ecosan

ecological sanitation

EcoSan Promotion Project - EPP

a Component of the

Water Sector Reform Programme,Kenya

Vision Workshop, 27.09.2010

Patrick Onyango and Moses Wakala

HARAMBEE

gtz Sida

Contents

- The Project (EPP)
- Project areas
- Main Intervention Lines
- EcoSan Philosophy
- Sanitation Challenges in Project Areas
- Urine Diverting Dehydration Toilets
- Onsite Waste Water Treatment in Public Places and Institutions

EU-Water Facility / SIDA Co-financed
EcoSan Promotion Project
GTZ-Water Sector Reform Programme (WSRP)
Ministry of Water and Irrigation / Kenya

Main Cornerstones of the Project

Implementation Period:
November 2006 until May 2010

Budget:

Total contribution	2,75 Mio. €
EU to GTZ-WSRP:	1,73 Mio. €
SIDA by KWSP:	0,82 Mio. €
GTZ by WSRP/PSDA:	0,20 Mio.€

Partner for Implementing
Ministry of Water and Irrigation

Pilot Areas:
North & South Lake Victoria, Southern Rift Valley, Central, North-Eastern,Eastern Provinces

Core Indicator:
50.000 Beneficiaries reached

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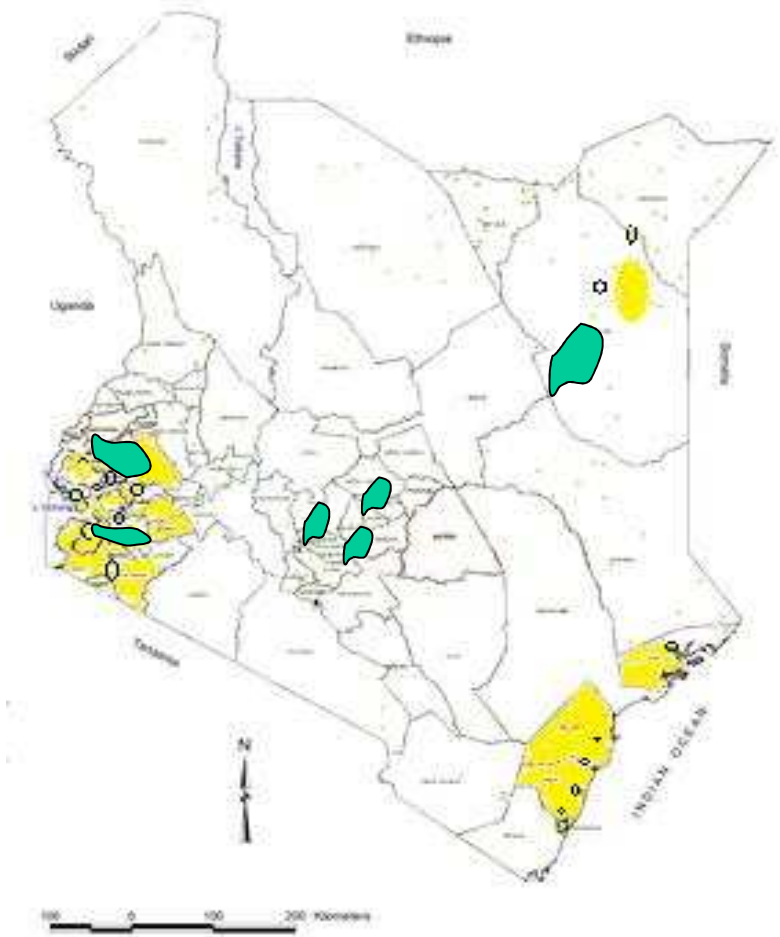


Identified Pilot Areas for Implementation of EcoSan clusters (green)

Sanitation Hot Spots (yellow) of

- Low Sanitation Coverage
- Frequent Cholera Outbreaks
- High Water Tables
- Unstable / Infertile Soils
- Flood Occurrence
- High Poverty Index

Capacity Building on Sustainable & Environmental Friendly Sanitation for

- Min. of Water, Water Services Trust Fund,
- Water Service Providers, Water Service Boards
- Civil Society / Private Sector / Communities
- Other Government of Kenya Stakeholder

