ISO 9001:2008 CERTIFIED

Water Sector Trust Fund

Special Report for the Bill and Melinda Gates Foundation

UBSUP Pilot Phase and the Finalization of the Up-scaling Concept

Concept Development, Testing, Piloting, Progress & Challenges

Illustration of the sanitation value chain

January 2014

Version 2.0

Last update: August 2017

Table of Contents

Water Sector Trust Fund

1. Executive Summary

This is a special report on the implementation of the pilot Up-scaling Basic Sanitation for the Urban Poor (UBSUP) program in three Water Service Providers (WSPs) and preparatory actions for the up-scaling phase. It covers the activities undertaken during the period. It also covers the progress, achievements, challenges and lessons learnt during the UBSUP pilot program in the period from July 2013 to December 2013. The last chapter provides an outlook towards the up-scaling phase starting February 2014.

UBSUP is a five year program which aims at improving the living conditions of the urban poor by offering access to sustainable sanitation for residents in urban low income areas in Kenya.

UBSUP is being implemented jointly by WSTF and GIZ in a bi-partite model. WSTF is the principal implementer and GIZ is the key provider of technical support. The outline of the UBSUP concept and a majority of most tools were finalized before the start of the UBSUP pilot phase. One of the objectives of the pilot phase was to develop, together with the Water Service Providers (WSPs), residents and other local stakeholders (e.g. the local Public Health Departments of the Ministry of Health), the remaining tools needed for the scaling up of plot and household level sanitation. The UBSUP study had a direct impact upon the development of (up-scaling) tools that were used and tested during the pilot phase. The UBSUP study also informed the development of new tools during the pilot phase. In addition, a sanitation champions meeting was held in April 2013, to bring in the existing knowledge and best practices among sanitation stakeholders in Kenya.

Major progress has been achieved during the pilot phase in testing the social marketing concept, the technical options and the business and financial model.

In 2010, fundamental changes that impacted on legal and institutional framework in the water sector were introduced with the promulgation of the Constitution of Kenya (CoK 2010). Under the Bill of Rights, Article 43 b, it is stated that every person has the right to accessible and adequate housing and reasonable standards of sanitation. In addition, Article 43d states that every person has the right to clean and safe water in adequate quantities. UBSUP recognizes and keeps with the provisions of CoK 2010 and other key statutes that ensure the rights of every citizen including the marginalized and underserved. As a state agent, WSTF is obliged to ensure the gradual achievement of human rights to water and sanitation especially for people in the low income areas (pro-poor focus) based on human rights approaches to water and sanitation.

UBSUP has aligned itself to the water sector legal framework and continues to engage the Water service regulator (WASREB) in order to overcome the remaining challenges with regard to regulation of on-site sanitation systems in Kenya. This involves also the engagement of the other key state departments involved in sanitation like the Ministry of health.

This document further outlines the main achievements made by UBSUP, challenges and lessons learnt during testing and piloting. The issues discussed include the support provided

by WSTF and GIZ, preparatory activities, creation of sanitation units within the WSP, identification of project areas, preparation and signing of financing contracts, recruitment of WSTF field monitors and social animators, establishment and training project task teams, training of local artisans, implementation of social marketing and customer registration. Statistics of progress on construction of toilet facilities and site acquisition for decentralized treatment facilities (DTFs) are also described. The last chapter of the document outlines the up-scaling plans, general challenges and major lessons learnt.

2. Introduction

This report is different from the ordinary reports as required by the program agreement and is meant to allow the partners to follow, monitor, and keep informed about and to be able to inform others about the developments of the program. It highlights key processes of up-scaling sanitation and key lessons for up-scaling in low income urban areas.

UBSUP program aims at improving the living and health conditions of the urban poor in Kenya through enhanced access to basic sanitation and safe water. It targets the population of the urban sanitation hotspots; the informal and formal low income urban settlements. The program intends to reach 800,000 people with safe sanitation and up to 200,000 people with safe water. The program will enable residents of low income urban areas to apply, through improved access to adequate sanitation and through awareness creation and sensitization, sound hygiene practices. This special report highlights the progress of UBSUP detailing the specific components of the testing and piloting phase.

2.1 UBSUP Program Objectives

The main objectives of the program are:

- 600,000 – 1,000,000 additional people living in urban low income areas have adequate access to basic sanitation allowing for improved hygiene practices.
- A monitoring system for tracking access to safe water and basic sanitation facilities in urban low income area dwellers is in place and accessible to the public (i.e. an online database).
- Sector institutions, civil society organizations and small-scale private entrepreneurs have the capacity to actively participate in the provision of basic sanitation to the urban low income areas and cooperation with research institutes results in improved sanitation options.
- A sanitation up-scaling concept in line with the sector reforms ensures sustainable use of facilities and is used for the further development of the sub-sector.
- The program is funded by both Bill and Melinda Gates Foundation (BMGF) KfW and is being implemented by WSTF under technical assistance from GIZ.

2.2 Program Management

UBSUP is currently being implemented jointly by WSTF and GIZ in a bi-partite model which recognizes WSTF as the principal implementer and GIZ as the key provider of technical support. The program is thus coordinated from WSTF with the overall implementation being

steered by a team comprising officers from WSTF and GIZ. An organogram for the implementation of UBSUP is contained in the UBSUP Concept Development DVD ROM.
The key features of the implementation model are the uniqueness of the urban household sanitation up-scaling process especially in a diverse socio-cultural context which requires diverse expertise input especially at the concept development stage.

2.3 Organization of the Report

This document is organized as follows:

- **Chapter 3** addresses the concept development
- **Chapter 4** addresses the UBSUP testing phase
- **Chapter 5** addresses the UBSUP pilot phase
- **Chapter 6** addresses the preparatory works and planned actions for scaling up
- **Chapter 7** addresses the challenges and lesson learnt.

This document also contains a:

- **List of Acronyms**
- **List of References and Data Sources Used**

3. Concept Development and Finalization

3.1 Introduction

The outline of the UBSUP concept and a majority of most tools were finalized before the start of the UBSUP pilot phase. One of the objectives of the pilot phase was to develop, together with the Water Service Providers (WSPs), residents and other local stakeholders (e.g. the local Public Health Departments of the Ministry of Health), the remaining tools needed for the scaling up of plot and household level sanitation. The pilot projects that were implemented with 3 WSPs indeed have resulted in numerous improvements in existing tools, approaches and technical drawings and in the development and testing of most of the remaining tools. The collection of tools have been categorized and placed into 6 modules which together constitute the "Toolkit for Urban Sanitation Projects".[1]

3.1.1 Using the Study

During the first stage of the UBSUP program the team carried out a large-scale sanitation study in 11 towns.[2] Much of the data collected and many of the conclusions that could be drawn on the basis of the quantitative and qualitative findings have been to the benefit of the development of the UBSUP concept. Using the study, the UBSUP team was able to link certain observations made or challenges faced during the implementation of the pilot

[1] This toolkit consists of 2 main parts: one part only deals with urban public sanitation projects (e.g. public sanitation facilities), whereas the second part, which was developed within the framework of the UBSUP programme, focuses on plot- and household-level sanitation.

[2] The study is included in the Toolkit for Urban Sanitation Projects.

projects to the wider Kenyan sanitation context. For instance, data concerning sanitation preferences existing within the various religious communities or the relationships between landlords and their tenants were used during the pilot to develop tailor-made sanitation and social marketing approaches. In Nakuru and Embu, this has resulted in the development and introduction of pour flush systems linked to existing sewer lines.

In other words, the study had a direct impact upon the development of (up-scaling) tools that were used and tested during the pilot phase. The study also informed the development of new tools during the pilot phase.

An analysis of a sanitation project (ROSA Project) implemented in Nakuru (captured in a separate study report which is included in the Toolkit) a number of years ago clearly shows the short-comings of single vault toilets and the misuse of subsidies if these are provided to landlords (or artisans) before construction. This analysis has guided the development of the UBSUP business & financing model and the choice of technologies to be implemented in the sanitation value chain.

3.1.2 Using the Outcomes of the Sanitation Champions Meeting

Recognizing the fact that sanitation projects have environmental and social impacts, there was need to consult a wider range of stakeholders actively involved in sanitation projects implementation to share experiences. A workshop bringing together a number of sanitation experts (champions) was held on 15th April 2013 to create understanding about UBSUP and to learn how these external parties view the project and its risks, impacts, opportunities, and mitigation measures. Listening to stakeholder concerns and feedback can be a valuable source of information that can improve project design and outcomes and help identify and control external risks. It can also form the basis for future collaboration and partnerships. For stakeholders, a company's consultation process is an opportunity to get information, as well as to educate company staff about the local context in which the UBSUP project will take place, to raise issues and concerns, ask questions, and potentially help shape the project by making suggestions to consider and respond to.

To this end, the consultations including the sanitation champions meeting have provided information on technical options, financing mechanisms, business opportunities and sanitation marketing and sensitization approaches that have greatly leveraged the concept development and the piloting of UBSUP.

The champions meeting also facilitated knowledge sharing and also recommended actions to implement policy and institutional reforms, including harmonizing regulatory systems and ratifying frameworks to create a suitable environment for investment and efficient operations of sanitation throughout the entire value chain. This is currently being taken further through engagements with the Water Service Regulatory Board (WASREB) and the public health offices at county level.

3.2 Progress Made

This chapter highlights the progress made on several key components of the program.

3.2.1 The Social Marketing Concept & Program

During the pilot phase, the overall social marketing approach and concept as well as a

number of key tools were tested and improved:

- The (multi-stakeholder) Project Task Team approach.
- The training program for the Social Animators.
- The organization of public meetings (*barazas*) at community level.
- The organization of SafiSan[3] Mini Fairs.
- Plot and household (social marketing) visits.

Other tools, such as scripts for sanitation messages (sensitization & social marketing) for local radio stations were not tested as the Project Task Teams considered using other media, such as PA systems (megaphones) and posters which were more cost effective.

