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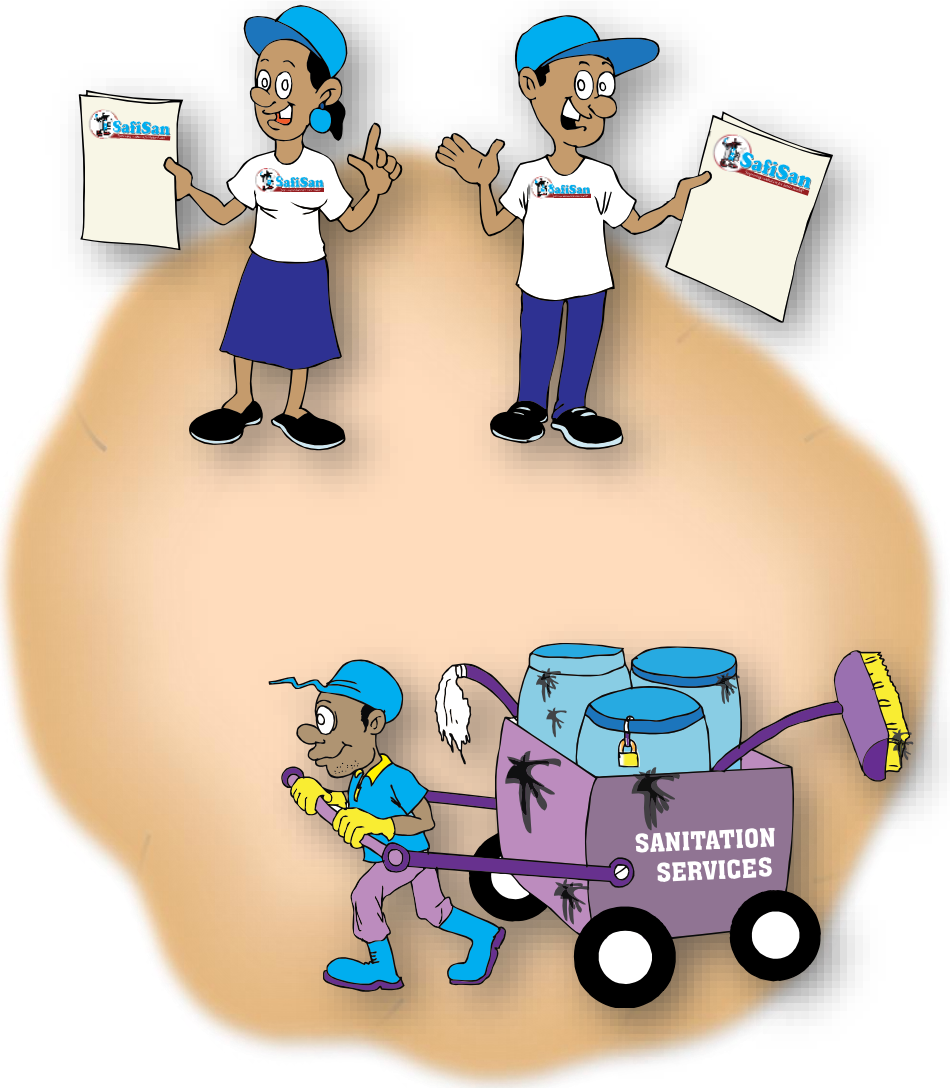
Water Sector Trust Fund

Up-Scaling Basic Sanitation for the Urban Poor (UBSUP)

The Financing & Business Model



(Illustration by Vincent Nyalik)

Prepared by the UBSUP Team.

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Acronyms and Abbreviations

ABR	Anaerobic Baffled Reactor
BMGF	Bill and Melinda Gates Foundation
BoQ	Bill of Quantity
CBO	Community-based Organization
CfP	Call for Proposal
CoK	Constitution of Kenya
DEWATS	Decentralized Wastewater Treatment System
DIY	Do-It-Yourself
DSDB	DEWATS/Drying Beds
DTF	Decentralised Treatment Facility
FM	Field Monitor
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
HH	Household
KACC	Kenya Anti-Corruption Commission
KfW	Kreditanstalt für Wiederaufbau
KSh	Kenyan Shilling
L	Litre
LIA	Low-Income Area
ME	Manual Emptier
MoU	Memorandum of Understanding
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
PPPD	Per person per day
PSF	Public Sanitation Facility
SPA	Service Provision Agreement
UBSUP	Up-scaling of Basic Sanitation for the Urban Poor
UDDT	Urine Diverting Dry Toilet
UPC	Urban Projects Concept
VST	Virtual Sanitation Tool
WASREB	Water Services Regulatory Board
WSB	Water Services Board
WSP	Water Service Providers
WSS	Water Supply and Sanitation
WSTF	Water Sector Trust Fund

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Constitution of Kenya.

FROST & SULLIVAN, http://www.frost.com/sublib/display-market-insight-top.do?id=20759887

KLOSS, R.: Improving Urban Sanitation Systems: Waste Water Treatment Plants; Nairobi, 2009.

JENKINS, Joseph: The Humanure Handbook – A Guide to Composting Human Manure; 2005, p. 81

Ministry of Public Health and Sanitation: The Implementation Plan for Sanitation, 2009.

OSTERWALDER, A. et al.: Business Model Generation; New Jersey, 2010.

SEUR, Han: Sowing the Good Seed, 1992.

UBSUP Documents:

- Rosa Project Report
- Social Animators Handbook
- Study Report on the testing of SafiSan Toilets in Oloolaiser Water Service Provider, May 2013
- UBSUP Preparatory Study
- Study among users of improved sanitation facilities
- Study of potential users of compost
- Technical handbook

Wikipedia

"If I had asked my customers what they wanted, they would have told me 'a faster horse.'"

HENRY FORD

1. Introduction

The development of a business and financial model for the "Up-scaling of Basic Sanitation for the Urban Poor (UBSUP)" Programme is an essential part for the success of the overall initiative. An affordable and functioning toilet facility will not reach its potential customers if a sound business model and financing model is not in place.

This paper describes the development of the UBSUP business and financial model and defines their characteristics. Its development is based on numerous discussions and workshops with team members and sanitation stakeholders. The models produced will be tested during the pilot phase and updated with the additional experience gained.

Following Henry Ford's quote, the development process of the models follow the adaptation and consideration of new ideas, approaches, customer segments, distribution channels, etc. A business model can be innovative and create needs which did not exist beforehand (e.g. mobile phones).

A key focus of the financing and business models for UBSUP is put on providing incentives for the key partners (e.g. WSPs) to fulfil their mandate within the model. Without clear incentives, the models may not work in practice.

This document is split into six main parts:

1. **Preliminary consideration and principles (Chapter 1):** providing all relevant technical background information and describing underlying principles;
2. **The sanitation value chain (Chapter 2):** analysing the risks of the sanitation value chain which are related to the finance and business models;
3. **Considerations of the Financial and Business Models (Chapter 3):** describing relevant considerations and their effect on the model designs;
4. **The Finance Model and its procedures (Chapter 4):** providing the detailed finance model.
5. **The Business Models and their specifications (Chapter 5):** describing business models for stakeholder involved in the service delivery;
6. **Recommendation & Outlook (Chapter 6):** setting the way forward.

It is expected to update this document after the pilot phase with experience gained on the herewith recommended model.

1.1 Principles Guiding the Financing & Business Model

The following principles have guided the development of the Financing and Business Model:

1. Promote technical options that minimise health and environmental risks.
2. Develop affordable technical solutions for the end-user.
3. Solutions promoted and supported by the WSTF/UBSUP programme should be sustainable and therefore, address the entire sanitation value chain.
4. Enhance the involvement of the Water Service Providers (WSPs) in the provision of on-site sanitation services.
5. Develop, together with the Water Services Regulatory Board (WASREB) realistic incentives for WSPs that are committed to increasing sanitation coverage.
6. Reduce the risk for donors, the Water Services Trust Fund (WSTF), the WSPs and local artisans who construct the improved toilets.
7. Promote private sector participation and capacity building.
8. Promote improved sanitation through social marketing.
9. In-house development of a variety of sound technical options.

1.2 Assumptions made by the UBSUP Programme

The UBSUP programme, including its social marketing programme, is aware that its actions are based on a number of assumptions. If the assumptions turn out to be untrue or problematic they become challenges or they may even jeopardise the overall success of the UBSUP programme.

The following assumptions are underlying the UBSUP programme:

Table 1 - Assumptions Related to the UBSUP Programme

Rank	Assumption
1	WSPs are keen to move into onsite sanitation
2	The sanitation situation in LIAs in Kenya is poor
3	Sanitation is a priority
4	Landlords care about tenants
5	Landlords are willing and able to invest in improved sanitation facilities
7	The UBSUP toilets are affordable
8	Waste from double vault Urine Diverting Dry Toilet (UDDT) is safe when properly used
9	Residents don't mind separating urine and faecal matter
10	Residents don't mind a toilet with steps
11	There is a market for soil conditioner & fertiliser made of human waste
12	Cultural constrains related to handling and using human waste can be overcome
13	Most low income areas have manual emptiers or people who sees an business opportunity
14	There are enough local artisans able and willing to build the required number of toilets
15	Up-scaling is easy also when it comes to onsite sanitation
16	Demand for improved sanitation exists
17	Demand for improved sanitation can be met by the UBSUP programme
18	WASREB is willing and able to work on developing incentives for WSPs
19	Other sector stakeholders will support UBSUP
20	Prefabrication is feasible and cheaper and leads to faster implementation (assembly versus construction)
21	There is enough land available to construct decentralized treatment facilities
22	UPC has adequate quality assurance mechanisms in place
23	Sufficient quantities of building materials for all toilet designs can be obtained from the
24	The amount of faeces produced per user is on average 0.53kg pppd
25	The toilets are used by 10 persons per day on average

1.3 UBSUP: Toilet Attributes

The business and financing models are based on the whole sanitation chain and not on one specific step only. However, the toilet infrastructure (the first step of the chain) is seen as a core part of the model and as such of the success of the overall programme. Since the programme is demand driven, the other steps of the sanitation chain are only coming into action if the first step is successful. In addition, the designed infrastructures determine the next steps of the chain (the emptying process depends on the adopted toilet technology). As a result, the design of the toilet facilities has been the most prominent activity within the first year of the UBSUP programme and a lot of different options and approaches have been considered.

The technologies developed are briefly described in Chapter 1.4 and are based on attributes which are highlighted in the following table. The ranking is based upon the results obtained with the UBSUP qualitative and quantitative studies.[1]

Table 2 - Key Attributes Used During the Social Marketing Programme

Rank	Attribute	Category
1	Affordable and incentivised	Financial
2	No bad smell & enough light	User experience
3	User-friendly (easy to use, clean and safe)	User experience
4	Easy & quick assembly	Construction
5	Equipped with a hand washing facility	User experience
7	No need of digging a pit	Construction
8	Space efficient. Economical use of land	Space
9	Easy to keep clean & maintain	Maintenance
10	No need to construct new latrine when old is full. It is re-usable as it only needs to be emptied	Structural
11	Strong & durable	Structural
12	Termite proof	Structural
13	No environmental hazard; can be placed near the well (Minimal ground water contamination)	Value chain
14	Easy to empty & safe disposable waste (Waste can be used as compost)	Value chain
15	Can be constructed on collapsible soil, high water table areas and hard surfaces	Local attribute
16	Multiple units can be connected	Structural
17	Beautiful & cool	User experience
18	Sanitation is a human right!(providing it is an obligation)	Rights & duties
19	Environmentally-friendly	Value chain
20	Provision of sustainable sludge management services for the users	Value chain

These attributes will be used by the social marketing programme to create awareness and to sell the toilets.

The UBSUP social marketing programme in addition to stressing the environmental impact of improved sanitation and treatment will put much focus on a number of other attributes of the improved toilets. Attributes such as durability, affordability, user-friendliness, cleanliness, health impact and risk minimisation will be used to sell the improved toilets as being an essential part of the value chain. The social marketing activities are guided by the outcomes of the UBSUP study done in LIAs of 11 towns in Kenya.

The social marketing programme also uses specific local conditions and preferences to increase demand for improved sanitation:

- Pour-flush toilets are suitable for areas already provided with a sewer network and sufficient water supply and areas with a large Muslim population. The UBSUP study clearly shows that this type of sanitation technology is the most preferred improved option within this community.
- A double vault UDDT provides a solution for areas with high water tables or severe lack of water as well as rocky and sandy soils.

[1] See UBSUP Document No. 8

1.4 UBSUP Main Technical Options

Within UBSUP attention is paid to the entire sanitation value chain. This entails the development of appropriate user interfaces (toilet facilities), adequate collection and transport systems and treatment facilities.

UBSUP supports high quality pour-flush and cistern-flush toilets, which have been designed and developed before and during the UBSUP Pilot Phase. Furthermore, UBSUP has developed the double vault UDDTs, which could address the common problems encountered in sludge management from pit latrines, septic tanks and other wet system toilets. However, during the pilot phase and the first implementation phase, it has become clear, that the demand for this kind of sanitation facility is low despite extensive marketing efforts. Therefore, the UBSUP Program currently focuses on mainly wet toilet systems. Nevertheless, WSPs still have the possibility to promote and support UDDTs in their respective target area, when deemed feasible.

In addition to the toilet facilities, decentralized treatment facilities (anaerobic baffled reactors and sludge drying beds) are integrated in the UBSUP approach to deal with sludge treatment. The anaerobic baffled reactors treat sludge from VIPs and septic/conservancy tanks. The sludge drying beds treat wet sludge from anaerobic baffled reactors. In exceptional cases they may also treat sludge from the UDDT which has not been treated properly in the UDDT vaults. Combining these facilities at one location, facilitates treatment of sludge from both wet and dry systems and keeps the operational costs of these facilities as low as possible.

1.4.1 The wet toilets

UBSUP has adopted and designed wet toilet facilities and corresponding sludge management systems. Two types of wet sanitation facilities have been incorporated (i.e. the pour- and the cistern flush toilet). In the designed UBSUP wet systems, no separation of faeces and urine takes place.

Both systems are quite similar as faeces are flushed away using water. In the pour flush toilet, water is poured in by the user after use, while in the cistern flush toilet the flushing water comes from a cistern flushing unit. However, when water supply is not continuous, any cistern flush toilet can become a pour flush toilet. In the wet system toilets, a water seal prevents odours and insects from coming back up the drainage pipe.

Wet system toilets can be connected to an existing sewer line or to an on-site collection system, a septic or conservancy tank.

When a wet system toilet is connected to a sewer network, no emptying of the toilets is required. However, when a wet system toilet is connected to an on-site collection system, these systems require frequent emptying (i.e. once every 2 years) through exhausters.

1.4.1 The dry toilets: UDDT

In urine-diverting dry toilets (UDDTs) two waste streams - urine and faeces - are separated. Separation takes place through the use of a specially designed seat or squatting pan. The term “dry” implies that no water is to be used for flushing the toilets. However, water needs to be available for hygiene practices such as hand washing after visiting a toilet.

A UDDT consist basically of two parts: the sub- and superstructure.

The sub structure of the UBSUP toilet consists of two separate vaults both with a volume of about 500l. In a vault, faeces are collect, stored and dehydrated. Vaults are used alternatingly. When one vault is full, it should be sealed for a period of 6 months without adding fresh faeces before emptying the vault. During this period the second vault is used while the content of the first vault dehydrates and partly

composts. The dried content of a vault can be co-composted further together with other organic wastes if required depending on the purpose of reuse.

UDDTs come in basically two embodiments i.e. one structure which is entirely built above ground level with stairs and one where the superstructure is built on sub-ground level with no stairs to suit physically challenged persons.

During the pilot phase and the implementation of the first project phases, it has become clear that there is little demand for UDDTs. Despite extensive marketing efforts, the majority of customers have opted to invest in a wet toilet. This has a major impact on the business model of the Sanitation Teams, as few UDDTs will not generate enough profit for a sustainable business operation. In areas where only a handful UDDTs have been constructed, the emptying services need to be secured, even if it not a viable business for Sanitation Teams. In such cases, the WSP can opt to offer such services instead.

1.4.2 Decentralised treatment facilities: DTF

In addition to the toilet facilities, UBSUP has also designed decentralized treatment facilities (DTF) to treat sludge from septic and conservancy tanks, existing VIPs and pit latrines. The DTF developed within UBSUP include bio-digesters, anaerobic baffled reactors and sludge drying beds. They are simple, reliable, and have low operation and maintenance costs. The effluent generated from the anaerobic baffled reactors is well treated and can be disposed in soak pits or reused for agroforestry/ornamental farming demonstrations.

The functions of the DTF system components will be as follows:

- **The bio-digester** will be used for primary treatment of sludge from VIP and pit latrines, conservancy and septic tanks. They treat the sludge through anaerobic fermentation. Biogas produced can be used as a source of energy for cooking or lighting. These facilities are to be owned and operated by WSPs. WSPs may lease them to private groups for operation. Desludging is done every 1.5 to 2 years.
- **The anaerobic baffled reactors (ABR)** will be used for secondary treatment of effluent from bio-digesters. An Anaerobic Baffled Reactor (ABR) is an improved septic tank because of the series of baffles under which the sludge is forced to flow. The increased contact time with the active biomass (sludge) results in improved treatment. In the ABR effluent is treated further through anaerobic fermentation. The organic pollution of effluent (BOD) is reduced by about 90%. Outputs of the ABR are a continued flow of treated effluent. Desludging of the compartments is done every 2-3 years. They are built together with bio-digesters on the same site in series. Management follows the same principle as bio-digesters.
- **Drying beds:** The drying beds are large concrete platforms with several compartments. The drying beds to be used in UBSUP will treat basically two types of waste i.e. wet sludge from bio-digesters, ABR and dried compost (in case of the need of additional dehydration from UDDTs). The dehydration in drying beds takes place through percolation and evaporation. In the first compartment, wet sludge is collected and dried to a certain moisture content. In the second compartment, the more dry sludge from compartment 1 is mixed with dried waste from UDDTs. In the last compartment, the dried waste is stored awaiting collection by possible users.

