Dry Ecological Sanitation Alternative in Tanzania

By:

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Background

- EcoSan was Introduced in Tanzania by EEPCO in 2000 (95 Double vaults Urine diverting toilets units were built in a pilot Area (Majumbasita) in Dar es Salaam city – Ilala District)
- Over this period, EcoSan gained tremendous credibility countrywide(EcoSan toilets are now widely promoted in Tanzania .

EcoSan Projects -regions

Double vaults Urine diverting EcoSan

CASE STUDIES
I. Pemba Island – "Sanitation Options training" December 2006

Dry EcoSan toilet under construction for household in Pemba Island. Photos by EEPCO 2006

- 4 Districts Involved
- 3 Options learnt (EcoSan, SanPlat and pour flush)
- Number of Participants per District – 30 artisans, District officials 2 (total number 128)
- Number of EcoSan toilets built during Event – 4 (1 in each district)
- Implementing Agency – EEPCO
- Funding Agency – UNICEF, Dar Es Salaam

Noticed Challenges: -

- Cultural belief regarding handling of urine
- Washing/Bathing/Urine Place

CASE STUDIES Continued
II. School EcoSan toilets – Kisarawe District Coast Region

- Implemented project: **““Ecological Sanitation in schools.” 2003 - 2005**
- 10 Primary Schools Involved
- 10 Trainings was organized in ten villages on construction, operation and maintenance of EcoSan toilets
- Number of Participants per Training – 14 (2 teachers, 2 Village leaders and 10 Artisans)
- Number of school EcoSan toilets buildings built -20 (2 in each school – 3stances for girls, 3stances for boys)
- Implementing Agency – EEPCO
- Funding Agency – Finland Embassy , Dar Es Salaam

EcoSan School Toilet at Titu Primary school – Kisarawe District Coast region (photo by EEPCO 20006)

CASE STUDIES Continued
III & IV. Household and School EcoSan toilets - Hai District, Kilimanjaro region

- Implemented project: **"Promotion of Ecological Sanitation in Hai District" 2002**
- 1Primary Schools Involved
- Trainings was organized on construction, operation and maintenance of EcoSan toilets
- Number of Participants – 14 (2 teachers, 2 District officials and 10 Artisans)
- 12 stances School EcoSan toilet built (6 stances for girls, 6 stances for boys)
- 5 household EcoSan toilets built
- Implementing Agency – EEPCO
- Funding Agency – UNICEF, Dar Es Salaam

EcoSan School Toilet at Bomango'mbe – Hai District Kilimanjaro (photo by EEPCO 20002)

Field Survey
Household (hh) Survey in Hai District – March 2007

- Number of hh visited – 31 (all hh in the district with EcoSan Toilets)
- **Interview conducted regarding:**
- Use and maintenance of the toilets
- household knowledge/information and attitudes regarding the toilets
- **sanitary inspection conducted to collect information about:**
- use, maintenance, cleanliness, and presence of additives
- **Focus group discussion (FDG)** administered to:
- look on barriers and ways forward in increasing the number of EcoSan toilets in the district

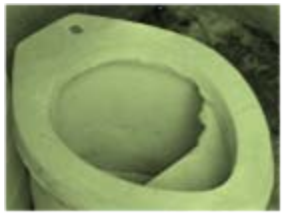
Field Survey Continued
School (Sch) Survey Hai & Kisarawe Districts – March 2007, April 2007

- Bomang'ombe Primary school visited in Hai
- 10 Primary schools visited in Kisarawe
- **Interview conducted regarding:**
- use, maintenance of the toilets
- household knowledge/information and attitudes regarding the toilets
- **sanitary inspection conducted to collect information about:**
- use, maintenance, cleanliness, and presence of additives
- **Focus group discussion (FDG)** administered to:
- look on problems and ways forward

General issues/concerns - hh and sch EcoSan toilets
1. EcoSan pans including Place for anal cleansing

- Blockage of pipes and difficulty to wash in the urine bowl and anal cleaning bowl.
- Materials used to make the pans (concrete-cement finish) do not look modern/urban. - Comparison with Ceramic Water closet (WC)

EcoSan squatting pan – Innovated & Promoted by EEPCO. Approximate cost US $ 4



EcoSan seating pan – Promoted by EEPCO. Approximate cost US $ 4

EcoSan squatting pan – Promoted by Water and Environmental Project Management organization (WEPMO). Photo by EEPCO 2007.