An important addition, which was developed during the pilot phase, is the role of the social animators during the early stages of toilet use. The pilot projects revealed that the users prefer a face-to-face approach (in addition to an illustrated toilet manual) when it comes to knowing how a toilet works and how it should be maintained, emptied and repaired.

3.2.2 The Business & Financing Model

The Business and Financing Model for UBSUP has been highlighted in UBSUP Document No. 12 and is included in the toolkit. The document includes a risk analysis, justifications and a theoretical outline of the up-scaling of the UBSUP program. The models presented are being tested and modified during the pilot phase. At the end of the pilot phase, all changes and lessons learnt will be incorporated into the business and financing model document. This document will then be a major column of the up-scaling of UBSUP in 2014.

3.2.2.1 The Business Models

The business models developed in document no. 12 provide guidance on how stakeholders of the UBSUP program should run and operate sanitation infrastructures and services which are part of the sanitation chain. The document, for instance, describes how a Water Service Provider (WSP) could outsource parts of (or the full) sanitation chain. It further gives examples on how a treatment facility can be operated in a sustainable way.

The models presented so far are mainly based on theoretical considerations. The final document, however, will include concrete examples acquired from the pilot phase. At this stage of the pilot phase, several different implementation models are already emerging from the different pilot areas.

3.2.2.2 The Financing Model

The Financing Model mainly describes how the subsidy moves from the Water Services Trust Fund to the final beneficiary. Again, experiences drawn from the pilot phase are already massively changing the model developed in document 12. Whereas the document suggested making the artisan the recipient of the subsidy, experiences from the field proposes to

[3] **SafiSan** – and not UBSUP - is the name of the project and the toilets used at WSP level. “Safi” means clean in Kiswahili.

rather disburse the subsidy to the landlords. In addition, it becomes obvious that WSPs should be given a certain amount of (controlled) flexibility when it comes to implementation models as local circumstances are different, WSP capacities are diverse and financial abilities of landlords are varying. Therefore, the UBSUP team is already testing different financing models in the three pilot zones. Embu WSP, for instance, requested to be allowed to implement a so-called "turnkey" solution for the construction and financing of infrastructures. In this specific case, the model foresees the WSP to be responsible for the construction of the facilities.

The customer pays a fixed (subsidized) fee to the WSP and within a defined timeframe; the WSP constructs the facility and hands it over to the customer. In this model, the WSP will be the recipient of the subsidy. This specific model is an interesting option which may boost demand since the financial risk of the subsidy is cater by the WSP. The "Turnkey"-Solution model, however, needs a certain level of capacity of the WSP and may only be eligible for a very limited number of providers during the up-scaling of UBSUP. The updated document no. 12 will elaborate this and other models in detail.

3.2.3 Technical Options Developed: Toilets

The UBSUP program aims at improving the living and health conditions of the urban poor in Kenya through enhanced access to basic sanitation and safe water. One of the first steps in developing an up-scaling concept for household and plot level sanitation is to identify suitable sanitation systems that can be promoted. To compile respective sanitation systems it is important to establish a minimum standard for the provision of facilities and a minimum service level for the safe disposal (and reuse) of human excreta, sludge and effluent that reflect the long-term vision of the Kenyan Government for providing basic sanitation services to its citizens. Since the sanitation challenges can not only be solved by development of front end solutions (user interfaces), UBSUP has approached the challenges holistically. By doing so the entire sanitation chain has been critically looked at and for the various weaker links in the chain, different options have been developed. These options offer a solution for the newly constructed sanitation facilities and also address sludge management for the already existing facilities.

3.2.3.1 Toilets

During a risk analysis of the various possible options for dry toilets, it was decided to further develop the Urine Diverting Dry Toilets (UDDTs). Although UBSUP mainly promotes the dissemination of UDDTs, under specific conditions such as the availability of water, wet sanitation systems such as pour and cistern flush will also be adopted by the program

3.2.3.2 Dry Toilets

The designed UBSUP UDDT consists of the following basic elements:

- Urine diversion toilet seat or squatting pan (squatting or sitting);
- Double faeces collection chambers (double vault)
- Urine piping leading from the toilet to a soak way, collection container or drip irrigation system;
- Ventilation pipe from the collection chamber;

- Roofing(with/without rainwater harvesting system)
- Hand washing facility;
- Toilet superstructure.

Assuming that the toilets are used properly and by an average maximum of 10 persons per day, the size of the vault guarantees a minimum storage time of faeces of 6 months.

Depending on local circumstances and personal preference, the vault can be built above or underground. The latter offering an easy access to the facility since no steps has to be climbed.

The superstructures are basically constructed using local materials, ranging from burnt bricks, quarry stones to corrugated iron sheets.

Emptying can be done by the users/owners or by private service providers depending on the financial ability and preference of the users/owners. The urine and grey water from the hand washing facility is diverted to a soak away or to a separate underground container. It can be used for kitchen gardening, horticulture (ornamentals) or seedlings production (agro forestry) as liquid fertilizer. Since proper use of UDDTs is of utmost importance for treatment efficiency, accompanying training and instruction materials on use and maintenance have been developed.

3.2.3.3 Wet Toilets

There are areas where water supply connection exists with/or without sewer network. The beneficiaries in such areas who can afford flush toilets will be allowed to choose either pour flush or water saving cistern flush systems. These will be connected to the sewer lines (where existing) or septic tanks. UBSUP will support the Water Service Providers (WSPs) in improving the manual and exhauster emptying/transportation services within the LIAs through capacity building of the private service providers. The water saving cisterns/toilets will be promoted to reduce amount of water used for flushing.

3.2.4 Technical Options Developed: Decentralized Treatment Facilities (DTF)

UBSUP assists WSPs to develop facilities which can treat sludge from dry urine separating toilets, pit latrines, septic tanks and wet systems (pour flush, cistern flush). For treatment of waste coming from the different type of toilets the Decentralized Treatment Facility (DTF) was developed. In a DTF both waste from wet- and dry toilets can be (further) treated. In Figure 1 the process flow in the DTF is depicted.

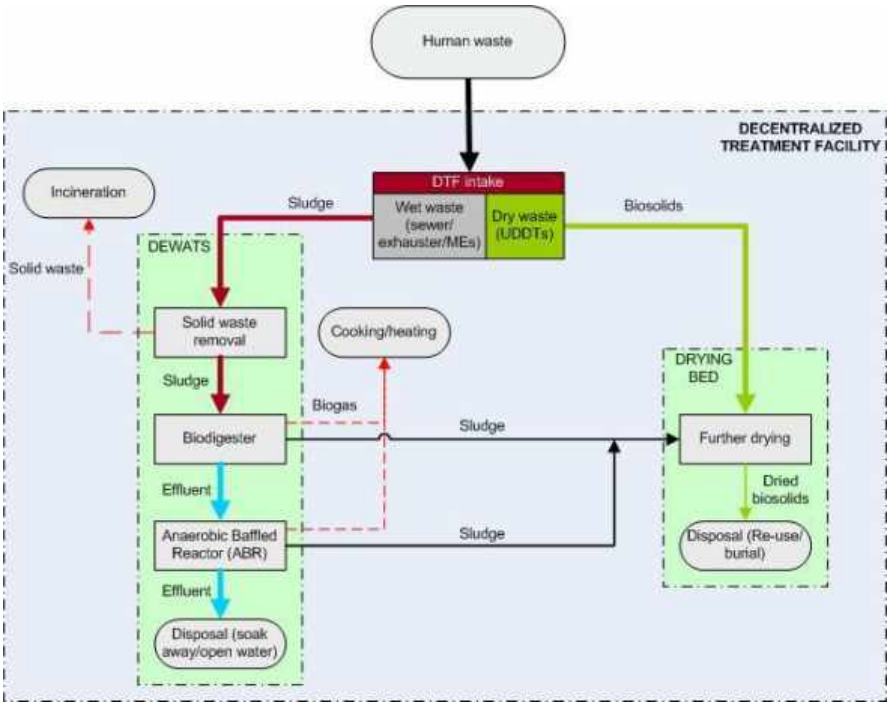


Figure 1: Process flow of human waste in the Decentralized Treatment Facility

3.2.5 Planning Improved Sanitation: The Virtual Sanitation Tool (VST)

In order to come up with appropriate sanitation solutions in low income areas, the Virtual Sanitation Tool (VST) is currently under development. The VST is an approach in which an Android based application (software tool) will be used. In interactive sessions with various stakeholders in LIAs, the VST will enable the following:

- Collect data on the current and preferred/feasible sanitation situation.
- Develop a list with most appropriate technical options (toilet facilities and service delivery)
- An analysis of the anticipated market for the mentioned technical options
- Identification of potential efficiency gains in the operation of existing infrastructure through improving service delivery
- An investment plan for the water service (WSPs) focused on the urban low income areas (LIA) in their service area.

The VST is a tool which can assist the WSP during the preparation of the project proposal for the WSTF or for other partners. It can also be used during the project preparation and implementation phase. And if data collection (on progress made) becomes an integral part of the VST it can also be used to track progress and to assess impact.VST data will be collected from existing databases such as WARIS and MajiData but also new data will have to be collected.

3.3 UBSUP and Sector Alignment

The UBSUP program is not a stand-alone initiative. In order to maximize the impact,

collaborations with key sector institutions have been initiated. This chapter describes the activities being done with the most relevant players in the sector.

3.3.1 Engagement with the Regulator (WASREB)

Several meetings were held with the sector regulator - WASREB - in additional to a number of more informal discussions. The main topics discussed during the meetings were:

- The Sanitation Levy Study which is being implemented by the Regulator.
- The Water Bill 2013 in relation to proposed sanitation surcharges.
- The role of the County and Public Health Officers.

The discussions with the Regulator are of key importance to the up-scaling of onsite sanitation. Although many, if not most, WSPs have shown a keen interest in getting engaged in pro-poor onsite sanitation, they question they tend to ask is; "what's in it for us, the provider?" Fortunately, the Regulator is in a position to develop "incentives" for WSPs that are developing pro-poor sanitation interventions. There are several questions that have to be asked and answered:

- Who should pay sanitation surcharges? Only WSP customers with a sewer connection or should all customers pay for the overall improvement of sanitation (onsite and offsite)
- How can revenue created with these levies and be made to strengthen the entire sanitation value chain?

