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**WATER, SANITATION AND HYGIENE:
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**Challenges and opportunities of resource oriented
sanitation toilets in Arba Minch, Ethiopia**

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REVIEWED PAPER - LOCAL

Arba Minch with about 75000 residents is one of the four towns in East Africa selected by ROSA to improve the poor sanitation. Out of the randomly surveyed 404 households in the town 10% use open defecation the rest use substandard pit latrines. The town is characterized by flooding, loose soil and in some place rocky ground unfavourable for latrine construction. ROSA has constructed seven Arborloo, seven urine diversion dry toilets, and five Fausa Alterna toilets for households. It is observed the users are negligent to participate in the operation and maintenance. The major challenges of the toilets includes poor hygiene, poor toilet seat usage, poor storage of excreta, low involvement in the transportation and low willingness to use in their garden (farm) as fertilizer. However, there is big demand for the toilets. Awareness to the public and cooperation along with institutions will realize success.

Introduction to current sanitation situation of Arba Minch

Arba Minch is one of the fast growing towns in Ethiopia; sanitation problem is increasing with time. However, the elongated shaped town and its peri-urban area supports many agricultural activities and supports ecological sanitation concepts. Most of the toilets are pit latrines of low standard and about 10% use open defecation (ROSA 2007). The town does not have regular pit desludging services forcing the residents to dig new pit, or manually desludge the pit, which is unacceptable practice from health point of view. There are people involved in emptying and digging toilets for their livelihood. The contents of the toilet pits are a mixture of soil, excreta which is semi-solid (dry toilet) so it is even difficult to use vacuum trucks for emptying. Some house holds complaining of that their compounds covered by old pits.

Most of the soil type in Arba Minch is fragile to support structures so collapsing and flooding of toilet pits is common. Most pits are shallow because of the loose soil structure and high digging costs depending on the soil and rockiness of the ground. The cost of construction materials is also expensive for many families to have a lined wall pit.

The municipality lacks the necessary infrastructure, man power, budget and organizational setup for developing the sanitation system of the town. Cross-cutting organizations such as the town health office carry out some health, sanitation and hygiene promotion activities. According to a survey done on 404 households (ROSA 2007), eighty five percent of the houses of Arba Minch town are made of mud wall and corrugated iron roof. Recently built houses have a compound of their own for single family. However, the old part of the town is crowded and most of them are confiscated by government from the owner's in 1974 and the residents have low income. The house rent is very minimal, in most cases 0.2 euro per month, that there is not enough money to maintain and construct toilets. Figure 1 shows the toilet conditions based on the transect survey done on 404 households.

In the congested parts of settlement with rented houses in which land is not available for digging pits and people either share a single latrine or go for open defecation. Generally, in the town gorges and jungle are potential open defecation areas and solid waste disposal sites.

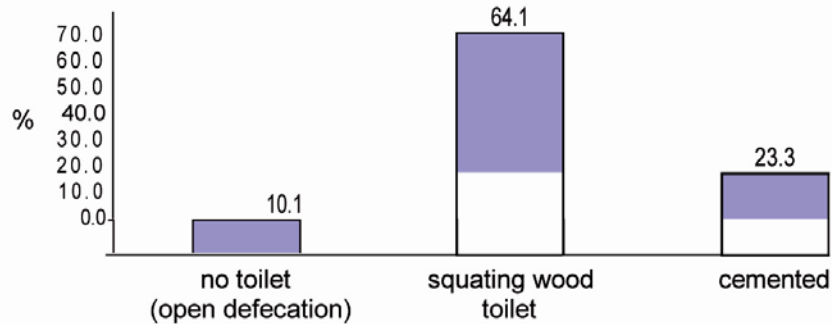


Figure 1. Type of toilet at Arba Minch town from the transect survey

Source: baseline study Rosa 2007

The demand for resource oriented toilets is therefore increasing since its introduction by ROSA (resource oriented sanitation concepts for peri-urban Africa) and Ecological sanitation Ethiopia in Arba Minch. However, ECOSAN toilets are not without challenges. This paper describes the challenges and opportunities of ECOSAN toilets in Arba Minch town.

Ecological sanitation in Arba Minch

Ecological sanitation sees human excreta, grey water, and solid waste from households as a resource that should be made available for use. An alternative to pit latrines can be found within the ecological sanitation (ecosan) concept, which is a new paradigm whose core principles are containment of human excreta, treatment to remove harmful pathogens, and possible reuse of the sanitized excreta (Winblad and SimpsonHébert, 2004). Ecosan approaches strive to be sustainable in all aspects. Reuse of excreta should be the final aim of any ecosan approach. If reuse is not possible, the sustainability of the toilets is at stake. It is an approach practiced with the majority of Ethiopian countryside where farming and pastoralism is major activity; however, non-hygienic.

Ecosan hardware options in Arbaminch, which solve flooding and rocky ground problems, include toilets with different construction materials and do not need water, constructed in the town since beginning of last year. ROSA has constructed seven Arborloos, seven urine diversion dry toilets, and five Fausa Alterna toilets for households. Crop trial using urine, co-compost preparation from solid waste, excreta and urine and biogas demonstration was constructed to realize the resource reuse concept. ROSA is monitoring the construction, the operation of the toilet and the systems along with local artisans since its start. It has also provided training for local artisans in different professions.

