



East Africa Practitioners Workshop on Pro Poor Urban Sanitation and Hygiene LAICO Umubano Hotel, Kigali, Rwanda, March 29th-31st 2011

1. **Title 'Best Practice':** Safer sanitation and water treatment
Gunder Edstrom
2. **Country:** In many countries in Africa and Asia
3. **Initiator of the 'Best Practise':** In my work with SUDEA, Red Cross and UNICEF in many countries among others, Ethiopia, Kenya and just now in Uganda, in Asia Sri Lanka, The Philippines, Pakistan etc. During my work I have collected and developed different ideas and tried to put them together.

4. **Background of the initiative:**

I have been working with water and sanitation since the late 60s. I have followed the development of composting toilets, electric toilets, freezer toilets and vacuum toilets. In 1993 I was introduced to urine diversion combined with dry toilets by Dr Torsten Modig. Our cooperation together with Almaz led to the concept of ECOSAN –Economical, Ecological Sanitation

I have also been working in many emergencies with water, sanitation and hygiene. Through this work my observation has been that some recommendations needs to be modified. Example: The amount of latrines recommended in the Sphere standard per person do not take into account the use of urinals which can reduce the recommendation significantly.

Other examples are: In flooded areas the most common solution is to build pit latrines. In a hot climate such as Namibia where 6 deep pit latrines were built in IDP camp for five hundred persons, the bad odor and the maggot production was at its peak. The fly breeding was immense.

In many camps the water quality has not been acceptable or people have been forced to use unsafe water like river water.

5. **Description of the urine diverting, dry toilets (UDDTs)**

Urine separation or diversion is the basis for reducing air and ground water pollution from toilet systems that do not use water for flushing. The MDG 7, Environment protection, does not take into account the air pollution from mixing excreta and urine in pit latrines. There are also other benefits from never mixing urine and faeces: the products are easier to handle, easier to transport, easier to recycle, no flies and no smell.



The basic work has been through the ECOSAN project in Ethiopia. It has shown the do-ability of using human excreta as fertilizer to produce food, fodder flower and or trees. But at the same time it has also shown that it is safer and more environmental friendly than common sanitation systems (pit latrines and poor flush toilets) promoted by many institutions – Governmental and International - and NGOs in Africa and Asia. Through the introduction of Urban Agriculture or Home Gardening we have succeeded to show how to empower women with natural resource management from the household. This has shown to be a very good income generating method for poor rural and peri-urban households.

UDDTs are a better option than ordinary pit latrines for sanitation in poor urban settlements, camps and schools because the ECOSAN system is more complicated and need more training and knowledge.

- Less fly and no mosquito breeding
- Less smell
- More environmental friendly
- Safer

6. Urinals

In restaurants, camps, schools and other public places the female toilets often create a queue. But at the men's toilet the queue is short, if any. The reason is most of the time the use of urinals. Urinating is called "short call" because it takes a short time. But the equipment in the ladies' toilets is not always proper for ladies' needs. There you only find toilets for "combined" needs, not differentiated – urinating, defecating or menstruating. The two last needs take more time and blocks the "short calls". In my presentation I show one example from a school in Uganda where they have rebuilt three girls' latrines into six urinals, two latrines and one washing room at a very low cost. This way they have tripled the capacity! On the boys' side it was built like that from the beginning – three latrines with six urinals – and no queues!

The present option to improve many toilets in public places, urban settlements, camps and schools is to build a new structure and abandon the old one. The options are many if girls and ladies learn and accept to use urinals.

Option 1 - Toilets can be extended with a fence and urinals constructed for both male and female. The urine then seeps into a soak pit and the faeces pit does not fill up so fast. The life time will be 4-5 times a mixing latrine.

Option2 - If the pit latrine is filled up, close the pit and put a raised toilet which is emptied from the backside, either by using manpower or machines or containers. The urine can then seep into a soak pit.

Option 3 - Build a new toilet, make it raised and possible to empty from the back side like in the former one.

Option 4 - Build or rebuild it the ECOSAN way! Raised, preferable sitting, with a urine collector or urine diverting seat, use containers for collecting faeces and tanks for collecting urine. Sign an agreement with a farmer to use the urine as a fertiliser or start a production of 4F in the neighbourhood.

Notice! Try to avoid rain water to enter the urine soak pit!



7. Treatment of unsafe drinking water

In slum areas as in emergency situations, the contamination of water is not unusual. The treatment of water or lack of safe water in many emergencies has shown the need for better options than chemicals which can affect the health of the beneficiaries. Through my work at UNICEF's regional office in Kenya I have come in contact with different low cost filters that can protect from most water borne diseases.