WC usually used in Tanzania (imported). Photo by EEPCO 2006
Approximate cost: Chinese = US $ 6.7, Indian = US $ 7.5

General issues/concerns - hh and sch EcoSan toilets Continued
2. Handling and re-use of Urine

- **Possibility of pathogens and pharmaceuticals residues in the urine**
- risk during handling of the urine and
- bioaccumulation of pharmaceuticals in plants
- **Quotes regarding handling and re-use of urine.**
- "There must be diseases causing microorganism in urine. Doctors frequently asked sick people to bring urine for diagnosis so I think urine is risky and needs special treatment rather than collecting, storing and reusing it"
- "When I took antibiotic pills its smell smells in my urine this means to me that some pills residues are excreted with my urine what will happen to the plants when I apply the urine as fertilizer?'
- "Sometimes plant dies when we urinate on them frequently, now we are told to apply urine in our crops we are afraid".
- "Diluting urine before use is a problem. We do not know the dilution factor/ratio and how to avoid smell".
- " I can not eat garden products knowing that urine was applied as fertilizer"

General issues/concerns - hh and sch EcoSan toilets Continued
3. Market for by-products from EcoSan Toilets

- Re-use of human excreta is still new concept
- Under urban/peri-urban conditions, not all households are engaged in agriculture (do not use the by-products as fertilizer)
- There are some reservations
- AS RESULT
- Currently there is no reliable market for the by-products.
- Only 46% of households using EcoSan toilets have started using urine as fertilizer (Shayo 2003).

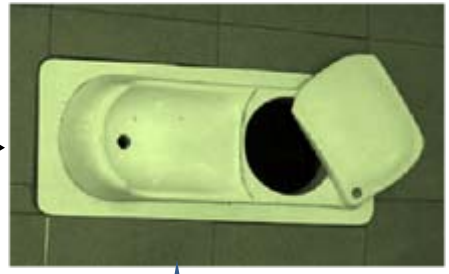
General issues/concerns - hh and sch EcoSan toilets Continued
4. Washing/bathing place

- Options like pit latrines, pour flush, water closets, toilets are also used as bathing rooms
- No provision for bathing in the EcoSan toilet
- People are complaining about the situation and
- some are bathing on the top slab of the standby vault

Required Immediate Actions

- **EcoSan Actors should:**
- Find alternative of improving EcoSan pans to make them: More ideal, attractive and hence self incentive (can be locally made or imported , but affordable).
- Find ways to provide Washing/bathing place as component for EcoSan toilet design.
- Increase tirelessly promoting reuse of EcoSan by-products.

←Examples→



Composting toilet with urine separation (China) Source: Christine Werner, Patrick Bracken, Florian Klingel

Urine diverting dry toilet in Guangxi-Province, China Source: Christine Werner

Urine divertion and dry composting of fecal matter atTingvall conference center Sweden.
Source Prof Dr. Petter D. Jenssen