The following figure shows the proposed sludge management system of the UBSUP.

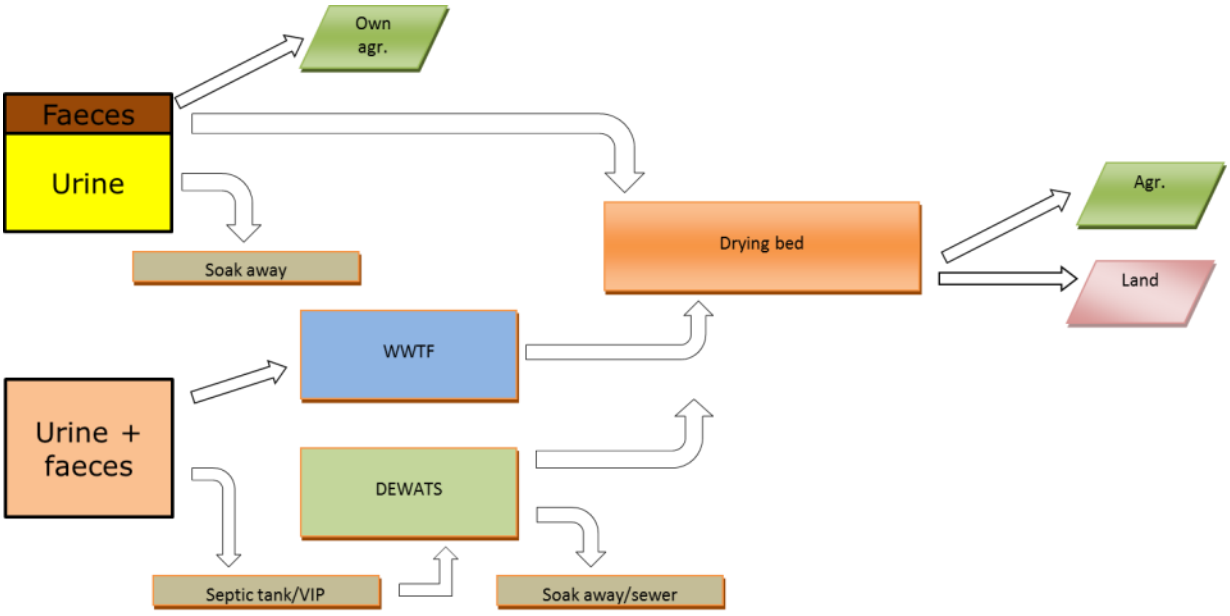

Figure 1 - UBSUP Wet and Dry System Toilet Treatment

2. The Sanitation Value Chain

This document aims to show how (within the framework of the UBSUP programme and beyond) a number of key stakeholders – comprising of the WSP, local artisans, contractors, manual emptiers, operators of decentralised treatment facilities, landlords/ladies and tenants - are enabled to create and deliver sustainable sanitation services in the whole value chain. The services should consider the following issues:

- Public health
- Environmental
- Economic
- Financial
- Socio-cultural

Wikipedia defines "value chain" as: "a chain of activities that a firm operating in a specific industry performs in order to deliver something valuable (product or service)." (Source: Wikipedia, search "value chain").

Within the on-going debate on sustainable pro-poor sanitation the concept "value chain", a business management concept (see definition below), is seen as a key tool which makes us aware that "sanitation activities" (e.g. using a toilet) should not be addressed in isolation but should be looked at more holistically; the entire chain or loop has to be addressed. This is important, not only because focusing on partial solutions (e.g. improved toilets) is likely to have serious environmental and public health implications (e.g. the dumping of sewage in the living environment), but also because sanitation outputs (e.g. urine and faecal matter) have the potential to gain value as they pass through a set of handling and treatment activities (e.g. as they move down or up along the chain).

Example:

> If one analyses the value chain of tea production or of a firm that produces digital cameras, one can conclude that activities that constitute the value chain are in most cases "secured" through a set of clearly defined contractual obligations as well as through well-established relations, practices, procedures and standards which are followed before a product reaches the marketing phase and subsequently (or not) the consumer. Out-growers have to supply tea leaves which are valued according to well established (and

known) grades (e.g. orange pekoe[2], etc.). Required grades, quality, prices and payment modalities are specified in contracts.
If a tea factory is only interested in the highest grades of tea (the orange pekoe) out-growers have an incentive to deliver that product. This unlike our tea out-growers sewage is not perceived as a product that needs to meet certain standards and has a value (to the producer) but as a burden, a problem one has to get rid of. What is the incentive for tenants who use someone else's toilet (the landlord's) and of the landlord or landlady to manage sanitation by preventing the dumping of solid wastes (e.g. batteries and other dangerous wastes) in their toilet and by adding ashes and separate urine from faecal matter?

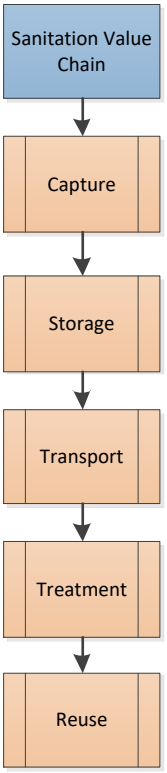

Figure 2 - The Sanitation Value Chain

The sanitation value chain comprises basically of 5 steps: capture, storage, transport, treatment and reuse.

Also solid waste is (still) considered to be a problem. According to the UBSUP Preparatory study, 54% of all households dump their solid waste in the pit latrine.

If we look at the sanitation value chain, urine and properly processed faecal matter can be used as soil conditioner, compost and fertiliser. However, unlike our tea growers, households have no incentive to produce a high quality product. Instead of getting paid, they have to pay for emptying services. In the ideal situation, when a market for soil conditioner or fertilizer based on human waste has been established, it might be possible that collection of waste will be done free-of-charge or that households even get paid for the waste collected.

Capture and storage: Some households never really address the problem of storage of the waste; they leave their toilets overflowing. Others decide to build a new one when the old one is full. Most households, however, make use of the services of emptying services delivered by manual emptiers or exhauster operators. Manual emptiers, however, have no incentive to carry faecal matter up a hill to the decentralised treatment facility, if he has to pay at delivery especially if he can dump easily dump it downhill in the river.

If we consider the sanitation value chain and compare it with the tea value chain we see that, in the current situation the two lowest levels of the chain producers do not get paid but have to pay for their produce and the value they add. This is not entirely uncommon - the solid waste >> compost and recycling value chain has similar challenges - but it forces us to have a very close look at the sustainability of the value chain.

Table 3 - Comparison Tea Production and Faecal Matter Value Chain

Tea: production, trade and use					
Basic produce	Players				
Tea leaves	Out-grower	Tea factory	Tea wholesaler	Tea retailer	Customer
Adding value	→	→	→	→	→
Payment	←	←	←	←	←

[2] In the tea industry, tea leaf grading is the process of evaluating products based on the quality and condition of the tea leaves themselves. The highest grades are referred to as "orange pekoe", and the lowest as "fannings" or "dust" (Source: Wikipedia, search, "tea leaf grading").

Faecal matter: production, trade and use				
Urine & faecal matter	Toilet user	Manual emptier	DTF operator	Dumping
Adding value				
Payment				
Urine & faecal matter	Toilet user	Manual emptier	DTF operator	Farmer
Adding value				
Payment				

Waste remains waste:

One of the main risks (challenges) associated with the local transport and decentralised treatment of faecal matter is being faced with an "incentiveless" value chain.

If there is no market for the soil conditioner/compost, the DTF operator is unable to sell his product. Consequently, the operator is unable to offer an incentive to the manual emptier. And although value chain activities may result in added environmental and public health values since dangerous faecal matter is transformed in harmless even beneficial soil conditioner, with the absence of economic incentives (manual) emptiers are not willing to deliver the toilet contents to the DTF. Under such conditions, the Water Service Provider (WSP) has to offer the operator other incentives (e.g. a monthly allowance) and together with the authorities at town or county level, has to enforce specific (by-)laws and apply sanctions. In other words, in the absence of a sustainable market for human waste-based fertiliser or soil conditioner/compost of good quality, the role of the WSP will include monitoring/supervision in order to prevent illegal dumping of waste.

Waste becomes a resource:

If, however, there is a market for soil conditioner/compost there are incentives for both players; the operator of the DTF and the manual emptier. Their involvements are real value added activities and actually increase the value of the product. Monitoring will become a more self-regulating activity because of the impact of quality on the price of the final product.

The introduction of EcoSan latrines has been successful in some countries, especially in the rural areas – at farm level – where the value chain is short in terms of actors (one actor) and space (one location). In rural areas, the producer is, in most cases, the main consumer/user. Here we can easily achieve a closed loop provided the necessary sensitisation (EcoSan products are harmless and good for farming) and training (how to manage the toilet) are given sufficient emphasis.

Preliminary results of the UBSUP study on reuse of sludge suggests that small scale farmers, plant nurseries & ornamentals are an ideal target market for the fertiliser that will be produced during the UBSUP Kenya program. However, large scale flower farms and tea farms might not be the ideal target market

If, considering an urban context and especially the low-income area context, the sanitation value chain is long (also in terms of distance, terrain etc.) and involves more steps and actors. Tools to ensure that we achieve the following objectives should be considered:

1. Householders and landlords/landladies are willing and able to invest in improved toilets (i.e. toilets that can easily be linked to the value chain.
2. Toilet content is after a certain period of good quality.
3. Householders prefer to have their toilet emptied by professional emptiers and they are able and willing to pay for the service.
4. Manual emptiers and exhauster truck operators, instead of opting for the easiest solution (least energy consuming), dumping wherever possible, are motivated to deliver their "product" to a treatment facility.

5. Decentralized treatment facilities are properly managed and operated.
6. Possible users of soil conditioner/fertilizer such as farmers and growers of ornamental plants are educated and trained. They buy the dried sludge produced by the treatment facilities for reuse in agriculture.
7. Customers are willing to consume crops cultivated on "human manure". This means addressing potential socio-cultural (including religious) and public health constraints.

Of course, we will have to consider a variety of economic/financial incentives, but there is more.

2.1 Value Chain and Risk

We cannot consider the sanitation value chain and develop activities and solutions without considering risks. Therefore, we should look into safety and health risks that can affect the individual, the local community and the society.[3] In that sense the value chain is different from the tea or the digital camera value chain. If the customer does not like a particular type of tea there may not be much demand for it. However, the risks and immediate side effects (to our best knowledge) are no cause for worry as long as collection, treatment and disposal are strictly adhered to. Sanitation is different simply because the health of the users is at stake as well as public health and the environment and it affects everybody. To some extent, the sanitation value chain bears more resemblance to the value chain which constitutes the development, marketing and sale of medicines. Through self- and external regulation a pharmaceutical company minimalizes (at all cost) certain risks; the unintended and harmful side effects of using a new drug, the remedy should never be worse than the disease. During the early stages of the UBSUP programme the UBSUP team considered the nation-wide up-scaling of cartridge based UDDT toilets. Toilets, which had to be emptied once a week by a qualified and trained emptiers who have to take the full containers collected to the decentralised treatment facility. But what happens if the cartridge is full and the emptier fails to show up? What will the tenants do? In other words, what if the emptier – even if he/she has the incentives - appears to be the weakest link in the sanitation value chain? A cartridge-based system creates a high-frequency (daily or weekly emptying) dependency and a health risk.[4] Cartridge-based solutions can work but their success and reliability depend on such factors as emptying frequency (in general a higher required frequency increases the dependency and risk), incentives (both for users and emptiers), access (e.g. adverse weather conditions), etc.

When in 2007-8 the municipal waste collection system (weekly collections) of the Italian city of Naples came to a standstill the large heaps of waste which gradually appeared along Naples' streets soon became a serious public health risk.[5]

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[3] "Risk society is a term that emerged during the 1980s to describe the manner in which modern society organizes in response to risk. The term is closely associated with several key writers on modernity, in particular Ulrich Beck and Anthony Giddens. The term's popularity during the 1990s was both as a consequence of its links to trends in thinking about wider modernity, and also to its links to popular discourse, in particular the growing environmental concerns during the period."(see Wikipedia, search "risk society").

[4] Apart form the health risks it remains to be seen whether residents are keen on having emptiers entering their yard on a daily or weekly basis. Sanitation becomes a hassle.

[5] According to Wikipedia: "Since the mid-1990s, Naples and the Campania region have suffered from the dumping of municipal solid waste into overfilled landfills. Beginning on December 21, 2007, the municipal workers refused to pick up any further material; as a result, the waste had begun to appear as regular fixtures on the streets of Naples, posing severe health risks to the metropolitan population. On December 31, the government closed one of two major dumps near the city at the request of the city's residents.

Reports during the summer of 2008 stated that the problem was caused at least in part by the Camorra, a powerful local mafia based in Campania, who had created a lucrative business in the municipal waste disposal business. Heavy metals, industrial waste, and chemicals and household waste are frequently mixed together, then dumped near roads and burned to avoid detection, leading to severe soil and air pollution." (see Wikipedia, search, "Naples waste managment crisis").

The UBSUP team did not want to take this risk and further thinking was guided by the need to carefully consider risks in addition to incentives and logistical organisational considerations. One of the design criteria used in the development of the UBSUP toilets is a risk analysis. All possible risks along the value chain were looked into and assessed. Based on the criteria, it was decided to move away from the single cartridge toilet and move towards wet toilet systems and the UDDT. Although it seems that more research is required to establish whether the compost produced by a well-managed UDDT is harmless for human beings, domestic animals and the environment, the literature shows that the risks associated are relatively low compared to raw sewage.

2.1.1 Risks related to Toilet Use

Is the double vault UDDT developed and promoted by the UBSUP team a risk-free solution?
No it is not. What can go wrong?:

- The toilet has been designed (size of the vault) for the use by 10 persons on average per day. If more than 10 persons use the latrine (and the UBSUP study shows that plot-level toilets are used by an average of 8 to 26 persons), the onsite treatment process is shortened as the vault is likely to fill up faster than the required period of 6 months. For a double vault UDDT, this means that the period between the last use (of a full vault) and emptying is less than 6 months a period which is considered necessary for the elimination of most pathogens. In other words, if a vault is emptied, say after 5 months, its content cannot be considered safe.
- Users dump other (harmful) solid and liquid wastes in their toilets. The UBSUP study shows that this is a widespread and common phenomenon as 54% of all households in the survey use their toilets for dumping "other wastes". Some wastes can be considered to be relatively harmless. Other wastes such as empty batteries (e.g. AA batteries) do pose a threat to both the environment and public health as they permeate into the soil and groundwater.[6] If liquid and inorganic (industrial & consumer) wastes (such as plastics, pieces of metal, chemicals) wastes are dumped in the vault these wastes may have a negative impact upon the treatment process and upon the chemical composition and consistency of the compost.
- Using a double vault UDDT properly has its own discomforts. If users decide to ignore user guidelines and stop separation of urine and faecal matter, the composition will be affected and the moisture content of the content of the vault will be higher. This will affect negatively the treatment process.
- The toilet is not kept clean which can quickly result in a very poor hygienic condition and a serious health risk to all its users.
- This could mean that if users are not observing (urine & faecal matter) separation guidelines, whilst being aware that they are "not doing the right thing", they are more likely to start

[6] According to Frost & Sullivan the main harmful effects of the dumping batteries in the environment are:

- For humans, both lead and cadmium can be taken only by ingestion or inhalation. Mercury another harmful metals can even be absorbed through the skin, although this metal's use in batteries has declined greatly due to laws and regulations that have been put in place (E.g. US Battery Act, 1996) to reduce its content.
- These harmful substances permeate into the soil, groundwater and surface water through landfills and also release toxins into the air when they are burnt in municipal waste combustors. Moreover, cadmium is easily taken up by plant roots and accumulates in fruits, vegetables and grass. The impure water and plants in turn are consumed by animals and human beings, who then fall prey to a host of ill-effects. Studies indicate that nausea, excessive salivation, abdominal pain, liver and kidney damage, skin irritation, headaches, asthma, nervousness, decreased IQ in children and sometimes even cancer can result from exposure to such metals for a sufficient period of time.
- In addition, potassium, if it leaks, can cause severe chemical burns thereby affecting the eyes and skin. Landfills also generate methane gas leading to the 'greenhouse effect' and global climatic changes.

(see: http://www.frost.com/sublib/display-market-insight-top.do?id=20759887)

neglecting others usage or maintenance "rules" such as not dumping other wastes in the toilet. The emergence of one "shortcut" often results in a strain of additional shortcuts. However in a study done on the use of the toilet in all of the commissioned testing toilets after a few months of usage, it was found that all but one toilet were used and maintained properly. It was found that virtual no solid waste other than wiping materials (toilet tissues and newspapers) was found in the vault. (see Study Report on the testing of SafiSan Toilets in Oloolaiser Water Service Provider, May 2013)

Although we can make a separation between (1) cleaning, (2) (correct) usage and (3) technical maintenance, a neglect of one can result in a neglect of the other. If users are aware that they are not using their toilet correctly this can result in a more general neglect; the toilet is no longer kept clean. However, the opposite can also occur; a toilet which is not kept clean is more likely to "suffer" from improper use (e.g. urine not being separated, toilet being used to dump all sorts of wastes, incorrect emptying, etc.).