Further meetings with the Regulator are planned in June 2014.

3.3.2 Engagement with the Ministry of Health

One of the topics discussed with the Regulator was the (current and potential) role of the Public Health Officer (PHO) within the framework of sanitation interventions.

The pilot projects (and the project implemented in Nakuru in particular) have shown that a close collaboration with the PHO can result in higher adoption rates. In Nakuru the PHO (who is a key member of the Project Task Team) , in addition to sensitizing residents of low income areas on the need for improved sanitation and the public health risks associated with poor sanitation, also enforces the Public Health acts and sanitation standards. In fact, working with the PHO has resulted in the following set of PHO activities for up-scaling:

- Enforcement of the Public Health act and local sanitation by-laws and standards.
- Sites for toilets (within plots) are identified or have to be approved by the PHO.
- The PHO also determines the number of toilet units that have to be built in order to achieve sanitation coverage (one unit should not be used by more than 10 persons).
- The PHO participates in the training of the Social Animators.
- The PHO participates in awareness/sensitization activities at community-level.

3.4 UBSUP and Constitution Alignment

Following the rational of UBSUP collaborating with relevant sector institutions, the program

is as well aligned to the relevant policies. The key activities related to that topic are highlighted below.

3.4.1 The Constitution and Sanitation

In 2010, fundamental changes that impacted on legal and institutional framework in the water sector were introduced with the promulgation of the Constitution of Kenya in 2010 (CoK 2010). Under the Bill of Rights, Article 43 b, it is stated that every person has the right to accessible and adequate housing and reasonable standards of sanitation. UBSUP recognizes and keeps with the provisions of CoK 2010 and other key statutes that ensure the rights of every citizen including the marginalized and underserved. As a state agent, WSTF is obliged to ensure the gradual achievement of human rights to water and sanitation especially for people in the low income areas (pro-poor focus) based on human rights approaches to water and sanitation.

3.4.2 Engagement with the County Governments

The constitution has further allocated the provision of water and sanitation services to the county governments. UBSUP in collaboration with other key stakeholders are in the process of using the opportunity to reach out to the county offices including all the departments relevant to the improvement of sanitation services such as the department of health through the public health officers, the department of environment and the county engineers office to speed up the uptake of the program. So far, the support by the 3 counties Embu, Nakuru and Kajiado, where the 3 WSPs are located has been vast. The county offices have been able to approve the technical options being implemented and have offered officers to support UBSUP activities on the ground. WSTF through their officers have discussed sanitation progress, challenges and emerging issues with regard to sector transition in the new dispensation based on the Water Sector Transition Plan, as a reflection of the harmonized legal and institutional framework, to the Constitution of Kenya 2010.

3.5 Main achievements: A concept for Project Implementation

The UBSUP concept that is now nearly ready for up-scaling is firmly rooted in the UBSUP study, the testing phase and the pilot phase. It has also greatly benefitted from the experiences acquired by other stakeholders (BMGF, Sanergy, ROSA project, Umande, etc.) and with other sanitation programs and projects. The UBSUP concept will enable WSPs to develop, implement and sustainably operate pro-poor sanitation projects that consider (cover) the entire sanitation value chain. In other words, the concept contains both:

- The approaches and tools required by a WSP to implement a single pro-poor sanitation project. This part of the concept is contained in the Toolkit which will be available online[4] and on a DVD-ROM which will be provided to all WSPs and other stakeholders.
- The procedures and tools needed by the Water Services Trust Fund to launch its 1st

[4] Accessible through the WSTF website; www.wstf.go.ke

Call for Household & Plot-Level Sanitation Projects and up-scale pro-poor sanitation.[5] These tools and procedures will be embedded in the WSTF Procedures & Information Document which will also be available online.

3.5.1 People:

The UBSUP concept has a people focus as it emphasizes the need for training, sensitization, social marketing and enforcement of standards and Acts. The concept places the implementation of the SafiSan/ UBSUP projects firmly in the hands of the WSP which will be able to implement its project with local stakeholders – PHO, residents, Area Chief, local NGOs, opinion leaders (etc.) by bringing them together in the Project Task Team (PTT).

3.5.2 Hardware

The UBSUP concept also has a hardware focus as it contains all the necessary technical drawings, Bills of Quantities (BoQs), pictures (of SafiSan toilets), manuals and training program needed to cover the entire technical components of the sanitation value chain.

3.5.3 Software Accompanying Measures

A main emphasis of the Toolkit is on the "software" which is needed to implement the projects; manuals, posters, programs, cartoons, scripts, etc. The UPC/UBSUP team has also initiated the development of 2 computer software programs:

- The Virtual Sanitation Tool (see section 3.2.5)
- The WSTF Android[6] tablet application.

This application will be used to collect detailed information of the existence, use and operation of all UBSUP (and UPC) project intervention.

3.6 Challenges & Lessons Learnt

The development of the UBSUP concept had to deal with a number of challenges:

- A very wide variety of issues that had to be considered and covered, ranging from sector reforms, alignment to a new constitution and devolution, public health, toilet (customer-aided) design and testing, social marketing, development of demand, habitation patterns and landownership, planning for improved sanitation, data collection, progress reporting, etc. Bringing together all these issues in a comprehensible and logical approach required a lot of hard work and coordination. If we only consider the upcoming new Act and the recent establishment of a devolved Government, we can only conclude that if the UBSUP concept is to remain dynamic and able to respond to change it will continue to require revisions and additions.
- The delayed toilet uptake has delayed the finalization of a number of tools during the pilot phase by the UBSUP team. The fact that the spread (adoption) of improved

[5] A number of tools, such as the project proposal appraisl tools, still have to be finalised

[6] Android is still the market leader in Kenya when it comes to mobile phone and table OS.

sanitation depends on demand at household- and plot-level has introduced a number of unknowns during the implementation of the pilot projects. How long will it take for demand to develop after social marketing? Will the number of (trained) artisans be sufficient to meet demand once it develops? What will trigger demand; the subsidy, the price of a toilet, wanting a better toilet, enforcement, peer pressure, sensitization, social marketing... or all of the above? During the period following the initial social marketing program, the uptake was still low. In Nakuru the uptake increased once residents and landlords in particular developed a trust in the WSP knowing that subsidies are paid as long as the toilet is complete and meets the standards. The support enforcement and sensitization) provided by the PHO also proved to be crucial.

- One of the lessons learnt is that already during the early stages of a UBSUP/SafiSan project the assessment and acquisition of sites for DTFs has to be initiated. Landownership, land rights, user patterns and relations in many urban areas and within urban slums in particular are often complex and not very transparent. In Embu, the search for an appropriate site seemed to be successful and the PTT was confident that the right spot had been identified as all stakeholders had been involved only to find out that the land was actually owned by an individual who had taken the County to court over a land expropriation dispute. This has prevented the UBSUP team from testing the construction and operation of DTFs, forcing the team to appraise the operation of already existing (non-UBSUP) DTFs.

3.7 Remaining Activities

3.7.1 The Toolkit for Urban Sanitation Project (Online)

The toolkit will be put online before the middle of February 2014. The DVD-ROM version will appear later in May when the VST and the Android application are ready. The advantage of an online toolkit is that files and tools can be added, modified or removed. Like the UPC "Toolkit for Urban Water Supply Projects" (which is already online), the sanitation toolkit consists of 6 modules:

- Introduction to the Toolkit & SafiSan
- Module 1: Application Form
- Module 2: Data Collection
- Module 3: Project Implementation
- Module 4: Operation of Onsite sanitation
- Module 5: Project Evaluation
- Module 6: Design, Technical Drawings, BoQ's

3.7.2 On-going Collaboration & Networking

Sustainable scaling up of sanitation among the urban poor requires cooperation between sector players. This is to enhance innovations and sharing of lessons learnt through sharing of good practices, strengthening of channels for data sharing and other information. UBSUP

endeavors in not only scaling up sanitation but also proposing standards after testing of the technical options being pioneered by other sector players both within Kenya and across the borders. In the past one year, UBSUP has consulted on the possibility of collaborating with other institutions. Presently, WSTF/GIZ is in the process of initiating technology exchange activities with Biofil Limited in Ghana. This is after Biofil Limited in Ghana presented an innovative sanitation technology which has the potential of addressing the challenges that come along the sanitation service delivery chain. There have been official communications between WSTF/GIZ and Biofil teams and the UBSUP team is developing a collaboration concept to be shared by BMGF/KfW before adoption for implementation. Other institutions that have emerged as potential partners include Vitens Evides in Nakuru and Sanergy in Nairobi.

Mechanisms such as the sharing of data to improve technologies, financing and marketing approaches will enable the policy development, standardization and impact monitoring. Currently UBSUP team is consulting with water services regulatory board (WASREB) on the possibility of creating incentive streams for WSPs for them to engage on on-site sanitation. WSTF also intend to reach out to a broader community through a variety of fora including policy discussions, workshops involving a wide range of stakeholders and public consultations on sanitation best practices.

4. UBSUP Testing Phase

4.1 Progress Made

During the UBSUP testing phase, 17 UDDTs were constructed in Embulbul, Kware, Gichagi, Matasia and Kisumu Ndogo LIAs through Oloolaiser Water and Sewerage Company (WSP located in Kajiado County). The UBSUP testing phase primarily looked into analyzing the acceptability and the use of the double vault urine diversion facility on a household level. In addition, different materials were used for the construction of the sanitation facilities to determine acceptability, costs of construction and transportation.

During the testing phase, a number of activities were carried out to understand the user's perception and acceptance of the UDDTs. The activities involved:

- Monitoring proper usage of the toilet after training (involving also solid waste management)
- The rate of filling of the vaults
- Social acceptability of UDDT technology
- Understanding the sludge disposal method when the toilets are full
- Monitoring the cost of materials, their local availability and ease of transportation to the construction site
- Availability of skilled artisans for future up-scaling

4.2 Main Achievements

Majority of the beneficiaries were able to use the UDDT after training. Through social

marketing, the beneficiaries were able to accept and use the toilets. The project was able to identify the materials that were not preferred by the beneficiaries and were not sustainable for up-scaling.