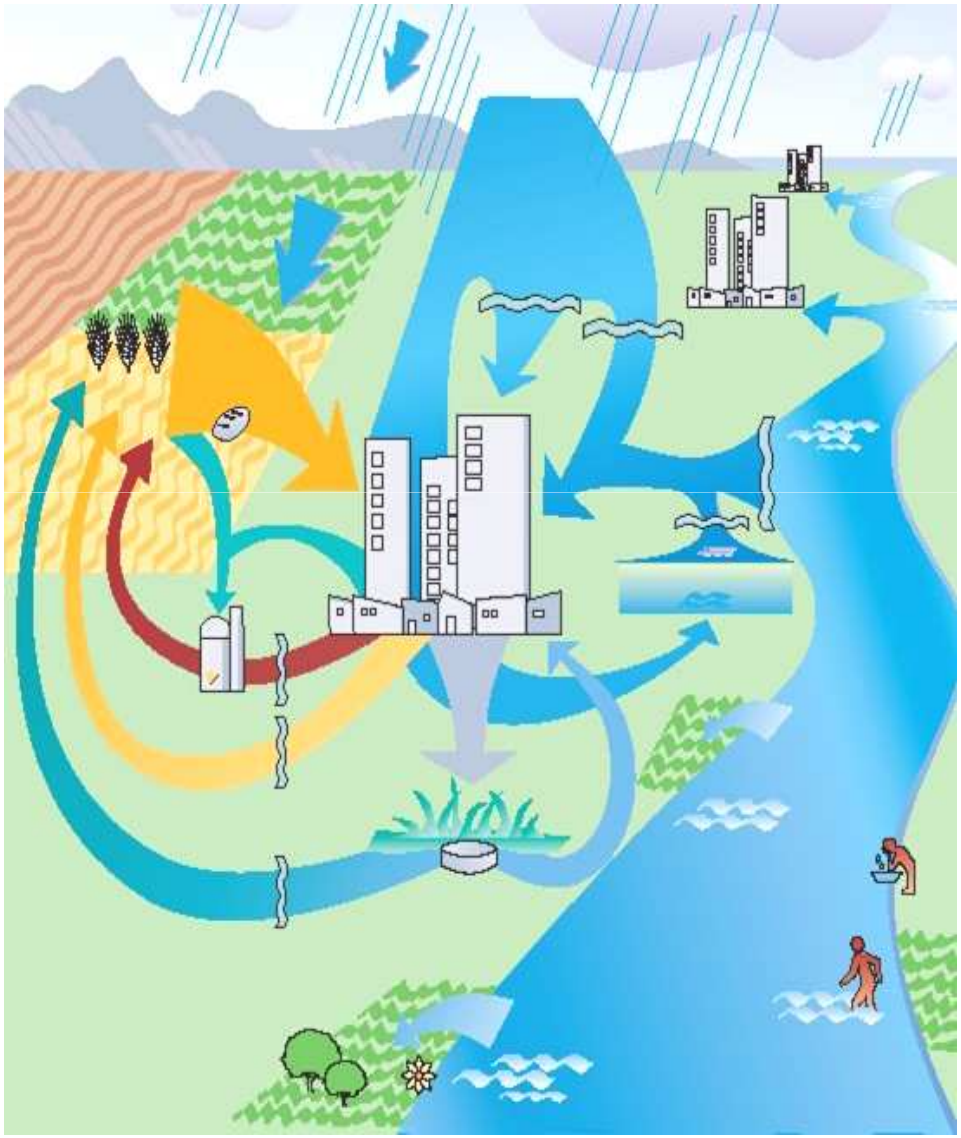
Main Intervention Lines for Pilot Implementations to Prepare Large Scale Roll-out in Kenya:

1. Single households (Urine Diverting De-hydrating Toilets - UDDTs)

2. Public institutions like (boarding) schools and prisons, (Biogas digester / baffled reactor /constructed wetland)

3. Public places, such as markets, bus parks, and boat landings (water kiosk, low flush toilets connected to Biogas digester / sewer)

4. Informal Settlements (sanitation block with toilets, shower facilities, and community rooms, treatment by Biogas digester and baffled reactor)-Still under development with WSTF/Study Planned

