

waterpoints

PUB Singapore wins Stockholm Water Award

A holistic approach to water resources management which made water use sustainable for different sectors of society in a unique and challenging urban island environment has earned PUB Singapore the 2007 Stockholm Industry Water Award. The award will be presented on 15 August during the 2007 World Water Week in Stockholm.

PUB is the national water agency in Singapore charged with water, wastewater and stormwater management in the city state. The public agency services about 4.5 million people and a number of major industries with intensive water use. The development and implementation of the complete management system is ongoing, but has taken place over a period of about 40 years.

PUB's holistic approach has resulted in a lower dependence on external water sources by diversification of water sources, including water re-use, desalination, stormwater storage in new water storages and the supply of very high-quality recycled water to industry with some internal reuse of this supply. Singapore presents a challenging environment for water resources management as it is a small but densely populated island city state.

In its own operations PUB has significantly reduced water losses due to leakage in pipes and inaccurate meters, for example. It has 100 per cent servicing of its population with water and wastewater services and strong political and public acceptance of its policies and services.

This has been accompanied by a major change in water pricing and access policy which aims to use the rate structure to encourage the more efficient use of water. PUB has been able to provide lowered costs of delivered water of improved higher quality to industry and the community. Reclaimed water, branded NEWater in Singapore, is recognized for its high quality. Singapore has also been able to maintain low water costs for households on the lowest tariff water supply despite the major capital investments in new equipment and systems. Its household-directed campaign of 'Water

Efficient Homes' helps residents to save water at home and reduce their water bills.

Through an extensive partnering programme with the water industry in all aspects of implementation it has been a model of out-sourcing of skills.

'PUB has succeeded in combining all the complex components of a well-functioning water management system that has been accepted by the general public, business and industry', says Lars Gunnarsson, chairman of the Award Committee. 'The PUB story would fit well as a study example in the education of water managers. This is an exemplary model of integrated water management in a framework of good policy and innovative engineering solutions'.

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Animal bone char treatment for fluoride in Senegal

Experimental research has demonstrated that water containing excessive amounts of fluoride can be treated with bone char, thereby rendering it safe for human consumption.¹ But the investigation also revealed that because of water shortages in the areas where fluoride levels are highest, people prioritize finding sufficient water, rather than paying attention to its quality.

Systemic fluorosis is an endemic problem in several developing countries. In Senegal four regions are endemic for fluorosis. WHO standards indicate a concentration of 1 mg/l F⁻ in drinking water as a safe value for human consumption. People in some regions of Senegal consume water with fluoride concentrations of up to 4–5 mg/l F⁻, which causes permanent discoloration of the teeth, skeletal deformities and joint pains. Considerable work on fluoride removal from water has been done all over the world. However a safe, efficient, simple and low-cost defluoridation process is not yet widespread in Senegal and needs to be developed in order to cope with the occurrence of fluorosis.

Experimental research was conducted in the University 'Cheikh Anta Diop' of Dakar. Column tests were

designed in which the column was filled with animal bone charcoal, above a layer of cotton, through which water was filtered. The bone charcoal was obtained by heating beef horns in an electric kiln at the temperature of 500°C for about two hours, and selecting only the blackened parts. The tests revealed that treated water with a concentration of 0 mg/l F⁻ could be obtained from raw water with an initial concentration of 4.2 mg/l F⁻.

Preliminary investigations in Senegal revealed some of the social, technical and economic aspects related to the problem of fluorosis. Because fluoride is colourless, tasteless and odourless, and its effects are only experienced after some time, people are often unaware that their water supply is unsafe. When the first symptoms appear (yellowing of teeth and pains in the joints) people do not always seek medical advice because:

- they don't know that it is due to fluorosis;
- people don't have enough money for medical visits;
- affected people generally present the symptoms of dental fluorosis, which they regard as only an aesthetic problem that doesn't cause physical pain;
- there is no official therapeutic protocol about fluorosis in public hospitals because the Ministry of Health doesn't recognize it as a disease, so few doctors know how to proceed when the symptoms of fluorosis appear.

Therefore information, education and communication are essential components of a lasting action against the fluorosis. At the same time continuing research is needed to find a simple home-based defluoridation system using animal bone char.

Reference

1. Sorlini, Sabrina, Gueye, Omar, and Palazzini, Daniela (2007) 'Fluoride removal from drinking water using animal bone char in Senegal', University of Brescia, Italy.

International Year of Sanitation

The draft objectives¹ for the 2008 International Year of Sanitation (IYS)

have been handed over to UN Secretary-General, Mr Ban Ki-Moon. Mr José Antonio Ocampo, Under-Secretary-General for Economic and Social Affairs, mentioned two planned UN IYS activities in 2008:

- a workshop on the linkages between improved sanitation and girls' education
- an interregional conference on sanitation organized by a new UN Office to be set up in Zaragoza, Spain, for advocacy and awareness raising on water and sanitation issues in the context of the International Decade for Action, 'Water for life' 2005–2015.