Table 4 - Maintenance and Hygienic Conditions of Public & Private Toilets

Maintenance and Hygienic Conditions of Public & Private Toilets
It is interesting to note that both public toilets (i.e. toilets that are used by hundreds of customers) and individual toilets (used by the members of a single household) are often better maintained and cleaner that communal toilets (e.g. toilets that are only accessible by the members of a certain group, such as the tenants families that reside together within a yard). The UBSUP study shows that 38% of all households consider the toilet they are using to be dirty. The cleanliness of a public toilet can often be explained by the fact that users are customers who pay for the service, i.e. for the work of a caretaker operator. The good hygienic condition of many household toilets is often attributed to the small number of users which makes it easy to keep it clean and to identify a user who is not using the toilet in an appropriate manner. When considering the maximum number of persons per toilet a number of factors have to be considered: • The use and management (i.e. cleaning, repair, emptying) of the toilet. • Feelings/perceptions of ownership & responsibility. • Adequate access to good sanitation (e.g. how long does one have to wait?). • Available space (within the yard). • Affordability. • Cultural and religious factors (e.g. can women and men share the same toilet?).

2.1.2 Toilet (Mis-) Use: Risk Mitigation

In order to mitigate the above-mentioned risks the following activities and measures should be part of the sanitation programme:

- Promotion of types of toilets that produce a low/risk (for public health) content even if the toilet is not used properly (e.g. the double vault UDDT).
- The toilet should have an attractive and user-friendly design (Design).
- Cleaning the toilet should be easy (Design).
- Emptying the toilet should be easy (Design).
- The toilet should be lockable (Design) from the in- and outside.
- The effect of dumping waste in the toilet should be emphasised.
- The importance of using ash properly and its effects on the dehydration process should be emphasised.

- Each toilet should have a (laminated) toilet user manual, which includes a list of do's and don'ts (Sensitisation)
- A toilet (unit) should not be used by more than 10 persons (sensitisation & social marketing).
- Householders, landlords and tenants should be sensitised on the need to have a rubbish pit within the yard (sensitisation and the enforcement of local by-laws) and a solid waste bin in the toilet (particularly for sanitary towels and diapers).
- Manual emptiers should inform the owner/landlord (etc.) and users/tenants if the content of the toilet contains other wastes.

Table 5 - Ten Persons per Toilet Principle

Ten (10) Persons per Toilet
The UBSUP programme has designed toilet facilities that should be used by an average of ten (10) persons per day, residing within the same yard. The following considerations have led to this decision: • If a toilet is shared by many persons, the individual user loses the feeling that he or she has access to his or her own toilet. • Considering an average household size of between 3.7 and 8.3 persons (according to the UBSUP study and MajiData), this means that a single toilet (unit) is used by two households. • Within the Kenyan water supply and sanitation (WSS) sector there seems to be a common understanding that if one toilet is shared used by 10 persons or less, all have adequate access, provided the toilet itself is of good quality. • If a landlord wishes to do so he or she could of course reduce the number of tenants/toilet. The maximum of 10 persons/toilet has been also been adopted to be able to offer solutions to landlords whom are faced with space and/or financial constraints.

2.1.3 Risks Related to Emptying, Transport and Unloading

The following risks are associated to the emptying, transport and unloading of faecal matter:

- The content of a toilet is emptied before it has been given enough time to rest (UDDT).
- The content of the toilet contains contaminants such as plastics, batteries, chemical wastes, hair extensions, insecticides, etc.).
- The toilet vault is not emptied when it is full (UDDT).
- Those who empty the toilet, be it the users, the landlord or a manual emptier, do not wear protective clothing, boots and gloves thus possibly get infected by pathogens.
- The content of the toilet is emptied by the users and dumped within the yard or a nearby drain, rubbish pit (etc.) thus possibly contaminating groundwater sources.
- The manual emptier or exhauster dumps the content somewhere near the toilet/yard, in a drain, a vacant plot or piece of land or a playing ground for children, etc.
- The manual emptiers and exhausters have the habit of dumping the content of toilets in a nearby stream.
- The manual emptiers and exhausters sell the content of the toilets they empty to farmers, of the cultivators or ornamental plants.
- The manual emptier delivers the contents of the toilets they have emptied to the decentralised facility (DTF/drying bed) although their loads also contain contaminants.

2.1.4 Risk Mitigation: Emptying, Transport and Unloading

In order to mitigate the above-mentioned risks the following activities and measures should be part of the sanitation programme:

- The local authority allows dumping of faecal matter in the designated treatment/dumping facilities only (landfill, centralised sewage treatment works and DTFs & drying beds).
- Create awareness among residents so they can report illegal dumping to the WSP and/or the local authorities.
- Enforcement of local by/laws and acts that address the unloading) dumping of wastes.
- Manual emptiers who are found to be in breach of the local by-laws of regulations are fined and risk losing their license. (UDDTs)
- Create sustainable incentives for manual emptiers. This can range from a monthly allowance to an amount paid per delivery at one of the treatment facilities. (UDDTs)
- Create a sustainable market for human waste based soil conditioner or compost.
- Training of manual emptiers. (UDDTs)
- Licensing and certification of trained manual emptiers. (UDDTs)
- Manual emptiers receive a book of do's and don'ts. (UDDTs)

2.1.5 Risks Related to Treatment, Sale or Dumping

The following risks can be associated with the (decentralised) treatment/processing of faecal matter and/or urine:

- The quality of the processed human waste is not good for usage as soil conditioner.
- The decentralised treatment facility is not well operated (messing up the intake, not keeping the property clean, etc.) as the operator lacks incentives and knowledge to do his or her work properly. For example, the facility is closed most of the time forcing the manual emptiers to dump the contents of the toilets they have emptied elsewhere.
- The fence of the decentralised facility is broken and the facility itself is used to dump all kinds of solid and liquid waste.
- Not fully processed waste is dumped in the environment.
- The treatment is done properly but the contents of DTF and drying beds are dumped in the surrounding area: liquid waste from the DTF is soaked away or deposited in the sewer, sludge should be dried in the drying bed. After proper treatment there is no real harm in dumping the waste from the drying bed into the environment.

2.1.6 Mitigation of Risks Associated with Treatment, Sale or Dumping

In order to mitigate the above-mentioned risks the following activities and measures should be part of the sanitation programme:

- Training of DTF operators.
- Licensing and certification of trained DTF operators.
- DTF operators receive a book of do's and don'ts.
- The local authority only allows dumping of faecal matter in the designated treatment/dumping facilities (landfill, centralised sewage treatment works and DTF & drying beds).
- Create awareness among residents so they know they can report illegal dumping to the WSP and/or the local authorities.
- DTF operators who are found to be in breach of the local by-laws of regulations are fined and risk losing their license.
- Enforcement of local by/laws and acts that address the unloading/dumping of waste.
- Create sustainable incentives for DTF operators. This can range from a monthly allowance to an amount paid per delivery at one of the treatment facilities.
- Create a sustainable market for urine-based fertiliser and/or soil conditioner/compost of good quality.
- Money is allocated for regular (preventive and corrective) maintenance.

2.2 Guarding the Sanitation Value Chain

In addition to incentivised toilets and the construction of DTFs, capacity building, training and the development of specific incentives, the sanitation value chain should also be "protected" through the development and use of procedures (to be implemented by the WSPs, facility operators, etc.), by-laws and sanctions in cases of non-compliance (a carrots and sticks approach). And although probably a little ambitious, people should be made aware that a better and cleaner environment starts with themselves. They should be vigilant and address wrong doers.

2.3 Cartridge-Based Sanitation: A Risk Analysis

During the early stages of the UBSUP programme the UBSUP team considered the development and introduction of cartridge latrines. The process resulted in the design of a toilet with a cartridge that has to be replaced once a week. Simultaneously a short (health and environmental) risk analysis was carried out (see Appendix 1 for the main outcomes of this analysis). Based on this analysis the decision was made to stop the further development of the cartridge toilet. It was considered that this type of toilet has a number of serious disadvantages in low income areas where residents have sufficient space to construct toilets in their yard. What are the specific challenges a cartridge-based toilet system is likely to be faced with?

Table 6 - Risk Analysis Cartridge Toilet

No.	Possible practice/behaviour/situation	Response	Risk/disadvantage
1	The cartridge is not collected (on time)	Overflowing cartridge/self-emptying & dumping	Health and environmental
2	There is no market for the fertilizer	No incentives for manual emptiers & operators	Health and environmental
3	Frequent emptying is a hassle	People do not like the system	Gradual neglect
4	Frequent emptying is a cost	Perhaps landlords will resort to self-emptying	Health and environmental

The main disadvantage - risk - of the cartridge based toilet is that it creates dependencies – it embeds these dependencies in the value chain. Toilet users and operators become dependent upon the daily or weekly (depending on the type of cartridge used) services provided by the manual emptiers. Especially in a country where service delivery is not at a real high level, risky activities (in terms of health and environment) should be avoided as much as possible.

The UBSUP team believes that the introduction and operation of public or communal cartridge toilets can be successful in a specific urban niche; i.e. high slums with very high population densities where household & plot level sanitation is not possible due to a lack of space and where residents have the choice between open defecation and using a privately-owned commercial toilet (pay per use) or a public and/or community-managed sanitation facility. In other words, a cartridge-based toilet system is likely to be more successful if (at the beginning of the value chain) people are used to pay for using a toilet and where (at the end of the value chain) there is a sustained demand for fertiliser. In these settings the value chain resembles the tea production value chain (see section 2); manual emptiers and decentralised treatment facility operators add and receive value and even have an incentive to work together (in fact they can belong to the same sanitation entrepreneur).

The decision to develop the double vault UDDT was driven by the intention to reduce all environmental and (public) health risks (see section 2.1). According to the UBSUP team the double vault UDDT is the least risk solution even when it is not used properly, even if the other components (stakeholders, procedures, activities) of the value chain fail.

2.4 A Market for Fertiliser and Compost made out Human Waste

The assessment of the potential market for fertiliser and/or compost of human origin has to seek answers for the following questions:

- Are there commercial or peasant farmers within- or outside the city or town who have a sustained demand for fertiliser and/or soil conditioner and what are their characteristics.
- Are there any other possible users for the soil conditioner/compost produced in the drying beds? (use as addition to fossil fuel, forestry departments, vermiculture?)
- Do specific cultural constraints exist that may prevent the use of fertiliser or compost of human origin.

With regard to the first question the following issue has to be considered:

> European legislation does not allow the use of human based fertilizer to be used for production of food crops. Farmers may have put in a long effort to gain access to controlled foreign markets. The quality requirements their products have to meet may prevent export-oriented farmers from using fertiliser and soil conditioner emerging from an uncontrolled environment (i.e. a large number of plot-level toilets and a decentralised treatment facility instead of a single factory). For example, if soil conditioner is contaminated with heavy metals a farmer may eventually lose his export license. Farmers are usually less opposed to using fertiliser and soil conditioner of human origin if their products are not directly consumed (eaten or used as beverage). For example, when the management of the Unilever (Lipton) tea estate near Kericho was asked about the potential use of the content of EcoSan latrines the GIZ team was told that the company could not risks its good image and, therefore, neither fertiliser nor soil conditioner could ever be used in the tea plantation itself. According to Unilever, the only non-risk usefulness of these "products" was in the large eucalyptus plantations where trees that are used for curing, are cultivated.

As far as the cultural constraints or even individual reservations are concerned the following observations can be made:

- Many people have never seen the dried soil conditioner/compost. It could be that a person's objections disappear simply after seeing how the dried compost looks like.
- There is evidence that suggests that many farmers or consumers have no objections against using compost of fertiliser of human origin to cultivate their perennials such as coffee and certain types of fruit (mangos, and even bananas).
- The fertiliser based on human waste is already in use in some parts in Western Kenya.
- "Space" – between the fertiliser or compost and the agricultural product may also be of importance. Using the compost or fertiliser to cultivate salad or strawberries may encounter more resistance than if the same compost to cultivate sorghum.
- It should not come as a surprise that objections are less marked when compost is used to cultivate ornamental plants (see UBSUP document no.14).

2.5 Roles & Responsibilities of Key Stakeholders

In order to mitigate all potential risks, the UBSUP project envisages closely working with different stakeholders. Close cooperation between some of those stakeholders is of utmost importance for the success of the project. Especially the incentive provision for WSPs as well as the law enforcement plays an important role.

The following table gives an overview on the roles and responsibilities of the involved stakeholders.

Table 7 - Role & Responsibilities of Key Stakeholder

No.	Stakeholder	Roles & responsibilities
1	Water Services Regulatory board (WASREB)	Regulation of on-site sanitation; monitoring on service delivery in LIAs. Provides regulatory guidelines, Enforcement of water sector sanitation concept, elaboration of standards for facilities and enforcement of standards for sanitation, elaboration of a tariff setting for sanitation
2	Kenya Bureau of Standards (KeBS)	Liaising with WASREB and WSTF in the development of on-site sanitation standards

3	National Environmental Management Authority (NEMA)	Enforces rules & regulations on excreted disposal & general hygiene standards
4	Ministry of Environment, Water and Natural Resources	Development of the National Sanitation and Hygiene policy; agreed on the rehabilitation of the existing WWTP & adoption of on-site sanitation Legislation and strategy/policy formulation, resource mobilization, coordination and alignment of sector players, enforcement of sanitation policies
5	National level NGO (e.g. Umande Trust)	Involved in awareness creation & sanitation marketing through existing CBOs Hygiene education, awareness creation and construction of sanitation facilities, participate in the training of artisans and operators
6	WSP	Providing water and sanitation services to LIA, participate in the construction of sanitation facilities financed by the WSTF according to the UPC
7	Private Sector	Playing a major role in the provision of sanitation services. Provide sanitation services for public, construct sanitation facilities according to the agreed standards, participate in the training of artisans and operators
9	WSTF	Providing financial resources for improving access to water and sanitation services in urban LIAs, Pro poor financing of sanitation, inter-sectoral coordination on implementation level for projects

3. UBSUP Finance & Business Model Considerations

The UBSUP financing and business model will be incorporated into the Urban Project Concept (UPC) at the Water Services Trust Fund (WSTF). Through the UPC, WSTF is successfully financing water supply and public sanitation infrastructures on a national level. In 2010, UPC applied for funding at the Bill and Melinda Gates Foundation and KfW to extend their financing portfolio to household and plot-level sanitation. In its current form, the UPC concept cannot accommodate the specific characteristics of the UBSUP programme:

- The UPC programme provides grants for small-scale infrastructure development to WSPs. UPC monitors and accompanies the WSP during the implementation phase of the project until all funded infrastructures are constructed according to standards and target groups have been sensitized. With the operation of the infrastructure, WSTF involvement is mainly over except for some regular monitoring activities on operation.
- The UBSUP programme foresees a two phase project implementation: (1) construction of infrastructure and (2) operation. Approximately 80% of the capital for the toilets is provided by landlords with WSTF contributing a post-construction incentive and covering all software costs and a selected numbers of infrastructural needs required for closing the sanitation value chain (e.g. DTFs).

Both programmes have specific characteristics which lead to an adjustment of the existing UPC finance model. Those adaptations are discussed within this paper and a financing model focussing on household and plot-level sanitation is proposed in the next chapter.

The finance model specifically looks at the management and disbursement of projects from the WSTF point of view. This includes only the period of demand creation and construction of a toilet facility and not the operation of the sanitation value chain since this is covered in the business model and does not need finances from WSTF (see Chapter 5).

3.1 Objectives

The overall objectives that the Financing & Business Model aims to achieve can be summed up as follows:

- Make use and strengthen existing capacities at local level both in terms of toilet construction or assembly or when it comes to awareness creation and social marketing.

- Introduce feasible incentives for WSPs encouraging them to embrace onsite sanitation and decentralised treatment.
- The approach should not exceed the (existing) capacities (in terms of human resources) of the WSP.
- To increase demand through effective social marketing.
- Enable all stakeholders to respond to demand.
- Avoid lengthy (WSP initiated) procurement procedures.
- Build feasible incentives at the various levels of the sanitation value chain.
- Monitor and measure impact.

Instead of involving the WSP in procuring local artisans or local contractors householders and landlords are encouraged to make contact with any trained local artisan if he or she wants to have an improved toilet constructed within his or her yard.

Instead of having the WSP organise the emptying of UDDTs, the UBSUP model is based on the services provided by trained manual emptiers. The assumption is that in every town a sufficient number of capable private artisans and manual emptiers exist.

The business models (service delivery) presented in this paper are recommendations. However, modified models can be adapted based on specific local demands. Those adaptations – if working well – can then be up-scaled through the UPC approach as it is already the case for water supply.

3.2 The Urban Project Concept (UPC) Approach

The UPC mechanism is an up-scaling instrument for financing water and public sanitation infrastructures to improve access and service delivery to the urban poor. The concept follows 8 steps and is outlined[7] as follows:

1) **Launch of Call for Proposal (CfP)**: Approximately twice a year WSTF launches a countrywide CfP to encourage all WSPs to apply for funding to improve water and public sanitation in their service area.
2) **Collection of data by the WSP**: The WSP collects data on social, financial, technical and environmental topics for a proposed project.
3) **Preparation of project proposals by WSPs and WSBs**: The WSP enters all collected data into the UPC proposal template. The WSB approves the proposal and send it to WSTF before the deadline.
4) **Evaluation of proposals by the WSTF:** The WSTF evaluates the proposals according to transparent procedures and proposes a list of projects to be funded to the Board of Trustees.
5) **Approval and awarding of projects by the WSTF**: The Board of Trustees approves and awards a list of projects.
6) **Project implementation by the WSP and WSB**: After an official signing, the WSPs start implementing their projects. Implementation is supported by the WSTF through Field Monitors.
7) **Operation of the project by the WSP**: Once a project is commissioned the WSP starts with the operation.
8) **Evaluation of the project by the WSTF or by external evaluators**: The WSTF is continuously evaluating its funded projects through a set of tools. A part of project implementation WSTF as well looks at sustainable project operation.