We also identified that the prefabricated facilities did not offer a cheaper solution than constructing at the site, since the cost of producing prefabricated parts combined with transport to the site is still very high in Kenya.

The UBSUP testing phase allowed the team to come up with a combination of materials which produced the cheapest options currently being used in the 3 pilot areas. These options allowed the most disadvantaged people, to pay for the facilities.

4.3 Challenges & Recommendations

Within the testing phase, the UBSUP team was able to establish the following factors after carrying out a customer user aided design analysis:

- Magnesium oxide coated panels as a construction material, are not suitable and sustainable. They should not be further used in UBSUP. The panels were prone to dirt, were costly and were affected by the weather conditions easily (peeling off of the coating) Due to this, it shall not be further used in UBSUP
- All toilets to be used by elderly or disabled people should be adapted appropriately within the local areas without unnecessarily increasing the costs exorbitantly.
- Roof catchment should be incorporated to give additional water for hand washing
- Steel stairs were found not to be sustainable because they are expensive.
- During the testing phase, it was observed in some of the facilities that more than 10 people in the plot were accessing one toilet. Strictly one toilet is designed for a maximum use of 10 people due to the size of the vaults and as per the designs. In order to avoid this higher usage in the future, the county public health department will enforce the number of toilets to be built per plot depending on the number of people residing in the plot.
- Vaults should always be accessible during the emptying. The artisan should take this into consideration when setting out the toilet foundation since many plots in LIAs are narrow
- It is important for the artisans to be trained on-the-job on the construction of UDDTs before they are released in the market. This will ensure proper construction as the UDDT technology is relatively new in many LIAs.
- Further details on the Customer Aided User Design approach that was used to understand the needs of the beneficiaries can be found in the UBSUP toolkit[7]

4.4 Remaining Activities

The remaining activities include the construction of DTFs and strengthening the sanitation services such as exhauster and manual emptying services, treatment, reuse and disposal components of the sanitation value chain within the respective low income areas.

[7] Appraisal of the testing toilets in Ongata Rongai

5. The UBSUP Pilot Phase

The main objectives the UBSUP program intended to achieve with the UBSUP Preparatory Study and with the UBSUP pilot projects, which were carried out with Embu, Nakuru and Oloolaiser Water Company are to:

1. Assess the commitment and capacities of WSPs as far as onsite sanitation is concerned.
2. Establish whether it is possible to bring together local stakeholders and make them successfully implement a sanitation project?
3. Find out whether subsidized toilets can be sold (is there a market for improved sanitation or are toilets simply not a priority?).
4. Further develop the toolkit together with the WSP, residents and other local stakeholders (including the Social Animators and the Field Monitors of the WSTF).
5. Know if a Customer-Aided Design (CuAD) approach can be used for the development of better toilets (the improvement of existing improved toilets).
6. Assess if WSPs are able to operate the entire sanitation chain (from toilet to transport to treatment).

In this chapter we intend to show to what extent these objectives have been met.

5.1 Setup

The following sub-chapters describe the setup and different areas of supports provided by the key stakeholders.

5.1.1 Support Provided by the WSTF

The UBSUP program is firmly anchored on the UPC window and is being managed by the Programme Officer-Sanitation who reports to UPC team leader. The program is also supported by other program officers in UPC including a Socio-economist, a Program Engineer and a Senior Accountant. In the field, UBSUP's implementation is supported by field monitors recruited by WSTF.

The Programme Officer – Sanitation is the focal person in the implementation of the programme with the responsibility of coordinating the implementation activities including coordinating the delivery, monitoring and reporting of UBSUP results by ensuring that programme receive effective and timely technical and management support to maximize WSTF's contribution and deliver the programme targets in line with the programme strategies and priorities. These also include reporting, preparation of workplans and financial projections among others. The other programme officers in UPC support the roles of the programme officer-sanitation.

The Team Leader, UPC is responsible for the integration of UBSUP with the other UPC and the overall supervision of the programme implementation including planning. He also strengthens the programme coordination mechanisms through representation to the WSTF management and reporting all UPC matters including UBSUP to the Chief Executive Officer (CEO), WSTF.

The Senior Accountant, within the Finance Department, manages the programme funds including processing of disbursements to the projects, receiving of the projects financial reports, preparation of workplans, financial projection and preparation of financial reports to the WSTF management and the development partners.

The CEO of WSTF is the head and the chief accounting officer of WSTF, she represents WSTF and plays the overall supervisory and advisory roles to all programmes through the senior managers. She also offers strategic direction to the programmes including UBSUP.

5.1.2 Support Provided by GIZ

The German International Cooperation (GIZ) has been a key stakeholder of UBSUP throughout the development of the program. Apart from concept development and other important tasks of the program, the GIZ team is providing direct operations support to the WSP in the pilot areas. In each of the three pilot zones, one GIZ advisor is directly assisting the WSP in the implementation of UBSUP on a daily basis. Figure 2 displays the organization of the support: In each pilot WSP, a GIZ advisor is permanently based and receives technical backstopping by an international GIZ advisor allocated to the specific pilot zone. The task of the GIZ international advisor is to continuously provide technical backstopping and ensuring continuous information flow between the members in the field and the rest of the team. This does, however, not prevent other UBSUP team members to directly communicate and/or interact with the advisors at the pilot zones. This set-up is rather seen as a way to ensure close cooperation and communication between the team in Nairobi and the advisors in the field.

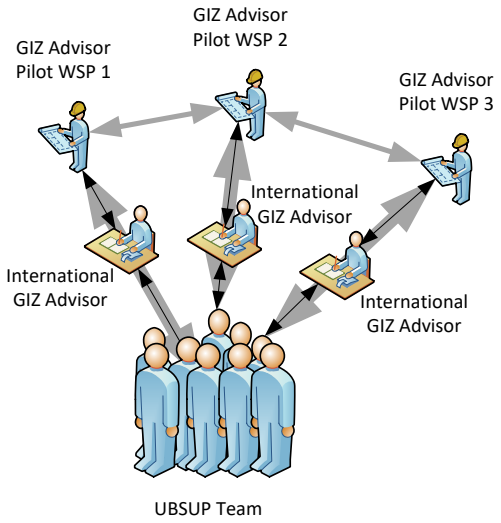


Figure 2 – GIZ Support to Pilot WSPs

This new setup has proven to be successful. Through the GIZ advisors at the WSPs, a quick and direct support is provided. Challenges and needs can be immediately identified and directly tackled. Frequent communication is common among the GIZ advisors in the pilot zones to learn from the challenges encountered in each zone. At the end of the pilot phase, the GIZ advisors at the WSP will change their form of support from advisors to observers. This will ensure that the WSPs are empowered and able to run the implementation on their own. During the up-scaling process, the experience gained by the advisors will be fundamental when training the other WSPs on the implementation of UBSUP. In addition to the technical support outlined in this chapter, GIZ is actively involved in the management of the UBSUP program and its finances.

5.2 Progress Made

At the level of the WSP, the main preparatory activities for the pilot were the following:

- An initial assessment (using a set of criteria and existing and collected data) of potential (suitable) project areas.

- The preparation of an initial project work plan.
- The preparation of a budget and a disbursement request.

These initial activities were followed by the preparation and implementation of the following project activities (see the sections below).

5.2.1 Creation of Sanitation Units within the WSPs

On-site sanitation programs are unique to most WSPs and its implementation demands a special unit with clear understanding of the dynamics characterizing low income areas in Kenya. The sanitation units within the WSPs comprise at least three staff members with backgrounds in technical issues, social and finance. The three pilot WSPs have created sanitation units that are now in charge of UBSUP implementation. The teams have been equipped with complete sanitation desks for all the operations of the program.

There is a significant relationship between performance of program implementation and the sanitation units and part of the discussions with the regulator is formalization of sanitation units within the WSPs structure, policies and procedures.

The main advantage is close monitoring of the implementation of UBSUP on a daily basis thus improving the technical, financial and social performance of the program as the unit focus on the activities of UBSUP as their core business.

5.2.2 Identification of the Project Areas

The process of identifying the project areas was facilitated by UBSUP field staff with support from the sanitation units. Project area identification was participatory and involved a number of stakeholders including public health officers and local communities. The WSPs considered the views of the communities in the process with regard to the following:

- The nature of the settlement whether low-income or not, whether formal or informal.
- The appropriate technology to the project's objectives or local capabilities.
- The adequacy of potential demand for the expected outputs and the comparative advantage of the project in the area.
- The potential of the households to pay for the construction of the toilet

The sanitation teams in the three WSPs then analyzed the information and prioritized the potential project areas within the WSPs areas of jurisdiction and the targeted number of beneficiaries. The final project areas as agreed upon was then fed into the application by the WSPs and submitted to WSTF for funding.

5.2.3 Preparation & Signing of Financing Contracts

The financing agreements were prepared and signed in the month of July 2013. This paved way for the first disbursements to be sent to the WSPs as detailed in the Appendix 1.

5.2.4 Recruitment of the WSTF Field Monitors

UBSUP is being implemented through the support of three categories of Field Monitors. The use of field monitors for project implementation has been successful with the UPC program and has been adopted by UBSUP. There are three categories of field monitors namely,

engineering, social and finance field monitors. Currently, UBSUP has seven field monitors whose recruitment and selection was based on clearly defined criteria based on the individual merits of candidates interviewed and on selection criteria relevant to the responsibilities of the position. The whole process is anchored on the WSTF human resource policy.

5.2.5 Recruitment of the Social Animators

The success of UBSUP significantly depends on the social mobilization of the community as well as marketing the toilets to individual households/landlords in the low income areas. There was therefore need to have social marketers sensitize the community and sell the toilets to the beneficiaries.