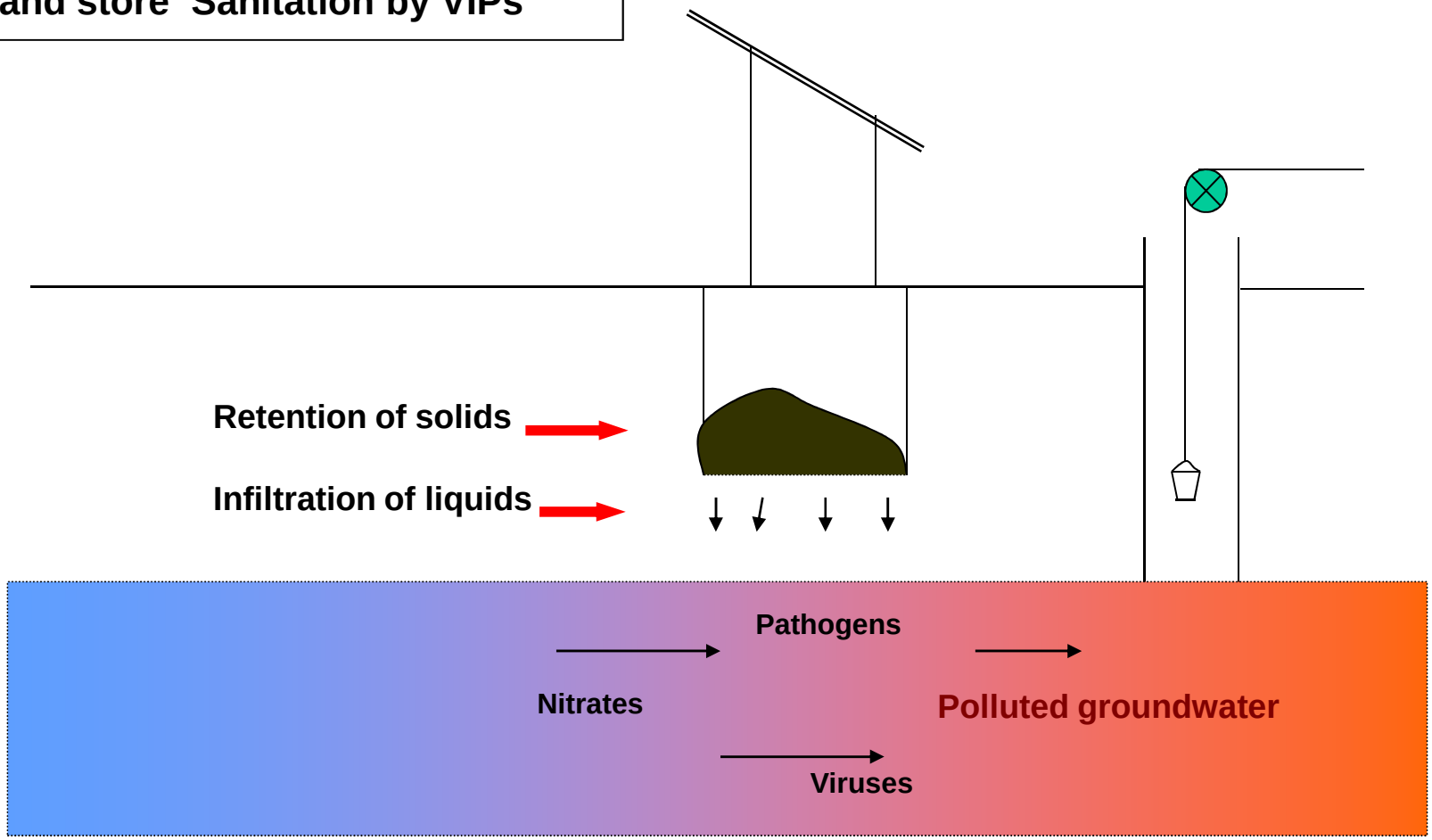


Advantages of EcoSan or Sustainable Sanitation

- Improvement of health by minimizing the introduction of pathogens from human excrements into the water cycle
- Promotion of safe, hygienic recovery and use of nutrients, organics, trace elements, water and energy
- Preservation of soil fertility, Improvement of agricultural productivity
- Conservation of resources
- Preference for modular, decentralised partial-flow systems for more appropriate, cost-efficient solutions
- Promotion of a holistic, interdisciplinary approach

