SWEDEN: A CASE STUDY ON COMMITMENTS-RELATED BEST PRACTICE OR LESSONS LEARNED IN WATER

Urban Water: contributing to the goals from Johannesburg

The Urban Water research programme aims at developing support for strategic decisions on future design and operation of sustainable water and wastewater systems. Will sustainable water and wastewater systems be improved versions of those that exist today, or will there be some radical changes?

The relevant WSSD goals addressed in the program are:
- to halve the number of people that do not have access to drinking water by 2015
- to halve the number of people that do not have access sanitation by 2015
- to give at least 100 million slum dwellers a better life, including shelter, water and sanitation, by the year 2020.

The Urban Water programme has adopted the following general vision for sustainable urban water management:

> *"Every human being has a right to clean water. For urban areas, our vision is water management where water and its constituents can be safely used, reused and returned to nature."*

To make this happen, a comprehensive approach is needed, emphasising technical and economic aspects as well as the challenges of institutional capacity and public participation in the planning process. There is also a need for integrating the urban area into the catchments in order to make proper analyses and avoid sub-optimisation in the planning process.

Urban Water aims at developing a comprehensive decision support for those actors taking part in the planning and decision-making of water and wastewater systems for the future. Decision support includes sustainability criteria, knowledge about different systems, and general methods and tools to be used for the production and presentation of knowledge. The Urban Water decision support is intended for use in Sweden as well as abroad, in developing countries as well as in Eastern Europe. Countries with established urban water management systems are confronting the challenge of renovation; countries planning new systems have to tackle the large investments this requires. In both cases there is a need for systematic comparative assessments between different alternatives.

An important prerequisite for Urban Water systems analysis is to adopt a definition of an urban water management system that includes the technical structure, the organisation and the users of the system.

Applying the decision support in a country town

Each city has to make strategic decisions depending on local context. In order to tackle the issue of contextual variance, the programme is taking place in five different “model cities” representing typical Swedish urban areas and exemplified through physical cases : “country town”, “old city centre”, “suburban area”, “newly built area” and “the urban enclave”. The last refers to a smaller area with its own water and/or wastewater system, existing within a larger urban area.

Since 2001, researchers from the programme have been working in dialogue with a local group of stakeholders in a Swedish country town, Surahammar, in order to develop and test Urban Water decision support.

Characteristics of, and knowledge about, a number of possible and realistic systems for drinking water, wastewater and stormwater in general have been developed and brought together in the Urban Water programme. We are working with membrane technology for the production of drinking water, with source separating wastewater systems as well as sludge fractionation for phosphorous recovery and with the beneficial use of stormwater.

In Surahammar, three system structures for wastewater have been designed in dialogue between researchers and stakeholders: a conventional system with reuse of sludge, kitchen waste disposers connected to the sewers and a black water system.

In all three systems, it is intended that the municipality be the responsible agency, with as little responsibility as possible resting on the users. All three systems' structures have been analysed with respect to 15 criteria (health/hygiene – 2; environment – 5; economy – 2; socioculture – 6), also selected in dialogue between researchers and stakeholders with the Urban Water's main list of criteria as the basis.

Comparing three systems for wastewater management

The local stakeholders were meant to carry out the comparative assessments of the outputs from the Urban Water analysis, meaning deciding which system was preferable with respect to local conditions in Surahammar. These assessments are still under way as of the autumn of 2003 and based on quite extensive written material.

We use the concept criteria as "demands to be met" by a sustainable urban water system and thereby obtaining a concept comprising all aspects of sustainability. Indicators, in terms of "degree of fulfilment", have proven to be complicated to use in relation to some of the criteria since there is no target present to assess the fulfilment of.

