Urbanisation and sustainable sanitation development: A research based participatory planning method

CUVE integrated water resources management waters

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1) Introduction

It seems to be a challenge to implement modern, user-adequate and technological adapted sanitation in developing countries. In our example, environmental change, population growth and urbanisation put increasing pressure on the scarce water resources in the Cuvelai-Etosha basin in central northern Namibia.

The goal of the Namibian National Sanitation Strategy (MAWF 2009) notes that "benefits of the provision of sanitation are promoted as a public good and include health, environment, energy generation (biogas) and food production (waste water re-use and treated excreta re-use)". Therefore the planning approach aims to support municipalities, users, and planners in implementing future oriented infrastructure.

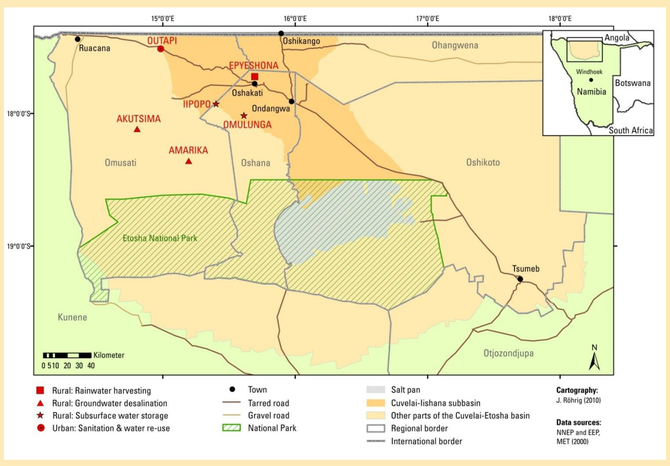

Figure 1: Map of the CuveWaters project area

2) Objectives

The central goal of the CuveWaters project is to strengthen the potential of the region's resources by combining new and adapted technologies in a multi-resource mix for water supply and sanitation. Following social-ecological research setting, technical project parts are framed by looking at societal questions. The project combines wastewater management with water re-use, fertiliser and energy recovery, and a community based approach. Special attention is paid to altering hygiene behaviour to improve the health conditions.

Materials and Methods

Outapi, a municipality in the central north of Namibia, has about 4'600 inhabitants. Together with local stakeholders, the town was chosen as location for implementing a planning concept (2008-2010) and is now realising the infrastructure (2011-2013). Residents and local stakeholders are included in the planning process. In a demand-responsive approach socio-empirical, participatory and urban planning methods are combined.

Figure 2: Impressions of the settlements – Shack Dweller (upper left), Onhimbu (lower left), Tobias Hainyeko (right) (Deffner)

3) Results and Discussion

The result of analysing the settlement structures made obvious that an overall sanitation and waste-water plan would not adapt to the preconditions. Therefore three modular sanitation concepts where developed:

- A **communal washing house** is serving around 250 inhabitants in an older partially dense informal neighbourhood.
- In a very young informal area small **cluster washing houses** will be shared by four to five families. The area has a pre-formal layout.
- **Individual connection** to water pipes and sewage system will be provided for a self-build neighbourhood which has already brick houses and some zoning plan.

Figure 3: Model and example of a communal washing house (left). Cluster washing house as a model – insight view (upper right), model situation with shacks in the surrounding (lower right). (Deffner, Müller)

Technical scope of the implementation

Wastewater will be lead to a decentralised plant with anaerobic and aerobic treatment. This treated nutrient-rich wastewater will be used for an agriculture initiative. In this way maximal use is made of the wastewater.

In rainy seasons waterborne diseases may occur in the Cuvelai-Etosha basin. To prevent a spread of pathogens the implementation of a vacuum water-tight sewer system is essential.

Challenges seem especially to concentrate on operation and maintenance issues. Within the CuveWaters Project great emphasis is put on capacity development to assure proper operation of all implemented technologies.

Societal scope of the implementation

Finding ways to improve sanitation calls for a good grasp of the local situation regarding water utilisation, hygiene and socio-cultural behaviour (Deffner et al. 2010). To lower risks of misunderstandings the participatory planning work started early. It consisted of an iterative discussion and adaptation of the technological solutions. In community workshops specific needs and opinions of the users were taken into consideration. This is aiming to raise the acceptance and buy-in to the new infrastructure already before it exists. The community based approach is continuing with establishing community health clubs (Waterkeyn 2010) to change norms and values among health and hygiene behaviour.

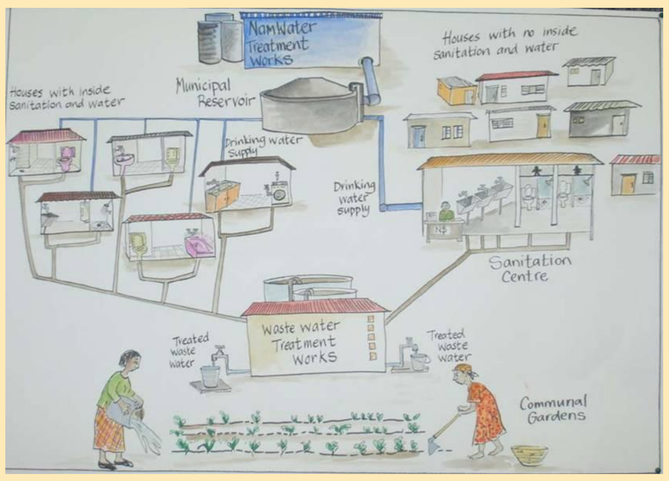

Figure 4: Urban modular sanitation concept showing individual and communal sanitation facilities and water re-use (Marais)

4) Conclusions

The chances of the concept are clear: it offers decentralised waste water treatment which includes water re-use, can be fitted in existing structures and is modularly expendable. But as there are few experiences in introducing sanitation infrastructure in settlements which are dynamically under transition there are obstacles. They are however on the non-technical side and concern the planning process, behavioural change and management. There also exist reservations towards pro-investment strategies on the stakeholder level and low capacities in maintaining and managing such infrastructures. The strength of the concept is to help integrating different perspectives and requirements to planning and implementation of sanitation infrastructure in informal settlements. That is why we conclude that this approach is preparing informed choices among stakeholders.

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Literature:

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