

Wastewater Production, Treatment, and Use in Swaziland

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Wastewater Production and Treatment

Wastewater in Swaziland is generated by domestic (rural and urban), industrial and agricultural activities. Depending on the rural set-up, wastewater from domestic activities is either discarded at the backyard without minimal treatment and in some households traditional treatment methods are employed in order to re-use the grey water. The common method which is widely advocated, but less practiced, is the use of ash to settle the suspended solids and the recycled water is usually used for watering vegetables in the back-yard gardens. This is usually practiced by communities challenged with water scarcity and on a small scale basis for subsistence farming. Municipal wastewater from domestic activities is treated in wastewater plants or septic ponds. Industrial wastewater is only limited to septic ponds treatment and never mixed with domestic sewage. Agricultural wastewater is never treated and finds its way back into the watercourse as return flows. There are no records captured for volumetric quantities of wastewater in the treatment plants. This is because the Swaziland Water Services Corporation (SWSC) is only interested in monitoring the quality of the wastewater other than the volume generated. Most industries, however, do not pre-treat, as stipulated in their permits, their wastewater before discharging to the main sewerage canal where sewage is conveyed to septic ponds for treatment by SWSC.

Wastewater use and/or disposal

Rural households with sewerage hire tankers (government or private) to siphon the liquid part of the greywater from the sewage pit to dispose it in a distant area, mostly an unofficial disposal site. The solid part is taken for processing to make fertiliser. In an urban set-up all domestic wastewater generators are connected, and charged, to a main sewerage where the greywater is conveyed to wastewater treatment plants or septic ponds which are both operated by SWSC.

Treated (industrial and domestic) and untreated (agricultural) wastewater eventually finds their way into the main watercourse and, currently, there are no direct uses of greywater in Swaziland; either for domestic, agricultural or industrial use. Swaziland has the potential to use wastewater, on a large scale, since the current infrastructure could be modified to suit the situation, however, the main challenge, which will take time to be overcome, is the stigma attached to wastewater. Even though wastewater re-use is promoted on both large scale and small scale, only those with water challenges find themselves compelled to recycle wastewater (which is particularly on a small scale for backyard gardens). Apart from the stigma, Swaziland, currently, receives enough water to meet her irrigation, domestic and industrial annual demands (DWA, 2011b). Indirect use of treated wastewater already occurs as a result of the discharge of treated effluents to the local streams and rivers. The influents are used to irrigate sugar-cane, downstream of the respective discharge point.

Policies and institutional set-up for wastewater management

There are two official institutions mandated by the Swaziland Water Act of 2003 which are responsible for wastewater collection in urban and rural areas. These are SWSC and Rural Water Supply Branch (RWSB), a wing of the Department of Water Affairs (DWA). SWSC is responsible for wastewater collection in urban and industrial areas, whereas, the RWSB, which works hand in hand with the Ministry of Health on this aspect, is responsible for rural-areas' wastewater. The Draft National Water Policy of 2011 and Swaziland Water Act of 2003 focus more on improvement of irrigation efficiency and are docile on the re-use of wastewater (Government of Swaziland, 2011; National Water Authority, 2003). Hence, to this stage, no efforts have been made to recycle wastewater for re-use in any of the sectors of water users particularly for large scale purposes.

Research/practice on different aspects of wastewater

There are no recent or ongoing, known or published researches on wastewater in Swaziland. One which was planned, but ended prematurely was on use of pig sludge to produce gas cylinder using methane. This was because pig production in Swaziland did not materialise as expected and such would have been unfeasible. Another one planned by SWSC is on the use of one of the products from the wastewater treatment plant, methane, to heat water only for the benefit of the people on site to make it feasible (S. Kunene, personal communication, 2012).

Status and need for the knowledge and skills on the safe use of wastewater

There is limited capacity and expertise within the water sector of Swaziland. There are also gaps both in the policies and implementation of wastewater management. There is also absence of national water development plan with particular focus on wastewater development. Lack of knowledge has been identified both in the supply side and demand side, i.e. the institutions responsible for allocating water to users do not prioritise wastewater use instead more emphasis is based on improving irrigation efficiency since 95% of the water received in Swaziland is used in the agriculture sector (DWA, 2011a). The demand side, on the other hand, has to be trained, to change their attitude towards wastewater reuse. They do not see the usefulness of wastewater and perceive wastewater as unsafe even after treatment. There is also a need for a research on total amount of wastewater generated in Swaziland since the mandated institutions do not incorporate such in their activities and also a recommendation on possible uses of wastewater in the various sectors of Swaziland.

References

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