

Appropriate treatment technology and environmental effects of wastewater use in agriculture

Group 2

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Aspects of the environment affected by wastewater

- Water bodies (fresh/saline): impact on aquatic life (fish kills, reduced diversity of fish species, contamination of fish with toxic elements), water quality degradation,
- Land: acidification, salinization, accumulation of toxic elements, increase/reduction of soil fertility
- Air: Bad Odour (mainly associated with Hydrogen Sulphide)

Services affected

- Tourism is reduced
- Food security is affected by the reduction of the availability of safe food
- Health and sanitation (including potable water supply)
- Loss of biodiversity
- Reduction of overall economic activity and output
- Loss of employment
- Reduced quantity of safe water

Best management practices to reduce negative impacts of wastewater on the environment

- Awareness campaigns within the communities to cause their reduced pollution of the environment
- Wastewater management should be an integral part of national development plans
- Master plan of water and wastewater management should be developed
- Integrating wastewater management within all economic sector plans in the country to allow for more targeted funding from Central Governments
- Legislation to develop wastewater management policies

Best management practices to reduce negative impacts of wastewater on the environment

- Financial commitment and timely release of funds from Central Government linked to national development plan
- Plan – Strategy – Implementation
- Wastewater management should be brought out as a climate change adaptation and mitigation (lowering carbon footprint) strategy and as a nutrient resource: giving an incentive to budget allocation
- Raising awareness to the costs of addressing the environmental degradation such as the high capital costs associated with developing alternative water sources for Harare and high costs of treatment of potable water supplies from existing polluted water source

Appropriate treatment technologies to consider

- Specifically focus on rural, peri-urban and urban settings individually
- Zanzibar has constructed wetlands for peri-urban areas to discharge effluent of suitable quality to the sea (600-800 households or 4000-5000 people). No complaints so far from people around the treatment plant in terms of air pollution.
- Similarly done in Durban, South Africa on a pilot scale (82 households) with nutrient recovery from bio-solids through the production of commercial fertilizers
- Decentralized wastewater treatment plants incorporating wastewater stabilization ponds for the treatment of domestic wastewater producing high quality effluents mainly in small towns

Appropriate treatment technologies to consider

- VIP latrines, septic tanks and soak-away pits
- Ecological sanitation separating yellow-brown water (phosphorus rich) and black water for solid fertilizer
- Conventional sewerage treatment systems (centralized or semi-centralized or de-centralized) for urban centers
- Integrating wastewater management plans into town planning to minimize the improper selection of wastewater treatment technology that could lead to groundwater contamination. Participatory approaches.
- On-site pre-treatment of industrial wastewater, full treatment and reuse
- Enforcement of regulations necessary