



Water Sector Trust Fund

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

Study report on the testing toilets

Technical report

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Introduction

WSTF together with GIZ has developed the SafiSan toilet. These sanitation facilities are dry systems meaning that the urine is separated from the faeces. Important is that the users are instructed well on how to use the facilities. If the toilet is used properly, it will not smell, will not attract flies and will not need expensive emptying services.

To find out the performance of these toilets, data-collectors were asked to monitor the use of the toilets. In a period of nine consecutive days (25 February – 11 March)¹, two data collectors were stationed at every test facility to collect quantitative and qualitative data on the use of the toilets. Field work consisted of a qualitative component (mainly formal interviews) and a quantitative component (i.e. household surveys). Every time the toilet was used, questions regarding the use and perception of the toilet were asked. In order to be able to collect proper data, two procedures have been developed. The

first procedure describes what kind of information is to be collected and when. The second procedure describes the process of weighing the faeces.



Figure 1 – SafiSan in-situ build toilet

This report presents the main findings that were obtained during a 9-day monitoring session.

1. Main findings on the use of the SafiSan toilets

1.1 General findings

1.1.1 Use and users of the toilets

The sex of the users of the toilets was equally distributed. 50% of the users were men and 50% women with children constituting only 25% of the observed users. Most of the users (80%) are residing on the plots and therefore could be reached directly by the trainings. During the monitoring period the toilets were more often used for small calls (60%) as opposed to 40% long and combined calls.

During the 9 day period of monitoring the total number of visits to all the toilets amounts up to 947. All of the toilets were under-utilized.

¹ For some of the toilets the monitoring period started only in March.

1.1.2 Training and instruction posters

About 90% of the beneficiaries confirmed that they had been trained adequately on use and maintenance of the SafiSan UDDT toilet facilities. All the observed toilets had instruction posters and a container with ash as per instruction given during the training. Training on proper sludge disposal and use was also confirmed by the users.

Impact on UBSUP: none

1.1.3 Covering materials:

The availability of ash does not seem to be a problem since all users confirmed that they are using ash as a drying material after every long call. Nobody pays for the ash used. 90% of the users produce their own ash. The amount of ash used varies from a spoon to a handful. Although none of the users apply wood shavings as covering material, 2 out of 3 interviewed indicated that wood shavings are readily available in the area.

Only a handful (about 200 ml) is required for every toilet use. Research has confirmed that wood ash has the best effect in reducing the pathogen level to a minimal in dehydrated feces within the vaults. The ash achieves this by increasing the pH within the dehydrating feces. Most pathogens cannot survive under the dry environment with high pH. Its use should be more encouraged. Other materials should be used only where it is totally not available.



Figure 2 – Bucket with ash

Impact on UBSUP: Indicate in the social marketing the use of various covering materials. If one material is in short supply another can be selected.

1.1.4 Sludge disposal:

Over 90% of those interviewed confirmed that they were trained adequately on disposal of sludge from the toilets. Many however haven't made a decision on how to use the dried sludge from the toilets.