The UPC approach will be used for the implementation of the UBSUP programme. However, the specific characteristics highlighted in the next chapter will be incorporated.

[7] The details of the concept are available in different documents.

3.3 UBSUP Project Characteristics

The following table highlights the specific characteristics of UBSUP and its implications to each phase of the UPC approach.

Table 8 - UBSUP Project Characteristics

Phase	UBSUP Project
1) Launch of Call for Proposal	WSTF will extend the scope of work to household and plot-level sanitation; however project proposals should be kept separated: e.g. a WSP submits one project proposal on water supply, one on public sanitation facilities and one on household and plot-level sanitation, totalling 3 project proposals.
2) Collection of data by the WSP	UBSUP projects are demand driven due to the financial commitments by landlords. A core element of a UPC project proposal is the planned number of beneficiaries which is assessed using the number of residents and proposed infrastructures. UBSUP real demand is expected to only trigger after the first phase of the UBSUP implementation (Social Marketing) has started. The WSPs should be provided a tool to estimate the potential demand. The implementation phase 1 of an UBSUP project foresees a detailed market analysis to define potential demand. Details are available in Chapter 4. In addition, the project implementation foresees a close cooperation with local artisans and manual emptier. A list of those and/or a cooperation agreement (e.g. MoU) should be attached to the proposal.
3) Preparation of project proposals by WSPs and WSBs	An UBSUP project will include different elements such as social marketing, training for artisans and so on. At this stage, the calculation of the post-construction incentive for the toilets is difficult since it is demand driven. Therefore, the project proposal needs to focus on other indicators which can define a successful project, such as sanitation coverage (MajiData).
4) Evaluation of proposals by the WSTF	A key indicator for UPC project evaluation is the per capita investment cost. As for UBSUP, the costs consist of two components: (1) the individual investments per household and (2) the investment costs of the decentralized treatment facility. The per capita investment costs of the latter mentioned are difficult to quantify since the number of users of these facilities (households served by manual emptiers and exhausters) is not known beforehand. Since the actual demand of the UBSUP projects is difficult to estimate, the per capita investment cost cannot be calculated. Evaluation should therefore focus on potential demand defined by area population and sanitation coverage, list of interested landlords, etc.
5) Approval and awarding of projects by the WSTF	As soon as the evaluation criteria are set, the approval and awarding of the projects can follow the same procedure as with UPC projects.
6) Project implementation by the WSP and WSB	The project implementation varies remarkably from the UPC approach. Important changes include the demand creation phase and the duration of a project.
7) Operation of the project by the WSP	The classical UPC approach focuses on the operation of a project infrastructure. The UBSUP approach is focussing rather on the operation of the overall sanitation chain. This includes the service delivery and the management of relevant actors.
8) Evaluation of the project by the WSTF or by external evaluators	All funded UBSUP projects will be monitored in terms of implementation and operation.

All characteristics highlighted within this table will be addressed in the course of the document and the proposed finance & business model. However, before drawing the model, several elements (e.g. UBSUP proposal, project) needs to be further discussed:

3.4 Diffusion of Innovations & Duration of a Sanitation Project

Within the UPC the definition of a project has already been well developed. Key attributes are:

- The project must improve the access to affordable water and/or (public) sanitation service for the urban poor.
- The project must be implemented by a licensed WSP.

- The project starts with award by WSTF and ends with the commissioning of the project infrastructures.
- A project comes with a clear budget describing the costs for the proposed infrastructures and other relevant items (software).
- The planned project period (of the first phase) is set with 9 months. It starts with the award from WSTF and ends with the commissioning of the infrastructures. The project period is split into a procurement phase and an implementation phase.

The following figure highlights the structures of an UPC project:

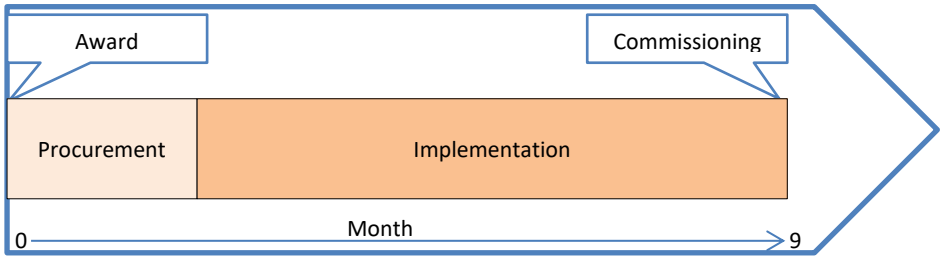

Figure 3 – Structure of an UPC Project

UBSUP is not only looking at the construction of the toilet but as well at the service delivery which is covered in the business model. Since the demand is unclear at the start of the project, the project structure differs from the UPC project. The following figure describes the UBSUP project structure:

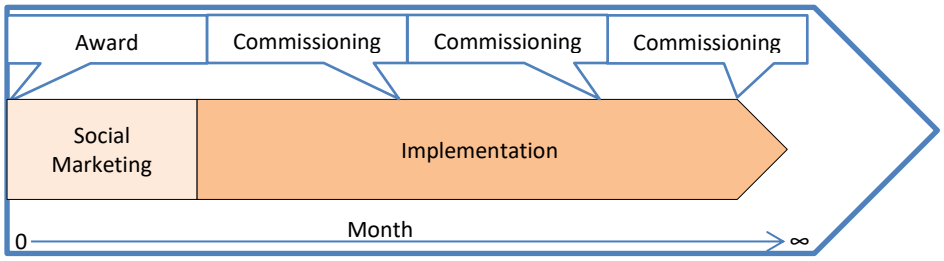

Figure 4 - Structure of an UBSUP Project

The main challenge in designing an UBSUP project is the unknown demand and as such undefined scope of work. This leads to the question of when does a project actually end?

The development and rate of adaption of improved sanitation at household and plot level depends on a number of factors:

- The current sanitation situation as perceived by tenants (users) and landlords.
- Whether landlords believe that improving sanitation is worth the investment (can they ask for higher rents).
- The price of the toilet also when compared to the price of the currently used sanitation options.
- The degree of adaptability of the proposed improved toilet to local conditions (e.g. soil conditions, religion, etc.).
- The social marketing of the toilets.
- Peer pressure (among landlords and tenants).
- Pressure exerted by tenants aimed at convincing their landlord or landlady that improving sanitation is important.
- The enforcement of laws and local by-laws.
- Awareness of people on their rights of having access to sustainable sanitation.
- The effect of better sanitation on the living environment.

What becomes apparent from having a closer look at the list is that the success of a sanitation programme depends on the decisions made by householders or landlords as well as the dynamics that exist within yards where tenants reside sometimes together with their landlord or landlady.

The successful implementation of a pro-poor water supply project does require the willingness and participation of the WSP, the local authorities and the residents as, for example, sites have to be found to construct water kiosks. Demand (for treated water) only emerges after project commissioning. In other words, decision making at household level only becomes relevant and visible (measurable) during the operation phase of a project. A well implemented water project, therefore, can turn out to be unsustainable if there is no real demand for treated water. The sustainability of a water project or scheme depends on the planning of that project or scheme.

A sanitation project is different in the sense that demand (for better toilets) is part of the project implementation process. Consequently, the demand at project area level that should trigger a number of important project activities:

- WSTF >> WSP disbursements (post-construction incentives).
- Donor >> WSTF disbursements.
- Construction/assembly works.
- Social marketing (if demand is low).
- Mobilizing training and certifying emptiers and artisans.
- Collection of additional data.
- Land allocation for decentralized treatment/storage facilities.
- Construction of decentralised treatment/storage facilities.

Although a sanitation programme should aim at "managing" (influencing) demand through the development of affordable and desired options and by carrying out a well-targeted social marketing programme, one cannot always predict when demand will really take off and what will trigger this demand. Perhaps the demand for better toilets will be explained by a tacit competition among landlords who wish to attract tenants by offering higher service levels, and not the health benefits of the improved toilets that will determine the demand.

There are examples of projects that became a "success" long after they had been closed down and declared a failure (Seur 1992).

A successful sanitation programme has to provide its implementers with sufficient flexibility so as to enable them to respond to demand whenever it develops.

In order to reduce the financial risks for the development partners, for the WSTF and for the WSPs, the disbursements of funds that are used to incentivise the toilet construction with the post-construction incentive, should be demand driven; i.e. disbursement should be done after landlords have paid their share of the cost of an improved toilet.

Based on these assumptions, the UBSUP team came to the conclusion that the end of a project should be defined rather by quantity than by time. Therefore the proposed model foresees an implementation in several phases:

(1) The first phase will be the same for all UBSUP projects. The scope is pre-defined: the first phase includes several soft components (social marketing, training for manual emptier (if there is demand for UDDTs) and artisans, etc.) and 200 of toilets. In addition, the project scope may include decentralised treatment facilities or other hardware items. An important part of the phase of the project implementation is the element of a market research. Each project will come with this item. The market research will be done by the WSPs and will focus on a detailed demand assessment of the project area. The outcome may be positive – then the project advances to phase 2 – or negative – then the project will be closed after selling 200 toilets or

in the worst case after a set time frame without selling the toilets. The timeframe for phase 1 is set at 9 months.

(2) The second phase of the project is optional and mainly depending on the sale of the 300 toilets: as soon as 200 toilets have been sold the WSP may request WSTF for additional funding of the second phase. Based on the outcome of the market research the potential scope of work/investment can be defined and the second phase maybe approved or disapproved. The scope and time frame of the second phase varies from project to project.

The UBSUP financial team believes that this splitting into two phases of the project helps to:

- Support project management from WSTF side;
- Reduce financial risks and never-ending project implementation phases;
- Define concrete demand based on the market research activity, and;
- Support planning for WSP and WSTF.

The detailed procedure is presented in Chapter 4.6.

3.5 Links between Financing Model and Business Model

We have opted to combine the financing approach and modalities - the financing model - with the business models at various levels as the design of the business model has important implications for the design of the overall financing model and vice versa.

The overall financing & business model adopts a multi-stakeholder approach. It not only links the various stakeholders (from national to local level e.g. from the WSTF to the householder) but also includes business models for individual stakeholders (e.g. WSPs, manual emptiers or DEWATS operators).

The business model seeks to offer an integrated solution for a variety of technical and operational options. For example it shows how a WSP that intends to make an existing investment (e.g. a sewer line) more profitable (sustainable) through the preparation of a WSTF/UBSUP proposal which, if awarded, provides post-construction incentives to households that are willing and able to connect themselves to the sewer line. The business model also links the collection and treatment of contents of dry as well as wet toilets.

3.6 The UBSUP Project Implementation

The Financing Model focuses on the project implementation phase (the selling of toilets) and covers:

- The WSTF level.
- The level of the development partners (disbursements made by donors and reporting to donors).
- The sub-WSTF level.

In the WSTF/UBSUP Financing Model, the following key WSTF programme modalities and features are addressed:

a. The UPC/UBSUP procedures, including the Call for Proposals, the preparation of the Funding Application (Project Proposal).
b. The components of a WSTF/UPC/UBSUP Project Proposal.
c. Detailed information on what the WSTF and its partners can and cannot fund.
d. An outline of the (WSTF >> WSP) disbursement procedures and triggers (milestones, proven demand for improved toilets).
e. The duration of a WSTF/UBSUP project.

f. The value chain (and value includes monetary value, in other words it also addresses the incentives chain). The UBSUP programme addresses the entire sanitation value chain and not only the beginning of it; toilets.
g. How toilets are marketed and sold to landlords, landladies and householders.
h. How toilets are constructed (responsibilities, role and workload of the WSP, the local private sector, etc.).
i. Emptying and transportation and the importance of decentralised treatment (funded by the WSTF) and disposal.
j. The end of the value chain (dumping at a landfill and/or sale of soil conditioner).

This document provides the structure of the finance and business models, whereas the appendices (will) contain the specific procedures that will be used to actually implement the business & financing model.

Together, the financing and the business model needs to ensure the long-term sustainability of household and plot-level sanitation both in terms of the further diffusion and adoption of the improved toilets as well as the sustainable operation of the installed infrastructure (toilets, DTFs, etc.).

3.7 Incentive or Freebees?

The UBSUP programme will only partly incentivise the construction of toilets at household and plot level (the post-construction incentive percentage is likely to range between 15 and 50 per cent). The amount of post-construction incentives/toilet provided is the same for every WSP and every type of toilet (minimum of USD 100.00).

Supporting the construction of toilets with the post-construction incentive raises the question of what is bound to happen after the UBSUP programme comes to an end. Will the diffusion and adoption of improved toilets come to a standstill? This is not likely to happen because if the UBSUP programme is successful:

- There will be a large number of trained and experienced local artisans and small-scale contractors who can continue the construction of improved toilets even if these are no longer supported through the post-construction incentive. This is facilitated by the fact that the post-construction incentive percentage is relatively low.
- Although during the initial stages the role of the WSP is crucial in terms of awareness creation, social marketing, registration, disbursements and data collection, the financing & business model focuses upon the private sector and direct contacts, agreements and payments between householders and landlords on the one hand and local artisans on the other.
- During the implementation of the programme the development of even cheaper - but durable – toilets will continue. Moreover, the current costs of the toilets do not consider economies of scale.
- Currently an initiative is on-going on the development of a national standard on onsite sanitation. UBSUP will play a lead role in the process and hence it can be expected that the UBSUP toilets fall within the expected standards. In many areas the UBSUP type toilets are likely to become the norm, the toilet people (tenants) will be expecting or asking for. Hopefully the toilet the local or county authorities will insist on the enforcement of building regulations. If there are improved toilets all around there will no longer be a need for the services of Social Animators. A good and available toilet can market itself.
- In the Constitution of Kenya (CoK) 2010, sanitation is mentioned as a basic right[8]. It is expected that this will trigger demand for better sanitation facilities.

[8] Constitution of Kenya (CoK), Article 43.

The fact that the UBSUP approach allows an autonomous diffusion of improved toilets does have its own risks. There are many examples of autonomous "technology translations". Instead of building a real improved toilet, artisans may decide to offer something (cheaper) which has some, but not all the features of a user-friendly improved toilet. Artisans, therefore, need to be trained so they understand why the promoted toilet has certain features. Monitoring of the construction and final product is imperative.

3.8 The Role & Responsibilities of the WSP

Following the UPC approach, the WSPs will be a key player in the implementation of the UBSUP programme. They will act as facilitators between the communities and the WSTF as well as being the responsible stakeholder for the provision of sanitation services. This will further strengthen their position within the water and sanitation sector in Kenya.

At the current stage, there are approximately 120 WSPs providing services in urban and peri-urban areas in Kenya. Most of them are still struggling with water supply while the sanitation problem has not yet been tackled. Only a handful of WSPs have a sewer network and/or wastewater treatment plant. The capacities and/or number of customers differ tremendously with some big WSPs serving millions in Nairobi and Mombasa and many small once with only some hundreds customers. As a result, many WSPs are already overwhelmed with their current range of tasks so that they may face severe problems when getting pushed into sanitation services.

The UBSUP programme is aware of this situation and has therefore developed a concept which is trying to keep the burden as small as possible for the WSPs but rather providing incentives for those WSPs getting involved in proper sanitation service delivery.

3.8.1 Incentives for Providers

A main incentive for the WSPs to opt for UPC funded projects is the provision of new infrastructures (assets) to the WSP (and WSB) as well as the additional revenues collected through the provision of access to water to new customers. Many WSPs reported on significant improvements of their revenues and number of customers through UPC projects. The same approach is followed with UBSUP; however, its characteristics are different due to the different nature of the support.

The main incentives for WSPs to get involved in new service areas and/or improve current services are financially related. Although it is within the Service Provision Agreement (SPA) that they have to provide a certain level of service which many by now have not yet reached, it is not motivation enough to improve service levels.

In difference to the UPC projects which is mainly only focussing on infrastructure development, with the UBSUP programme continuous and reliable services have to be delivered which results in costs and more work for the WSPs. Some WSPs may even have to employ more people to create a sanitation unit to tackle the service delivery. Having in mind that a large portion of WSPs still have problems in paying their current salaries due to inefficient revenue collection, non-existing billing systems, etc. it seems almost like a quixotic project for many WSPs.

The UBSUP programme will provide a lot of support to the WSPs in terms of capacity building, support on operation, provision of tools, etc. In addition, the following incentives have been established and/or are currently under negotiations to further get the WSPs fully committed:

- **Sanitation surcharge / tariff / levy**: This is the key incentive to WSPs. WSTF is in close cooperation with WASREB to design a sanitation surcharge / tariff / levy applicable for WSPs which has been successfully involved in (on-site) sanitation provision. It is planned to have the details and the approval by the minister of this form of incentive ready for the up-scaling. During piloting the programme will simulate the provision of the incentive.