Material flow cycle instead of disposal

Shortcomings of Conventional ‚drop and store' Sanitation by VIPs

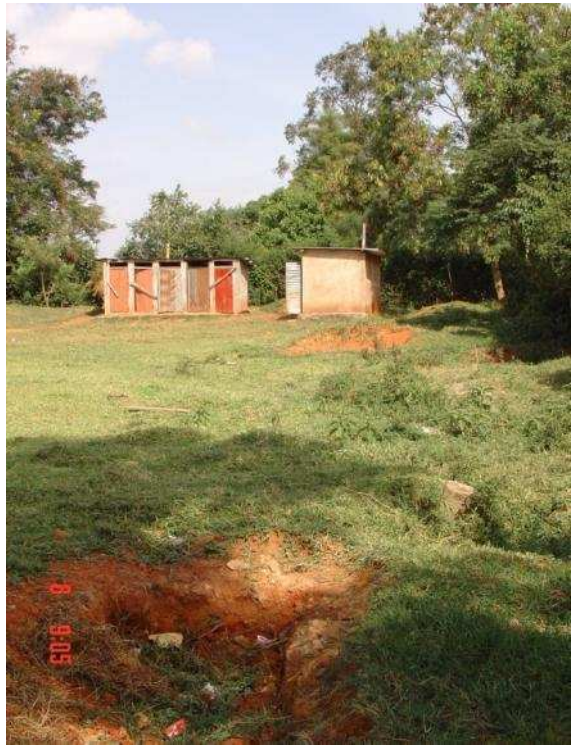


Typical Situations in Schools

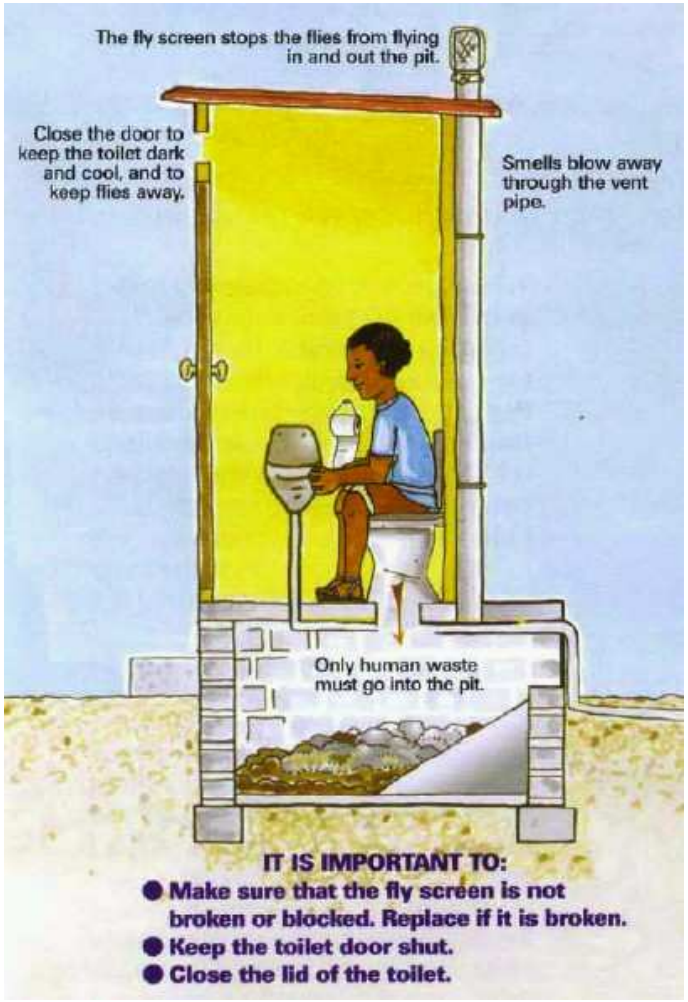
Up to 21 pit latrines on one school compound