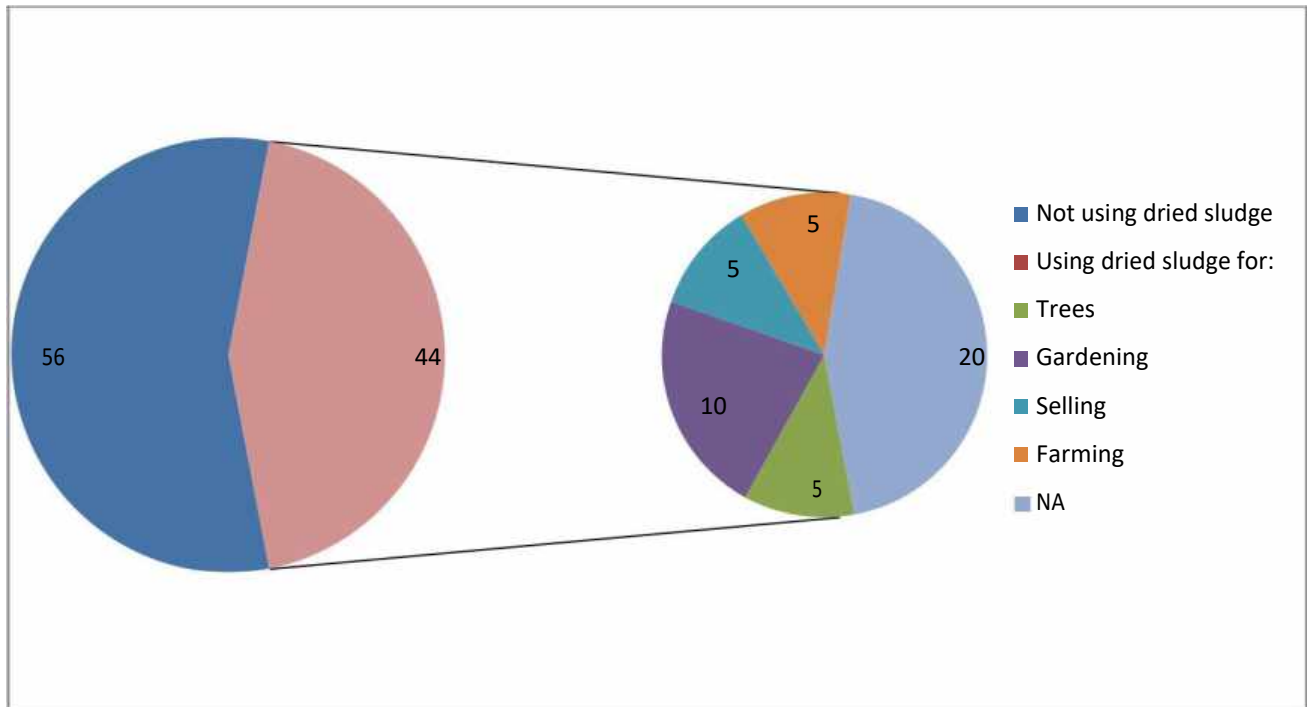


Figure 1: Where do people want to use the dried sludge from the UDDTs for?

Impact on UBSUP: Proper sludge management is of utmost importance for the success of the UBSUP programme. The effect of not taking care of “What to do when the pit is full?” is shown in the ROSA project in Nakuru. Since most people are unaware of the potential of using dried sludge as soil conditioner, UBSUP should create awareness. Awareness creation could be done by establishment of onsite sludge treatment facilities and demonstration fields with accompanying training measures for all stakeholders. These training are crucial for the success of implementation of the (dry) SafiSan toilets since they will influence the demand and acceptability.

Users should also be trained on the use of compost on trees or flowers in their compounds. Landfill as a means of disposal can also be encouraged within the plots especially those with live fences or shrubs/trees. Kitchen gardening can be done with the compost and urine under strict instruction and observation of certain public health rules.

1.1.5 Waste disposal:

Most of the households have a solid waste management system in place. The type of systems used is shown below.