Outputs from the analysis of the three systems in Surahammar did not clearly favour any of the alternatives, which is most often the case in these kinds of planning situations. Pharmaceuticals are, in general, an area of great uncertainty, and the weak point in our toolbox this far. Regarding the spread of heavy metals, the kitchen waste disposer system showed the poorest results. The black water system was best at recovering nutrients, but involves large investment costs. On the other hand, the costs for operation and maintenance are lowest in the black water system. There is the risk of a lack of robustness in the black water system, but it is the one that best meets the political environmental goals in Sweden as well as the intentions of the Environmental Code.

The planning of future urban water systems has a multi-dimensional character and must include a methodology for the integration of knowledge areas. Direct weighting is not a suitable method since the different areas of knowledge are on incommensurable scales. Still, a systematic method for synthesise is needed , without the loss of too much information during the process. The local stakeholders have carried out comparative assessments of the three alternatives, with process facilitation from the Urban Water researchers. We have chosen the multi-criteria decision-aid NAIADE, which is a software product dealing with different kinds of knowledge. Another

advantage of NAIADE is that it really is an *aid*, not a decision-machine black-boxing the arguments for the decision taken.

Lessons learnt

The output from this model city project is still under analysis but a number of experiences have thus far emerged. First and foremost, the local stakeholders were encouraging a comprehensive approach, and understood the Urban Water framework. That sustainable urban water systems are more than mere technology was established quite early in the process. However, that this implies changed norms and routines for the technicians as well as a more heterogeneous network of actors was not accepted as easily.

The tools in the toolbox were working and useful, but the outputs guiding the participants' assessments were, however, not always easy to grasp for the local group. Here we are in need of a more refined means of communicating research results as well as developing the tools in order to make them more independent of researchers for practical use.

The participation of different local stakeholders highlighted some of the complications related to participation. The aim of participation needs to be clarified, is it for more effective implementation, to arrive at better decisions, educative, trust building or to enhance communication? In our case, the municipality's technical office saw effective implementation and education as the main goals, but these goals were not explicitly expressed. The aim of participation needs to be reflected upon early in the process. Who is to be invited and why are other questions to consider, linked to issues like legitimacy and accountability.

Another reflection to make in relation to this test case is the importance of communicating worldviews. Different goals, worldviews or system definitions are one of the main obstacles for communication, and thereby for implementation. This is often due to the fact that these aspects are placed on the hidden agenda instead of being discussed. Shared worldviews are not a prerequisite for successful implementation, but an awareness of them is.

In conclusion: the challenge of sustainable urban water management systems deals, of course, with developing better knowledge of better systems, but there is most probably a higher marginal effect in developing processes for communicative planning and facilitating institutional capacity. The Urban Water programme contributes to both.

Dissemination of results

We will in the coming year start our work to make the results from the Urban Water Programme available to developing countries and countries in Eastern Europe. A workshop by Urban Water is scheduled to take place at IWA's 4th World Water Congress in Marrakech, Morocco, September 2004 and there will be a workshop "Decision Support for Urban Water Management" as a part of the Stockholm Water Symposium in August 2004. In December 2003 a Sida Conference on "Urban Sanitation Systems" will be held in Bangkok with presentations given by Urban Water.

For more information:
http://www.urbanwater.org/default_eng.htm

Information on some Ecological Sanitation Initiatives from Sweden supplementing the Urban Water Program: Over the last decade, ecosan pilot projects have been set up in Sweden and also in numerous locations around the world where Sweden is active in providing capacity building. The projects in Sweden are both dry and water-borne sanitation systems with urine diversion and recycling. In southern Africa projects have been set up testing environment-friendly and safe soil-composting latrine systems with recycling. And in Asia, SE Asia and Latin America urine diverting dry latrine systems with recycling have been tested and developed. Presently, large-scale urban pilot projects with these systems are being build in China, South Africa and Mexico within the EcoSanRes Programme sponsored by Sida. These solutions show great promise in areas of the world with water shortages and/or without the financial resources to build advanced sewage systems (contact www.ecosanres.org or arno.rosemarin@sei.se).

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