

The EU, GTZ, SIDA Ecological Sanitation Promotion Project

Is a component of the German Support to the Water Sector Reform Program of the Ministry of Water and Irrigation established with an aim of putting sanitation higher on the political agenda by fast tracking and up-scaling sanitation (sewer and on-site sanitation). The project is a joint collaboration between the WSRP, the European Union (EU) and the Swedish International Development Agency (SIDA) piloting public, institutional and household sanitation projects. It is also preparing large scale implementation of institutional sanitation in boarding schools

Key Partners

Water Service Boards, Water Service Providers, , Ministry of Public Health and Sanitation, Ministry of Education, Ministry of Agriculture, Ministry of Environment, Water Service Trust Fund, SME's, Construction Companies, NGO's, Traders and Youth Groups.

ECOSAN PROMOTION IMPLEMENTATION FRAMEWORK



Reclaim, Reuse & Recycle Waste Productively

The EcoSan Philosophy

The conventional sanitation systems use surface, ground water and soil as a sink for human excreta and wastewater. This leads to pollution and loss of nutrients with the attendant health risks. The EcoSan philosophy on the other hand rides on the principles of complete nutrient and energy reclaim. This conserves the natural resources, preserves soil fertility and enforces effective pathogen containment reducing disease transmission & environmental pollution.

The Benefits of EcoSan

- i. **Health benefits**
Reduces health risks related to sanitation
- ii. **Environmental Protection**
Prevents pollution of ground and surface water,
- iii. **Soil fertility**
Prevents degradation of soil fertility
- iv. **Resource reclaim**
It optimises themanagement of nutrients, energy and water resources
- v. **Human rights to sanitation**
Provides safe, dignified and decent sanitation.



Ecological Sanitation Promotion Project



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EcoSan Technologies

The Urine Diverting Dehydrating Toilets for Households and Schools

A Urine Diverting Dry Toilet (UDDT) is a toilet that operates without water and has a divider so that the user, with little effort can divert the urine away from the faeces.

The diverted Urine is collected in a container & then applied hygienically as fertilizer and pesticide into the soil media of field crops. The faecal matter is collected in a drying chamber where it is sanitized in a dry state for a minimum of six months to ensure pathogen destruction. To prevent flies, minimize odours and encourage drying, a small amount of ash, soil, or lime should be used to cover faeces after each use. Care should be taken to ensure that no water or urine gets into the drying chamber. If this happens, extra soil, ash, lime, or sawdust should be added to help absorb the liquid.

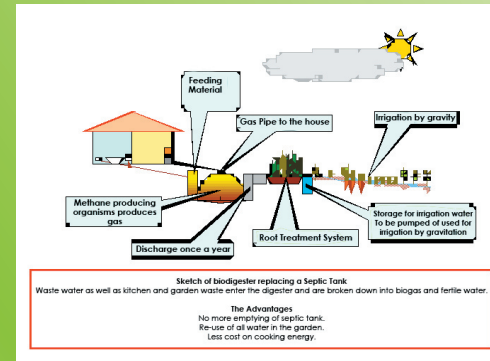
Where water is used for cleansing, an appropriate User Interface should be installed to divert and collect it separately. To empty the chambers, a shovel, gloves and possibly a face mask (cloth) should be used to limit contact with the dried faeces. Sanitized human excreta are a good soil conditioner.

Biogas/ Up flow Anaerobic Baffle Reactor System for Public Places, Schools, Prisons & Informal Settlements

An Anaerobic Biogas Digester and Baffled Reactor (ABR) hybrid system is an improved system being piloted in Kenya for partial wastewater treatment.