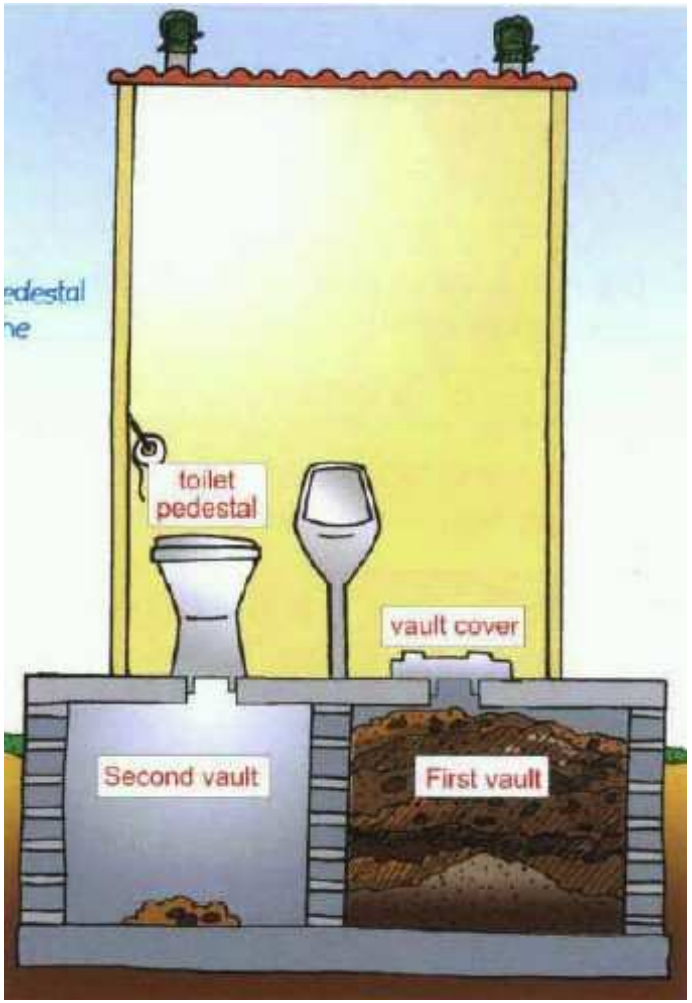
Rural boarding school with basic sanitation by costly erected but poorly maintained VIP-latrines (left)

Remains of more than 30 abundant pit latrines on school compound in Nyanza (right)