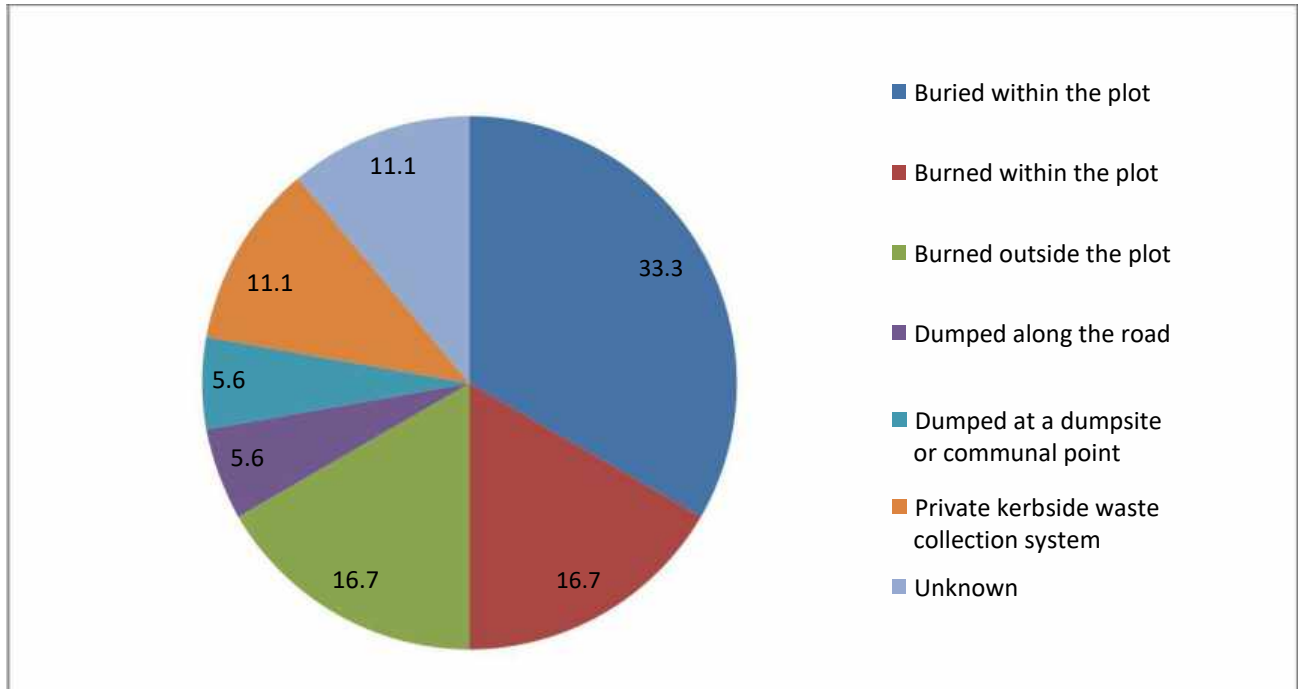


Figure 2: Means of waste disposal at household level

Impact on UBSUP: Users of the dry toilets need to be trained on proper use and maintenance of the toilets. They should also be made aware of the impact of improper use on the quality of the waste and the increased costs of collection.

1.1.6 Service delivery in Oloolaiser

This sanitation chain service delivery has not been tested by UBSUP during the testing phase. Most users are not aware of the existing services and they seem not to be emptying their toilets due to various reasons which were captured in the first UBSUP study. Over 80% of the users have no knowledge of the existing sanitation chain delivery services.

It was noticed that currently most people do not empty their toilets. Only about 17% are using some type of emptying services, the majority exhaustor services.