After the establishment of the sanitation units within the WSPs, the process of recruiting the social marketers commenced. This activity was undertaken by the sanitation units using an initial terms of reference developed by WSTF. The process of recruitment of the sanitation marketer was supervised by the sanitation officers from the UBSUP team. A total of 17 social marketers were engaged by the three WSPs.

5.2.6 Establishment & Training of the Project Task Team

Before the Project task teams could be created, the following issues had to be considered and tools (i.e. the PTT training program) had to be prepared:

- The rationale behind the creation of a Project Task Team (PTT).
- The key roles and responsibilities of the PTT.
- The (preferred) composition of the PTT.
- The (institutional, environmental, etc.) surrounding of the PTT.
- The induction/training of the PTT.
- The PTT and the initial stages of the project.
- The Activity Cards and the Detailed Project Work Plan.
- Data collection.
- Operations monitoring.
- The PTT and the need for good internal and external communication & coordination (with all stakeholders and with the WSP in particular.
- Reporting.
- Project evaluation.
- Dealing with internal tensions and conflicts.
- The PTT: logistics and compensations.

The development of these components of the PTT approach was indeed partly done before the creation of the pilot project PTTs. Most of them, however, were finalized during the plot projects, together with the PTTs and WSP and based on the experiences acquired.

These efforts resulted in the preparation of the:

- Project Activity Cards and the (updated) Detailed Project Work Plan.
- Manual for the Project Task Team.

Both outputs are included in the Toolkit.

5.2.7 The Activity Cards

The project Activity Cards aims to assist the PTT during all phases of the project (planning, data collection, implementation and operation).

The **Activity Cards** are meant to be used as a layer between:

- The **Detailed Project Work Plan** (see the appendix).
- The tools that can be found in the **Toolkit for Urban Sanitation Projects.**

The Activity Cards will assist the Project Task Team (PTT) with the (step-by-step) planning and implementation of the various UBSUP/SafiSan activities.

Each Activity CARD deals with a specific UBSUP/SafiSan project activity.

The numbers shown in the second column of the **Detailed Project Work Plan** correspond with the Activity CARD number.

The Activity CARD shows which tools (from the toolkit) to use, which procedure has to be followed, which persons are involved, etc.

The numbering of the Activity Cards corresponds with the numbering used in the Detailed Project Work Plan.

If, during up-scaling, the WSP or the PTT decide that there is need for additional Activity Cards (which describe additional project activities) the numbering has to be adapted (for example, if the new CARD is placed between Cards 11 and 12 it can be numbered 11b).

5.2.8 Training of Local Artisans

Within the UBSUP program, various facilities have been developed. In order to guarantee proper construction of these facilities, training materials for local artisan have been developed. The training basically consists of a two day workshop in which emphasis is given to quality of works, standards and safety. After the theoretical training, the artisans were taken into the field in which various demonstration toilets were shown. An artisan is certified after satisfactorily constructing 2 toilets (under supervision of a trained artisan)

So far 54 artisans have been trained in group sessions in the three pilot areas. Since the demand for an individual training arose during the pilot, training material for individual artisans has also been developed. This training again focuses on safety, quality of works and standards.

5.2.9 Data Collection

Although the online pro-poor database of the WSTF MajiData contains a lot of relevant information with regard to the population, habitation patterns, layout and the water supply and sanitation situation in Kenya's urban low income areas, there may be need to collect

additional information or updated information on (potential) project areas. For this purpose, the UBSUP team has developed an area data collection tool. This tool will also be at the basis of the further development of the VST.

In Nakuru, this tool has undergone some initial testing. Further tests in other project towns are required, but these will be carried out within the framework of the VST testing.

5.2.10 Social Marketing

The pilot projects offered a good opportunity to use and test the entire social marketing package (approach, tools, procedures & training) that has been developed by the UBSUP team. Actual fieldwork has resulted in a number of adaptations and additions:

- In addition to marketing toilets, the Social Animators can play an important (after sales care) role during (1) the construction phase and (2) the early stages of the toilet operation phase (explaining how the toilet is used, maintained, repaired and emptied).
- A careful analysis of the performance of and interactions between the PTT and the Social Animators (SAs) led to conclusion that there was need for a representation of the SAs on the PTT. In order to improve communication and the coordination of community-level activities. For instance, it is important if during a public meeting (*baraza*), the PTT can introduce and explain the upcoming series of plot visits carried out by the Animators.
- An increased emphasis on enforcement (emphasizing the sticks in addition to offering carrots) of public health related laws and standards. This requires good cooperation between the PTT (i.e. the PHO) and the SAs.

5.2.11 Customer Registration

The customer registration is the first step to acquire a SafiSan toilet. The registration is not a legally binding agreement; it is rather the expression of interest of a landlord in the SafiSan program. Customer registration is normally done during the social marketing campaigns when social animators visit households or implement public meetings (barazas) to promote the SafiSan toilets. However, an interested landlord can always register at the WSP office as well. Ideally, a registered customer will sooner or later start construction of a SafiSan toilet. Nevertheless, there are customers which may never reach the stage of construction of a toilet. Reasons for that are manifold (e.g. change of priorities, change of financial situation).

The UBSUP team monitors, on a weekly basis, the number of registered customers, toilets under construction and completed facilities. This enables the team to immediately implement counteractions in case of no progression in one or more pilot areas.

The following tables highlight the progress in registration for the period of 2nd December 2013 till 6th of January 2014 in each pilot zone.

No.	Date	WSP	Target	Registered Customers	Increase to previous week (%)
1.	02/12/2013	Nakuru WSP	200	250	N.A.
2.	09/12/2013	Nakuru WSP	200	261	4.40%
3.	16/12/2013	Nakuru WSP	200	261	0.00%
4.	20/12/2013	Nakuru WSP	200	269	3.07%
5.	27/12/2013	Nakuru WSP	200	269	0.00%
6.	06/01/2014	Nakuru WSP	200	275	2.23%
7.	13/01/2014	Nakuru WSP	200	269	-2.18%

Nakuru reports the highest number of registered customers among the three pilot zones. In the last reporting week (13/01/2014) there is a drop of registered customers from the week before. Apparently some registered customers started to construct pit latrines instead of SafiSan toilets. As a result, those customers have been removed from the database.

No.	Date	WSP	Target	Registered Customers	Increase to previous week (%)
1.	02/12/2013	Embu WSP	200	182	N.A.
2.	09/12/2013	Embu WSP	200	190	4.40%
3.	16/12/2013	Embu WSP	200	198	4.21%
4.	20/12/2013	Embu WSP	200	210	6.06%
5.	27/12/2013	Embu WSP	200	212	0.95%
6.	06/01/2014	Embu WSP	200	217	2.36%
7.	13/01/2014	Embu WSP	200	225	3.69%

The number of customers registering in Embu is increasing steadily at an average pace of 3.6% per week. Only in the week of 20th till 27th of December was a drop in the trend. This can mainly be justified with the Christmas celebrations during that week where people had other priorities than registering for SafiSan. The week after the average pace had not been reached by then but already an increase could be noted. By the second week of January, the increase in registration should be back on track again.

No.	Date	WSP	Target	Registered Customers	Increase to previous week (%)
1.	02/12/2013	Oloolaiser WSP	200	190	N.A.
2.	09/12/2013	Oloolaiser WSP	200	210	10.53%
3.	16/12/2013	Oloolaiser WSP	200	222	5.71%
4.	20/12/2013	Oloolaiser WSP	200	228	2.70%
5.	27/12/2013	Oloolaiser WSP	200	228	0.00%
6.	06/01/2014	Oloolaiser WSP	200	228	0.00%
7.	13/01/2014	Oloolaiser WSP	200	228	0.00%

As well in Oloolaiser the number of registered customers has exceeded the target. However, no change in numbers could be reported during the last three reporting quarters. This is

mainly due to the break for Christmas.

In general it is good to note that the number of registered customers exceeds the target number in all pilot areas. Nevertheless, the target number is based on toilets constructed and not (only) on facilities registered.

5.2.12 Construction of Toilets

After applying and registering for an UBSUP subsidized toilet, the customer selects an artisan for the construction. The artisan can be selected from a list with certified artisans, or the customer can come up with his/her own preferred artisan. However, if the artisan is not certified, he should follow the Artisan training course. The customer and artisan discuss the scope of work, the planning for the construction and negotiate on the price. The customer might decide to procure the construction materials himself and agrees on a labor contract with the fundi. Also a turnkey option is possible in which the WSP basically arranges the entire construction of the toilet. Various different options are possible, all in collaboration with the WSP.

After reaching an agreement with the fundi, the customer should register with the WSP for pre-approval of the selected site. During construction the quality of works is monitored to prevent deviation from the required quality. When the construction is completed, a final inspection (by the WSP) will take place after which the customer can apply for the subsidy.

5.2.13 DTFs: Site Acquisition and Construction

With the cost of haulage being quite high, Decentralized Treatment Facilities (DTFs) should be located close to the people served. The DTF basically consists of two components. The DEWATS treats waste water from septic tanks, sewer and pit latrines. The drying bed further treats the waste from the UDDTs and also sludge from the DEWATS.

The DEWATS will be implemented by WSPs who have public utility places for their implementation. For the ease of operation and maintenance but also because of the scarcity of land, it is preferred to construct the two facilities on the same plot. In areas with a high density of UDDTs, construction of an additional drying bed can be considered. A minimum plot of 30m x 30m will be required. Bio-digester and anaerobic baffled reactor facilities are built underground therefore landscaping and proper land use can be done. Sludge drying beds are built on the surface.

5.2.13.1 Construction of DTF

A DTF has a simple configuration. Therefore most of the components can be constructed by regular contractors. For the construction of the dome of the bio digester, specialized contractors should be deployed.

5.2.13.2 Management of DTFs

DTFs will be owned and operated by WSPs using the same management concept developed by WSTF for public sanitation facilities under the UPC. Households will pay for the costs of emptying and transportation by exhausters or manual emptiers. The cost of operating the DTFs will be covered by:

1. Adapted tariffs for WSPs who facilitate in the household and plot sanitation.

2. Possible revenues from the sales of soil conditioner

3. Additional income could be generated by establishing market for compost from drying beds and generated bio-gas for energy.

