Ecological Sanitation: A sustainable Sanitation Option for the Rural Communities in the Coastal Region of Nigeria.

BY

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THE COASTAL REGION OF NIGERIA

- The coastal region of Nigeria (Niger Delta) spans a total area of 70, 000 sq km with a population of 20 million.
- The settlers in the Niger Delta depend exclusively on water for livelihood and survival
- Fishing and aquaculture constitute the major economic activities in this region
- The area is criss–crossed by a large number of rivulets, streams, canals and creeks.

Two major sources of Water contamination

Pollutants from crude oil operations

Household excreta and municipal waste

Water Supply

•Available water supply to an area may be either contaminated with faeces or with high salinity content.

•Communities often retrieve water from other distant areas.

•The practices of water fetching, sometimes illegal tapping of the nearest municipal lines, and water vending are prevalent

- Water fetching in NDR

Sanitation Facilities

- The sanitation situation in some parts of the coastal region of Nigeria can at best be described as critical
- In most of the riverine and coastal communities, sanitation facilities are absent and direct defecation into the surface water is prevalent, particularly in squatter settlements, where the settlers relieve themselves in the open sea.

ENVIRONMENTAL ISSUES

•The environmental problems are so bad that one wonders why population growth in such settlements should be tolerated by the government.

- **COASTAL SETTLEMENT AND SUSTAINABILITY ISSUE: AN ISLAND IN NDR**

CURRENT SANITATION INTERVENTIONS IN NDR

- Communal Toilets
- Night soil Collection
- Septic Tanks
- Cesspools
- Sewerage System:

- This is feasible in coastal and waterfront communities, but due to high capital requirements, and high water demand, such option is considered inappropriate.
- Also, because it is traditional for residents of flood prone swampy areas to build above water and moor their boats near their houses, construction of sewer lines to connect the houses become impossible.

HEALTH AND ENVIRONMENTAL PROBLEMS

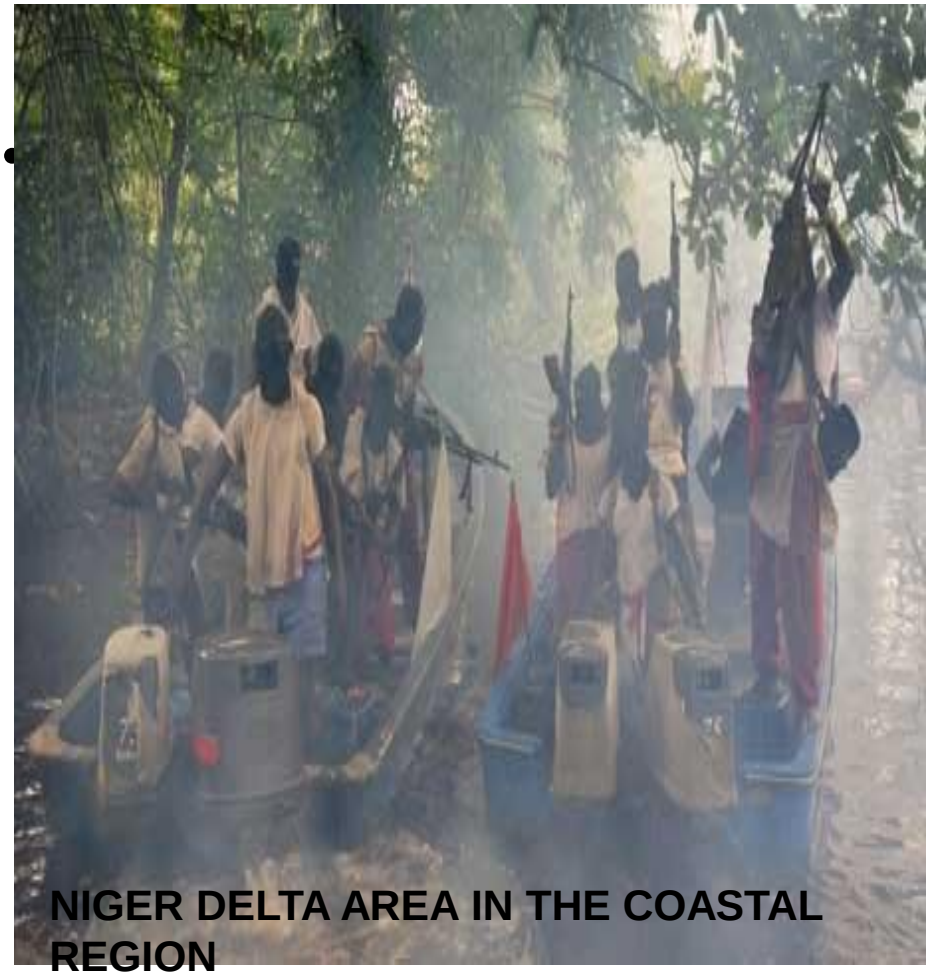
- Improper sanitary management results in high exposure of the inhabitants to faeco-oral infections transmitted by the consumption of contaminated food and drink.
  - Children are particularly exposed to infection when playing or bathing in the polluted and contaminated water.
    - Diarrhoea, cholera and malaria are common health issues in these areas.