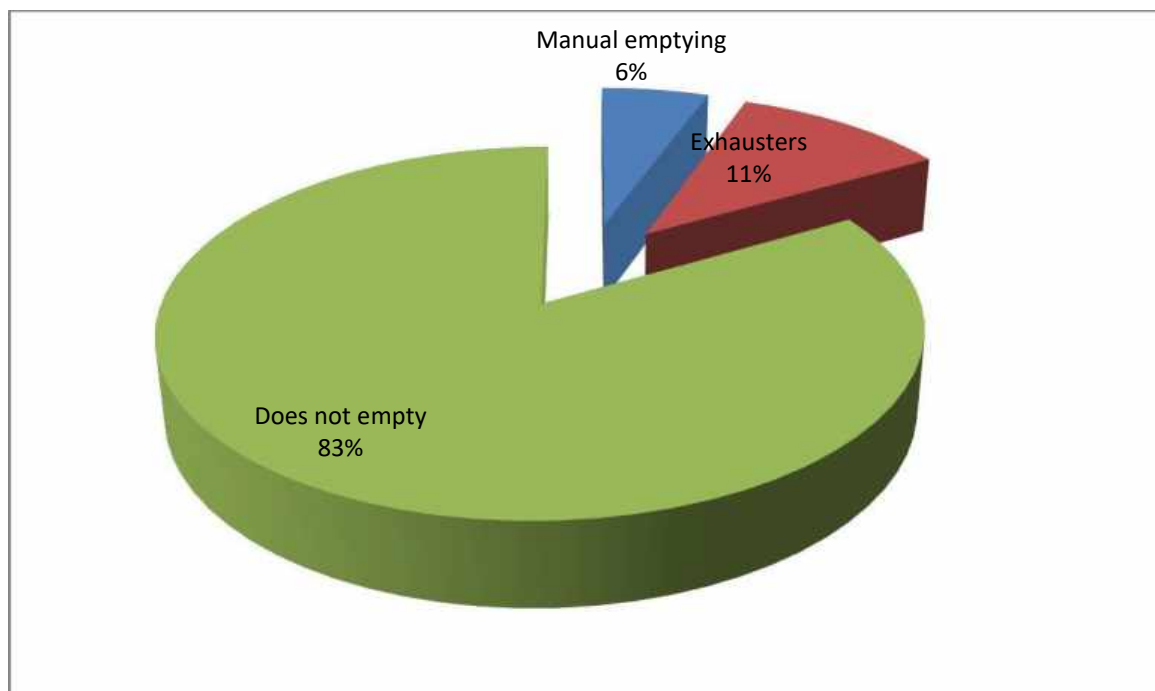


Figure 3: Type of emptying services used

In the testing area private sector providers provide both sludge and solid waste management services. However, majority are not aware and do not use the services except in solid waste management. This is one area the UBSUP still has to do more work.

1.2 Specific findings on the use of the toilets

1.2.1 Hand-washing

The majority (56%) of the toilet users do not wash their hands after visiting the toilet. Of the 41% of the users who do wash their hands, only 21% use soap. It should be mentioned that at the time of the study no hand-washing facilities were placed at the toilets. However, for the toilets to be constructed they are part and parcel of the facility. Hence it is anticipated that the percentage of people washing their hands after visiting the toilet will increase.

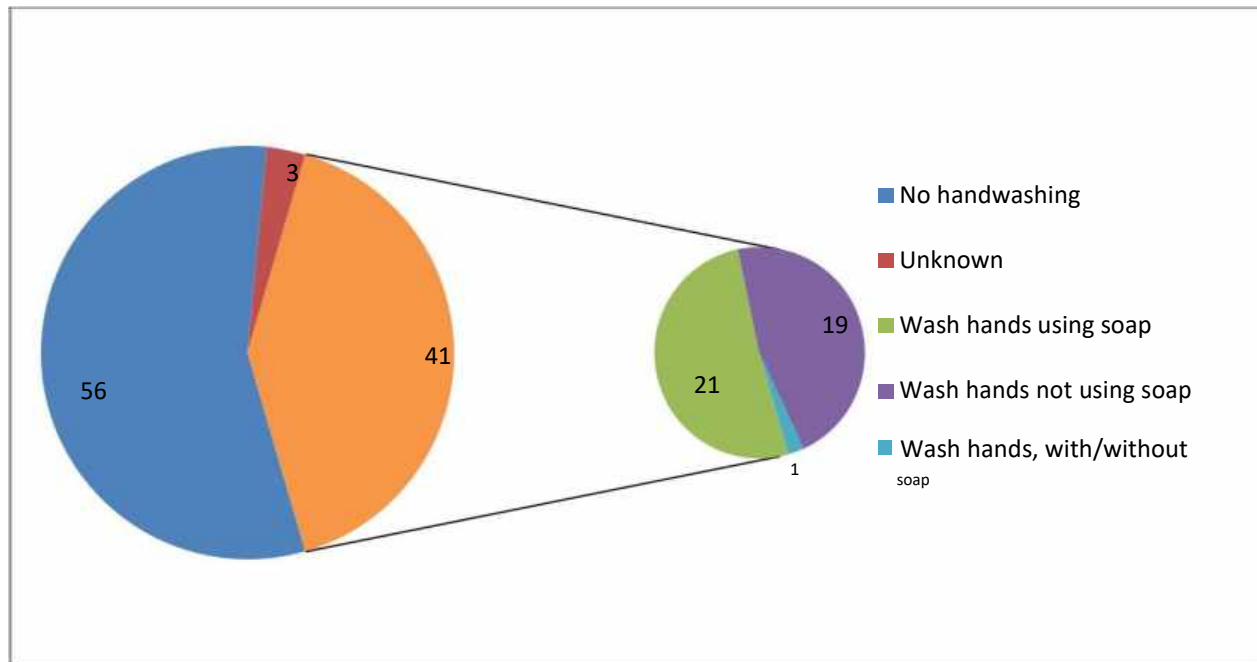


Figure 4: Hand washing practise

Impact on UBSUP: Hygiene training will be crucial in the implementation of UBSUP in order to achieve the attitude change with regard to hand washing and other hygiene practices. Basic things like use of soap for hand washing need to be emphasized and explained. This will need a stronger cooperation with the Local publish health officers on the ground.

