



A down to earth approach in prison

Ruud Kampf and Adriaan Mels, The Netherlands

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Shimo la Tewa Prison Mombasa, Kenya

review of plan for a constructed wetland lagoon system for improving the sanitary situation



UNEP-GEF WIO-LaB PROJECT

ADDRESSING LAND BASED ACTIVITIES
IN THE WESTERN INDIAN OCEAN

Coastal Development Authority, Mombasa
Mombasa Water & Sewerage Company
Kenya Marine and Fisheries Research Institute
Dar es Salaam University, Tanzania



a "do something project"
with very well defined goals



Objectives of the Project

1. Design and construct a coupled wetland-lagoon STP
2. Promote education and awareness to Prison inmates and staff
 - on relevant environmental issues
 - including good sanitation practices
3. Learn the prison to manage the system
 - in collaboration with the Municipal Council of Mombasa
4. Improve water, sanitation and environmental health
5. Promote the use of treated wastewater for use in agriculture and aquaculture
6. Reduce pollution through prison

The problem?



Mtwapa Creek at high tide

The waste water of the prison:

- negative influence on the water quality of the Mtwapa creek
- but also many other discharges



Quality of sea water is important

- Effect of prison discharge?
 - Only local
 - But will be example!!!



The prison

- Inmates:
 - Main prison for man: ca. 2.200 pers.
 - Woman prison: ca. 300 pers.
- Shima Annex Prison
 - Farming, gardening activities: 300 pers.
- Boys prison: 300 pers.
- Staff quarter
 - About 1500 staff and family
 - Close to the prisons, but scattered over the area
- Total surface ca. 250 ha



Some pictures from inside

It is quite unique I could take pictures inside so freely!



Education, training are important part of prison life



One of the inmates, will be a good tailor when he comes out

Payment every year at Christmas

Some pictures from the Carpenter workshops





The metal workshop



Paint workshop

The new library



Small shop outside prison



Toilet facilities



Discharge through a separate sewer system: very concentrated waste water, separate urinals





The outside room for day use
 The open gutters were originally designed for rain discharge (monsoon climate!)
 Now also "Grey water"

Inside of a cell



Existing waste (water) discharge Outside prison

- Sewer to the river in a very bad and neglected state!!!
 - Hardly carrying any water!!
 - Very frequent blockings



Where the sewer changes in a open discharge

The main Shimo la Tewa Prison sewage gang



Supervising officer:
 Salim O. Mwatimbo

Prisoners:
 Tonny Aden
 Peterson Mykhongo
 Johne Njorogie

Important!

- Some time ago a "septic tank" and lagoons has been built.....
- Why should the new integrated wetland lagoon system still function in 10 years time?
- There is not a common word for maintenance in Kenyan Swahili!
 - Thus it has to become a "part of life"!!:
 - Economical benefits.....
 - Manuals and maintenance schemes are crucial !!!!!!!!!!!
- There is well defined goal!!

Basic ideas for design

- Apply source separation and reuse of wastes
 - But will not be possible everywhere because of existing situation
 - f.e. main prison building
- Thus it will be a combination of methods!!
 - Use Ecosan / Ecological Engineering principles

What is difference between
 animal manure
 and
 "human manure"
 ?

Culture and health

Agriculture in prison



Plant nursery



• Mrs Lina E. Bonto

Dr. Rene D. Haller Baobab Trust



Learn how to sustain a family on 1000 m²



Nguuni
Environmental
Education Centre
Farmer Field
School Training
Programmes



Learn how to grow plants for the local market



Learn how to grow fish on the home farm



Sieving compost

Compost ready for the market

Earth worms: fish food

Growing earth worms to produce compost and fish food

Bio-gas production on a small scale

Combination chicken roost and fish farming

Why not include in the project?

It "fits within the mission statement"

KENYA PRISONS SERVICE
MISSION STATEMENT
 To contain offenders in humane safe condition in order to facilitate responsive administration of justice. Rehabilitation. Social Reintegration and community protection.

Baobab Trust

a good neighbouring partner in:

- logistics of black wastes
- seeking solutions in production of biogas and manure
- education of inmates in farming, aquaculture: how to set up an honest business in rural areas

Interesting role for LeAF!

From July Frederick Tetey-Lowor, student from WUR will be in Mombasa

For more information on Baobab Trust and dr. Haller:
www.baobabtrust.com
http://www.leaf.or.ke/EcoEng999/EcoEng012_drHaller.html
<http://www.leaf.or.ke/BaobabTrust.com>
<http://www.baobabtrust.com/mombasa.html>

dr. Haller

The engineering team

Prison:
Paul Cherviyot

Mombasa Water & Sewage Works Co.:
John Mwamburi
Mwawuganga Mwambota:

Technical workshop

12 March 2007 at CDA in town



Conclusions + 2007

- A good project to continue
 - Separation of flows and “tailor made solutions” very promising and needed
 - Constructed wetland
 - Make it more simple, more reliable and cheaper
 - Use the existing Grey water Banana fields
 - Managing of black wastes and Ecosan
 - Demonstration project:
 - » LeAF/ Wageningen Agricultural University + A4A in cooperation with Baobab Trust and local partners