5.2.13.3 Training of DTF operators

For proper operation and maintenance of the DTFs, a comprehensive training program for the DTF-operators has been developed. In the (hands-on) program emphasis is put on the various elements of the DEWATS and how to monitor their performance. It also shows the DTF operators how to sample in- and effluent, sludge and finally the dried bio solids.

5.3 Main Achievements

This chapter highlights the main achievements of the UBSUP program during the pilot phase.

5.3.1 Sale of Subsidized Toilets

Not every registered customer will automatically result in a constructed facility. People may express an interested but are currently not able to raise the needed financials.

The following tables highlight the number of constructed facilities and currently under construction for each pilot area.

No.	Date	WSP	Target	Under construction	Completed	Total
1.	02/12/2013	Nakuru WSP	200	53	19	72
2.	09/12/2013	Nakuru WSP	200	66	19	85
3.	16/12/2013	Nakuru WSP	200	66	19	85
4.	20/12/2013	Nakuru WSP	200	66	27	93
5.	27/12/2013	Nakuru WSP	200	53	33	86
6.	06/01/2014	Nakuru WSP	200	53	43	96
7.	13/01/2014	Nakuru WSP	200	57	43	100

The number of completed toilets in Nakuru is currently at 21.5% of the target. Combining the number for toilets under construction together with the completed ones, the indicator reaches 50%.

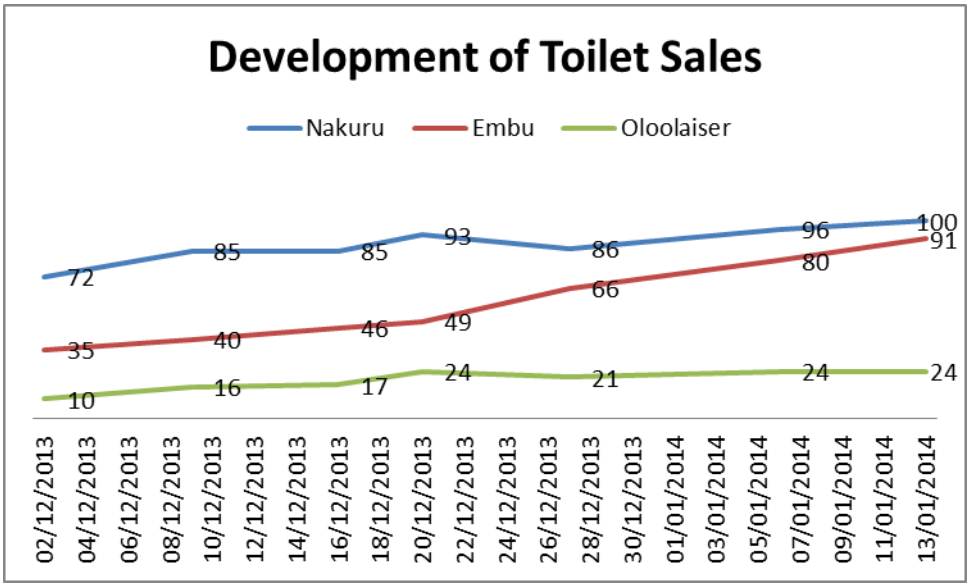
No.	Date	WSP	Target	Under construction	Completed	Total
1.	02/12/2013	Embu WSP	200	17	18	35
2.	09/12/2013	Embu WSP	200	20	20	40
3.	16/12/2013	Embu WSP	200	25	21	46
4.	20/12/2013	Embu WSP	200	21	28	49
5.	27/12/2013	Embu WSP	200	34	32	66
6.	06/01/2014	Embu WSP	200	40	40	80
7.	13/01/2014	Embu WSP	200	48	43	91

Embu develops at a similar pace as Nakuru. The percentage of completed toilet reaches 21.5% and combined with the ones under construction, a total of 45.5% of the target is

reached.

No.	Date	WSP	Target	Under construction	Completed	Total
1.	02/12/2013	Oloolaiser WSP	200	2	8	10
2.	09/12/2013	Oloolaiser WSP	200	8	8	16
3.	16/12/2013	Oloolaiser WSP	200	9	8	17
4.	20/12/2013	Oloolaiser WSP	200	13	11	24
5.	27/12/2013	Oloolaiser WSP	200	10	11	21
6.	06/01/2014	Oloolaiser WSP	200	11	13	24
7.	13/01/2014	Oloolaiser WSP	200	9	15	24

In terms of completed toilets and toilets under construction, Oloolaiser WSP is lagging behind. It reaches 7.5% of the target on completed toilets and 12% on completed and under construction.



Combing all three pilot zones, 16% of the target has been reached on completed toilets only and a combination of completed and toilets under construction results in 36% of the overall target.

5.3.2 Finalizing the UBSUP Concept

As foreseen, the pilot projects have greatly contributed to the finalization of the UBSUP concept. Existing tools were improved, new ones were added. A small number of tools still require fine-tuning and a few still need to be prepared. The current status of the Toolkit is nearly ready to be put online and will allow the WSTF to start with the scaling-up of plot- and household level sanitation. Previous experience with UPC shows that a WSS toolkit is never 100% ready. A dynamic and flexible concept should be able to incorporate new experiences and respond to new developments.

5.3.3 Putting Sanitation Center Stage

The achievement of the pilot project should also be discussed against the background of the objectives that were formulated at the outset (see the introduction of the chapter).

1. Onsite sanitation is new to most WSPs. The pilot projects have shown, however, that WSPs can have the capacity and indeed show the commitment to develop and implement onsite sanitation projects. In fact, the WSPs of Embu and Nakuru made very significant contributions to the development of the concept (financing concept, additional technologies, etc.).
2. The experiences obtained with the PTT approach are positive, perhaps with the exception of Oloolaiser where some team members lack the required commitment. The Oloolaiser experience and work with the Nakuru PTT has resulted in the development of a PTT manual which will further improve their performance during the up-scaling. This manual also addresses the issue of the inactive PTT members.
3. The pilot projects confirm the results of the UBSUP Preparatory Study, namely that there is a market for improved sanitation even among landlords who own structures that are occupied by tenants who pay very modest rents. It is important to note that in some low income areas (e.g. in New Area in Nakuru) landlords in urban slums prefer to link their subsidized pour flush toilet to an existing private sewer line which was tested and is being operated by the WSP.

   It is remarkable how sanitation has become almost hype in the project areas of some of the pilot towns. In the beginning landlords and householders were cautious, even doubtful (Will the subsidy be paid? Is the SafiSan really a good toilet?) But with the construction and completion of the first toilets and the payment of subsidies the demand for SafiSan toilets is increasing.

4. The pilot projects have achieved their objective of providing a platform for the participatory testing & development of tools and the finalization of the UBSUP approach.
5. The active participation of users in the appraisal of the testing toilets (Ongata Rongai, Matasia and Ngong) has definitely resulted in better toilets. Some of the proposals made by users (such as adaptations in the toilets designed for the physically challenged), as presented in the Customer-Aided Design report, still have to be incorporated (planned for the 2nd half of January) in the toilet designs.
6. The pilot project has <u>not</u> offered the opportunity to test the operation of the entire sanitation value chain. This can be attributed to the delays in the construction of DTFs caused by the lack of land and the need (e.g. in Oloolaiser) to carry out an environmental impact assessment (EIA). Currently the construction of DTFs has been initiated in Embu and in Nakuru. At Oloolaiser WSP arrangements have been made for the EIA. The UBSUP team expects that in March (2014) all 3 pilot WSP will have an operational DTF.

   Most users have expressed their satisfaction with the SafiSan toilets they use and urine diversion, contrary to expectations, is not perceived as inconvenient or complicated. Most toilets are used correctly and not used for dumping waste. Since none of the testing toilets is full (albeit on most plots, people are currently using the 2nd vault), the UBSUP program still lacks the experience with emptying and transport.

Since the content of the toilets is relatively dry, even during the use of the vault, we do not expect difficulties during emptying and transport.[8] The study and interviews with landlords in the pilot towns indicate that they are more than willing to pay for having their bio-solids delivered at the DTF by manual emptiers.

The assessment of the demand for emptying, transport and treatment services, both during the study and during the pilot projects, as well as the appraisal of existing DTFs, give us the confidence that the DTFs can be operated sustainably by the WSPs. Especially if the operation costs in areas where there is no real market for treated compost, can be (partially) covered through the new sanitation levy.

5.4 Challenges & Lessons Learnt

During the implementation of a pilot phase, it is not expected that everything works out as planned. In actual fact, the idea of a pilot phase is "*to identify design issues before the main research (implementation) is done*"[9]. For the UBSUP implementation, the pilot phase is a crucial part to test (and improve) all components of the program. The following table provides a list with the most relevant challenges encountered.

No.	Challenges	Mitigation Strategy
1.	**Delayed demand development**: Demand developed slower than initially anticipated. People living in low-income areas resulted to be very skeptical towards new initiatives since many have been disappointed by previous programs.	Through continuous presence of social marketers in the project areas and rapid construction of facilities and payment of subsidies, more and more landlords gained confidence. Especially the timely payment of the subsidies resulted in a booster for demand.
2.	**Completion of technical works**: In the beginning, the construction of facilities took more time than initially anticipated. Artisans where not yet conversant with the design of the different SafiSan models.	The artisans training program has been further modified and artisans increased speed through gaining more experience of construction SafiSan toilets.
3.	**Busy artisans:** Many areas in Kenya (including low-income areas) are experiencing a building boom Therefore, finding artisans which are willing to rather build a toilet than a building used to become a challenge. Sometimes, artisans started the construction of a toilet and left it halfway to work on a bigger construction.	Together with the pilot WSPs, the UBSUP team registered all available artisans and shares this list with potential clients. With a longer list of artisans it is expected to find interested workers who finish building a toilet on time.

[8] The CuAD visits showed that after heavy rain rainwater can seep through the top of the vault door. Adaptations have been made to prevent this from occuring during the scaling-up.

[9] Source: Wikipedia (www.wikipedia.org), search string: pilot experiment.