1.2.2 Waste composition

More than 70% (newspapers are used as toilet paper and are not dumped) of the observed toilet vaults did not have any dumped solid wastes. Only about 10% showed some traces of sanitary pads in the vaults.

Impact on UBSUP: Further training should be done on menstrual and solid waste management to eliminate this problem. The types of solid wastes observed in the vaults of the toilets are shown below. They are quite minimal. Sanitary pads and plastics are strictly not to be disposed of in these toilets since they are not bio-degradable.



Figure 5: Waste composition

Households should be trained to mitigate this behaviour. The manual emptiers should also be trained to charge more for emptying toilets which contain sludge with a high level on non bio-degradable materials.

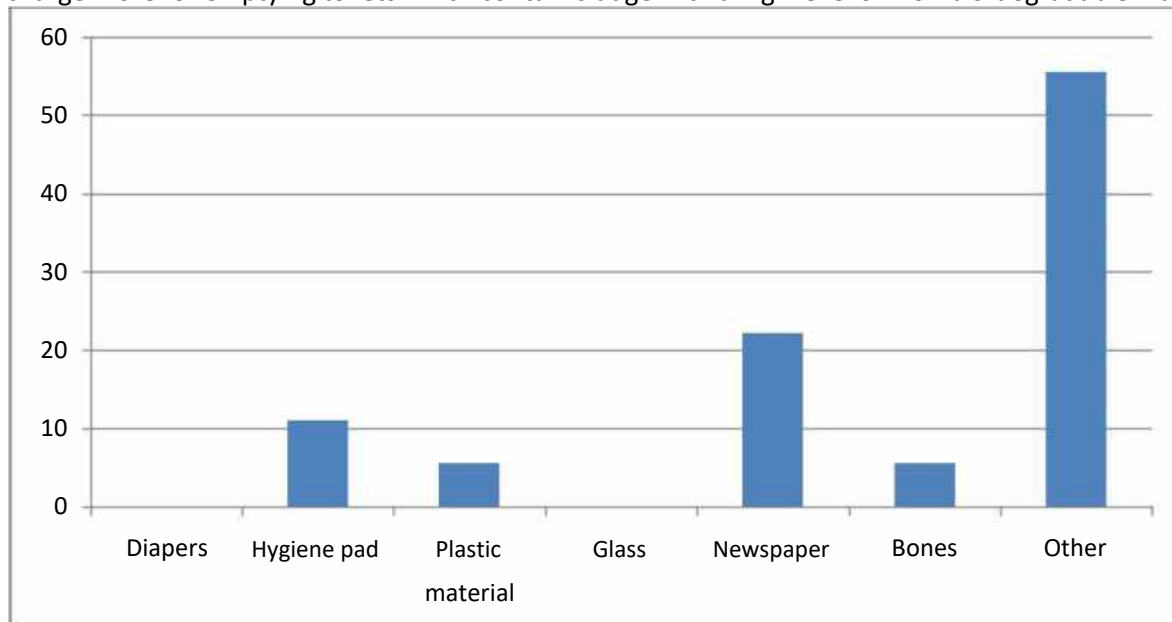


Figure 6: What kind of solid waste was found in the vaults?

1.2.3 Comfortability of the toilets

The study also looked into the proper and comfortable use the toilets as per the given training posters. More than three out of four users indicated that the use of the toilet was quite comfortable. Those indicated why using the toilet was not comfortable mainly mentioned that squatting was a problem.

