

Wastewater Production, Treatment, and Use in Malawi

Golden Msilimba PhD

*Centre of Excellence in Water and Sanitation, Mzuzu
University*

George Henry Kapelemera

Ministry of Agriculture and Food Security

Wastewater production and treatment

- In Malawi, wastewater is generated throughout the country
- However, much of it is generated in the urban centres where there is piped water supply connections in dwelling houses, Schools, public places etc.
- Institutions like schools, mines, Police also generate a lot of wastewater, especially those connected to piped water supply network.
- In general, wastewater is generated both from domestic and industrial. In the rural areas, industrial wastewater is mainly from processing factories (Mines, Tea, Coffee and Sugar) while domestic is mainly from Institutions like schools, dwelling houses etc.
- There is also wastewater from water utility companies generated during treatment of drinking water.

Wastewater use and/or disposal

- Treatment of wastewater is through a number of systems like the following:- Stabilization Lagoons; Aerated Lagoons; Wetlands at a smaller scale and for private institutions; Trickling Filters combined with Stabilization lagoons; Settlement tanks at a smaller scale
- Airated lagoons, Stabilization lagoons, Settlement tanks and trickling filters are mostly available in urban areas only and are utilised for both domestic and industrial wastewater.
- Rural areas mainly use stabilization lagoons with very few institutions using wetlands.
- Use of wastewater is at a smaller scale and is mainly used for car washing, agricultural activities, cooling of boilers, lawn mowing and re-use, especially wastewater from water utility companies.
- Disposal of wastewater is mainly into water bodies with very few treatment facilities discharging in the environment in general.
- In most cases untreated wastewater is discharged with

Regulations and implementation of guidelines

- Environmental Affairs Department (Environmental Management Act, 1996)
- Water Resources Board (Water Resources Act, 1969) under review)
- Sanitation and Hygiene Department (Using Sanitation Policy and the Department is in the process of coming up with an Act).
- The wastewater quality standards look at the quality of wastewater to be discharged into water bodies (MS539:2002 and MS691:2005) while the only guideline looks at the operating conditions (in Draft form 2004-07-01 but in use).
- MS539:2002 is on Industrial effluent-Tolerance limits for discharge into inland surface water
- MS691:2005 is on Tolerance limits for domestic/sewage effluents discharges into inland surface waters
- Draft guidelines, 2004-07-01 is on effluent treatment plants- Operations conditions: This is for institutions and organisations managing the wastewater treatment facilities.

Challenges

- **Technical:**
- Most facilities are not functional due to lack of spare parts (e.g. Aired and trickling filters); Poor design of the facilities; Over loaded because of the increase in population with time; Utilization of unskilled labour to manage the facilities,
- Outdated facilities; Lack of capacity to establish the quality of wastewater being treated and discharged by institutions responsible for managing the facilities.
- **Institutional:**
- Many players in the management of the wastewater treatment facilities (e.g. Town and City councils, Private Institutions, Water utilities).
- **Policy**
- More policies regarding management of wastewater, namely:
- Water Works Act, 1995: That mandates the Water utility companies to manage the wastewater; Water Resources Act, 1969: That mandates the minister responsible for water affairs to manage the water resources in the country; Sanitation Policy, 2008: Advocating for establishment of Institutions to manage the facilities; Local Government Act: That mandates the Town and City councils to manage wastewater in those areas; Public Health Act: That empowers to the Ministry of Health to manage both liquid and solid waste in the country.

Government's approach to wastewater management

- Harmonisation of the existing policies regarding management of liquid and solid waste
- One Institution to manage the wastewater treatment facilities, especially, those in towns and cities: Thus where wastewater is being conveyed to one point.
- One of the two institutions being proposed to take a leading role in managing wastewater facilities is Local Government (Targeting Town and City Councils) or Water utilities. The thinking is that those generating waste should also manage it.

Possible solutions

- Improvement on the processes involved in wastewater treatment to ensure that the final effluent is of acceptable quality (e.g. additional step(s) to chemically purify the final effluent).
- Re-use of the wastewater for irrigation purposes, cooling of boilers etc.
- Introduction of different types of wastewater re-use schemes and development of guidelines/standards on water quality for irrigation.