- **Potential for exhauster fees**: with the UBSUP programme a WSP can apply for decentralised treatment facilities. Currently there is only a limited number of treatment facilities available in the country with a treatment efficiency of only 20% (Kloss, 2009). Therefore, privately operated exhausters opt rather to dump their waste in the environment (and therefore risking legal punishment) then driving 50 or more kilometres to the next available treatment facility. It is expected that through the construction of additional decentralised treatment facilities, more private exhausters will make use of these and the WSP is able to collect disposal charges.
- **Improved service delivery**: It is in the nature of each WSP to have an interest in improved service delivery. This will be possible through the UBSUP programme. Improved service delivery means as well less calls and complaints from angry customers.
- **Status**: the water and sanitation sector in Kenya is facing changes in the future under the devolved government structure. The idea of clustering has been introduced and it is only a matter of time when the implementation will begin. Th erefore, it is of utmost importance especially for small WSPs to improve performance. A well performing WSP will have more options for negotiation when clustering will be rolled out. The water sector regulator (WASREB) has been publishing a yearly impact report on the performance of formalised WSPs. The information provided will definitely be considered when clustering will be done.
- **Comply with mandate**: it should be an incentive enough for all WSPs to comply with their mandate. WSPs which do not comply may risk their Service Provision Agreement (SPA) and as such lose their business at one point.
- **Increased revenue**: a combination of higher tariffs, additional disposal charges, and more customers will lead to an increase in revenues.
- **Monthly sanitation charges**: WSPs could consider to implement a model where customers pay on a monthly basis (e.g. through the water bill) for sanitation services.
- **Increased number of clients**: with the extension of services to sanitation, the WSP may increase their number of clients since the toilet does not need a water connection to be operational. An increased number of clients may result in increased revenue.
- **Financing toilets through monthly charges**: in cooperation with local micro-financing institutes, the WSP could explore the option of providing a financial product to customers to finance the toilet infrastructure. The idea could be that the micro-finance institute provides the loan, the client pays it back through a monthly payment done to the WSP and the WSP charges an administration fee on top of the loan.
- **Sale of end product**: there is a potential for the sale of the treated content of the toilet to small-scale farmers. There are already several initiatives in Kenya where farmers get the end product from a wastewater treatment facility for free which they then use as a soil conditioner and/or fertilizer in their field. Studies suggest that there is a market given certain circumstances. This will need further investigations and research especially during the pilot phase.
- **A sanitation award**: On a yearly basis, the performance of the various WSPs involved in UBSUP will be compared and the best performing WSP (indicators still need to be developed) will win the award (still needs to be developed).

The above list of incentives is not exhaustive (e.g. reasons like improved health has not been mentioned) but already provides good reasons for WSPs to get further involved in plot-level sanitation. Within the course of the development of the sector, there is no alternative for WSPs to provide adequate sanitation services; regardless whether it is done in-house or subcontracted to a sanitation agent; WSPs will be held responsible for this service delivery.

3.8.2 Roles & Responsibilities

Having established the incentives, there is a need to look at the roles and responsibilities of the WSPs. As mentioned earlier, the WSPs are the key stakeholder of the UBSUP programme. Their roles and responsibilities according to each phase of the UBSUP programme are highlighted below.

Table 9 - Roles & Responsibilities of WSPs

Proposal Preparation
Selection of project areas
First demand assessment
Basic sensitisation of residents on improved sanitation
Collection of needed data for proposal
Land allocation for DTFs
Preparation of UBSUP project proposal
Submission of proposal to WSTF
Project Implementation
Procurement of social animators (funded by UBSUP)
Establishment of cooperation with local artisans, manual emptier and local banks (where applicable)
Facilitate small organisational changes to incorporate sanitation activities
Facilitate application for toilets to interest residents
Commissioning of newly constructed toilets together with the FMs
Paying of post-construction incentives to artisans if their work has been successfully commissioned
Accounting of project funds
Reporting of project activities to WSTF
Continuously promoting UBSUP
Service Delivery - Operation
Organising emptying with contracted manual emptiers and exhausters
Operation of decentralised treatment facilities
Collecting of service charges
Provision of customer services
Managing contracted agents

3.9 Importance of the Private Sector

The private sector should play a crucial part in a successful project implementation. One can distinguish between services outsourced to different private operators and outsourcing the complete sanitation chain to one sanitation agent.

3.9.1 Services outsourced

The concept foresees the inclusion of existing private sector actors in the delivery of specific services. This is mainly due to the limited capacities of the WSPs to do all relevant activities in-house. The following list gives an overview on activities which are supposed to be outsourced to the private sector.

Table 10 - Activities to be Outsourced

Activity	Description
Social marketing	During project implementation the social marketing should be done by externally recruited social animators.
Construction of toilets	The construction of toilets should be done through local artisans. A list of trained and certified artisans will be provided to each interested customer; however, it is up to the customer to pick the one of his/her choice and to arrange the payment modalities. Provision of toilet components (squatting plates and plans) would be another area for outsourcing.
Construction of other infrastructure	The construction of decentralized treatment facilities can be outsourced to local contractors. They would be monitored by the WSP together with WSTF field monitors, following the UPC approach.
Emptying services	The empting services can be outsourced to trained and certified local manual emptier. The emptying service is described in detail in chapter 5.2.3.

Sale of soil conditioner	The treated sludge can be sold to a company which would then sell it to interested farmers and other clients.
Operation of treatment facility	The operation of the decentralized treatment facility can be outsourced to a private operator. The monitoring activity; however, would stay with the WSP

The UBSUP programme offers manifold opportunities for small-scale private entrepreneurs. The above list is not exhaustive and the UBSUP programme is open for any further business proposals.

3.10 The Role of Private Local Artisans

The role of the artisan is important for a fast roll out of the UBSUP programme. Artisans are available locally almost everywhere in the country and most of them already have a good customer base. The UBSUP programme would provide capacity building and more business. In our approach, the WSP would cooperate with a number of local artisans which will be able to provide services within the project area. They will be trained and certified and may even receive specific tools needed for the construction of the UBSUP toilets.

The concept further foresees that the choice of the artisan lies within the client. Even the payment modalities can be negotiated between the client and the artisan. The incentives for artisans to work in the UBSUP program are as follows:

- **Additional Business**: all UBSUP toilets will have to be constructed through certified artisans.
- **After sales services**: artisans could offer after sales services for the facility or even small improvements which would lead to more business.
- **Expertise**: artisans will gain new expertise which may help them on future business opportunities.
- **Expansion**: more business may lead to expansion of the business.
- **Spin-off**: doing a good job with constructing the toilet may lead to further business opportunities.
- **Permanent customer base**: new customers will be added to the permanent customer base.

4. Development of the UBSUP Financing Model

Based on the considerations mentioned in the previous chapter, the financing model can be designed and is presented in this chapter.

4.1 Components of the Financing Model

We consider the financing model to be composed of the following elements:

1. The Call for Proposals, the Funding Application Forms[9] and other procedures and deliverables related to the Call for Proposals approach (the completeness of the Project Proposal deadlines, desk screening, detailed appraisal, field appraisal, etc.).
2. The contractual relations the WSTF has with its partners (within the framework of this document the contractual relation between the WSTF and the WSPs and WSBs is of key importance).
3. The disbursement procedures of the WSTF (milestones, deliverables, required quality of works, etc.).
4. The reporting and accounting procedures the WSP has to comply with (including milestones).
5. Corrective measures and sanctions formulated and imposed by the WSTF (RED Flag report, withholding further disbursements, termination of the contract, etc.) in case of poor performance and/or irregularities.

[9] A filled in WSTF/UPC Application Form is the Funding Application = the Project Proposal.

6. The contractual relations between the WSPs and the suppliers, contractors(s) it has procured under the contract it has signed with the WSTF.
7. The sanctions and measures the WSP has at its disposal in case suppliers and contractors fail to observe their contractual obligations.
8. Sanctions in case of breach of contract between suppliers/contractors and users

The financing model allows the WSTF to prepare funding projections and estimates and to analyse the impact of the support it is providing to its key partners, the WSPs. The financing model to a large extent determines how WSTF-funded projects are being implemented. For instance, if the WSTF and its development partners want to reduce risks (disbursed funds that are not well spend) the demand for improved toilets at household/plot level, as recorded and communicated by the WSP, should trigger disbursements made by the WSTF.

A financing model has to be adapted to the specific requirements of a household and plot-level sanitation project. Unlike a water supply project, which can be implemented (built) once certain challenges (for example, finding appropriate sites appropriate for water kiosks) are overcome.[10] Therefore, it is relatively easy to implement a water project within a given contractual) period. Onsite sanitation is, however, in many countries the outcome of decisions made at household or plot level (i.e. by the landlord/landlady) therefore making it demand driven. In most cases, a household & plot level sanitation project is – has to be – demand-driven.

4.1.1 The UBSUP Project Proposal

After the launch of the Call for Proposals Project, the WSPs can start with the preparation of their Project Proposals (= Funding Applications).

Key attributes of an UPC proposal are the exact scope of work which defines the costs and the planned number of beneficiaries. Those indicators, among others, are used as a basis to approve or reject a submitted proposal.

Following the argumentation in Chapter 3.4, an UBSUP project proposal will have to be structured and analysed differently:

- **Scope of work and anticipated costs:** UBSUP projects are demand driven. Therefore, it has been proposed to split the UBSUP intervention into several phases. The first phase will come with a pre-defined scope of work. Each first phase proposals will look at a package of software (social marketing, training and certification, etc.) and hardware. The hardware component includes post-construction incentives for 200 (1st phase) -300 (subsequent phases) toilets and - based on project characteristics – treatment facilities. The limitation of post-construction incentives for toilets allows to prepare a budget and as such a better management of the project. The timeline for the implementation is limited to 6 (subsequent project phases) to 9 months (first project phase). A WSP is eligible to enter into the second phase if they successfully sold the 200 toilets as well as the market research activity identified more demand (see Chapter 4.4).
- **Number of planned beneficiaries:** based on the unknown demand, the number of planned beneficiaries cannot be established. Demand creation on local level is part of the project and as such will only be known during implementation. However, during proposal preparation a potential demand can be identified based on available data on sanitation coverage, population, etc.

[10] It is possible to successfully implement (build) a poorly planned (in terms of addressing issues of operational sustainability) project as demand for water, or the lack of such a demand will only become apparent after commissioning.

The basic principles of an UBSUP Project Proposal can be summarised as follows:

- The proposed project can have an area or town focus.
- The proposal should be based on detailed data on the proposed project areas (existing situation according to MajiData, KNBS data and a sanitation value chain analysis.[11]
- The proposal should contain a demand assessment which has been prepared on the basis of the collected data.
- In addition to the demand for improved toilet the proposal should also contains information on the availability and skill levels and capacities of manual emptiers, exhausters and local artisans.
- The proposal should indicate how and where the toilet content will be treated.
- If decentralised treatment facilities are required, the WSP should attach a MoU it has signed with the local authority which specifies the available sites.
- The proposal should indicate whether there would be demand for soil conditioner based on human waste.
- Value chain analysis should result in the presentation of the most feasible and viable technical options both in terms of toilets and (decentralised) treatment.
- Based on the most appropriate technical options the proposal should present the social marketing approach and requirements as well as data collection plan (i.e. the data that will be included in the MajiData UBSUP projects layer).
- The proposal should clearly specify the roles and responsibilities of all local stakeholders.
- The proposal should include a detailed project implementation work plan which covers the entire construction (e.g. DEWATS) awareness & social marketing phase.
- If possible the project proposal contains data on the number of householders or landlords that have (pre-) registered, or even paid for an improved toilet.
- The proposal should include a sound financial proposal which covers all activities funded by the WSTF. With regard to the number of toilets that are expected to be constructed under the programme only an estimate needs to be included.

4.1.2 What does the WSTF fund?

Within the framework of the UBSUP the WSTF would fund the following activities:

- Awareness programme.
- Social marketing programme up to area level.
- Social marketing programme & materials up to plot level (WSTF pays for the Social Animators).
- Market analysis on demand for improved sanitation.
- Training and certification of artisans, manual emptiers and exhausters.
- Demonstration plot level toilets (partly paid by beneficiaries but targeting vulnerable groups).
- Construction of DTFs & drying beds.
- Demonstration fields for the use of fertiliser & soil conditioner.
- Training of the DTF operator (manuals).
- DTF operation package.
- Branding of WSP infrastructure and operators/emptiers.
- Branding and certification of operators and emptiers.
- Post-construction incentives for a number of toilets enabling the WSP to meet immediate demand.

[11] WSPs are encouraged to use the Virtual Sanitation Tool (VST) to carry out this analysis.

4.1.3 What does the WSTF not Fund?

The WSTF will not fund:

- The acquisition of sites for DTF and/or drying beds.
- The operation of the decentralised treatment facilities.

4.1.4 Project implementation at WSP level: Step-by-Step

The implementation of an UBSUP project at the WSP level should be carried out according to the following main steps:

1. Internal awareness creation at WSP level.
2. Establishment of the Project Task Team (possible composition: WSP staff, Field Monitors, Social Animators, representative of local artisans, the Public Health Officer, the local authority, residents, opinion leaders, WSP, etc.) by the WSP.
3. Preparation of the detailed programme work plan by the Project Task Team
4. Preparation of the implementation of project activities.
5. Training of relevant WSP staff.
6. Recruitment of the Social Animators.
7. Training of Social Animators (assisted by FMs using WSTF tools)
8. Start of the awareness and social marketing programme.
9. Identification and training of the manual emptiers.
10. Procurement of contractors for DEWATS.
11. DTF/Drying beds site clearance and start of construction.
12. Identification & procurement of local artisans (toilet builders)
13. Training of local artisans (toilet builders) (assisted by the FMs using WSTF tools) (training on-the-job during demo toilets).
14. Recruitment and training of the DTF/drying beds operators.
15. Data collection & transfer on constructed infrastructure.
16. Completion of works and social marketing activities.

4.1.5 Payment Options: Onsite Toilets

The UBSUP programme should allow for the following payment options:

- Full payment (excluding post-construction incentive).
- Deposit and payment in monthly instalments.

4.1.6 Payment Options Sewer Connected Toilets

The WSTF will accept UPC/UBSUP projects that aim to connect facilities to existing sewer lines in urban low income areas (after all the WSTF is a pro-poor fund). These projects will also focus on the plot and household level.
Post-construction incentives will be provided for the toilet infrastructures. Financing the household connections to sewer will have to be discussed.
WSPs could offer the following payment options to households and landlords:

- Full payment
- Deposit and payment in instalments which are added to the monthly water bill.

4.2 Schematic Outline of the Financing Model

The proposed financing model involves a number of different stakeholders and activities. The UBSUP project will work with the WSPs as their implementation partners, following the successful up-scaling approach for water supply with the UPC. In difference to the water supply approach, where the

construction of water kiosks and other relevant infrastructures is managed by the WSP, it is proposed to have the interested customers (landlords, households) being in charge of selection (procurement) and supervision of the construction of toilets. The WSPs remain with the registration and inspection responsibilities.

In brief, the financing model looks at eleven different steps:

(1) WSTF launches the Call for Proposal (CfP)
(2) Interested WSPs prepare proposals and apply for project funding
(3) After evaluation, WSTF awards successful proposals and start with the first fund disbursement (including full amount of post-construction incentives)
(4) The project implementation starts with training and certification of artisans and emptiers
(5) At the same time, the WSP will initiate the procurement of the sanitation marketers and their training. Optional, the WSP may involve existing NGOs/CBOs to support the marketing activities.
(6) As soon as the sanitation marketers have been trained, the marketing (selling) of the toilets start.
(7) If a customer is interested, he/she places his/her order directly with a certified artisan of his/her choice. This may go hand-in-hand with a first payment[12].
(8) The artisan will start construction of the toilet.
(9) Upon completion of the construction, the WSP will inspect the facility on the artisans' request.
(10) Upon successful inspection, the landlord (or artisans that have an agreement with the WSP) is eligible to apply for post-construction incentive from the WSP. The post-construction incentive will be paid by the WSP after the evaluation of the application has been successful.
(11) As soon as the toilets are in place and operational, the customers may hire emptiers for emptying services.

The following scheme visualises the steps described above.

[12] A payment means that the overall cost of the toilet is higher than the financial contribution of the customer. The post-construction incentive will only come in place after the construction and inspection of the toilet and the full payment of the customer's contribution.

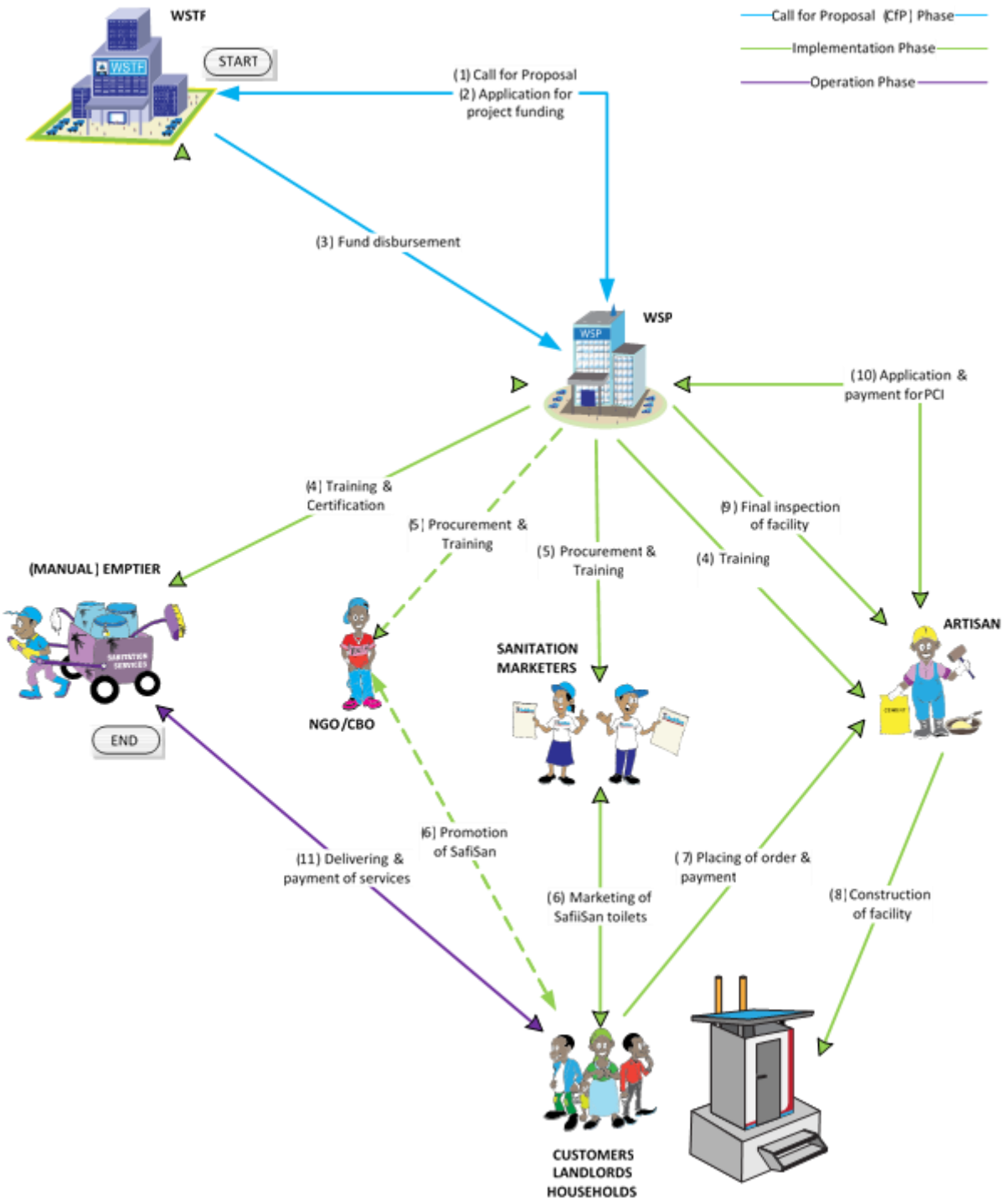

Figure 6 - Schematic Outline of the Financing Model

The detailed design of the financing model and its phases are described in the following chapters. The operation phase is covered by the business model which is described in Chapter 5.