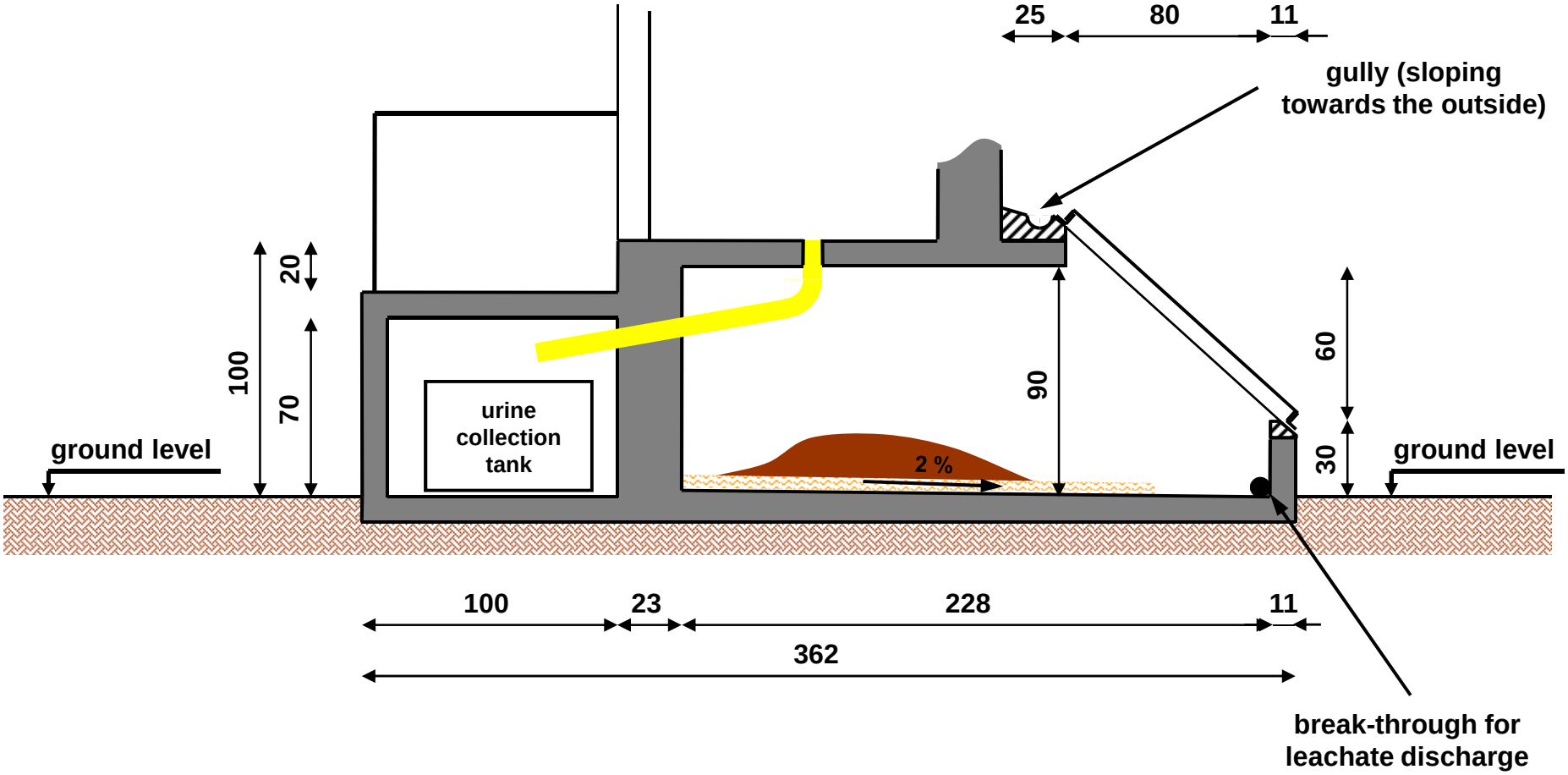


Principles of an Urine Diverting De-hydrating Toilet





EcoSan Technologies



Urine Diverting De-hydrating Toilet - UDDT

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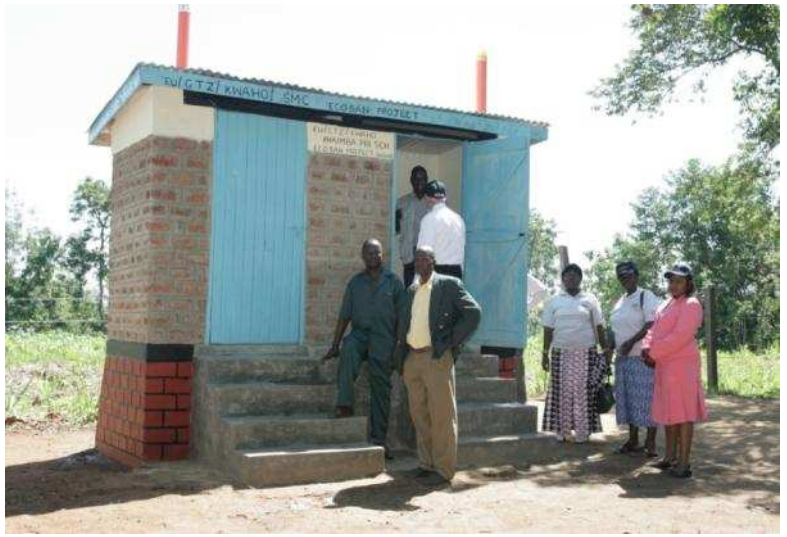
Urine Diverting De-hydrating Toilets - UDDTs

EcoSan Technologies Implemented

1. Urine Diverting De-hydrating Toilets on household and school levels (single and double door)
2. Low Flush Toilets connected to Biogas-Digesters & constructed wetlands for Institutions
3. Bio-Latrine-Centres for Public Places and Informal Settlements

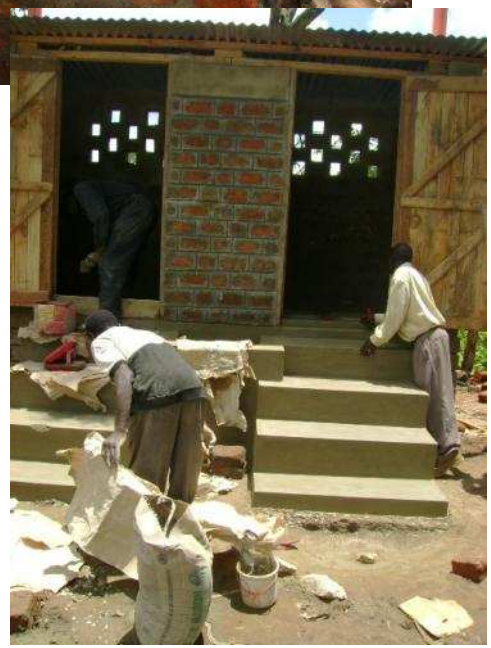


Dissemination of UDDTs in Western and Nyanza

Cluster approach:
Double Door UDDTs for Schools and Single Household installations in the Environment of the School

Increase implementation Speed by Training of Artisans

Training on-the–job by adding at least 2 trainees to each of the experienced EcoSan artisans (Western and Nyanza Province) implemented via Community based Organisations (CBOs)



EcoSan Technologies

Advantages of Urine Diverting De-hydrating Toilets - UDDTs:

