



Programme- MSc Industrial Environmental Management

Title – Balance model to Abelenkpe Area of Accra, Ghana

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Abstract

Increasing global pressure changes such as population growth and climate change are putting a huge stress on the available water resources especially in urban areas of developing countries. By the year 2020, 75 – 220 million people in Africa will face more severe water shortages according to the Global Policy Network on Water Management (2009). Accra had low annual rainfall and majority of the urban populace face water shortages. With this in mind, an approach is needed which will help find alternative sources now and in the future to minimise such threats. The approach used in this study sees wastewater reuse as a source of alternative supply to meet certain demands in the study area.

The SWITCH CWB model was used to model the urban water cycle of the Abelenkpe area in Accra in order to ascertain the water balance of the area. Based on the simulation, the proposed unit block WW recycling water management option chosen will result in the reduction in volume of water imported and also the volume of wastewater that will be discharged to the environment. The recycled wastewater is to be used as toilet flush water and also for garden irrigation. Future scenario for population growth was also determined which showed that there will be a 100% increase by the year 2030 which will have significant impacts on water demand. WW recycling strategy was also used for the future scenario to determine its suitability.

The result showed that under the current situation, the use of WW recycling on the unit block scale will contribute to a 4.4% reduction in imported water and 9% in the future for the study area. This also reduces the volume of wastewater that is discharged to the environment.