PUBLIC SECTOR INTERVENTION IN TWO LOCATIONS

1. WATER SCARCE AREA

Lugbe, a fast growing slum near Abuja

2. DIFFICULT & POLLUTED TERRAIN



NIGER DELTA AREA IN THE COASTAL REGION

STEPS TAKEN

- AWARENESS CREATION
  - One-day seminar for stakeholders on Ecological sanitation including the leaders of the target community

  CAPACITY BUILDING
  - An expert from CREPA, Burkina Faso was invited to train young Engineers/Scientists from my Agency

Special advocacy visit to the Chief

THE ECOSAN LOOP

ECOSAN (ecological sanitation) is the approach to sanitation aiming to reuse human excreta as fertiliser in agricultural production. The separation of urine and faeces at the source enables the treatment necessary for a safe reuse. CREPA has carried out research, promotion and training in ECOSAN in 10 West African countries since 2002.

HARVESTING

EATING

REUSING

URINE

Make a furrow at a distance of 5 to 10 cm from the plants

Another option is to make a trough beside the plant.

Apply the urine in the furrow or trough

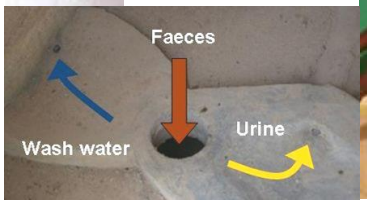
Apply water if possible.

Close the furrow or trough to reduce nitrogen losses.

Avoid to apply urine on the leaves.
The dose varies from 0,1 to 1 litre of urine per plant and growing season, depending on the plant need, the soil quality and the nitrogen concentration in the urine

FAECES

The sanitized faecal matter should be applied and incorporated into the soil before sowing.



URINATING + DEFECATING

TREATMENT OF URINE: STORAGE DURING ONE MONTH IN CLOSED CONTAINER

ADD ASH AFTER DEFECATION. IF ASH IS NOT AVAILIBLE, ADD SAW DUST OR DRY SOIL

TREATMENT OF FECAL MATTER: STORAGE (DEHYDRATION) IN VAULT OR IN MOVABLE CONTAINERS/BAGS DURING 6 MONTHS IF ASH HAS BEEN ADDED OR AT LEAST 12 MONTHS IF NO ASH HAS BEEN ADDED

THE URINE DIVERSION MAKES TREATMENT EASY AND HELPS TO REDUCE SMELLS AND FLIES. THE VAULT WHERE THE FAECAL MATTER IS COLLECTED SHOULD REMAIN DRY.

URINE | FAECES

SANITIZING

CURTESY: CREPA, BURKINA F

ECOLOGICAL SANITATION (EcoSan): *Urine Diverting, Dehydrating Model*

- The urine diverting and dehydrating (UDD) is a dry EcoSan facility, consisting of units of two vaults constructed above the ground for dry aerobic composting for re-use (fertilizer)
- Urine is separated and treated in a different compartment to reduce acidity and humidity, and to lower the nitrogen content of the total waste pile.
- The contained urine is allowed to stand for a few days as a means of sanitizing it for possible use as bio-fertilizer.

Urine diverting squatting pan

Two vaults above the ground

ECOSAN FACILITY IN THE COASTAL AREA

A lot of reinforcement to accommodate risk of subsidence and collapse

Structure well raised above ground; urine stored in container under the raised floor

- The back view of the structure showing the faeces chambers (FC) or vaults, and a grey-water filtration system.

ACCEPTANCE/ADVOCACY

- EcoSan concept is not generally embraced by the generality of the Nigerian populace, who do not wish to take responsibility for managing their own waste
- The issue of re-use is not so much the problem but the process of sanitizing the waste is
  - If a company can undertake to commercialize the products of ecological sanitation, the re-use component may become feasible

AFFORDABILITY/COST ANALYSIS

- The cost of the facility varies according to terrain and material in-put
- Compared to the flush toilet, ecological sanitation is more affordable and sustainable in terrain with very soft soil formation, very high water table and flood-prone environment
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ADVANTAGES OF ECOSAN

- The main advantages of this system include:
  - prevention of surface and groundwater contamination/pollution
  - possibility of above the ground construction of the vault, overcoming the challenges of high water table and soft soil formation that is prone to collapse as is common with Pit and VIP toilets
  - Being a dry toilet, the issue of water scarcity is overcome
  - Disease out-break is minimised, as little water for hand-washing is needed to achieve hygienic condition

CHALLENGES

- Awareness and general acceptability of the technology in the Niger Delta areas
- The construction cost due to difficult terrain
- User management issues are additional challenges:
    - It is hoped that with the current construction of a training EcoSan facility in the area, multi-stakeholder workshops and aggressive awareness campaign, acceptability and cost issues will be handled.

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