Sanitation Teams go through vigorous training to ensure that they do not empty any other toilets apart from dry toilets/UDDTs. The training also ensures that they understand that their license is restricted. UBSUP/SafiSan is constructing Decentralised Treatment Facilities that will cater for the waste from all the different toilet technologies. These sites have been issued with licenses from NEMA (Environment Impact Assessments). The Sanitation Teams are educated on the location of the sites and are aware that these are the only sites they can use to dump the sludge.
88 (1) Any person intending to transport waste within Kenya ,operates a wastes disposal site or plant or generates hazardous waste shall prior to transporting the wastes commencing with the operation of the wastes disposal site of plant or generating hazardous waste ,as the case may be apply to the authority in writing for the grant of appropriate license	The UBSUP/SafiSan is not only constructing toilets. It also ensures that there are existing treatment facilities that have accorded licenses by NEMA. The emptiers are aware that they cannot dump in any other sites other than the approved NEMA treatment facilities.

### 5.2.3. Waste Management Regulation (2006) Part 11 7(1-5)

This sub chapter highlights the sections that deal with Waste Management Regulation and also informs on how UBSUP is planning on incorporating this section within the service provision component. The then Minister for environment and natural resources gazetted the Waste Management regulations in 2006, in exercise of the powers conferred on him by Sections 92 and 147 of the Environmental Management and Co-ordination Act No. 8, of 1999. These Regulations may be cited as the Environmental Management and Co-ordination (Waste Management) Regulations, 2006. Waste Management Regulations are meant to streamline the handling, transportation and disposal of various types of waste. The aim of the Waste Management Regulations is to protect human health and the environment. The regulations place emphasis on waste minimization, cleaner production and segregation of waste at source.<sup>4</sup>

Relevant sections in Waste Management Regulation (2006)	How is UBSUP addressing this section?
<b>Part 11, 7(1-5) states that:</b>	
7(1) No person shall be granted a license under the act to transport waste unless such a person operates a transportation vehicle approved by the authority upon the recommendation of the relevant lead agency.	Transportation equipment which is known as SaniGo has been developed by the UBSUP/SafiSan team that meets the regulations. The transportation equipment will be used to transport the dehydrated faeces from the UDDTs to the NEMA licensed decentralized treatment facilities.
(2) Any vehicle used for transportation of waste or any other means of conveyance shall be labelled in such a manner as may be directed by the Authority.	All SaniGos will be appropriately marked with the programmes logo and will be labelled appropriately. Each SaniGo will have its own NEMA tracking document
(3) The authority in consultation with the relevant lead agency may designate particular geographical areas as areas for operation for licensed waste transporters.	UBSUP/SafiSan is ensuring that the Sanitation Teams have decentralized locations in the proximity of the underserved areas
(4) An application for a license to transport waste shall be in form I of the first schedule to these regulations and shall be accompanied by the prescribed fee set out in the second schedule.	The Sanitation Teams initially undergo training. Part of the training will ensure that they understand how to apply for a waste transportation permit
(5) A license issued under the Act for the transportation of waste shall be in form II of the first schedule to these regulations and shall be valid for one year from the date of issue.	The Sanitation Teams initially undergo training to understand the legal aspects pertaining to their job

### 5.3.3. Waste Transporters Responsibilities

The waste transporters responsibilities are highlighted in the following section and are stated in Part 11 section 8 (1-3) and 9:

<sup>4</sup>[http://www.nema.go.ke/index.php?option=com\\_content&view=article&id=137&Itemid=490](http://www.nema.go.ke/index.php?option=com_content&view=article&id=137&Itemid=490)