4.	Financial burden for landlords: Although a lot of effort has been put on a cheap and affordable toilet, in some project areas the price was still too high for landlords. It sometimes takes landlords several months to save funds for the toilet. This results in delayed demand.	UBSUP is supporting the WSPs to partner with local micro-finance institutions to help landlords to gather the needed funds. In addition, Embu WSP developed a low-cost SafiSan toilet based on iron sheets. Furthermore, the "turnkey" solution developed by Embu WSP will help landlords to only raise a small amount of money since the subsidy risk is taken by the WSP.
5.	**Construction of demonstration toilets**: Some WSPs had challenges in construction of the demonstration toilets in due time consuming public procurement processes.	Demonstration toilets will either not be needed in some WSPs during up-scaling or directly procured through the UBSUP program
6.	**Land availability for treatment facilities:** Land availability is a very sensitive issue in Kenya and as such as well for the construction of the treatment facilities.	Close cooperation with the city council is needed from the early beginning of an UBSUP project. During up-scaling, a memorandum of understanding has signed between the city council and the WSP will be part of any project proposal.
7.	**Copies of title deeds:** The SafiSan application process needed a copy of the title deed of the landlord. Many landlords were either afraid of giving copies or simply do not have ones.	The application process has been redesigned in such a way that the provision of a copy of the title deed is optional. Landlords can simply apply by providing a copy of their national ID.

Many more challenges have been identified during the pilot phase so far but for the sake of this report, only the main ones are presented above. The following table describes lessons learnt which will be important for the up-scaling concept.

No.	Lessons Learnt	Description
1.	Timely Payment of subsidies	A key item for continuous demand creation is a timely payment of subsidies. The UBSUP team developed an internal procedure for WSPs on how to efficiently process subsidy applications.
2.	Involvement of Public Health Officers (PHO)	In the Nakuru pilot zone, it has been experienced that the Public Health Officer (PHO) is crucial for demand creation. According to Kenyan laws, every Kenyan has the right to proper sanitation. The PHO is supposed to enforce the law on the ground. Now, with the UBSUP program the PHO has a tool to enforce improved sanitation through advising landlords to become part of UBSUP.

3.	Involvement of Social Marketers	The role of the social marketers is crucial for the demand creation and success of UBSUP. The continuous contact with the client improves the demand creation sustainably. The UBSUP concept foresees a phasing out of the social marketers after some time. It should be considered to extent the period or find another way on how to keep social marketers for a longer time.
4.	Intensive support to WSPs	The implementation of an UBSUP project at a WSP involves many areas of the organization. It goes much further than the implementation of an UPC project. As well, the risk of a poorly performing WSP is much more damaging the project implementation of UBSUP than UPC. Therefore, each WSP will need intensive support by Field Monitors and/or UPC/UBSUP team during the up-scaling. As highlighted above, the timely payment of the subsidy is a key item for a successful UBSUP program. This is purely depending on a well performing WSP.

The list of lessons learnt is not complete but the items provided give a good overview on the main findings of the pilot phase.

5.5 Remaining Activities

Since the development of the UBSUP program and the start of the pilot phase, a lot of activities have been focusing on technical development/standards, social marketing, business models, and other concepts at a rather macro level. The implementation of all those concepts needs a big number of tools, forms, descriptions, etc. Following the lessons learnt mentioned in the previous chapter, a lot of activities are remaining with a focus on a direct support to the WSP. Simple forms and template are needed to support the incorporation of UBSUP into a WSP's daily operation.

In addition, due to the nature of the project, limited experience has been gained on the treatment of the toilet content and even the emptying of the toilet. Only in a few months' time, the first toilets will be ready for emptying and then experiences can be gained on how to improve the concept of emptying, treating and re-using. These areas will become a focus within the coming months. The other remaining major activities are linked to the up-scaling of UBSUP. Those are further elaborated in the following chapters.

6. Scaling Up: Preparatory Works & Planned Actions

The pilot phase directly leads into the scaling up of the program. This chapter describes the preparatory work and planned actions need for the scaling up.

6.1 Feasibility & Risk Analysis

This sub-chapter looks at feasibilities and risks affecting the scaling up.

6.1.1 Technical Standards

During the UBSUP program testing and pilot phases, the team developed, tested and improved various versions [in terms of price, material used, size and construction method

(in-situ or prefabricated)] of the Urine Diversion Double-vault Toilet (UDDT). Some of these versions are good enough to up-scale. Some versions will not be up-scaled due to the durability, acceptability and affordability of the materials.

The designs have been approved by the relevant authorities in the pilot towns, but they will also be presented to the Kenya Bureau of Standards (KEBS) for endorsement/approval. KEBS is currently in the process of developing and appraising a number of pro-poor toilet types in order to create onsite sanitation standards.

6.1.2 Additional Sanitation Technologies Piloted

During the pilot phase, Embu WSP proposed the development of an improved toilet linked to local communal septic tanks which can be emptied and the sludge treated at the treatment works. In a low income area of Nakuru, the project has subsidized a number of toilets which are connected to existing sewer lines that discharge in the sewage treatment works of the WSP.

6.1.3 Other Technologies and Cooperation with other Sanitation Technologies

UBSUP's SafiSan project is not the only sanitation project targeting the urban slums and planned low income areas which being implemented by Nakuru WSP. An EU-funded project is being developed and implemented simultaneously by the WSP, which receives support from the Dutch water provider Vitens-Evides and the NGO Water and Sanitation for the Urban Poor (WSUP). Currently the EU-funded program is targeting other low income areas. However, in order to prevent confusion at all levels, the WSP has decided to target the sanitation market with a single (social marketing) message and concept. A number of meetings have taken place and there is frequent contact between the 2 projects. The EU-funded project, however, is promoting a different sanitation concept. The Fahari-Loo (formerly known as the Xipoti toilet) is in fact a lined pit latrine. To prevent seepage and groundwater contamination, the pit is sealed by means of a strong but flexible plastic bag. When full the very liquid content of the Xipoti toilet which is a mixture of urine and faeces is emptied and transported to a specially designed treatment facility which uses the nutrients provided by the urine to produce fertilizer. The concept would also allow for the treatment of the content of the SafiSan toilets or of the DTFs treated bio-solids.

During deliberations, the issue has been raised whether the subsidies provided within the framework of the UBSUP program could be used for the promotion of the Xipoti toilets and concept. Discussions with the UBSUP partners based on a careful social, technical, public health and environmental assessment of the concept is needed before such a decision can be made.

During the sanitation workshop held in Nairobi and hosted by the Bill and Melinda Gates Foundation (July 2014), a first contact was made with the Ghana-based Biofil program. Recently initial steps were made to assess whether the Biofil approach and toilet could be tested and subsequently introduced in Kenya. The UBSUP team proposes a careful approach which considers all aspects of the approach and technology (similar to the approach with regard to the Fahari concept).

A second and important step would an exchange with the Biofil team, which results in receiving detailed information on the technology and the implementation approach. An

assessment of Biofil project data should be at the base of the possible domestication (i.e. adapting it to local conditions found here in Kenya) of the Biofil approach.

During the Nairobi sanitation workshop the Foundation mentioned that it expects that affordable improved toilets will be available for testing during the first half of this year. The UBSUP team believes it is ready to test alternative improved toilets.

The UBSUP team believes it would be unwise to test and upscale these improved sanitation options and approaches in the current pilot towns unless the new sanitation options are very compatible with the sanitation value chain investments that are currently made (e.g. DTFs). Preferably new options should be tested in other towns, together with other WSPs. The current enthusiasm for pro-poor sanitation within the sector will make it rather easy to find suitable partners.

6.1.4 Social Marketing

The combination of a WSP-managed multi-stakeholder Project Task Team and a WSP-managed teams consisting of Social Animators (sanitation marketers) is proving to be a good concept.

Since the social marketing approach, tools and procedures are firmly rooted in the nation-wide UBSUP Preparatory Study, the UBSUP team believes that it can be scaled up.

6.1.5 Customer Response and Reviews

Customer response in the various towns has been promising. Participation in the public meetings was good and so was the response to the plot & household visits. Overall the toilets are considered to be affordable and attractive, albeit some landlords face difficulties to mobilize, at once, the funds needed. In many towns we, therefore, see the gradual construction of the toilets. Landlords will mobilize some of the funds and start with construction works. When they run out of funds they will wait until their tenants have paid the next rent. This should not come as a surprise; project beneficiaries always translate projects so as to make them fit their objectives and possibilities. Another form of translation was encountered in Nakuru. In some areas there are exiting (private) sewer lines. Landlords living along these lines have formed (sanitation) user groups and are constructing pour flush toilets linked to these lines.

6.1.6 Project Implementation: Who does the Work?

During the pilot phase of the UPC, in 2008-9, the WSTF observed that during the pilot projects many tasks and activities were carried out by WSTF officers. In some cases the WSP remained somewhat in the background. To a lesser extent, the same can be said for the UBSUP pilot projects. Especially the Oloolaiser WSP seems to be less active and assertive. The WSTF and GIZ, expect, however, that during the scaling-up phase, projects can be implemented by PTT which are assisted by the WSP and the Field Monitors of the WSTF.

6.1.7 Project Duration

UBSUP/SafiSan is demand driven. Unlike water supply projects where demand only becomes relevant after project commissioning, demand for better sanitation is part of the project

implementation. Although the project tries to influence demand by keeping toilets attractive and affordable through the social marketing program, it is not clear when demand will really take off. Unlike WSTF-funded water supply projects, the exact duration of successful UBSUP/SafiSan projects, including the pilot projects is not known. Although by implementing a large number of projects, there will eventually be more knowledge with regard to the development of demand, there is need for flexibility regarding the project duration. This can be a risk factor. Even if the WSTF is able to make funds available when demand for sanitation develops, how long will the WSTF provide the support given by its Field Monitors? The final design of support measures, the duration of fund allocations and the availability of support provided by the Field Monitors, for instance will have to be established after the completion of the pilot projects and perhaps even after the completion of the 1st Call for Proposals.

