Dry Toilet Sanitation as an Alternative Solution to the Rural Ethiopia

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Autobiography

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Abstract
This paper intended to explore the sanitation situation of the rural Ethiopia and evaluate how the existing situation can welcome dry toilet as an alternative for sanitation. The study was based on the field survey, literature reviews and field observation during November - December of 2012 and 2013, and June 2014. The survey found out that a lot has been done in the area, but it is too early to declare that the question is solved. In terms of DT sanitation policy and promotion intra-ministerial collaborations are improving. Moreover, the traditional use of night soil for the crops that are eaten cooked is an interesting part to be taken into account when considering dry toilet.

Keywords: *Dry toilet, pit latrine, fertilizer, sanitation and behavior*

Introduction

Improving sanitation has been an agenda of decades for national governments, financing and partner organizations in developing countries. Still 2.5 billion people around the world lack access to proper sanitation whereas half of them practice open defecation (WHO, 2012; cited in O'neill, 2015). Most importantly, the problem prevails in the sub-Saharan countries, like Ethiopia. According to the UN World toilet day press release, in Ethiopia about 36% of the population's toilet option is open field (UN, 2014) and hence ranked among the top 10 countries, which practice open defecation (WHO, 2014).

In Ethiopia various organization are involved in a campaign of improving sanitation coverage: Ministry of Water, Irrigation and Energy (MoWE); Ministry of Health (MoH) and Ministry of Education (MoE), partner organizations are the main actors. Earlier they used to operate independently without coordination. Since 2013, all the ministries reached to an agreement to harmonize their efforts for one WaSH (ONWP, 2013). Yet, to come to a solution is quite challenging since solving sanitation

alone cannot bring ultimate result. The feasible direction that needs to be considered in rural Ethiopia is to make multi-sectoral campaign, and link open defecation to the improvement of agricultural productivity. Actually, this requires a change in the traditional toilet types to fit with composting.

Almost no flush toilet has been used in the rural part of the country. It would require high capital cost and there is no house connection of water supply. In rural areas where per capita supply is below 15 liters per day (Behailu, et al., 2015), it is unthinkable to install flush toilets or to make water borne toilets – these are good reasons to think of dry toilet. Common toilet type in the rural areas and most cities of the country is pit latrine. The nature of pit latrine promotes burring and forgetting human wastes – thus neglecting resources (Meizinger, 2009). The process of keeping human wastes in pit latrine will result in disconnection of phosphorous cycle. This will result in importing and distributing artificial fertilizer with expensive foreign currency, for the sake of improve productivity (Abbott, 2013). Rural poor are also imposed to buy fertilizers by credit and pay the price with interests subject to the change of the increasing dollar value. Most farmers cried out loud for the situation since their plots cannot generate adequate product to cover fertilizer cost. The other very important reason that drives us using human wastes as fertilizer is that its advantages of over the inorganic fertilizers in productivity, early maturity, and even taste (Cofie & Adamtey, 2009). Thus, thinking sanitation promotion as a source of fertilizer could be acceptable and would enhance efforts for dual functions.

Aim and Methodology

The paper aims at exploring the existing situation of sanitation in rural Ethiopia (briefing national strategy, citizen perception, practical situation and tricks between the health extension workers and the rural people on sanitation) and discussing ways to make dry toilet as an alternative sanitation solution.

The research is qualitative by its nature, based on the views of individuals in rural areas, and field observations in rural Ethiopia. A household survey (n=1524) was done on sanitation practices (hand wash, toilet and use, open defecation and daily water consumption). In addition to the survey, the author made his observations on the provision of sanitation facilities and the extent of use. Moreover, literature reviews was made to look through the existing situation and national government's strategy.

In the selection of the sample for the survey, the governmental structure was followed. Amhara and Benishangul Gumuz regions were considered for the study since the focus of the research is Community Managed Projects (CMP) approach for water supply and sanitation and this approach was practiced more commonly in the two regions. Based on the number of districts that implemented CMP approach, three from Benishangul Gumuz and four from Amhara were selected. A total of 179 water points were randomly selected and one third of user households from these water points were interviewed for water. Accordingly, 1524 members of households were interviewed during November - December of 2012 and 2013, and June 2014. Moreover, observation of toilets was made in parallel. The focus of the survey was water supply and sanitation. In this paper only the sanitation part is considered.

The paper will present the result and discussion part about national strategy to embark on sanitation improvement, status of sanitation and open defecation in the study areas, open defecation in the lenses of the user and built sanitation facilities and their utilization. It covers also traditional thinking of rural people towards human wastes as resource and the opportunity to bring dry toilet as an alternative option.

Results and discussion

Progress in reducing open defecation

The paper is discusses the progresses of Benishangul Gumuz region, Amhara region and the national cases, since the study is focused in the two regions. As indicated in Figure 1, open defecation reduced nationally was significantly between 1990 and 2012, about 55% populations succeed to get rid of open

defecation. In 1990 open defecation was 92% and by 2012 the figure was reduced to 37% (WHO, 2014).

