

TEMPLATE FOR COMPLETION WHERE PhD/MSc PROJECTS CONTRIBUTE TO SWITCH DELIVERABLES

Name of SWITCH theme:

Theme: Urban Water Environments and Planning

Subtheme: Resource Recovery and Re use Urban Agriculture

Work package title and number: WP 5.2 Use of Urban Water for Urban Agriculture

Identification of Deliverable (name and number):

5.2.4 Ac

Accra PhD research

Details of contributing PhD/MSc theses (including title, date, author, abstract, details of where thesis can be accessed):

PhD: **Daan van Rooijen** (former IWMI, now UNICEF):

Title: "**Water Demand Management**"

Date finalised: 2010

This PhD is partially related to, but not funded by SWITCH (Accra is one of 3 cities target in the research under a collaboration between IWMI-Accra, WEDC (affiliated) and UNESCO-IHE).

Availability

The following papers are related:

The full PhD can be found at...

Abstract:

The study focused on integrated urban water management, or more specifically at the impact that urban development in general and investment in water and sanitation infrastructure at city level and facilities at the household level have on the city scale water flows. The research methods used is hydro-institutional analyses followed by urban water balance modelling.

Rapid population growth and urban densification in cities like Accra, Ghana are some of the underlying reasons why it has proven so difficult to improve urban sanitation in the low-income areas of the city, in order to reach the MDG water and sanitation targets. Household connections to a sewer or septic system are listed as 'improved sanitation facilities', but they require sufficient space to install a toilet facility, a reliable water source, and proper sewage infrastructure. These elements are generally missing in urban Accra with a supply-demand gap of 40% and where 60 percent of the population live in dense urban settlements with inadequate sewage disposal facilities. Using examples, this paper analyses the inter-relatedness, of the water and sanitation issues and shows how it influences the future water needs and wastewater disposal pattern in the city. The spatial and social constraints to improving access to urban water supply and providing safe sanitation, are discussed. The role that urban agriculture can play in safe disposal of wastewater is highlighted. It is further suggested that improvements in both the governance (software) and

infrastructure (hardware) of the urban water system are required in order to successfully achieve the MDGs.

Contribution to Deliverable:

Comprehensive description of how the content of the PhD/MSc thesis contributes to achieving the goals/objectives of the Deliverable

The PhD research contributes to overall theme of 5.2, *Use of water for urban agriculture and other livelihood opportunities*.

Work package 5.2 aims to contribute to a paradigm shift in wastewater management and sanitation towards a recycling-oriented closed loop approach. Water, sanitation and food problems affect people directly, and call for sustainable management of urban resources. The aim of the work package is to effect significant improvements in agricultural production, processing and marketing, and other livelihood activities, using freshwater, storm and waste-water. Changes sought include positive actions (e.g. integrated planning) and mitigating actions necessary to reduce risks to the environment and health of producers and consumers. The work-package involves working in Accra, Beijing and Lima and (to a lesser extent in Hamburg) to start up multi-stakeholder processes for action research on productive use of water and wastewater.

In Accra research focused on the availability of water, and the (productive) use of waste-water by urban farmers. In addition to the demonstration in Dzorwulu area in Accra, research has been undertaken by two PhDs, and several MSc students who have contributed to demonstration in Dzorwulu area and its watershed in Accra.

One PhD Ernest Abraham (product 5.2.4 Ab), has been jointly coordinated by GUEL-NRI and IWMI. He worked on urban water quality characteristics related to livelihoods (food and income) and use of waste-water for productive activities in the Odaw-Korle catchment. He examined the complex area of human attitudes and behaviour in relation to water and the environment and evaluated this in the light of current approaches and strategies to urban water management. It is developing useful recommendations to inform strategies for improving water access and for public involvement in water and environmental management.

This PhD student, Daan van Rooijen: focused on integrated urban water management, or more specifically at the impact that urban development in general and investment in water and sanitation infrastructure at city level and facilities at the household level have on the city scale water flows. The research methods used is hydro-institutional analyses followed by urban water balance modelling. This PhD is partially supported by SWITCH (Accra is one of 3 cities target in the research under a collaboration between IWMI-Accra, WEDC (affiliated) and UNESCO-IHE).

This resulting knowledge will contribute to influencing urban water planning approaches to become more integrative in support of both, urban water based livelihoods and improved water quality. It will add to the other research and feed information to the LA and support the further implementation of the new policy on urban sanitation in Accra.

Results....

To be updated once final report is received.

Related products

(and deliverable number)

5.2.1 Ab Planning urban water-dependent livelihood opportunities for the poor in Accra, Ghana. Abraham, Ernest Mensah, Daan van Rooijen, Olufunke Cofie, Liqa Raschid-Sally. 2007. Paper for SWITCH Scientific Meeting, 9-10 Jan 2007. Birmingham. UK. SWITCH