For the last ten years the use of chemicals at the household level has increased a lot. On sign posts in Kampala we can read advertisers wanting us to treat all drinking water, even the tap water. The chemicals used are killing pathogens and/or lowering the turbidity. Sounds good, but a long time consumption of an unknown amount of chemicals can affect the stomach negatively. Especially in an emergency situation we tend to distribute chemicals without any restriction or without proper information of the side effects. Since the ceramic filters are safer and easy for anybody to use, they should be recommended instead of using the chemicals we are using today. One of the disadvantages of the chemicals is the dosage of the amount of chemicals which can give a counter productive result.

One of the arguments for using chemicals is the lower cost; however, filters can be used for a long time. In terms of people's health, filters are also cost effective.

The water filters made of ceramics are commonly used and can be bought in many places in towns. These filters do not have any known negative side effects.

- A ceramic filter costs around 2.50 US\$ and can serve a family for a few months to clean the drinking water. An emergency ceramic filter that guarantees almost pathogen free 7 m³ water (some not so common viruses can slip through!) costs around 10\$. The amount is enough for cleaning the drinking water for a family of 6 persons for at least one year. In some countries local factories have started to produce low cost ceramic filters.
- A membrane filter with ultra filtration that catches even viruses costs below 30 US\$ and guarantees the quality for 17 m³ which means it will last for at least 3 years.

Both from the point of view of health and economics, it is about time that we change our ways by informing involved partners about the new developments.

8. Major drivers of the process and success

- The main reason for this paper is to spread the idea of using urinals in pro-poor urban settings, schools, camps and other congested areas to reduce the queuing time, reduce the need for latrines, to shorten the building time, reduce the cost for construction and reduce environmental pollution.
- The main target of the initiative is women and children in particular and the whole family in general. This is a concept also possible on household level. The other target groups are government organizations and NGOs who participate in training for trainers and then continue further to introduce urinals. UNICEF, UNHCR and Red Cross have shown their interest in changing their WASH approach.
- To upgrade the international standard for emergencies SPHERE regarding sanitation



- To “lead” the development of sanitation systems to look at the possibilities of avoiding polluting the environment with traditional systems will be a result
- To improve the drinking water quality for people who do not have access to safe water this is the objective, yes, but also a driver!

9. Resources

- There have not been any special allocated resources for this. Since the results and the experience from ECOSAN is there. A “simpler” version is less expensive, actually it is not costing as much as an ordinary pit latrine.
- Chemicals are more expensive and less safe when you compare the cost for the same amount of water.

10. Successes

- The obstacle has been the pre-conceived idea such as that “females do not want to use urinals”. Experience so far shows that the younger female generation appreciates using urinals.
- UDDTs and ECOSAN is spread all over the world, but many times without proper introduction
- Low cost water filters are now available in the market

11. Lessons learned

- The basic concept of male and female urinals can be used in many areas, also at household level
- The concept is proper for all types of communal toilets
- The use of urine, when applied under the top soil, is suitable especially for countries with low rain fall
- In projects where human friendly technology and where well-managed interventions are introduced with monitoring, the results have been durable and sustainable

Address the following and possibly other issues:

- *Is this achievement the end or just the start?*

The idea is new and the achievement has just started

- *What is the way forward to achieve sustainability, what still needs to be done?*

Political will and commitment from the governments to do the scaling up.

- *What should we do differently when we could start afresh and how can we correct the weak aspects in the initiative?*

We should start the introduction in poor-urban areas, camps and in schools! But it very important that the hygiene training comes with the introduction. It is more cost effective to clean, empty and maintain toilets than to build new when the pits are full!

- *Which were the most difficult components, perhaps still not solved?*

We initiated the concept of ECOSAN - Economy, Ecology, Sanitation (the name of our project proposal) with a detailed concept developed by a multidisciplinary group of academicians and chose the Urine Diverting Technique as a safe lead for recycling. However, huge confusion was created when others came with mixed techniques and started to call it ECOSAN. The name of a



Sida research program – SanRes – was changed to EcoSanRes, but a lot of money has been spent on old types of mixing pit latrine systems. There is a need of solidarity and respect to initiators among the core group of water and sanitation activists.

- *What were the easiest and what the most difficult elements in this ‘best practice’?*

At the beginning one of the most difficult issues was to convince the bureaucrats that this system should be tried. Many people argued that the system of urinals for females will not be accepted due to culture. The challenging and rewarding aspect is when I work with schools and organizations that see the idea function. Culture is in not a hindrance!

- *Could this intervention/initiative/practice be scaled up in other towns/areas in the country with similar challenges and comparable conditions?*

Sanitation will be scaled up. The benefits from diverting urine and faeces are many – money saving, environmental friendly, comfortable and less spreading of diseases.

It might be more problematic to convince organizations to distribute a more lasting solution for safe drinking water through ceramic or membrane filters since the initial cost is higher than chemicals.

- *What are crucial preconditions for the initiative to be successful elsewhere? (in terms of resources needed, knowledge and attitude of different stakeholders, support structures, leadership etc)*

Good knowledge of the concept.

12. More information:

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13. Further reading:

Google on Almaz Terrefe and/or Gunder Edstrom