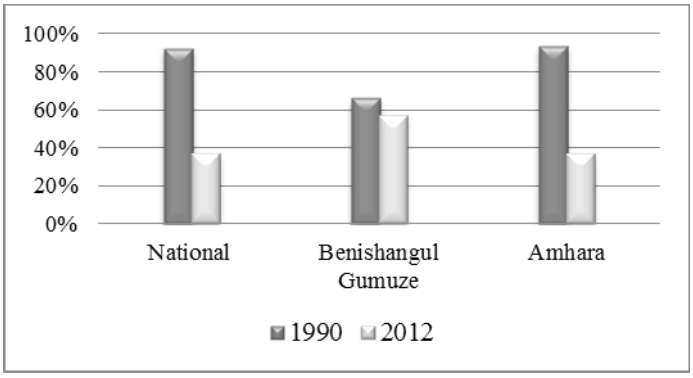

Figure 1. Open defecation in Ethiopia and in the two regions between 1990 and 2012 (WHO, 2014)

However, the improvement in sanitation in the time frame mentioned above is not changing uniformly throughout. For example, in the Amhara region achievement was 56% (from 93% to 37%) while the Benishangul Gumuz did only 9%. The rest of the population who counted as having sanitation facility cannot be absolutely considered as sanitized community. At least men and boys spent their time at farm where there is no toilet. On the other hand, having toilet is not a guarantee for uncontaminated environment. If parts of the family members fail to use sanitation facility properly, it will affect the whole family. The same is true when some households fail to maintain proper sanitation, because the problem will reach everyone in the village. Therefore, the principle of "Not in my yard" is not applicable for sanitation.

Trend of incorporating sanitation in projects and the national strategy

The terms *water supply and sanitation* are dominating titles of projects. In Ethiopia, one cannot find water supply project without sanitation. In practice, sanitation part is given very little attention compared to water supply. The reason behind, based on my judgment, is the experts involved in such projects are not staffed from both disciplines reasonably. Only engineers may be given responsibility and at the course of implementation they focus only on engineering and end with no or little sanitation part. The other hypothesis about the problem is that sanitation may be suffixed to a projects' name to increase the possibility of getting fund. Whatever the reason is, sanitation is the area, which gets less attention by implementers unless devoted only for sanitation.

This problem is not only at project level in Ethiopia, but it is also reflected at the ministerial level. The MoWE was responsible to Water, Sanitation and Hygiene (WASH) activity, at the same time the MoH also responsible to the WASH. Both are spending resources; however, the problem is the lack of integration. They cannot do both water supply and sanitation adequately. They did not share the quality they have. Moreover, their plans were not integrated.

For instance, Ethiopia launched Health extension program (HEP) in 2003. The program has seven major areas and 17 packages to address, among which *Hygiene and Environmental Sanitation* is an area with seven packages. The packages are proper and safe excreta disposal system, proper and safe solid and liquid waste management, water supply safety measures, food hygiene and safety measures, healthy home environment, arthropod and rodent control, and personal hygiene (Bilal, et al. 2011). The first three packages are common for the two ministries and to their regional counterparts. Moreover, their beneficiaries are also same people. They had worked independently and fragmentally in the way it contributed for low achievements. At least by now, they are trying to harmonize their work to plan and implement together in their area of specialization (ONWP, 2013). The MoH is responsible for sanitation aspect whereas MoWE is accountable for water supply aspect.

At the moment, Health Extension Workers (HEWs) provide any education related matters for hygiene and sanitation. HEWs assigned at each *Kebele* (smallest administration unit in Ethiopia) where they can meet rural people house to house to give advice on the HEP packages. In this program, the technique used to boost sanitation is creating competition among villages and signify the best and the worst publicly by erecting green and red flag in the villages. Green is the symbol of Open Defecation Free (ODF) whereas red is the other way round.

Checklists that need to be fulfilled during HEWs' scout are presence of toilets, hand wash facilities, and ODF free environment. Therefore, every member of a village wants to have green flag and keep the requirements at least physically – proper utilization is also another big issue for sanitized environment. Remember, HEWs also need to have successful villages under their intervention area. Therefore, there are misrepresentations to escape from being labeled badly in front of every body passing by their village. From my own observation from the community during the fieldwork, they are keener on things that others look at them than what they actually feel for themselves. As a result I faced difficulties to find direct responses about open defection and was forced to change to indirect questions to investigate these issues.

Existing situation of sanitation and types of toilet

Over 90% of the surveyed households replied that they have a toilet. The most common type of toilet in the rural Ethiopia is pit latrine. It is made of an excavated pit, superstructure and a slab of local material. As shown in Figure 2, the cover of the toilet is either thatched or corrugated iron sheet depending on the economy of the household. Sometimes the wall could be covered with plotline sheet and no roof at all. To keep the toilet free from fly breeding and smell, ash is added after each use. All these are the efforts of the health extortion program. Discussion on the impact is quite challenging but seeing people on the transition towards sanitized environment is exiting. During data collection asking a direct question to an individual was thought to give an answer. If asked do you defecate open, the answer was no –with ashamed gesture. However, in practice night soil was observed here and there. It was interesting to see people getting ashamed of open defecation.