Relevant sections in EMCA 1999	How is UBSUP addressing this section?
<b>Part 11 section 8 (1-3) and 9:</b> Any person granted a license to transport waste shall ensure that:	
(1) The collection and transportation of such waste is conducted in such a manner that will not cause scattering of the waste	The Sanitation Teams are thoroughly trained on how to transport the waste
(2) The vehicles and the equipment's for the transportation of waste are in such a state that shall not cause scattering of, or flowing out of waste emissions of noxious smell from such waste	The transportation equipment is enclosed, water tight, light and easy to navigate in different terrains
(3) The vehicles of transportation and other means of conveyance of waste follow the scheduled routes approved by the authority from the point of collection to the disposal site or plant	The Sanitation Teams are aware of the designated treatment facilities that they can use to dump the waste
(4) He or his agents possess at all times during transportation of the waste , a dully filled tracking document as set out in form 111 in the first schedule of these regulations and shall produce the same such tracking document on demand to any law enforcer.	The Sanitation Team are thoroughly trained on how to fill in the tracking document and are aware of always having that document with them
(9) Any person licensed to transport waste shall collect waste from the designated area of operation and shall deliver such waste to the designated disposal site or plant	The Sanitation Team are practically and theoretically trained on the importance on their area of operation

#### 5.3.4. Guidelines for the Waste Transportation Permit

Any person, who before the commencement of these regulations was carrying on the business of transporting waste, shall apply to the authority for a licence for the transportation of waste within ninety days after the commencement of these regulations in the prescribed form I as set out of the first schedule to these regulations. Below are the general guidelines for license application for waste transportation:

- **Name and address of applicant:** Name of the applicant should be the name of the legal entity under which the licence will be issued. Give the postal, email, telephone, fax website and physical address. Also include the name of contact person who should be someone legally authorised to speak on behalf of the company and records at all times.
- **PIN number to Include PIN and I.D** (attach copy to each application). Firms should give certificate of registration and attach copies.

- **Registration and type of vehicle to transport waste**-as per registrar of motor vehicle, attach copy of log book: type of vehicle indicate whether high or low loading, side, rear or front loaded etc.
- **Quantity of waste** to be transported indicate amount in tones or Kgs
- **Licensed site/plant to which waste is to be transported**-attach copy of contract with a licensed disposal facility.
- **Collection schedule**-attach copy of work/collection schedule for the vehicle to be licensed.
- **Any other information**-provide all necessary information as required in the application requirements.
- **Quantity/size of waste:** Give the amount of waste being transported in Kgs (tones) or litres.
- **Description and physical nature of waste:** indicate whether waste is solid or liquid. If solid waste state whether paper, plastic, glass, garbage, hospital sharps etc.
- **Type of waste as per licence:** indicate whether hazardous, municipal, domestic, biomedical, industrial.
- **Area** collected as per licence

### 5.3.5. Licensing Procedures

**The following are the licensing procedures that need to be followed by the Sanitation Team**

Step 1: Obtain application forms can be obtained from District Environment Officer (DEO) OR download from the National Environment Management Authority (NEMA) website<sup>5</sup>. These documents are also available in Appendix 9 and 10.



Step 2: Fill application forms in triplicate and attach the necessary documents



Step 3: Pay prescribed application fee through NEMA's Kenya Commercial Bank (KCB) Revenue Account (233971386) or Cash payment of Kshs 3, 000 at NEMA headquarters. NEMA official receipt will be issued on evidence of payment such as bank deposit slips or copy of banker's cheque.



Step 4: Return the duly filled application forms and documents to the District Environmental Officer who will then forward them to the NEMA Headquarters, waste management section for reviewing.



Step 5: The application will then reviewed within 21 working days. An approval for licensing will be given with relevant conditions or a decline stating the reasons.




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<sup>5</sup>[www.nema.go.ke](http://www.nema.go.ke)

Step 6: Upon fulfilment of application requirements and payment of license fees, a license will be issued within 30 working days



Step 7: The license is renewed annually upon adherence to all conditions provided.

**NOTE!!**

**Application Fee charges**

- a) Transportation of waste KShs 3,000

**Licensing fee charges**

- a) Transport waste KShs 5,000

The following are general guidelines for the use of the **NEMA Tracking document**. This document can be viewed on Appendix 10

1. Serial number: Each tracking document to have a serial number starting with 001
2. Number should never be repeated
3. Registered name of transporter as per the licence is required
4. Usual area of operation as per the licence is required
5. License number as per waste transportation licence issued by NEMA

### **5.3.6. Environmental Monitoring and Compliance**

NEMA's Environmental Inspectors will undertake regular monitoring of the facilities to ensure compliance with the Regulations. In the event of violation of conditions in the license notwithstanding the official renewal dates, such facilities shall cease to operate until the licensing conditions are fulfilled.