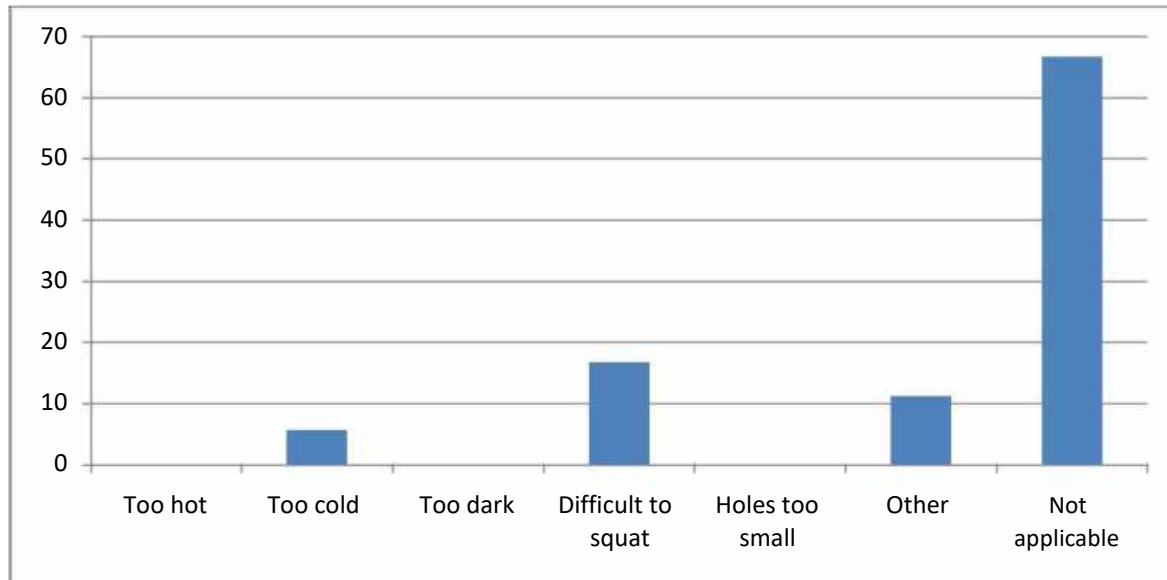


Figure 7: Reason for discomfort with the current SafiSan toilets

Impact on UBSUP: Squatting may also be difficult for the physically challenged, sick and the elderly. Some of the toilets have been already modified in such a way that accessibility was increased. These options have been included as a special option in the standard SafiSan toilets. For those who have difficulty with squatting, a seating option is offered. In this type of toilet a seating pedestal is placed, which can be combined with urine diversion. Further development of the designs might be required.

1.2.4 Maintenance

In none of the toilets, the urine pipe was blocked. Although the period of usage is relatively short, this indicates that the users of the toilets are basically using the toilets properly i.e. no defaecation in the urine section or disposing of toilet tissue in the right hole. In some of the toilet splashing of urine was noticed. However in some toilets it was noticed that people didn't pee in the right section of the squatting pan resulting in (very) wet faeces in the vault and the toilet smelling. Those toilets which showed some slight odour, the ventilation system was improved to increase the air circulation in the vaults. They are now odourless. Over 80% of observed toilets had no problems at all with flies and insects.



Figure 8: Open urine pipes

Impact on UBSUP: Further evidence of effectiveness of the trainings in the toilet use was shown by the proper management of the vaults and very limited odour from the toilets.

1.2.5 Weight of collected faeces

During the monitoring period, the weight of the collected faeces was measured. Once every three days, at a fixed time the bucket, which collected the faeces was removed from the vault, weighed, emptied, cleaned and replaced. Unfortunately was the quality of the weighing scale poor, resulting in in-accurate figures.

1.3 Conclusion

Basically all the users were quite content with the SafiSan toilet. However some comments and room for improvement were collected during the monitoring period.

Technically : UBSUP needs to further develop toilets which can be used by people who have difficulty with climbing stairs and/or squatting. One of the options which tackles the problem with climbing the stairs is the UDDT with an underground vault. This toilet has been constructed but was not operational during the monitoring phase. For those having difficulty with squatting, UBSUP offers a seating model. This option was also not fully developed during the monitoring phase.

For the proper functioning of the UDDTs, it is important that users are informed about the impact of in-proper usage of the toilets. Since waste deposited in the vault will affect the dehydration process negatively, measures needs to be taken to change this behaviour. Providing a waste collection bin as part of the toilet in combination with waste collection, maybe by the emptier, could mitigate this problem.

Hand washing using soap was in general not part of visiting a toilet. Main reason could be the fact that the SafiSan toilets were not provided with hand washing facilities at the time of monitoring. At this moment a hand washing facility is a (compulsory) part of the SafiSan toilet.

Again the importance of proper instruction on the use and maintenance of the toilets became paramount.