



Efficient Assessment of the Environment for Integral Urban Water Management

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Abstract:

Introduction:

Sustainable water supply and sanitation is fundamental, especially in countries that are also particularly vulnerable to water-related problems. The Integrated Water Resources Management (IWRM) approach makes sure that water management is organised in a transdisciplinary way taking into account the river basin, the hydrologic system and the appendant organisation like culture, law and economics. The main objective of IWRM is the sustainable organisation of water resources quality and quantity (GWP and INBO 2009).

However there are more important targets in sustainable use of water resources. New sanitation systems are focussing on adding value and maintaining essential resources in circular flow. Focussing on material fluxes can contribute on water quality, food security, sustainable use of renewable energy, adaption on water scarcity and also on rising water and sanitation demand because of rapid urban and suburban growth (Price and Vojinović 2011; Rost et al 2013; Stäudel et al 2014).

Problem:

There are several planning tools for IWRM as well as for urban water management. But to complete the IWRM approach for the resource oriented concept a systematic assessment tool is missing. The assessment of crucial indicators obviously requires a lot of data from different subjects/disciplines, in different scales of detail and in different accuracy and in data acquisition (Karthe et al 2014). On the one hand there will be data abundance and on the other hand the data can be unavailable or unfeasible for example because of scale and specification (Rost et al 2013). Such a complex integrated concept requires a clearly worked out structure for the way of managing and priority setting.

Purpose:

To get systematic in the complex planning process the toolbox model is going to develop. The assessment of the environmental screening (one part of the toolbox) is going to be presented in this paper. The first step of assessment leans on the assertion that each of the required subjects/disciplines implies first sight expert knowledge or provided open access data. In the case of the need for a more detailed screening the next steps consist of scientifically based analysis and legal statutory analysis. Indexes (indicators) or benchmarks for each assessment scale will be summarized and linked to suitable measures. The trans- and interdisciplinary approach makes sure that technical, informative and administrative measures will be involved. A rating between the current situation and the determined target situation will help for effective derivation of measures.

Conclusion:

The claim of the stepwise assessment is to make the data possible to handle, and to summarize the knowledge of expert's effective environmental assessment methods. The universe, comprehensive assessment will be feasible by using the toolbox.

The toolbox will be a planning tool for sustainable urban water management and closed loop recycling water management.

GWP, INBO (2009) A Handbook for Integrated Water Resources Management in Basins. 104.

Karthe D, Heldt S, Rost G, et al (2014) Modular Concept for Municipal Water Management in the Kharaa River Basin, Mongolia. Environ. Sci.

Price RK, Vojinović Z (2011) Urban Hydroinformatics Data, Models and Decision Support for Integrated Urban Water Management. 520.

Rost G, Londong J, Dietze S, Osor G (2013) Integrated urban water management - an adapted management approach for planning and implementing measures: Case study area Darkhan , Kharaa catchment, Mongolia. Submitt to Environ Earth Sci 19.

Stäudel J, Schalkwyk B Van, Gibbens M (2014) Methods and strategies for community-based enhancement & up-scaling of sanitation & waste management in peri-urban areas in South Africa. SANO. Rhombos-Verlag, Weimar, pp 1–13