Reference

1. UNSGAB – Draft Objectives [http://www.unsgab.org/IYS2008/May0707/draft_objectives.htm]

WB uses carbon credits for sewage methane emission reduction in Bolivia

The Community Development Carbon Fund (CDCF), managed by the World Bank (WB), has signed an emissions reductions purchase agreement with Bolivian sanitation and wastewater treatment cooperative Saguapac, the WB announced.

The agreement is for Saguapac to install a covering system on anaerobic lagoons at the four wastewater treatment plants it operates in Santa Cruz de la Sierra city.

'We are solving two issues at the same time', WB task manager Roberto Aiello says. The project will 'cut down on the release of methane, which helps the environment, and the lagoon covers will also reduce the odours at these plants, which will help the neighbours who live in the surrounding area.'

Under the agreement CDCF will buy 200,000 t of carbon dioxide equivalent by 2015. In turn, Saguapac will use part of the revenues from this operation to improve sewerage services in one of the poorest areas of the city.

'It is expected that the Santa Cruz experience could be replicated in other cities around Bolivia and the Latin American region', according to the WB statement. 'We don't have specific cities yet, but we are looking at Argentina, Colombia and Bolivia. There have been similar projects in terms of [treating gases emanating from] animal waste

lagoons, but this is a first in terms of urban wastewater,' Aiello adds.

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Lasting improvements in Bangladesh?

There are important lessons to be learned from the efforts of a local NGO and a village to transform water supply, latrines and hygiene practices in their community. These efforts resulted in dramatic increases in latrine construction and use, improvements in the water supply and a substantial – if disappointing – increase in good hygiene practices.

The area of the greatest improvement, latrine construction, was the task that villagers took on for themselves. However, it is also clear that many social groups need to be involved to ensure that village-based initiatives are sustainable, and support for the Village Development Committee needs to continue beyond the period of a one-year project, especially if new hygiene practices are to take root.

The village featured in the study is Natuapura in Bangladesh and support came from BSKS, a local NGO that is a member of the NGO Forum for Drinking Water Supply and Sanitation in Bangladesh.

BSKS's approach, fundamental to NGO Forum initiatives, was to establish a Village Development Committee (VDC), train its members in participatory planning techniques and WatSan technologies, and use hygiene education and promotion (HEP) to mobilize villagers in self-help programmes. VDC members became aware of the importance of water, sanitation and hygiene promotion and they took a number of initiatives to promote these issues. Rallies, popular theatre, house visits and other social interaction maintained the momentum of the programme. The schoolteacher and religious leaders reinforced the hygiene messages, and everyone in the village was made aware of the importance of household hygiene.

New water points were subsidized by the government, but householders took responsibility themselves for latrine construction, guided by the Village Development Committee and the NGO representative. In fact, it was in latrine construction that the project has to be judged most successful. A big majority of the householders built a hygienic

latrine at their own cost, raising the numbers having access to latrines from 11 per cent before the project to 80 per cent after it. Some new water points (tubewells) were also built, and villagers themselves installed and paid for a number of arsenic-iron removal plants. A recent review shows that the new facilities are being used and maintained.

A.R.R.M. Kamal, Chief of Training Cell of NGO Forum, has reviewed the project and written it up as a case study.¹ His main conclusions are:

- It is very important to involve other social groups and institutions such as the Union Parishad, the Gramsarkar (local government institution) and other government institutions to make the effort sustainable.
- It is equally important to implement projects for longer than one year in order to change hygiene behaviour. This process needs to be sustained by community-based institutions/organizations and they in turn need resources.

Progress in hygiene behaviour was less encouraging. The project had aimed to raise the numbers of people washing their hands with soap after defecation from 10 to 50 per cent; the actual number achieved was 30 per cent. Another target was to increase the percentage of villagers washing their hands with soap before preparing food from 7 to 30 per cent, and the level reached was 20 per cent. There was some disappointment too that the Village Development Committee has significantly reduced its activities since the project ended.

Overall, the verdict is that the VDC model was effective, though care is needed in ensuring that all villagers are involved in selecting the committee members. More sustained follow-up by trained community members after the project is seen as a lesson for the future. On a positive note, the evident enthusiasm of Natuapura residents has led to requests from neighbouring villagers for similar projects, and new initiatives are under way.

Source Water and Sanitation Weekly
May 2007

References

1. Sijbesma, Christine and Appleton, Brian (eds.) (2007) "Local Initiatives for Better Hygiene: Four case studies from Asia", Occasional Paper 43, by IRC, <http://www.irc.nl/page/32224>