Expectations & Strategies

Rural Areas –

Current situation

< % Traditional pit latrines

VIPs, Pour flush etc

EcoSan Alternative

Current Situation

Urban/Peri-urban – Current situation

VIPs, flush, sewerage, septic tank, pour flush, > % traditional pit latrines etc

Product development/Improvement

Affordable
Durable
Initial Subsidy

Promotion

EcoSan Alternative

Futur on

Affordable
Durable

Promotion

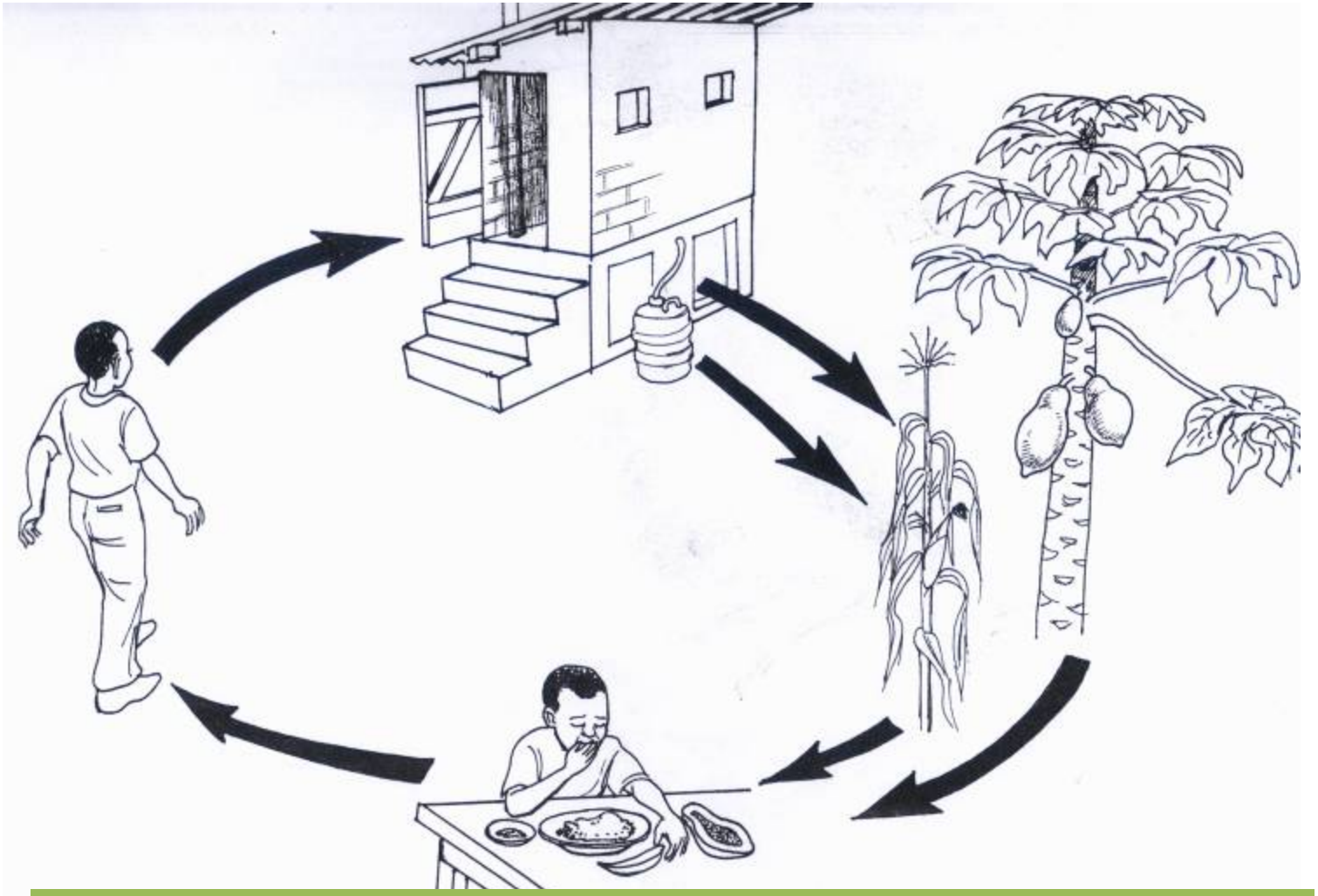
Conclusion

- The community welcomed the EcoSan as a solution to latrines construction in their areas as they found it permanent, simple, durable, affordable, environmentally friendly and hygienically safe (Shayo 2003).
- However, people's reservations and attitudes should be addressed to make the toilets users friendly and attract more people. In conclusion dry urine diversion EcoSan toilets are accepted in the areas built.

Recommendations

- For Tanzanian context, research is required to examine potential harmful substances (pathogens, heavy metals, commonly used pharmaceuticals and hazardous organic substances) in urine and examine retention time for urine storage and dilution requirements
- Alternatives of utilizing urine should be considered
- To promote use of byproducts from EcoSan toilets hence create its market/demand, a project of collection and reuse of the byproducts on a large scale in the country is recommended.
- EcoSan actors countrywide should find alternative of improving urine diversion EcoSan pans to make them more ideal, attractive and hence self incentive.
- Consideration for ideal Washing/bathing place as component for EcoSan toilet is recommended.
- Reflection of people's culture/customs on use of toilets is very important factor in planning, designing and implementing EcoSan projects.

“EcoSan Closing The Loop On Sanitation”



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