What can be said about project duration can also be maintained when it comes to project area. In Nakuru, the PTT has already extended its activities to a neighboring area, a not foreseen addition, simply to meet demand and to render a DTF more sustainable.

6.1.8 The Sanitation Value Chain

During the pilot phase the emphasis has been on the entire sanitation value chain. However, the construction of the DTFs designed by the UBSUP team has experienced delays which are mainly explained by the difficulty to find available and suitable sites. Meanwhile the construction of DTF has been initiated. The first DTFs should be operational in March (2014).

6.1.9 Sector Requirements and Alignment

The regular workshops the WSTF is organizing for the WSP provide a good indication that many WSPs are keen to get engaged in pro-poor sanitation. A number of newly established County Governments have declared sanitation as being one of their priorities. Increasing sanitation coverage, however, comes at a cost and WSPs would like to know of the incentives which can be provided by the sector. This underlines the importance of the discussions between the UBSUP program and the Regulator, WASREB. The Regulator is confident that the outcome of the discussions and the initiated study (funded by the World Bank) will be a realistic incentive which is generated by introducing an affordable (for the consumer) levy or surcharge. The lack of incentives for WSPs should be considered a serious risk factor as many WSPs may not see the need to implement projects which will not generate any revenues.

The UBSUP team believes that there is need to engage with the County Governments. The Counties may be able to set the right priorities but they also lack the necessary specialized skills to implemented WSS projects and to operate (pro-poor) schemes.

6.1.10 Cooperation and Innovation

The pilot projects have shown that it is possible to cooperate with other (compatible) sanitation programs (e.g. Nakuru). The UBSUP team also believes that during the up-scaling phase there will be room to test alternative and new sanitation facilities (toilets) and treatment methods.

6.2 Introduction: Planned Up-scaling

Relevant information on the planned up-scaling are presented below.

6.2.1 The January – July 2014 Work Plan: Scaling up

Key to the January – July 2014 work plan is the national sensitization workshops for the WSPs, county officials and other stakeholders to introduce the program, take the stakeholders through the elaborate UBSUP toolkit as well as share the lessons of the pilot. This activity is aimed at preparing the WSPs to respond to calls for proposal which will be made sometimes in February 2014. The target is to get as many WSPs as possible to apply thus making the up-scaling phase a success.

6.2.2 National WSP UBSUP Introduction Workshops

The main objective of the sensitization workshop was to popularize the implementation of the UBSUP throughout the country. This will make the WSPs aware of the details of the program, how to apply for funds from WSTF and the implementation process. Key stakeholders targeted by this workshop will include the WSPs, county officials such as public health officials and county executives and NGOs.

6.2.3 Policy & Regulatory Framework Reviews

UBSUP requires strengthening of implementing institutions through clear policies and regulation. Part of the regulatory framework formulations required by UBSUP is the introduction of sanitation levy to provide an incentive stream for the participating WSPs as a motivation to engage in on-site sanitation. Discussions are on-going between WSTF/GIZ and WASREB.

6.2.4 The First Call for UBSUP Project Proposals

The first call for proposals is planned for late February 2014 after the sensitization workshops. Every licensed WSP will be eligible to apply under the guidelines to be developed which will borrow from the current UPC application guidelines. It is expected that the call attracts applications across the country with a minimum of 20 projects envisaged if we are to successfully implement the program within the timeline. Based on the experience of the pilot and the uptake of the registration of customers all the way to construction of toilets to completion, a call is likely to run for one year hence calls will be made on an annual basis.

6.3 Progress Made

The pilot projects provided the opportunity to work finalize, together with the WSPs, the “Toolkit for Urban Sanitation Projects”. This toolkit is almost ready. In the coming weeks the toolkit will be made available online. The Toolkit will also include the detailed Application Form which has to be used by the WSPs to prepare their Project Proposal (Funding Application). The UBSUP team still has to work on the tools needed to appraise the proposals. These tools will incorporate a set of clear criteria (current sanitation situation, per capita investment costs, and focus on the sanitation value chain) that can be used to compare proposals.

6.4 Main Achievements

The main achievements of the pilot phase can be summed up as follows:

- Finalization of the technical designs for toilets & DTFs.
- Testing and improving the social marketing approach and program (at WSP-level).
- Testing of the existing project tools.
- Development, together with the WSPs, of remaining tools.
- Initiated the development of incentives for WSPs (at sector-level).
- Creation of sanitation units within the WSPs.
- Sale of toilets in urban low income areas.
- Construction of good quality toilets by local artisans.
- Starting the construction of DTFs.

6.5 Remaining Activities

Plenty of work is still remaining when it comes to the preparation of the first Call for Proposal and the up-scaling. Nevertheless, UBSUP will be able to borrow a lot from the experience of the UPC. The UPC up-scaling concept is very well established already. Since 2009, 6 Calls for Proposals have been launched with more than 200 projects financed. This institutional knowledge will be very helpful for the design of the UBSUP up-scaling.

Although UPC and UBSUP will be implemented in a similar way, there are many differences which will directly affect the up-scaling. A major difference is the unknown demand. Even in an area with a high population and a low sanitation level, the project may be slow to pick up due to insufficient demand. This scenario will influence the design of the appraisal procedures and tools. Which proposal parameters should be appraised to ensure that the potentially most promising projects will funded.

In addition to the project proposal appraisal procedures and tools, more items still need to be developed. Some are listed below:

- Disbursement procedures from WSTF to WSP
- Project implementation time limits
- Monthly reporting procedures
- WSP implementation workshop tools
- Operations monitoring indicators for plot-level sanitation
- Newspaper advertisements for Call for Proposal

7. Challenges & Lessons Learnt

Chapter 7 summarizes the challenges and lessons learnt during the implementation of the UBSUP program.

7.1 Technology & Design

Challenges and lessons learnt of the technology and design bit are presented below.

7.1.1 Technology & Materials Used

In the concept phase of the UBSUP program, various options for the user interfaces were developed. After scrutinizing the options few of them made it to the testing phase.

In general it should be stated that the technology of UDDTs was well received. The concept of the UDDTs seems to be understood well and most of the toilets are well used and maintained.

General lessons learnt:

- Evaluating the testing toilets after half year of operation, it became clear that the artisans who had not been trained through UBSUP, lacked knowledge and experience to follow the designs prepared by the UBSUPs Technical Team. During the piloting phase, toilets are only constructed by trained artisans. Proper monitoring during construction leads to better quality of toilets

- Prefab toilets: With scaling up in mind, prefab toilets would be an obvious solution to guarantee quality and standardized products. However looking at the experience with the companies approached for prefabrication of toilets we concluded that the disadvantages outweigh the advantages (higher transporting costs, vulnerability of the components used and highly specialized workforce required).

- Design: During the pilot phase it became apparent that some of the offered designs were considered to be too expensive. Having that in mind, a new design had to be developed. The cheapest option which came out of that exercise, compromises a little on the set quality of the offered toilets. It consists of a stone vault and a partly iron sheet super structure. This concept seems to be in high demand during the piloting.

7.1.2 Toilet Types

In addition to the UDDTs, residents (Nakuru) and WSPs (Embu) have expressed their preference for pour flush toilets (linked to communal septic tanks (Embu) or to existing sewer lines (Nakuru). Since the construction of good quality toilets results in a very significant improvement of the sanitation situation, the projects are subsidizing these toilets.

An interesting aspect of the project in Nakuru is that residents (landlords) living along the sewer lines have come together to form a sanitation group which is negotiating with the owner of the sewer lines (connection fees, etc.).

7.2 Demand Creation, Subsidies & Customer Response

The creation of demand has faced the following challenges:

- Official messages (e.g. subsidy amount) get translated once they reach the ground

- Coordination of activities between the Project Task Team and the Social Animators.
- Demand for toilets is influenced by seasonal household priorities (expenditures), such as Christmas and school fees (January).
- It takes time for the residents to trust the WSP (in terms of subsidy payment).
- Landlords need time to mobilize funds and many of them, therefore, prefer to construct their toilets in stages.
- Demand also develops outside the project area.
- Even if detailed knowledge exists with regard to the project area and its population it remains at this stage of the program (pilot phase) difficult to prepare reliable demand forecasts.
- Not all landlords are able or willing to invest in good sanitation.

7.3 Cooperation with other Sanitation Programs

The UDDTs promoted by the UBSUP program constitute a safe, user-friendly toilet. It offers a sustainable sanitation solution if the other stages of the sanitation value chain is covered. Discussions with the Vitens staff working for the EU-funded project in Nakuru also shows however, that although the content of the SafiSan toilets could be processed at the new treatment facility, the nutrients contained in the urine are, as it stands now, not used to produce organic fertilizer. Perhaps the Nakuru project provides the opportunity to consider the collection, transport and use of urine.

List of Acronyms

BMGF:	Bill & Melinda Gates Foundation
BoQ	Bill of Quantities
CBO:	Community-Based Organization
DTF:	Decentralized Treatment Facility
EIA	Environmental Impact Assessment
FM:	Field Monitor
GIZ:	German International Cooperation
KfW:	German Development Bank
KIPI:	Kenya Industrial Property Institute
LIA	Low Income Area
MoU:	Memorandum of Understanding
MS:	Microsoft
NGO:	Non-Governmental Organization
PHO:	Public Health Officer
PTT:	Project Task Team
VST:	Virtual Sanitation Tool
WASH:	Water, Sanitation & Hygiene
WASREB	Water Sector Regulatory Board
WSP:	Water Service Provider
WSTF:	Water Services Trust Fund

List of References and Data Sources Used

WSTF (2013), Toolkit for Urban Sanitation Projects (available online and on a DVD-ROM) www.wstf.go.ke

WSTF (2013), MajiData, the online pro-poor database www.majidata.go.ke

UBSUP (2013) UBSUP Flickr account http://www.flickr.com/people/ubsup/

UBSUP (2013) UBSUP website www.ubsup.go.ke

Appendix 1: Financial Report WSTF

Appendix 2: Financial Report GIZ

Appendix 3: UBSUP Work Plan