It is also stated within the act that any person who contravenes any provision of this section shall be guilty of an offence and liable to imprisonment for a term not more than two years or a fine of not more than one million shillings or to both such imprisonment and fine. This information will be provided to the Sanitation Team and the respective water companies implementing the UBSUP programme.

## **6. Omni-ingester technology under development by BMGF<sup>6</sup>**

The Omni-Ingester suite of tools will allow emptiers to access vaults in areas unreachable by vacuum trucks, pump material that can't be pumped by vacuum trucks, and operate far more efficiently. In turn, they will be able to cut costs, charge less, and increase their customer base.

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<sup>6</sup>More information in the website: <http://fsmtech.org/>



## 6.1. The manual pump

The Omni-Ingestor Manual Pump is an inexpensive, simple, manual pump designed for emptying shallow, low-volume vaults. The Manual Pump is a tool that manual emptiers can use to make vault emptying more sanitary, safer, faster, and more acceptable.

- Keep manual emptiers out of pits.
- Reduces unsanitary practices
- Increases emptying rate

Built to be carried and operated by just one person, the pump quickly empties shallow, low-volume pits containing thick sludge and debris. The emptier does not need to enter the pit. An easy-to-clean strainer captures debris and prevents clogging of the valves. Delivered as a kit and built with locally sourced components, the pump is inexpensive and easily maintained. It is currently in field testing and production is set to begin this year. Each pump is expected to cost between 100-300 USD depending on configuration. Features are as follows:

- Foldable design makes it easy to carry or roll.
- 4-step setup is quick and easy.
- Takes just 1 minute to access, clean, and replace the strainer and valves.
- Pumps more than 1 liter per second.



Figure 12: The Manual Pump

## 6.2. Mechanical Pump

The pump is a stand-alone system that can fill a variety of sludge transporters, including vacuum trucks, tank trucks, and trailers. Because it is not attached to a sludge transporter, the pump is free to continuously fill one transport vehicle after another—increasing operational efficiency.

- Empty wet & dry vaults
- Access vaults that couldn't be reached before.
- Pump all contents, not just the liquid fraction.
- Cut emptying costs.

The only pumping system ever developed to overcome these barriers, the Mechanical Pump can handle the liquid content of septic tanks and cesspools as well as the thick, debris-filled waste found in latrine pits. Its reach extends beyond that of existing vacuum-truck pumps, and its pumping costs are lower. The pump is a stand-alone system that can fill a variety of sludge transporters, including vacuum trucks, tank trucks, and trailers. Because it is not attached to a sludge transporter, the pump is free to continuously fill one transport vehicle after another—increasing operational efficiency. Features are as follows:

- Designed for wet and dry vaults.
- Debris screen prevents clogging and damage to the system.
- Pumps 50+ meters.
- More fuel efficient than competitive methods



Figure 13: The Mechanical Pump

### 6.3. The Mobile Pre-Processor (MPP)

The Mobile Pre-Processor (MPP) technology will make emptiers of vaults having contents less than 5% solid more productive and significantly reduce their operating expenses.

- Reduce the volume of wet vault waste.
- Remove trash and grit.
- Empty more vaults per day.
- Cut fuel and maintenance costs.
- Prevent discharge of bio hazardous materials into the community.



Figure 14: The Mobile Pre-Processor (MPP)

## **7. Appendixes**

- 1. Sanitation Team Training Programme**
- 2. Registration at the Department of Gender and Social Welfare**
- 3. Sanitation Team Protective Equipment**
- 4. How to use a UDDT**
- 5. WSP Sanitation Team Registration Form**
- 6. Sanitation Team Certificate**
- 7. Procedure for identification, registration and training Sanitation Teams**
- 8. How to empty a UDDT**
- 9. NEMA Waste Application Form**
- 10. NEMA Tracking Document**
- 11. Step by Step Sanitation Team Poster**
- 12. Adverts for the Sanitation Teams**
- 13. Hand washing Poster**