4.3 The Call for Proposal (CfP) Phase

The Call for Proposal (CfP) Phase consists of three main different steps:

- Launch of Call for Proposal (CfP),

- Proposal Preparation,
- Proposal Evaluation.

Therefore the procedure looks as follows:

(1) *CALL FOR PROPOSALS (CFP) LAUNCHED BY WSTF:* Approximately once a year the WSTF launches a Call for Proposals to invite WSP to prepare project proposals on improved water supply, public sanitation and/or plot-level sanitation for the urban poor. The CfP is published in the national newspapers.

(A) Proposal Preparation Phase

(2) *AREA IDENTIFICATION & DATA COLLECTION BY WSP*: As part of the project proposal preparation, the WSP selects potential project areas and implements a data collection exercise on all proposed project areas. Focus will be on indicators such as sanitation coverage, potential demand and area specific characteristics. The WSPs are urged to use existing tools and databases such as MajiData and the VST (Virtual Sanitation Tool, currently under development).

(3) *IDENTIFICATION AND LISTING OF LOCAL ARTISANTS & EMPTIERS*: Since artisans and toilet emptiers are core partners during the project implementation, the WSP has to provide a list with their contacts and willingness to cooperate in the project. The UBSUP project foresees training of those entrepreneurs.

(4) *PREPARATION OF PROPOSAL AND SUBMISSION:* The WSP will combine all relevant data and information into the WSTF proposal template for UBSUP. Following the UPC approach, the WSPs will submit the project proposal with the support of their WSBs.

(B) Proposal Evaluation Phase

(5) *PROPOSAL EVALUATION BASED ON SET INDICATORS*: After the deadline of submission has passed, WSTF records all received proposals and starts evaluation. The evaluation process follows several steps. The first step is the desk screening. At this stage proposals will be checked according to completeness and relevance.

(6) *FIELD APPRAISAL*: Field appraisals follow the desk screening step. A field appraisal will be done for projects where the proposal creates doubts or uncertainties. The UPC team will organise a tour to verify specific items of the proposal on the ground.

(7) *PROPOSAL AWARDING*: Based on the outcome of the evaluation of proposals a number of projects will be recommended for financing. All WSPs will then be contacted on the outcome of their proposal.

In terms of timelines the whole procedure from launching the CfP (step 1) till awarding (step 7) may take 6 months:

4.4 Project Implementation – Phase 1

A project enters into implementation phase 1 if the proposal has been awarded.

(C) Proposal Implementation - Phase 1

(8) *1st DISBURSEMENT BY WSTF*: This project implementation phase starts with the 1st disbursement by WSTF. It includes 100% of post-construction incentives, social marketing costs, training and certification for artisans and emptier, and further software costs. As for hardware costs, the 1st disbursement will look at the costs of 10 (to be confirmed) demonstration toilets and other small hardware items. The idea of funding demonstration toilets is to quickly satisfy existing demand.

(9) *PROCUREMENT OF SOCIAL MARKETING TEAM*: On of the first activities of the WSP will be the procurement of the social marketing team. Tools such as terms of references and advert

templates will be provided by UBSUP. In addition, the Field Monitors are accompanying the process and supporting the WSP throughout.

(9.1) *TRAINING AND CERTFICATION OF EMPTIERS*: Meanwhile the social marketing team will be procured, the WSP together with the CRM will train emptiers in the project area (UDDT).

(9.2) *TRAINING AND CERTFICATION OF ARTISANS*: Meanwhile the social marketing team will be procured, the WSP will train and inform artisans in the project area.

(10) *LIST OF ARTISANS AND EMPTIERS PRODUCED:* The WSP will produce a list of trained artisans and emptiers which will be handed out to new clients. This list will be updated on a regular basis.

(11) *SOCIAL MARKETING STARTS:* The social marketing will start as soon as the social animators have been trained. A detailed concept on the social marketing approach can be found in the UBSUP Social Marketing Document.

(12) *WSPs START MARKET RESEARCH:* A core activity of the Project Implementation Phase 1 is the market research. Based on the project proposal the WSP can prove that the proposed area has a (high) potential demand. With the market research it is intended to quantify the demand in order to prepare for Project Implementation Phase 2 (see Chapter 4.5)

(C.1) Customer signs up

Customer will have different channels to apply for post-construction incentives for their toilets:

(C.1.1) With Social Animators

Each Safisan project funded by WSTF will start with a social marketing phase. A core activity of this phase is to raise demand and register potential customers.

(1) *UBSUP PROGRAMME AND TECHNICAL OPTIONS ARE EXPLAINED TO THE PROSPECTIVE CUSTOMER:* the social animators will explain the UBSUP programme and technical options and will attend to all relevant questions from the customer's side.

(2) *IDENTIFICATION OF THE RIGHT SITE IN THE YARD:* Together with the landlord / tenant, the social animator will identify a suitable site for the toilet in the yard.

(3) *REGISTER WITH THE SOCIAL ANIMATOR:* If the customer expresses his/her interest to participate in the SafiSan programme, he/she will register with the social animator. A copy of the registration form stays with the client.

(4) *COLLECTION OF DATA ON THE PLOT WHERE OCCUPANTS SHOW INTEREST:* the social animator records any further relevant data from the plot.

(5) *TRANSFER OF DATA TO THE WSP:* upon successful registration, the social animator transfers the collected data to the WSP at the end of his/her shift.

(C.1.2) At the WSP's offices

Alternatively to the registration with social animators, prospective clients can always inform and register to the UBSUP programme at their WSP offices. The following steps are recommendations; however, the WSP has the flexibility to decide on how the registration process at the WSP should be done. Those may differ depending on the size and capacity of the WSP.

(6) *UBSUP PROGRAMME AND TECHNICAL OPTIONS ARE EXPLAINED TO THE PROSPECTIVE CUSTOMER:* The details of the UBSUP programme and SafiSan toilet options are explained to potential customers. The WSP may decide which department should take over of this exercise. Some WSPs may link it with their sanitation unit; others may prefer the customer service unit to handle this task.

(7) *REGISTER WITH THE WSP AT THE CUSTOMER CARE COUNTER OR THE BILLING SECTION:* In case the customer is interested to participate in the UBSUP programme, he/she can register with the respective unit at the WSP's office.

(8) *COLLECTION OF DATA ON THE PLOT WHERE THE OCCUPANTS SHOW INTEREST:* the customer will have to provide information on the plot. Alternatively, the WSP could organise regular (weekly) field visits to collect specific data on the plot of the interested customers.

After the registration process has been completed, the data processing (at WSPs office) and the construction of the facility starts. Consequently, the procedure continues as follows:

(9) *DATA ENTRY IN CUSTOMER DATABASE:* At WSP level, all information on registered customers coming in from social animators and/or respective WSP departments will be entered into a UBSUP Customer Database which will be provided to all participating WSPs to handle the customer management. In case a customer registers at the WSP office, this step will be done during the registration phase. The customer will take a print-out of his/her registration as part of the confirmation of his participation.

(9.1) *DATA SUBMITTED TO WSTF SYSTEM (TO BE DEVELOPED):* In terms of WSTF management and monitoring, a system will be put in place which will have access to all registration data submitted by participating WSPs. This will help WSTF to directly monitor demand and impact.

(9.2) *ARTISANS REQUEST LIST OF NEW CUSTOMERS FROM WSP*: Proactive artisans may approach the WSP to receive a list of newly signed-up customers in order to promote their services to them.

(10) *WSP PROVIDES THE CUSTOMER WITH A LIST OF TRAINED AND REGISTERED ARTISANTS AND EMPTIERS:* At the end of the registration process of the customer, a contact list with all trained and certified artisans and emptiers will be handed over to the customer.

(C.2) Construction of facility

The construction of the facilities will be done by trained and certified artisans. The core principle of this step is that it is up to the customer to pick the artisan of his/her choice. Like this, the WSP will not have the burden to get involved into procurement process and/or price negotiations with artisans. In addition, it is expected that a direct contractual agreement between customer and artisan may support the quality and speed of the construction. In addition, artisans may offer payment schemes in instalments to prospective clients, following normal principles of the construction sector in Kenya.

(11) *CUSTOMER VISIT ARTISANS & AGREE ON TERMS & CONDITIONS OR ARTISANS APPROACH CUSTOMERS:* After a customer has picked an artisan (trained or one that s/he has previously worked with) s/he negotiates the price and conditions individually.

(12) *CUSTOMER SHOWS THE IDENTIFIED SITE WITHIN THE YARD / OR Social ANIMATOR /OR PHO ASSISTS IN FINDING APPROPRIATE SITE:* Before the construction process starts, the artisan has to be shown the selected site previously identified by the Social Animator or PHO.

(13) *CONSTRUCTION WORK STARTS:* the construction of the facility starts. Since a direct business relation between customer and artisan exists it is expected, that the customer will closely monitor the construction process. Furthermore, the artisan may have an interest to finalize the construction quickly and in a good quality to further promote his/her services and to receive the final payment.

(14) *CONSTRUCTION & BEAUTIFICATION COMPLETED:* A facility is considered to be completed after all essential parts (facility itself, mainstreaming package, and beautification) has been delivered.

(15) *LANDLORD OR ARTISAN REPORTS COMPLETED TOILET TO WSP:* Right after completion of the construction, the landlord or artisan reports his/her work to the WSP to request an inspection.

(16) *FINAL INSPECTION BY WSP:* depending on the demand of inspections, the WSP could organize one day a week a team which does the inspections of the newly constructed toilets. This 'fieldwork' could be combined with visiting sites for new SafiSan customers. Alternatively, the inspection could be done on ad-hoc basis. It is up to the WSP to organize this task; however, any major delay in out rolling the inspection should be avoided. The UBSUP Customer

Management System will monitor the time between signing up of a customer and completion of the infrastructure to avoid long delays. This information will be available to WSTF and may affect further funding of WSTF/UPC projects.

(16.1) *FINAL INSPECTION BY WSP SUCCESSFUL:* The WSP will inspect the facility according to a checklist and will highlight all needed improvements. In case no rectifications are needed, the WSP will sign a completion report and provide copies to the customer and artisan.

(16.2) *FINAL INSPECTION BY WSP NOT SUCCESSFUL:* in case the inspection of the WSP is not successful, a snag list will be compiled and the artisan will be given a onetime opportunity to rectify the shortcomings within a given period.

(16.3) *ARTISAN RECTIFIES:* based on the snag list of the WSP, the artisan rectifies the issues identified and requests for another inspection by the WSP. In case the artisan was not able to rectify the facility, the WSP will not pay the post-construction incentive.

(17) *ARTISAN OBTAINS COPY OF THE SIGNED COMPLETION REPORT:* after the inspection has been successful, the artisan is handed out a signed completion report.

(18)*LANDLORD / TENANTS CAN USE THE TOILET:* at this stage, the toilet can be used by the customers

(19) *FINAL PAYMENT FROM LANDLORD TO ARTISAN (IF APPLICABLE):* with the handing over of the signed completion report, the customer shall pay the remaining amount to the artisan (if applicable).

(20) *WSP FILLS IN SITE DATA FORM & TRANSFERS TO WSP & WSTF:* as soon as the completion report has been signed, the WSP collects additional data on the facility (GPS reading, photo, etc.). This data will be added to the UBSUP Customer Management System at the WSP and will be available to the WSTF.

(20.1) *CRMs CARRY OUT QUALITATIVE AND QUANTITATIVE MONITORING:* as soon as the WSP has accepted the completion of a toilet infrastructure, WSTF Field Monitors (FM) will be tasked to do a qualitative and quantitative monitoring of the facility.

(20.2) *CRMs SUBMIT DATA TO WSTF:* the monitoring report and data will be submitted to the WSTF and yellow and red flags will be raised if appropriate.

(C.3) Request for Post-construction Incentive (PCI)

A core pillar of the proposed financial model is that the UBSUP post-construction incentive is paid to the landlord (through the WSP). The incentive is only paid after complete construction of a facility. In some cases, artisans can enter an agreement with the WSP to be paid the post-construction incentive.

(21) *LANDLORD REQUESTS PCI FROM WSP:* with the signed completion report, the landlord (or artisan) can request the post-construction incentive from the WSPs office.

(22) *WSP CHECKS PCI REQUEST BASED ON COMPLETION REPORT:* all Post-construction incentive requests have to be thoroughly checked with the records at the WSP. Ideally this process takes maximum one week.

(22.1) *WSP REJECTS PCI REQUEST:* the WSP may reject the request if the inspection has not been successful/completed, the record of the facility does not exist or any other reason.

(22.2) *WSP PAYS PCI:* if all documents and records are correct, the WSP pays the landlord (or) artisan the post-construction incentive (e.g. through a cheque or MPesa).

(C.4) Request for post-construction incentive – WSP

The post-construction incentive for landlords (or artisans) will be paid through the WSP.

(23) *WSP HAS PAID ALL PCIs AS PER FINANCING AGREEMENT WITH WSTF:* As soon as all post-construction incentives from the first phase of the project implementation have been paid, the implementation of the first phase comes to an end.
(24) *WSP ACCOUNTS FOR ALL EXPENDITURES OF PHASE 1:* in order to be eligible for a second phase of the UBSUP programme, the WSP has to account for all expenditures of the first phase.
(25) *WSP PREPARES & SUBMITS FINAL REPORT:* at the end of the first phase, the WSP will submit a final report on implementation and financial management.
(26) *WSTF ANALYSES FINAL REPORT:* upon receipt of the final report, the WSTF will analyse it and prepare recommendations on future cooperation with the WSP.
(27) *PROJECT CLOSED:* the project is closed when all post-construction incentives have been paid and are accounted for. If the project is closed at this stage, this normally means that the market research has not identified any/enough further demand on improved basic sanitation.
(28) *ADDENDUM FOR PHASE 2 PREPARED:* if all post-construction incentives have been paid and accounted for and the market research indicated that there is still demand on improved basic sanitation, the WSP is invited to prepare an addendum for the phase 2 of this project.

4.5 Project Implementation – Phase 2

The Phase 2 of the project implementation is only eligible for WSP (1) which successfully implemented Phase 1 within a given period; (2) where market research suggested unsatisfied demand of improved basic sanitation; and (3) which is not blacklisted or excluded of involvement of any WSTF related projects.

In difference to Phase 1, this phase will look at the specifics for each project area. Due to the market research done, the scope of work can be identified and as such may differ from WSP to WSP. The procedure for this phase looks as follows:

(29) *PHASE 2 STARTS:* the 2nd phase starts based on the principles highlighted above.
(30) *DISBURSEMENT FROM WSTF:* following the implementation of the first phase, WSTF will send a first disbursement for the second phase.
(31) *(C) PROJECT IMPLEMENTATION:* the project implementation will follow as highlighted for phase 1 in Chapter 4.4.
(32) *CRMs CARRY OUT QUALITATIVE AND QUANTITATIVE MONITORING:* the FMs will continuously monitor the implementation of the second phase and report its outcomes to WSTF.

4.6 The UBSUP Financing Model

The financing model should allow the WSP to adequately respond to emerging and developing demand (responding to the demand curve) and it should also enable the WSP – the Project Task Team, to develop sound business models for itself and for its local stakeholders; manual emptiers, decentralised treatment facility operators, exhausters, etc. Continued demand for improved toilets will also depend on the existence of sustainable sanitation services.

4.7 Timelines

This chapter tries to propose timelines for each of the phases discussed above. Timelines especially for the implementation phase is difficult to define since projects will not have a fixed implementation period. Based on demand, a project may be closed / lifted to the second phase of implementation earlier or later. However, a project implementation period should be limited to a maximum time.

4.7.1 Call for Proposal (CfP) Phase

This phase is guided by the UPC procedures and as such proposed the same timelines. Between the launch of the call and the awarding of a project should ideally not pass more than 6 months.

