Development of a toolbox model for integrated urban water management: Case study area of Darkhan, Mongolia (MoMo II)

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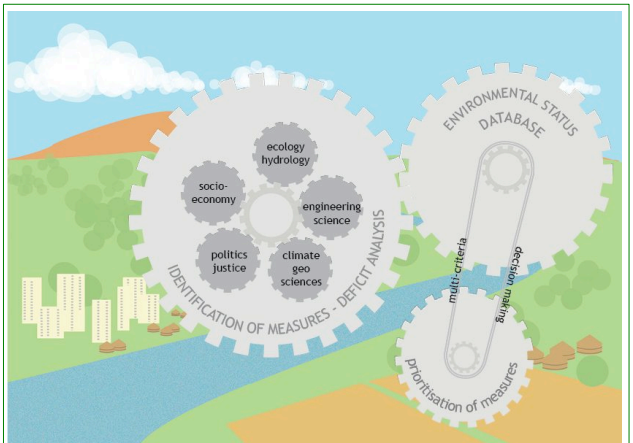
Integrated Urban Water Management

Strategic planning for urban water management considering the IWRM concept asks for complex decision processes. Additionally, several frame conditions and aspects need to be taken into account. The Toolbox for integrated urban water management is developed to facilitate this complex decision making process.

Within the frame of the international research project MoMo* the chair of urban water management and sanitation of the Bauhaus-University Weimar in cooperation with the Fraunhofer AST Ilmenau, developed a Toolbox in the sector of integrated urban water management for prioritizing measures, suitable for the Central Asian context.

By bundling measures a sustainable and constructive combination of several aspects and categories of measures is achieved.



An integrated urban water management and the interdisciplinary consideration offers the opportunity to implement measures in the most efficient way.

Research objective:

- Sustainability and Integration
- Flexibility and Adaption
- Resource oriented Circuit
- Nutrient Cycle - Energy and Money flow
- Modelling and Negotiability

Detailed Research and Method:

- Developing a management approach for integrated urban water management and integrated sanitation concepts
- Considering the urban water circuit as part of the river basin hydrological system
- Consideration of all water management related disciplines
- Taking several frame conditions into account
- Facilitating complex decision making

References

- Londong et al (2011): Integrated Sanitation: Supply by Disposal - Measures for Darkhan, Mongolia. Presentation at International Conference, 07.12.2011, Mongolian University of Agriculture, Darkhan, Mongolia
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- Karthe, D., Borchardt, D., (2012). Integrated Water Resources Management: Model Region Mongolia, 11-15, Project Profile, Helmholtz Centre for Environmental Research.

- ***MoMo:*** "Integrated Water Resources Management in Central Asia: Model Region Mongolia (MoMo2)"
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- ***iPiT®*** : "integrated personal innovative toilet" www.ipit.eu

An Integrated Water Resources Management (IWRM) of the Kharaa catchment area in Mongolia is the aim of the MoMo research project. Currently there is need for action in Mongolia regarding the water sector. Deficits exist especially in river basin and urban water management. Furthermore, the data management, the environmental education sector and the political organization structure for the water sector require a management approach.

Tool for Deficit Analysis:

- Interdisciplinary River basin system analysis provides knowledge of the current condition of the hydrological system
- Water management, water policy, institutional organization, demographical situation provides knowledge about framework condition
- Developing goals and political target required by law providing the acting targets

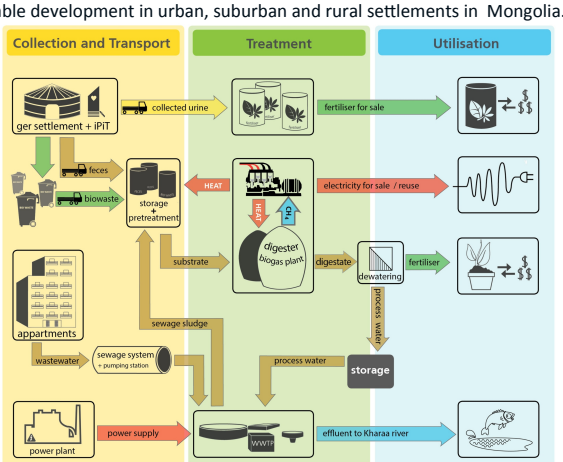
Identification of measures:

A: politically planned measures required by law
B: scientifically substantiated measures
C: expert knowledge based measures

Integrated Urban Water Management and Prioritization

New urban water management and sanitation conceptions consider different flows of nutrients and money. Monetary ratings will consider implementation time and efficiency. A Prioritization occurs based on criteria regarding time, costs and efficiency. Efficiency ratings consider development goals and interdisciplinary results of deficit analyses.

The lack of adequate water supply and sanitation services is a major issue related to sustainable development in urban, suburban and rural settlements in Mongolia.



An integrated urban sanitation system offers the opportunity to treat all material flows in the most efficient way (Londong et al. 2011)

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