

Centralized and de-centralized wastewater treatment in Maputo, Mozambique

Sustainable water supply in urbanizing Maputo, Mozambique

A. Marques Arsénio, I. Caltran, S. Jammer, O. Schölvink, N.P. Matsinhe, S. Manuel, M. Rusca and L.C. Rietveld

Maputo, Mozambique

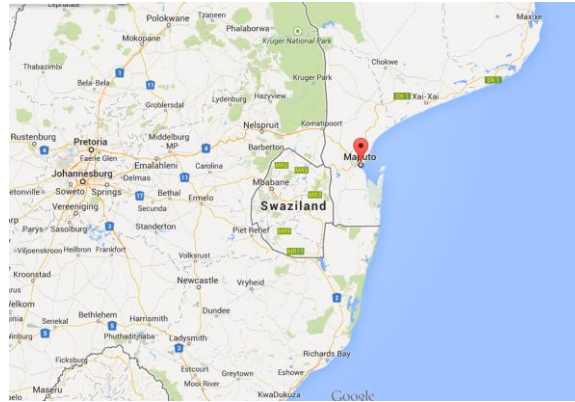
Context



Source: Google maps

Maputo, Mozambique

Context



Source: Google maps

Water supply and sanitation in Maputo

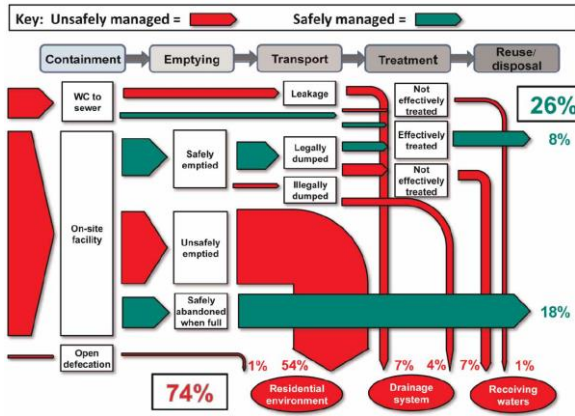
Major challenges

- Water scarcity
- Salt intrusion
- Poor regulation = poor enforcement of the existing legislation
- Absence of a sanitation fee
- Unsafe (waste)water reuse
- Limited access to sanitary services
- Climate change
- Population growth (migration)
- Poor maintenance of existing infrastructure



Maputo

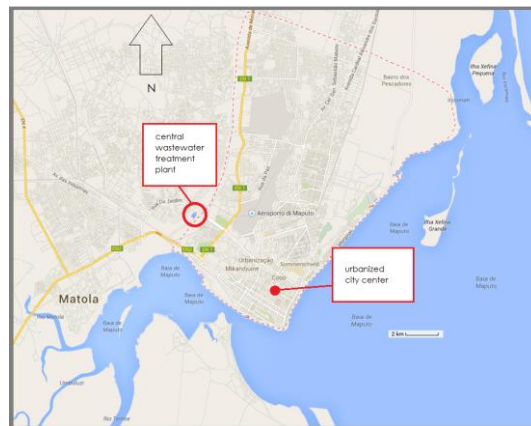
Sanitation



Source: Peal, A., et al. (2014)

Centralized wastewater collection & treatment

An overview



Source: Google maps

Centralized wastewater collection & treatment

The network



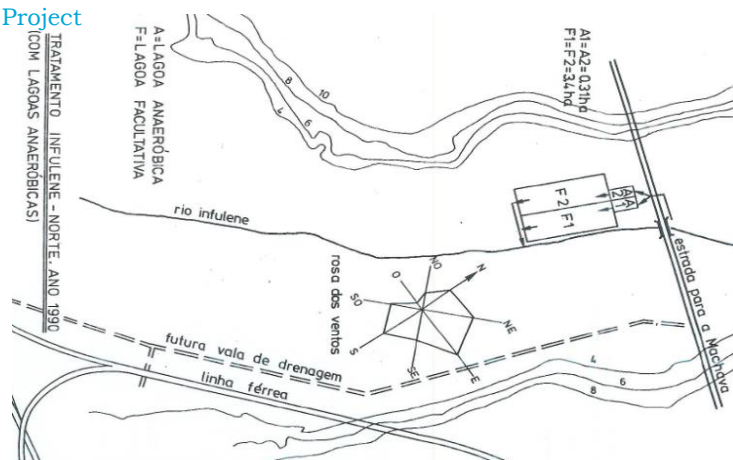
Source: RHDHV (1984)



Source: Google maps

Wastewater treatment plant

Project



Source: RHDHV (1984)

Wastewater treatment plant

Qualitative evaluation

- Unfenced (uncontrolled access)
- Lack of maintenance (de-sludging, weeding)
- Insufficient removal of COD/BOD, faecal coliforms



Wastewater treatment plant

Qualitative evaluation



Wastewater treatment plant

Irrigation



Wastewater treatment plant

Irrigation



Source: Google maps

Agriculture area = 150 ha

Effluent WWTP = 125 ha

Assuming (dry day, May):

Influent = 10.000 m³/day

Irrigation = 80 m³/ha/day

Wastewater treatment plant

Potential for improvement

- Water reuse (safe irrigation)
- Digestion (biogas)
- Fertilizers (agriculture)
- Reduction of polluted discharge to the environment



De-centralized wastewater handling

Challenges

- Peri-urban areas not covered by wastewater network
- On-site systems (latrines)
- Informal/formal de-sludging
- Faecal sludge is (partially) taken to the WWTP (acceptable but not ideal)



De-centralized wastewater handling

Potential for improvement

- Better handling of faecal sludge and greywater (ecosanitation)
- Water-fit-for-use (irrigation, small industries)
- Revenue generation (fertilizers)
- Improvement of urban health (contact with faecal sludge, limited contamination of shallow aquifers with faecal matter) and environment (polluted discharges)



Sustainable water supply for urbanizing Maputo, Mozambique

- Implement **water reuse** to offset water scarcity; reduce **pollution** and **health** risks for population
- Develop **tools, models** and **technologies** applicable in **other countries**
- Generate **revenue: energy** generation, **fertilizer** production

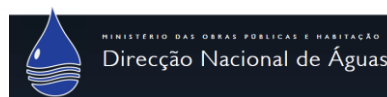
More info: <http://sustainablewatermz.weblog.tudelft.nl>


Sustainable water supply for urbanizing Maputo, Mozambique

- **Five-year** project (NWO-WOTRO)
- **International consortium** involving universities, NGOs, consultants, service providers, policy makers, regulators
- **Multidisciplinary approach:** technical (technology) and social aspects (social acceptance, governance) aspects of water reuse
- **Scientific** and **practical** output
- Four Mozambican PhDs = **capacity building**

More info: <http://sustainablewatermz.weblog.tudelft.nl>

Project partners





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