STEP	Activity	Months 1	2	3	4	5	6
	Call for Proposal (CfP) Phase						
1	*CALL FOR PROPOSALS (CFP) LAUNCHED BY WSTF:*	●					
A	**Proposal Preparation Phase**						
2	*AREA IDENTIFICATION & DATA COLLECTION BY WSP :*						
3	*IDENTIFICATION AND LISTING OF LOCAL ARTISANTS & PIT EMPTIERS :*						
4	*PREPARATION OF PROPOSAL AND SUBMISSION:*						
B	**Proposal Evaluation Phase**						
5	*PROPOSAL EVALUATION BASED ON SET INDICATORS :*						
6	*FIELD APPRAISAL (WHERE APPLICABLE) :*						
7	*PROPOSAL AWARDING :*						●

Legend:
Milestone
Activity WSP
Phase WSP
Activity WSTF
Phase WSTF

Figure 7 - Timelines Call for Proposal Phase

4.7.2 Project Implementation – Phase 1

The timeline for this phase is proposed as follows:

STEP	Activity	Month 1	2	3	4	5	6	7	8	9	∞
	Project Implementation – Phase 1										
8	*1st DISBURSEMENT BY WSTF :*	●									
9	*PROCUREMENT OF SOCIAL MARKETING TEAM :*										
9.1	*TRAINING AND CERTFICATION OF PIT EMPTIERS :*										
9.2	*TRAINING AND CERTFICATION OF ARTISANS :*										
9.3	*WSP PROVIDE THE ARTISANS WITH MAINSTREAMING PACKAGE:*		▲								
10	*LIST OF ARTISANS AND PIT EMPTIERS PRODUCED:*		▲								
11	*SOCIAL MARKETING STARTS:*		●								
12	*FMs START MARKET RESEARCH:*										
C.1	**Customer signs up**										
C.2	**Construction of Facility**										
29	*FINAL INSPECTION BY WSP:*										
29.3	*ARTISAN RECTIFIES:*										
31	*LANDLORD / TENANTS CAN USE THE TOILET:*				●						
33.1	*FMS CARRY OUT QUALITATIVE AND QUANTITATIVE MONITORING:*										
C.3	**Request for Subsidy – Artisan**										
C.4	**Request for Subsidy – WSP**							▲			▲
41	*WSP PREPARES & SUBMITS FINAL REPORT:*										▲
42	*WSTF ANALYSES FINAL REPORT:*										▲
42.1	*WSP IS ALLOWED TO ADJUST TARIFF OR CHARGE SANITATION LEVY:*										▲
42.2	*WSP CAN PAY DEDICATED STAFF THROUGH TARIFF INCREASE:*										▲
43	*PROJECT CLOSED:*										●

Legend:
Milestone WSTF
Outcome WSTF
Activity WSTF
Milestone WSP
Outcome WSP
Activity WSP
Activity Customer
Activity Artisan

Figure 8 - Timelines Project Implementation Phase 1

4.7.3 Project Implementation – Phase 2

Phase 2 of the implementation follows the same principle as phase 1. Demand development is still not very clear and as such the prediction of the project duration is difficult. Again, there is a need to define the maximum possible implementation period.

		Month					
STEP	Activity	1	2	3	4	5	∞
	Project Implementation – Phase 2						
45	*PHASE 2 STARTS:*	●					
46	*DISBURSEMENT FROM WSTF:*	▲					
47	*PROJECT IMPLEMENTATION:*						
48	*FMS CARRY OUT QUALITATIVE AND QUANTITATIVE MONITORING:*			▲			▲

Legend:
Milestone WSTF
Outcome WSTF
Activity WSP

Figure 9 - Timelines Project Implementation Phase 2

5. Development of the UBSUP Business Models

The operation and service delivery is covered in the business model which is discussed in this chapter. Considerations highlighted in the previous chapters have been taken into account and are reflected where necessary in the final model. The business model as such is looking at option on how to sustainable deliver sanitation services. Different perspectives lead to different results: a manual emptier has a different business model than the WSP or the WSTF. Guidance on models for artisans, manual emptier etc. is provided as well in this chapter.

This chapter is mainly about who does what, where, when and why.

5.1 Business Model Definition

What is a business model? According to Wikipedia: "A business model describes the rationale of how an organization creates, delivers, and captures value (economic, social, cultural, or other forms of value)". The process of business model construction is part of business strategy.

In theory and practice the term business model is used for a broad range of informal and formal descriptions to represent core aspects of a business, including purpose, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies."(Source: Wikipedia, search "business model").[13]

5.2 Components of the Business Model

Before developing the actual models it is important to look at relevant components of it. What does it actually mean to delivery improved sanitation services? What are service delivery considerations on

[13] According to Wikipedia: "In theory and practice the term business model is used for a broad range of informal and formal descriptions to represent core aspects of a business, including purpose, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies. The literature has provided very diverse interpretations and definitions of a business model. A systematic review and analysis of manager responses to a survey defines business models as the design of organizational structures to enact a commercial opportunity. Further extensions to this design logic emphasize the use of narrative or coherence in business model descriptions as mechanisms by which entrepreneurs create extraordinarily successful growth firms.

Whenever a business is established, it either explicitly or implicitly employs a particular business model that describes the architecture of the value creation, delivery, and capture mechanisms employed by the business enterprise. The essence of a business model is that it defines the manner by which the business enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit: it thus reflects management's hypothesis about what customers want, how they want it, and how an enterprise can organize to best meet those needs, get paid for doing so, and make a profit.

Business models are used to describe and classify businesses (especially in an entrepreneurial setting), but they are also used by managers inside companies to explore possibilities for future development. Also, well known business models operate as recipes for creative managers. Business models are also referred to in some instances within the context of accounting for purposes of public reporting." (Source: Wikipedia, search "business model").

emptying a toilet? Etc. This subchapter tries to clarify those and more relevant questions on sanitation delivery.

5.2.1 Toilets, Treatment and Measuring Access

The UBSUP study shows that a large majority of Kenyans living in urban low-income areas (LIAs) do not have access to improved sanitation. The sanitation picture in many LIAs is mixed. In addition different types of sanitation facilities can be found in the same LIA such as VIPS, Pit latrines etc.

In order to increase sanitation coverage (i.e. the proportion of the population with access to adequate sanitation) the UBSUP strategy will be to market both, the improved toilet and decentralised treatment (DTFs) for wet sanitation systems such as flush toilets and, where there is demand, for UDDTs. However, when establishing access levels (percentages), the WSTF will only consider (count) households that have access to an improved toilet and the content of the toilet is properly treated or disposed of.

The Implementation Plan for Sanitation 2009, paragraph 6.1.2 states: "Safe sanitation shall fulfil the requirements of the human rights to sanitation and shall *only be counted as sustainable safe sanitation if safe disposal of effluent and excreta is guaranteed*."

The table below shows how the UBSUP programme intends to define access.

Table 11 - Toilets, Treatment & Access

No.	Type of toilet used & condition	Waste treatment/dumping	Access
1	Traditional latrine in **poor** condition (1)	No treatment (dumping)/no emptying	No access
2	Traditional latrine in **poor** condition	Treatment (at DEWATS)	No access
3	Traditional latrine in **good** condition	No treatment (dumping)/no emptying	No access
4	Traditional latrine in **good** condition	Treatment (at DEWATS)	**Non-sustainable access**
5	VIP & flush toilet in **poor** condition (2)	No treatment (dumping)/no emptying	No access
6	VIP & flush toilet in **poor** condition	Treatment (at DEWATS)	No access
7	VIP & flush toilet in **good** condition	No treatment (dumping)/no emptying	**Non-sustainable access**
8	VIP & flush toilet in **good** condition	Treatment (at DEWATS)	**Access**
9	Double vault UDDT in **poor** condition	No treatment (dumping)/no emptying	No access
10	Double vault UDDT in **poor** condition	Treatment (at DEWATS)	No access
11	Double vault UDDT in **good** condition	No treatment (dumping)/no emptying	**Non-sustainable access**
12	Double vault UDDT in **good** condition	Treatment (at DEWATS)	**Access**

1): The technical and not necessarily the hygienic condition of the toilet.

2): Or any other improved toilet such as a flush toilet linked to a sewer or a cartridge-based latrine. .

It may not be difficult to measure and even visualise the impact of the UBSUP programme in terms of the number of toilets or decentralised treatment facilities constructed.[14] It will be more difficult, however, to establish coverage levels if we not only have to assess the type of toilet, its technical condition and if we have to consider the entire value chain (i.e. including treatment). What if a toilet is used by 23 persons instead of by 10 persons? The level of detail that is required to calculate access means that access & coverage levels can only be established through sample-based plot & household survey methods.

[14] All WSTF/UBSUP information will be shown on the MajiData UBSUP projects layer.

5.2.2 Filling the toilet

A successful operation and service delivery (= business model) starts with proper use of the toilet or rather with the proper filling of the vault. From the business point of view, the cleanliness of the toilet surface (superstructure) has (theoretically) no impact on the business model. The model starts with the content of the vault.

The toilet should be used according to the sensitisation and all documents provided to the households. Only then the business model outlines herewith will work. A UDDT vault which has been used to dump solid waste or with the content not having rested for at least 6 months will have a direct effect on the emptying, treatment and potential re-use. This effect can be directly translated into higher costs.

If we remember the comparison of the tea grower value chain and the sanitation chain, we will notice that the main difference starts with the first step of the chain: growing of leaves (tea grower value chain) and filling the toilet (sanitation value chain) respectively. The products produced differ in their value perception: the tea leaves have a value whereas the content of the toilet is considered to be value-negative, meaning it is a cost. This is a wrong perception! In history of mankind there are many examples where human waste was considered as a product with a value. In 1956, for example, 90% of the Chinese human waste was recycled and constituted to a third of all fertilizer used in the country.[15] There is almost an endless list of example on societies and periods where the collection and sale of human waste has been considered as a business. Therefore, we can conclude:

Human Waste = $ Money $*

* Depending on several circumstances such as area characteristics, cultural facts and others.

Looking at the filling of the toilet, we can conclude on one hand:

Good Quality Human Waste = More Money

And on the other hand:

Human Waste Mixed with Diapers, Tyres and Other Items = No / Little Money / Costs

These conclusions are very important for the development of our business models: in ideal situations, a market for human waste of good quality exists.

Therefore, the proper use of the toilet is a crucial part for the business model and therefore will be a core element of the social marketing campaign.

5.2.3 Emptying the Toilets (Who Does What and Who Gets Paid?)

The emptying process is the first step in the model with an effort attached to it. This normally results in costs, for the toilet owner/user and/or the emptier. This section discusses the operation of onsite wet toilets (pour and cistern flush, connected to a septic tank) and onsite dry toilets (UDDTs).

This document considers three different ways of emptying: (1) done by external service providers (e.g. exhauster or manual emptier), (2) self-emptying by the toilet owner/user, and (3) automatic emptying of a pour flush toilet to a septic tank.

[15] JENKINS, Joseph: The Humanure Handbook – A Guide to Composting Human Manure; 2005, p. 81.

5.2.3.1 Connected to a sewer line connected toilets (who does what and who gets paid?)

Wets systems connected to a sewer line don't need the involvement of emptiers. Users of this kind of toilets pay the usual sewer charge which is included in their monthly water bill.
Customers should be made aware of the proper use of their toilet(s). The UBSUP programme will prepare a short (and laminated) toilet user manual for sewer connected toilets which focuses on solid waste management at household level.

There are several options when it comes to organising the emptying process. As part of the programme, existing and new emptiers will be trained and certified.

5.2.3.2 Connected to an on-site storage (septic- or consolidation tank)

When on-site storage is used, emptiers will be involved in emptying these facilities. Emptying of wet-toilets could be done according to the following procedure:

1. The WSP provides the toilet owner with a list licensed private exhauster operators, or is able to offer the service with the inhouse exhauster.
2. When the need arises, the householder/user/landlord calls the WSP or private exhauster.
3. The WSP-owned or private exhauster inspects and subsequently empties the toilet.
4. The householder/user/landlord pays the WSP or the private exhauster.
5. The exhauster transports the waste to the decentralised treatment facility.
6. The operator of the decentralised facility accepts the loads delivered against a fee (regulated by WASREB)

5.2.3.3 Emptying by Manual Emptiers

Emptying of dry-toilets could be done according to the following procedure:

1. The WSP provides the new toilet owner with a list of the trained and registered (manual) emptiers working in the area.
2. Each registered (manual)emptier has the necessary equipment[16]
3. When the toilet (2nd vault) is almost full the (1st) vault has to be emptied.
4. The householder/user/landlord calls the trained & certified emptier.
5. The (fully equipped) emptier inspects and subsequently empties the toilet. Manual Emptiers are trained on assessing the quality (condition) of the waste stored in the vault. The costs of service delivery depend on the quality of the dried waste. Collection of dried waste containing lots of solid waste or dried waste with a high moisture content is charged more than the to be expected dried waste. In the social marketing, the cost differentiation based on the quality of the waste has been explained to the users.
6. The householder/user/landlord pays the manual emptier for his/her services either cash or using MPesa
7. The manual emptier transports the dried waste to the decentralised treatment facility.
8. The operator of the decentralised treatment facility can either pay the manual emptier (if there is a demand for treated sludge for farming or gardening purposes) or accepts the loads delivered free of charge (if there is no market for treated sludge (soil conditioner, fertiliser, etc.).
9. Alternatively the content of the toilet is buried or incinerated but only at a designed site.

[16] The manual and a list of required equipment are prepared by the UBSUP programme.

5.2.3.4 Self-emptying

The toilets are owned by the household or by the landlord. Owners have the right to empty their toilet themselves. However, the owners are not allowed to pollute neither their own yard nor any public spaces with the content of their toilet(s).
If the content of the toilet is sufficiently dry it can be buried, burned or used in the vegetable garden.

The UBSUP programme will provide guidelines on self-emptying and recommendation on how to use the dried waste.

5.3 Treatment

The treatment of the toilet content will be as well covered by the business models. Treatment is an essential part of the sanitation chain and for a value-added business model it becomes important since it may put the final product in shape and the facility may be used a point of sales.

5.3.1 UBSUP Innovation: the DTF/Drying Beds (DSDB)

The DSDB combines the DTF and the drying beds into one facility. As a result, the content of both wet and dry toilets can be treated at the same facility.

The main reasons for developing a combined DTF/drying beds facility are the following:

- Provide a decentralised facility which can offer services to residents using (new) dry toilets such as the double vault UDDT as well as residents using (existing and new) VIPs and pour flush toilets.
- To use the often scarce available sites/space more efficiently.
- To provide more incentives to decentralised treatment facility operators also by embedding water kiosk, a restaurant (using the biogas produced) or (hot) shower functions in the facility.
- To reduce operation costs by having one operator running two facilities at the same time.

5.3.2 Operation of the DTF/Drying beds (DSDB)

In case of using external services to empty the toilet, the content should be brought to the treatment facility. Within the course of the programme, the WSP may apply for funding of a DTF / drying bed treatment facility. The rationale behind this is to provide a decentralised treatment facility / dropping point for the toilet content within an acceptable range of the toilets. This should at least partly prevent the dumping of toilet content into the environment.

The business model foresees the following main elements of the DSDB management system & procedure:

- The DTF/drying bed has business hours and is fenced.
- The DTF/drying bed is operated by an operator. The operator deals with exhausters and emptiers disposing waste at the site and with people interested in obtaining treated waste from the site. In addition to that he maintains the facilities.
- The DTF/drying bed is owned by the WSP.
- The operator has a contract with the WSP and /or is WSP staff or the sanitation agent.

The treatment facility could be upgraded with a public toilet, a small shop, restaurant, sale of hot (bathing) water or similar income generating facilities. The aim would be to cover the operator's salary (if hired by the WSP or an external service agent) or to provide incentives for the operation of treatment facility. Several options may be tested during the pilot and experiences will be collected in tools and documents for facility operators.

The roles and responsibilities of the operator can be summed up as follows:

- Provide security & prevent illegal use (dumping).
- Keeping the facility clean.
- Directing the manual emptiers.
- Ensuring that solid waste is removed from the contents of the double vault UDDTs that are offloaded at the DSDB.
- Alerting the WSP when the facility is nearly full.
- Alerting the WSP when maintenance & repair works have to be carried out.
- Selling dumping services.
- Selling soil conditioner.
- Disposal of after-treatment soil conditioner.
- Screening of deposited waste into the facility
- Incineration of the solid waste found in the deposited waste
- Administration, disposal and collection of materials from the facility needed by the WSPs to apply for tariff increase at WASREB.

5.4 Business Model Methodology

This subchapter briefly describes the methodology of the UBSUP business model used. There is plenty of literature available on designing business models. After a literature research, the UBSUP financial team decided to mainly follow practices and ideas proposed in the handbook "Business Model Generation" written by Alexander Osterwalder & Yves Pigneur[17]. The main reason for following this handbook is that it has been considered providing a simple way of structuring all relevant elements of a business model in a very practical way.

The canvas developed in this book has been used for all different business models proposed in this chapter.

5.4.1 The Business Model Canvas (BMC)

The BMC is a one page template combining the core elements of any business model. Each element should be looked at independently. Finally the combination of all elements gives the overall picture of the business model.

5.4.1.1 Customer Segments

The customer segments are the core part of the business model. Without potential customers a company cannot survive. Customer segments can be different with independent needs and requirements. Therefore each customer segment may have to be approached differently by the business model. Customer segments as well include different markets such as mass market, niche market, segmented market, etc.

A business model in the first place needs to define the relevant customer markets and describes its specifics.

5.4.1.2 Value Proposition

The value proposition satisfies a specific need of the potential customers. Values created may be qualitative (e.g. customer experience) or quantitative (e.g. price). In addition, products/technologies can create new needs. The invention of the mobile phone, for instance, created a complete new market.

[17] OSTERWALDER, A. & PIGNEUR, Y.: Business Model Generation, 2010.

5.4.1.3 Channels

After having identified the potential customers and the added value, the interaction channel between customer and product provider has to be defined. Channels are needed for interaction during the following phases of a market entry/creation:

1) **Awareness**: How to inform customers about the products on offer?
2) **Evaluation**: How to support the customer on evaluation the value proposition?
3) **Purchase**: How can the customer buy the product/service?
4) **Delivery**: How is the product/service delivered?
5) **After Sales**: How is after sales service and customer support provided?