The Anaerobic Baffle reactor part is an improved septic tank with a series of baffles under which the wastewater is forced to flow increasing the contact time with the active sludge resulting in improved treatment with BOD reduction of up to 90 %, which is far superior to that of a conventional

septic tank. Accumulated sludge is desludged every 2 to 3 years. Critical design parameters are a hydraulic retention time (HRT) of 48 to 72 hours, up-flow velocity of the wastewater less than 0.6 m/h and the number of up-flow chambers. These hybrid systems produce (a) digested slurry for soil amendment (c) water for non potable uses (flushing toilets and irrigation) and (b) biogas for energy. Biogas is a mix of methane, carbon dioxide and other trace gasses that are easily converted to electricity, light and heat.



- year/unit = (giving a three year return period)
- iii. Clean cooking environment with no smoke hence reduced incidences of respiratory diseases.
- iv. Less firewood fetching burden on school pupils.

3. Safety and Dignity

- i. No smell hence people actively use the toilets
- ii. No flies hence less faecal transmission from toilet to food item.
- iii. Safe and adequate sanitation for girl child leading to improved school attendance.

4. Productive Sanitation

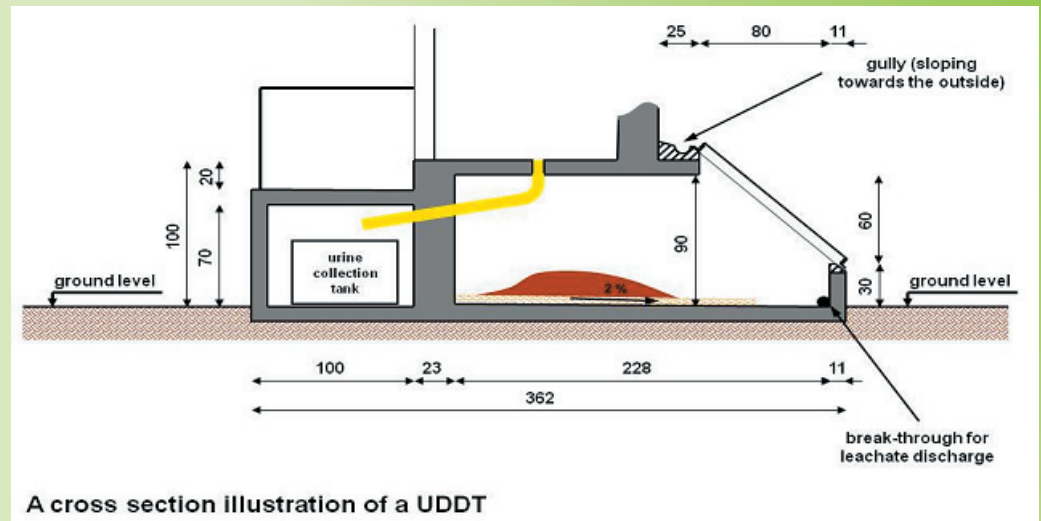
- i. Urine and sanitized faeces provide urea and soil conditioner for agricultural production = 20% increase in food production per unit.
- ii. Reduced dependence on artificial fertilizers cutting costs on fertilizer by KShs. 6,000/unit

5. Improved Health

- i. Hygiene promotion + less pollution of water resources + less transmission of faecal matter by flies means reduced disease incidences (Less cholera).
- ii. Less disease means less time and costs on health related matters and more time for productive ventures.

6. Job Creation and Poverty Reduction

- i. Youth and Artisans trained and contracted to construct units.
- ii. Job creation at KSh. 7,000 per unit earned by artisans
- iii. Use of stabilized (hydraform) blocks means improved skills.
- iv. Employment to sanitation block operators with monthly incomes of KSh. 30,000 per month.



Impacts of EcoSan Promotion Project in Kenya

1. Environmental Protection

- i. Reduced pollution of ground and surface water with effluent with BOD of <30mg/l
- ii. Reduced destruction of tree cover with savings of 4.2ha/year of mature trees per unit Potential saving in country is 16,000 ha/year.

2. Provision of Clean Energy

- i. Gas supply for cooking giving 3-9 hrs of cooking gas per day/unit.
- ii. Reduced cost on firewood equivalent to KShs. 500,000 per