Figure 2: Typical pit latrines in Ethiopia (Photo by author)

Because of this reason the questions of survey were changed to indirect questions. Rather than asking a person about oneself, they were asked about the behavior of the community in general. The question was "do you think open defection is practiced in your community?" Hence, about 43% of the sample believes that open defecation still exists. This result is a bit higher than the report of the WHO and UNICEF (2014). The exaggeration is because of the research method. As discussed earlier, this research is made in the rural part of the country that did not address the urban situation.

Hand washing is one of the basic requirements to keep sanitized environment. Moreover, it is one of the elements in the checklist of HEWs. Washing during food preparation, food serving, before and after meal, and after toilet are the important issues. However, in the survey the question about hand wash after toilet was the focus. Accordingly, about 84% respondents said we wash our hands after toilet. This result contradicts with the figure of open defecation. To the maximum the people that

supposed to get water for hand wash is when they use proper toilet. But the pressure from the HEWs is still contributed for this inflated result. My argument for this is the observed hand wash facilities.

Most visited toilets have a plastic bottle for hand wash service. Yet, none of these systems are giving service in a proper way *(see Figure 3*). The bottles looks deteriorated and never used for months, still they want to have them at the toilets. The reason observed from the field is that there is competition among villages for sanitation supervised by the extension health workers. Householders do not want to be embarrassed by missing of some requirements of sanitation. They often placed the bottles to satisfy the requirement of supervision by the HEWs. Surely, they are not benefiting from it. As to me, the HEWs should not focus on physical presence of sanitation facilities, but rather in behavioral changes in their evaluations.

Figure 3: Common hand wash facilities (Photo by author)

Traditional practice

Reducing open defection is a challenge in the rural part of the country because of the livelihood and nature of the daily activity. As most of people are engaged in farming they do not stay in office or at home. From this perspective, it seems that it will take decades to get rid of open defecation for good although the efforts are significant. However, the good news is the tradition of the rural community in using of night soil as fertilizer by defecting in their own farm when they grow non-raw edible crops like maize, sorghum and the likes. Moreover, it is very easy to promote composting in the area since they have a trend of using animal manure as fertilized very commonly as shown in Figure 4.

Figure 4: Practice of Animal manure as fertilizer in Dega Damot District (Photo by author, 2013)

Dry toilet and Ethiopia experience

A EU research project, Resources Oriented Sanitation for peri-urban Africa (ROSA) introduced dry toilet in Ethiopia a decade ago. ROSA was conducted research piloting at Arba Mininch in collaboration of Arba Minch University, selected municipalities and other Universities in Africa. The objective of the project was to introduce Urine Diversion Dry Toilet (UDDT) to enhance sanitized environment. However, the focus of the project was to peri-urban areas, it brought the idea of dealing with human waste as a source of fertilize. Moreover, the research done on the urine utilization for crop growth has showed significant difference on production when compared with conventional way of crop growing (ROSA, 2009 and Meizinger, et al. 2009).

The challenges of employing dry toilet concept or UDDT structure in Ethiopia are economy and way of advertising. During the ROSA project, technical assistance and financial support were provided since it was considered as demonstration. However, after the project those UDDTs are not as effective as was planned because of operation, maintenance and market problems. Since the toilets are situated in the city there is a need to transport urine and compost to farm but market linkage was not established well and it is not in a state of scaling up (Kassa & Behailu, 2012). Thus, taking this lesson to the rural may need further research more on behavior of the individuals in handling and transporting.

The possible threats that could challenge the implementation of dry toilet in rural areas are low economic potential of the individual households and need of a number of such facilities per household - at home and at the farm. As explained earlier, men spend at farm the whole day year round. Therefore, implementation of dry toilet schemes could be successful if it is promoted with subsidies and adequate training to improve the behavior of the communities in rural Ethiopia.

Conclusions and Remarks

The following recommendations are drawn:

- So far dry toilet has been tested in peri-urban areas. However, the discussion of this paper is on rural community. Still, we can see the gaps between bringing the dry toilet sanitation into ground because of its initial investment and awareness of the user. To be effective the ways of promotion need to be changed from conventional way to a new one. Rather than enforcing convincing the rural people has leverage at the end.
- Dry toilet can be an alternative solution but subsidies and intensive training are needed.
- The traditional experience of defecation in the farm is an asset to boost the use of human waste as fertilizer. Still, further promotion and awareness is very important in handling and technical matters.
- MOWE and MoH have already committed to work together in the area. Still, Ministry of Agriculture needs to cooperate with the other ministries to work on sanitation to materialize the inclusion of dry toilet as a sanitation alternative.

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