- no water usage
- good for areas with floods and unstable soil conditions
- enables the use of urine as fertiliser (N, P – fertiliser) and sanitised faeces (organic soil improver) in agriculture
- feaces are sanitised when collecting chamber needs to be discharged (2 chamber system prefered)
- prevents contamination of groundwater with pathogenes, nitrate, etc. (no leaching of sewage)
- permanent construction (VIPs latrines mostly require re-construction after 2...3 years, when the pit is filled up)
- can be built and maintained with local material and knowledge

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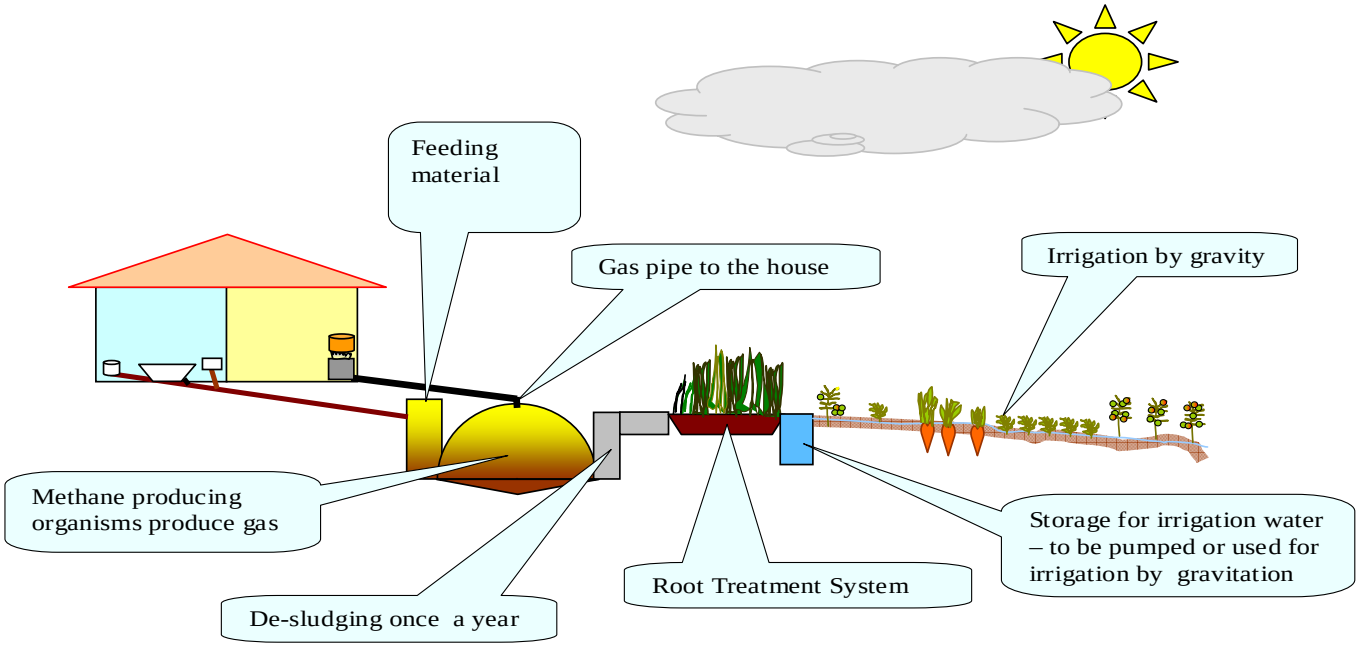
Onsite Waste Water Treatment for Instituitions



Sketch of biodigester replacing a septic tank. Wastewater as well as kitchen and garden waste enter the digester and are broken down to biogas and fertile water.

The advantages: No more emptying of septic tank. Reuse of all water in the garden. Less cost on cooking energy.

