

“EcoSan: An Old Approach Re-Applied”

Edward D. Breslin, Steven Sugden and John Kelleher

Where there was once a toilet, now there is a fruit-bearing tree

❖ EcoSan Saying in Moçambique

Ecological sanitation, or EcoSan, is an ancient idea that has gained new credence internationally. People throughout history have used faeces and urine for agricultural purposes as they have recognised the positive qualities of these so-called wastes. EcoSan builds on this knowledge, and promotes a range of technological sanitation alternatives that allow people to hygienically recycle human excreta back into the environment.

EcoSan is growing internationally as people across cultures and continents now actively seek out ecological sanitation alternatives for their families.

WaterAid's country programmes in southern Africa (Mozambique, Malawi and Zambia) have been introducing EcoSan concepts and technologies to partners. EcoSan is now becoming important components of partner sanitation programmes.

Some background:

What is EcoSan, and why is it becoming so popular?

EcoSan is approach to sanitation that differs considerably from other approaches.

At its simplest, EcoSan is the conversion and reuse of faeces and urine for productive purposes. Many see faeces and urine as **wastes** that need to be disposed of down pits or through sewers. Proponents of ecological sanitation recognise that faeces and urine are actually **resources** which when properly used, can increase crop yields, strengthen the soil's water holding capacity and facilitate the growth of trees.

The nutrients contained within faeces and urine are frequently of better quality than the commercial fertilisers being applied – at great cost – to crops throughout the world. To many poor families and individuals, commercial fertilisers are, in any case, unaffordable. And even if commercial fertilisers were cheaper and easily accessible to the poor, other hard questions are being asked about the long-term consequences of commercial fertiliser application such as the dangers of polluting rivers and the reduction in the carrying capacity of the land over time.

EcoSan therefore offers a viable, low-cost and sustainable alternative to the limitations of commercial fertilisers as well as an effective means to eliminate harmful excreta from the immediate environment.

Principles of EcoSan

EcoSan is based on three main principles:

- It offers families a **safe sanitation solution** that prevents disease and promotes health by successfully and hygienically removing pathogen-rich excreta from the immediate environment
- It is **environmentally sound** as EcoSan systems do not contaminate groundwater nor use scarce water resources
- It creates a **valuable resource** that can be productively recycled back into the environment. Excreta is transformed from a harmful product to a productive

asset over time through proper storage and the effective destruction of harmful pathogens

EcoSan Technologies

Many types of EcoSan latrines are being tested and applied throughout the world. Two systems described below are being applied with considerable success in WaterAid-supported programmes in Mozambique, Malawi and Zambia.

One such system that is gaining considerable acceptance is the **Fossa Alternata**. The **Fossa Alternata** includes two shallow pits that are partially lined. This makes the pits permanent, and facilitates the excavation of the pit contents once the excreta have transformed into compost. A moveable latrine slab is placed on one of the pits. Once full, the slab is moved to the second pit and the first pit is covered with soil and left to compost. When the second pit is full, the contents of the first pit are removed and either moved to a secondary composting point or, if enough time has passed, can be used directly as compost. The slab is then moved once again to the first pit, and the process starts again.

Another popular alternative is the **Arbour Loo**. The toilet consists of a small slab with handles cast into the slab. The slab overlaps a small, unlined pit. A moveable superstructure is included as well. Once the pit is two-thirds full, after about 4-6 months, the slab is removed and the pit is topped up with garden compost (grass, leaves), kitchen waste (vegetable matter) and/or soil. The contents are then watered down. A young tree is planted the following day and well watered. Over time, a tree will grow.

The concepts underpinning the **Arbour Loo** is well understood in countries like Malawi, where it is traditional practice to plant a banana tree on a full pit. Tests in Zimbabwe show that a whole range of fruit trees – from oranges to guava and mango – thrive in used pit latrines. The fruit can then be sold or consumed with no negative health consequences.

EcoSan programmes strongly encourage households to include a mixture of soil and ash after each use of the latrine. Soil/ash mixtures help in a number of ways. First, they help to reduce odour. Second, flies are no longer attracted to the pit as the ash/soil help dry the pit contents. Fly breeding becomes difficult in such circumstances. And third, soil/ash raise pH levels, which, in turn, accelerates the destruction of pathogens.



Fossa Alternata with 2 pits (second covered with wood plank) and soil/ash mixture to prevent smells, fly breeding and help with the transformation of faeces and urine to compost

Results so far

Experience to date in WaterAid's southern African programmes indicates that EcoSan is proving to be popular and practical at grassroots level, despite claims from health 'experts' before our projects started that local people would not accept such systems. "The use of faeces and urine for such purposes is culturally unacceptable" many definitively stated.



Guava Tree growing in former *Arbour Loo*

Instead, we are finding that households are open to the idea of EcoSan because of its considerable advantages and benefits.

These advantages include:

- EcoSan offers a **permanent solution**. As one EcoSan user in Moçambique whose yard includes 3 pits that were filled and covered in the past, "I will have this latrine for the rest of my life. I had no more room in my yard for new pits. I no longer need to worry about space in my yard for new latrines because I will never need to relocate my *Fossa Alterna*"
- **Potential for Added Economic Value** – there is a sense among users that the products from the latrines are of economic value and that this is useful for household with limited means. Orchards from previously used latrines are now common in parts of Zimbabwe. Some Mozambicans are using *Arbour Loos* in their fields that, over time, will give them plenty of fruit to eat or sell.

- **Simplicity** – the concepts behind ecological sanitation makes sense to people. Few have said they think the use of excreta is culturally unacceptable – instead many families insist that it is “logical”
- **Protection of Water Sources** – some have stated that the smaller pit depths common in EcoSan will ensure that groundwater is not contaminated
- EcoSan systems **do not smell and do not attract flies**, which is a great advantage over conventional pit latrines
- EcoSan systems being applied in WaterAid programmes in southern Africa are **inexpensive**. To illustrate, a VIP in Moçambique can cost over £45 while an ***Arbour Loo*** costs less than £10 and a ***Fossa Alterna*** is £30

Some Concluding Thoughts

EcoSan is not the only sanitation solution for people. There will always be those who do not want to handle dried faeces and urine, regardless of the compost’s potential economic and environmental value. This is certainly acceptable to WaterAid as long as alternatives such as pit latrines do not contaminate groundwater and sewerred systems do not discharge faecal sludge into rivers and streams.

Interestingly however, when given choice a growing number of households are choosing EcoSan over conventional systems in our programmes.

The inclusion of EcoSan in a broader package of options seems to make sense to us because the goal – at the end of the day – is hygienic sanitation for all. We can best achieve that goal by giving households a greater range of sanitation options, as one solution will never fit all.

Edward D. Breslin is WaterAid’s Country Representative in Moçambique
 Steven Sugden is WaterAid’s Country Representative in Malawi
 John Kelleher is WaterAid’s Country Representative in Zambia