5.4.1.4 Customer Relationships

A business model needs to define which relationship will be established for each customer segment. Interactions can range from personal to automated. Customer relationships are important for customer acquisition, retention and boosting of sales.

5.4.1.5 Revenue Streams

The revenue streams keep a business model and as such a company alive. Revenues can be collected through different ways: sale of assets, usage/subscription fees, leasing, etc. Revenue stream considerations as well include questions on how much customers are willing to pay and how they can pay.

5.4.1.6 Key Resources

The key resources describe the assets needed for the implementation of the business model. Assets can be physical, intellectual, human or financial.

5.4.1.7 Key Activities

The key activities describe the necessary tasks to make the business model work. That can include production, service delivery or network/platform related activities

5.4.1.8 Key Partnerships

The key partnerships comprise network of suppliers, partners, strategic alliances and similar. The ideas of those partnerships are to optimize economy of scale, reduce risks and uncertainty and acquisition of particular resources and activities.

5.4.1.9 Cost Structure

The cost structure describes all costs incurred to operate a business model. They can be distinguished between fixed costs, variable costs, economies of scale and economies of scope. Business models can be cost-driven which is focussing on minimizing costs and value-driven which focus on value creation.

5.4.1.10 Business Model Canvas Tool

All those aspects highlighted before will be combined within one table. It helps to create new or analyse existing business models. The following table shows the BMC.

Table 12 - Business Model Canvas (BMC)

KEY PARTNERS	KEY ACTIVITES	VALUE PROPOSITION	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS

	KEY RESOURCES		CHANNELS	
COST STRUCTURE			REVENUE STREAMS	

5.4.2 Usage of the Business Model Canvas

This document will provide the first step of the development of business models. A napkin sketch is provided in the following chapter with the key elements of each business model. These can be used to be transformed in business cases and/or being the basis of developing Terms of References on sanitation service delivery. The business cases would lead into a cost and revenue calculation and to a field test.

It is expected that during the pilot period of UBSUP, several different business models will be tested. Based on the experience gained, some business models may be selected for a more detailed development.

5.5 Selected Business Model

The business models presented here are a selection of different actors being involved in the sanitation chain. The business model for artisans is not directly involved in sanitation service delivery but they are crucial for the marketing and demand creation of UBSUP. Therefore, a business model for artisans is presented herein as well. The models presented are for:

- Artisans
- Emptiers
- DSDB Operators
- Sanitation Agents
- WSPs

5.5.1 Artisans Business Model

A BMC for Artisans involved in the UBSUP programme could look as follows:

Table 13 - Business Model Canvas for Artisans

KEY PARTNERS	KEY ACTIVITES	VALUE PROPOSITION	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
WSP, construction material suppliers	Construction of SafiSan toilets Construction of any other infrastructure Provision of add-ons to SafiSan toilets	Improved plot value Potential for higher rent Higher living standard	Personal and automated through WSP	Households, landlords

	KEY RESOURCES		CHANNELS	
	SafiSan Certification Knowledge on SafiSan toilets		Direct marketing; mouth to mouth indirect marketing through WSP	
COST STRUCTURE		**REVENUE STREAMS**		
Material, labour		Sale of toilet, after-sales services, post-construction incentive		

Key elements of this business model are:

- **Closed market / limited competition**: only certified artisans can satisfy the demand on SafiSan toilets
- **Marketing of services**: through the certification process, artisans will be put in contact with customers through the WSPs. Therefore, expenses on marketing can be limited. In fact, pro-active artisans can request a list of customers signed up with the UBSUP programme and approach them directly. In addition, the artisan can promote his services through a well-constructed SafiSan toilet.
- **Reducing prices for material supplier**: it is expected that the artisans will receive a lot of business through the UBSUP programme. By buying construction material in higher quantities, artisans will have a higher negotiation power and may be able to reduce prices further.

5.5.2 DSDB/DTF Operator

There are several management options for DTF operation:

- Operated by WSP staff: the WSP covers operation costs including salaries for the operator. Revenues collected through sale of soil conditioner (where applicable) and/or emptying fees for exhauster trucks stay with the WSP.
- Operated by external staff but owned by the WSP: another model looks at a private operator (ideally somebody from the area) who makes a living through selling soil conditioner (where applicable) and/or other income generating activities. One could imagine that the DSDB could be linked to a Public Sanitation Facility (PSF). The exhauster emptying charged would stay with the operator. The WSP would cover the investment costs (through UBSUP and/or UPC for the PSF).
- Operated and owned by an external operator: this model looks at a sanitation agent as described in Chapter 5.5.3.

Potential incentives/income generating activities for the DSDB operator are:

- Primarily the sale of soil conditioner to nearby located households.
- Sale of (hot) water and toilet services (in case of the combined DEWATS/drying bed/ kiosk/PSF facility).
- The operator will be trained, his job will be formalised.
- Sustainability of the treatment facility
- For the facility manual will be developed in which operation and maintenance procedures will be dealt with.

- The performance of the facility will be monitored on a regular basis by the WSP.
- The WSP allocates a certain percentage of the operating costs for corrective maintenance.
- On a yearly basis the condition of the facility will be assessed and a (small) investment plan will be developed to secure operation.
- A percentage of the yearly turnover will be paid to the operator(s)

The business model described below looks at the most common option where the operation and ownership lies with the WSP. A more detailed version of the DTF business model can be found in the DTF Business Model Document

Table 14 - Business Model Canvas for DSDB Operators

<table>
<tr><th>KEY PARTNERS</th><th>KEY ACTIVITES</th><th>VALUE PROPOSITION</th><th>CUSTOMER RELATIONSHIPS</th><th>CUSTOMER SEGMENTS</th></tr>
<tr><td rowspan="3">Manual emptier
Users of soil conditioner</td><td>Receiving waste
Treating waste
Selling soil conditioner</td><td rowspan="3">Creation of cheap soil conditioner / fertilizer based on human waste
Sale of biogas and other products
Improved public health</td><td>Direct contact with emptiers and potential sellers</td><td rowspan="3">Manual emptier
Farmer
Exhauster trucks</td></tr>
<tr><th>KEY RESOURCES</th><th>CHANNELS</th></tr>
<tr><td>Drying beds
DEWATS treatment</td><td>Direct customer contact</td></tr>
<tr><th colspan="3">COST STRUCTURE</th><th colspan="2">REVENUE STREAMS</th></tr>
<tr><td colspan="3">Operational costs;
Salaries</td><td colspan="2">Selling of fertilizer / soil conditioner
Charges for emptying trucks</td></tr>
</table>

Key elements of the business model are:

- **Important revenue stream**: the main challenge lies with the revenue collection. If no market for soil conditioner / fertilizer exists, the only income generating activities would be the collection of a disposal charge from exhauster trucks (UBSUP emptier would dump their content for free) and maybe the operation of a PSF and the sale of other products/services if the area is appropriate.
- **Cost coverage:** apart of the revenue stream, costs could be covered through the sanitation charge to be collected by WSPs successfully improving basic sanitation.

5.5.3 Emptier

Emptiers are local private entrepreneurs which are organized in groups. Within the framework of a WSTF-funded UBSUP project they have received training and training materials. UBSUP supports

existing CBOs and youth groups in adding emptying of UDDTs to their existing income generating activities (e.g. collection of solid waste).

Emptiers charge their customers for emptying toilets and there is a wide range of options to improve the business for manual emptiers. With an entrepreneurial spirit one could offer regular (weekly) cleaning services of the toilet for a small amount of money. During this cleaning session the emptier can also check the volume and composition of the waste collected in the toilet. In the case of irregularities he can then contact the users of the toilet and discuss with him the problems observed. In addition to this informal awareness creation, the emptier can also mention the increased costs of emptying when people use the toilet not properly. The interest of the manual emptiers should be to create a permanent business relation with the clients.

When considering the sustainability of the sanitation value chain it is important to ask the question what the incentives and other reasons are for manual emptiers to deliver the toilet content to the DTF/drying beds. Potential incentives and other reasons are:

- The DTF operator sells the dried waste as soil conditioner and therefore has an interest in not charging the manual emptiers for delivering UDDT matter.
- Social pressure exerted by residents.
- Enforcement of by-laws and acts (manual emptiers are aware that they can be reported).
- If the facility is at a relatively short distance.
- If there are no alternative dumping sites.
- The manual emptier has an interest to keep its partnership with the WSP.

The services provided by the emptier are key for the successful programme implementation when UDDTs have been constructed in a project area. If the services are not provided properly and/or the content is not disposed of at the designated areas, the programme is likely to fail (as seen in the ROSA project). Therefore a lot of efforts have to be put on the relationship and incentives for the manual emptier during the pilot phase and the business model needs special attention. In fact, there is not only one business model for emptiers. Business models could focus on:

- Collection, transport and delivery at treatment plant only,
- Collection, transport, delivery and re-use (sale), or
- Collection, transport, delivery, treatment and reuse.

At this stage, the most common version – collection, transport and delivery at the treatment facility – will be discussed in detail only. Business models depend on the local circumstances. If a local market for soil conditioner exists, the sale of human waste to treatment facilities could become a core element of the revenue stream of the emptier's business model.

Table 15 - Business Model Canvas for Emptier

<table>
<tr><th>KEY PARTNERS</th><th>KEY ACTIVITIES</th><th>VALUE PROPOSITION</th><th>CUSTOMER RELATIONSHIPS</th><th>CUSTOMER SEGMENTS</th></tr>
<tr><td rowspan="2">WSP</td><td>Emptying toilets,
Cleaning toilets
Maintaining toilets
Proper disposal of human waste</td><td rowspan="2">Improved sanitation experience
Improved health</td><td>Personal contact and automated through WSP</td><td rowspan="2">Households, WSP</td></tr>
<tr><td>KEY RESOURCES</td><td>CHANNELS</td></tr>
</table>

	SafiSan Certification Knowledge on emptying and cleaning techniques		Mouth-to-mouth and through the WSP	
COST STRUCTURE		**REVENUE STREAMS**		
Labour and material		One-time fees for emptying, monthly/weekly fees for cleaning, maintenance fees		

Key elements of this model are:

- **Closed market / limited competition**: only certified emptiers are supposed to empty the toilets.
- **Negotiable price**: the price for the service delivery will be negotiated between the customer and the emptier.
- **Room for many other services**: the cleaning of toilets could be promoted as one service done by emptiers. Customer could pay a monthly fee to emptier for cleaning once a week. The same applies for maintenance services for example.
- **Marketing of services**: following the artisans' model, service marketing will be partly done through the WSP.

5.5.4 Proposed Management Model for WSPs

The following model is describing a management model for the WSP on how to handle all different actors within the sanitation chain. In a case a sanitation agent would be contracted, the management activities would be reduced to monitoring. The following steps are referring to Figure 10.

1. The emptying process is done by certified emptiers. They charge the customer for emptying the toilet. In addition they may provide cleaning or maintenance services.
2. The transportation costs will be covered by the emptier. They have an interest in delivering the content of the toilet to the treatment plant because of being afraid of losing certification by wrong-doing and in case there is an established market for fertilizer and/or soil conditioner, they could expect a small additional income when dropping "high quality" waste at the treatment facility.
3. The DTF operator is an individual operator contracted by the WSP. He could either receive a monthly fee or is making a living through income generating activities: producing soil conditioner/fertilizer (where applicable), running a PSF (where available) or selling of other relevant goods.
4. The treated sludge will be sold to local farmers or other interested parties. The sale is done by the treatment operator and the revenue stays either with the operator or with the WSP.

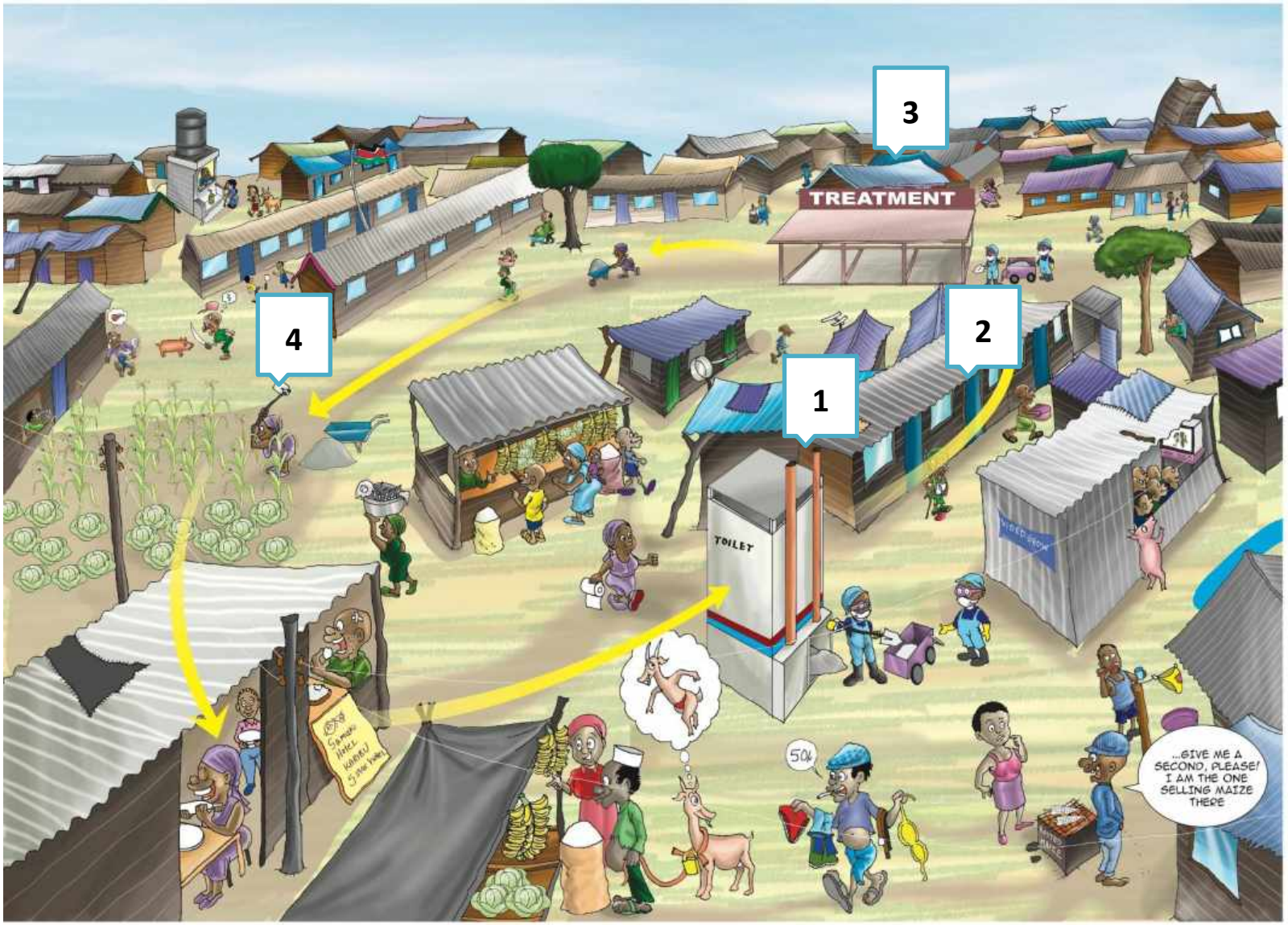

Figure 10 - Proposed Sanitation Loop Management

6. Recommendation & Outlook

This concept paper has been prepared in order to develop a business and finance model for the implementation of UBSUP. In order to successfully implement the model, a number of tools and supporting instruments have been prepared based on this document. They are outlined in the following chapter.

The outlined model has been tested and improved during UBSUP pilot phase based on the outcomes. The tools are outlined in the following table. In the future additional tools may be identified.

Table 16 - Needed UBSUP Tools

Phase.	Description	Identified Tools
1	Launch of Call for Proposal	• Guidelines on UBSUP project applications • Updated WSTF Call for Proposal (CfP) templates • Updated WSTF CfP advertisement
2	Collection of data by the WSP	• Contact list of people interested in SafiSan toilets • Tool for demand calculation (e.g. list of interested landlords combined with area population and sanitation service level information) • Draft Memorandum of Understanding (MoU) for manual emptier • Draft MoU for local artisans • Guidelines on use of MajiData and other tools for proposal preparation
3	Preparation of project proposals by WSPs and WSBs	• UBSUP application from • Budget calculation • Standard budget with defined number of PCI / demonstration toilets • List of indicators to define successful project
4	Evaluation of proposals by the WSTF	• List of evaluation criteria • Updated WSTF internal documents and procedures
5	Approval and awarding of projects by the WSTF	• Updated WSTF financing agreements • Sample contracts for WSPs • Awarding calculation
6	Project implementation by the WSP and WSB	• Toilet application form • Toilet registration form & data collection sheet • Application procedures • Sample contracts for artisans • Sample list of trained manual emptier and artisans • Toilet information sheets for WSPs and social animators • WSP approval sheet • Certification for manual emptiers • Training material • Template for commissioning of toilets • UBSUP mainstreaming package • Final inspection and handover list • PCI disbursement request
7	Operation of the project by the WSP	• Instructions for the toilet use • Business model emptier • Business model artisans • SafiSan Customer Management System (SafisApp) • Template receipts for toilet emptying • Operation manual DTF • Business model sanitation agent • Business model on reuse • Concept on manual emptier monitoring • Monthly report templates

8	Evaluation of the project by the WSTF or by external evaluators	• updated monitoring sheets • procedure for UPC-IS and MajiData monitoring

This list may not be exhaustive. Additional tools and documents may be identified during piloting and recommended tools may become obsolete.