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EcoSan Pilot Project
G.K. Prison in Meru
Treatment of the wastewaters of About 1. 500 inmates and 350 staff By a 110 m^3 Biogas plant, baffled reactor and a 4-door UDDT EcoSan Toilet for staffs

Instituition

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Public Sanitation

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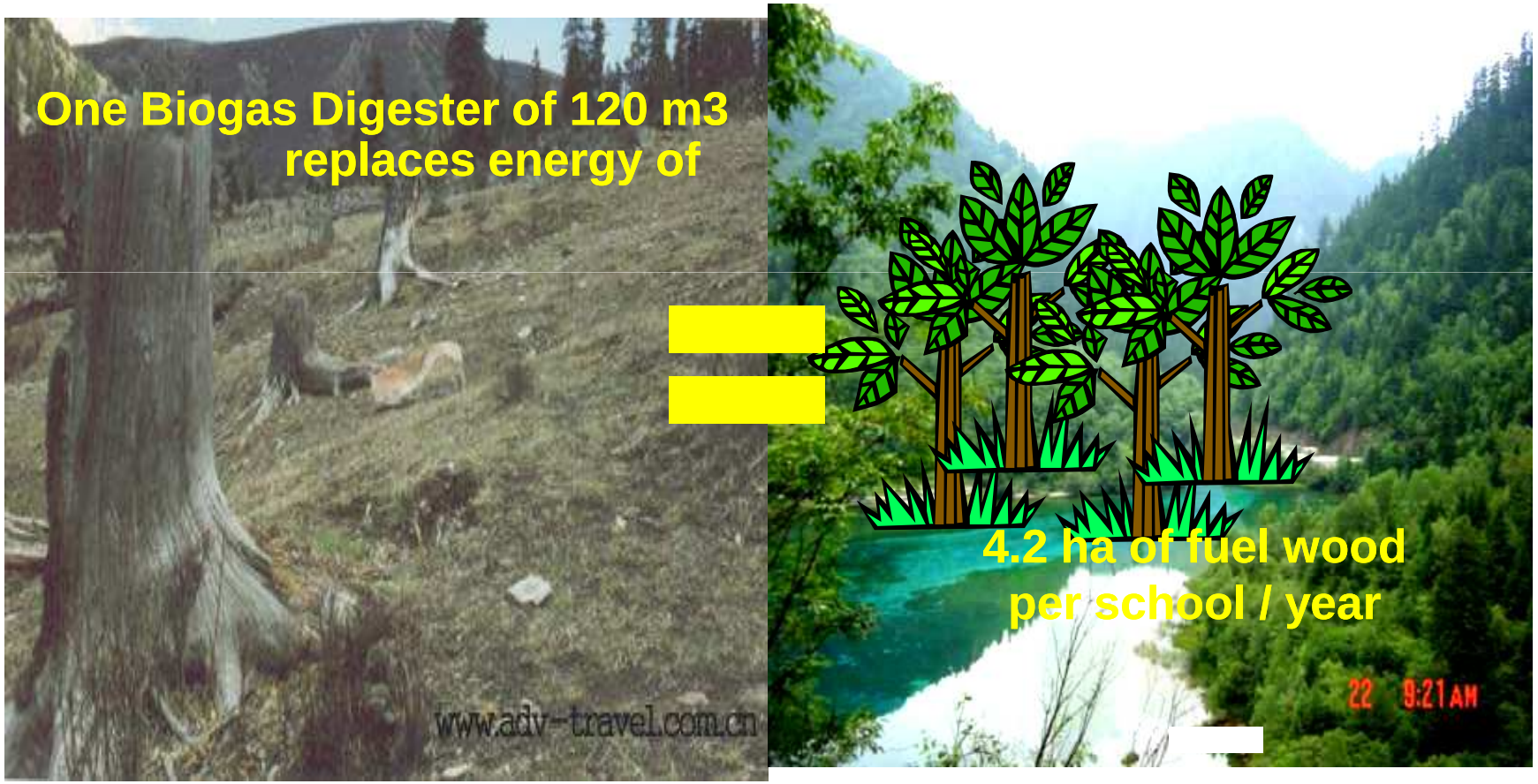
EcoSan Technologies

Benefits of on-site WW treatment systems for Institutions :

1. UDDT (Urine Diverting De-hydrating) Toilets (see above) for staff
2. Biogas-Digester connected to low flush toilet (1. step)
   Reduces at least 50% of the WW freight by anaerobic bacterias
   Produces Biogas for Cooking replacing fuel wood
   Sludge for fertilizing
   Known technology from livestock farming
3. Buffered Reactor (2. step)
   treats effluent from BG digester down to WHO standards
   Produces Biogas for cooking
   Effluent is safe and can be used for irrigation with high nutrition value
   Very simple construction, reliable low maintanance
4. Constructed Wetland and/or polishing ponds (optional)
   either for final treatment of the system and/or separated greywater

ENVIRONMENTAL AND ECOLOGICAL BENEFITS



Q&A!

Thank you very much!