Opportunities for use of resource oriented sanitation in Arba Minch

In Arbaminch, pit latrine structures are not to the standard that are not functioning due to poor or no super structure, wide pit hole, improper floors. Functional pit latrines have also problems like overflow, odor and fly. Frequent flooding of the town and collapse of pit toilets because of the soil nature and the topography are some of the widely available driving forces for residents to choose an ECOSAN toilet technology. Besides, in some parts of the town rocky nature of the ground makes digging cost unthinkable for the major residents. The other advantage for the selection of the resource oriented toilets in the town is the presence of farmlands bordering the town; in which fertilizer cost is very high. Absence of desludging truck can be the other main driving forces for success of the Ecosan toilets.

Although the three toilet types (urine diverting dry toilets (UDDT), Fausa alterna, and arborloo) were constructed in the town, the majority of the residents requested for Fausa alterna may be it is relatively deeper and look like conventional pit latrines. UDDT added benefit that it is more resilient against flooding. Residents are requesting ROSA for the toilet construction advice, most prepare the required construction materials; they are willing to accept the unfamiliar toilet because of the prevailing problems in the town.

What are the challenges to resource oriented toilets by the users?

Operation of Ecosan toilets

Operation of Ecosan toilets includes starting from hygiene to the reuse of waste as a resource. From the families having ECOSAN toilet, they are not showing willingness to manage dry faeces and exchange urine tanks in spite of the awareness given by ROSA. Some of the Ecosan toilet users do not wash their hands after toilet use. This behavioural change is not taking place in the public. However, some forgot to keep water and soap for washing. Some families follow all the necessary precautions, like add ash on the faeces, use the faeces and urine for their garden. In most cases the user are not willing to contribute in cash or labor for the transportation of faeces and urine to the compost production site. The organized youth group who is producing co-compost is not willing to pay for ECOSAN products transporters, like dry faeces. In addition, the microfinance which organized the youth group does not do practical assistance in searching markets for co-compost.

ECOSAN toilets are a new technology of handling excreta in Arbaminch. Before 2006 almost all people in Arba Minch had not seen it or imagined it. Therefore, it needs more time for people to accept it. UDDT use involves dehydration of the faeces as a method of pathogen destruction. This is not acceptable and neglected by some users who have to use water for anal cleansing. Therefore, it is common in some UDDTs to see water on the faeces. It is also observed in one instance that container full of dried faeces were kept in rain and made (not purposely) accessible to kids and chickens which are dangerous for health. Urine pipes also found clogged by ash, some users do not add drying agents after excretion, while others seat in the wrong pit hole are some of the problems encountered during operation. In Arborloo and Fausa alterna composting toilets some urinate out of the pit and others do not add drying agent.

Operation and Maintenance by the users is still a problem that needs to be understood to get appropriate amount of payment, the people's perception of the management is not changed. Currently, the users are waiting for ROSA to operate and maintain their ECOSAN toilet products.

Access to the Ecosan toilets for collection

Currently, transportation of urine and faeces is only done by car but soon it will be started by donkey cart. Some Ecosan toilets are only be reached by roads which may be inaccessible to the current clumsy donkey carts because of their width, slope or bad road. This will be especially critical in flood affected, poor or have bad road such as low-income areas and thus will largely affect the selection of equipment and transportation cost.

Awareness and attitudes towards Ecosan toilets

All steps in urine and faeces management starting from hygiene, use of the toilets, household waste storage and segregation into urine and faeces, recycling, collection frequency, transportation, the willingness to pay for waste management services, and reuse of the excreta and preparation of co-compost, all depend on user awareness and participation. Thus, this is a crucial issue which determines the success or failure of a resource oriented sanitation concept approaches management system in Arbaminch. In Arba Minch public awareness and attitudes to excreta affect the whole operation and maintenance of Ecosan product system. The people discriminate people working in pit disludging and they sometimes do not involve social activities with them.

The UDDT, Arborloo, Fausa Alterna users have common problems like having wet uncovered excreta (not desiccated) because of improper use of the toilets. Ash is scarce because wood is getting expensive and some people do not want to collect extra ash from neighbourhood because they afraid of being labelled as witches.

Institutions and legislation towards Ecosan toilets

Institutional issues include the current and intended legislation and the extent to which it is enforced. Although the Ethiopian government policy says that waste generated by a household is the responsibility of the family, enforcement is not taking place. The town municipality, health bureau which are responsible for toilet and hygiene are not involved in promoting ECOSAN toilets although they are aware of the technologies.

Conclusion and lesson learned

Lessons learnt from the project indicate that the implementation of an ECOSAN system requires an interdisciplinary approach to address issues such as transport logistics, agricultural use, sociological aspects of acceptance, cultural appropriateness, health and hygiene, town planning, economic and small-enterprise promotion, institutional administration, and so on. This system has not yet been scaled up. It needs strong motivation at donor agencies and responsible governmental offices working on sanitation sector but they have not yet considered in full heart to take ECOSAN as an alternative sanitation approach. Similarly, behavioural and attitudinal change is required at consumer level for its acceptance. This change is possible through demonstration projects and education. This concept should be taught in schools, universities and in the communities through formal and non formal education which is started now by ROSA. Arba Minch has to go for ECOSAN toilets to solve the current toilet problems and reduce open defecation.

Ack

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