

JULY 2011

## OVERVIEW

IIED Human Settlements Group

**Project name:**

Water resource management

**Project leader:**

Martin Mulenga and Gordon McGranahan

**Time frame:**

2009–2010

**Cost:**

£50,000

**Objective:**

To explore the extent to which urban dwellers in low-income settlements depend directly or indirectly on groundwater, and to raise awareness and emphasise the need for better integration of groundwater in management of urban water resources.

## PROJECT SUMMARY

Most in the water sector believe wells dug in poor urban settlements do not provide safe water. Tapping groundwater is seen as a fringe practice to be eliminated by expanding piped water systems; efforts to enhance the quality and sustainability of urban wells receive little attention, locally and internationally. But for the poorest urban households, far from being a minor feature in decline, these wells are vital. Based on Demographic and Health Survey data, a literature review, case studies in India and Zambia, and discussions with experts, we found that in surveyed Asian and African countries alone, 269 million poor city dwellers depend on wells — and are often unserved with improved water.

## THEORY OF CHANGE

Lack of awareness of the importance of wells to poor urban dwellers in many Asian and African countries, together with an absence of baseline data, prevents water managers from seeing the whole picture as they try to safeguard groundwater resources. Governments and water experts need a detailed understanding of urban communities' reliance on groundwater, and especially how this affects the most vulnerable

# Urban wells: a vital but ignored resource

Research reveals the immense significance of 'invisible' water to the urban poor.

In nearly all low-income settlements in Lusaka, Zambia, a local utility has started providing access to clean water by distributing it at central kiosks. But many households still use shallow wells dug in their yards to supply themselves with water, despite government warnings that such wells are easily contaminated by nearby latrines. An elderly resident asked visiting IIED researchers to put themselves in her shoes. Imagine you have to do your washing over a weekend, she suggested. You must walk some distance to the kiosk, haul back all the water in buckets, and pay for it by the litre with money you need for food. What would you do?

Similar dilemmas face growing numbers of urban poor in sub-Saharan Africa and Asia. Many government officials and water experts have assumed that as city water networks expand, more and more residents are filling their jugs, pots and glasses from a tap or water kiosk, leaving behind the simple wells used in rural villages. But according to new research from IIED, the opposite is true: access to city water supplies isn't keeping pace with demand in most poor settlements, and wells can now be found almost everywhere. In Nigeria, for example, more than 60 per cent of urban dwellers rely on nearby wells, up from 27 per cent in 1999. Almost one third of the population in Asian and African cities examined by the US Agency for International Development's Demographic and Health Surveys (DHS) — some 269 million people — use wells. And this has implications not

only for public health, but for regional groundwater supplies under stress from climate change.

## Quantity over quality?

Most importantly, the research shows that wells deserve a new image. From case studies in Lusaka and Bangalore, India, as well as a literature review, the researchers reported that many localities concerned about disease have blanket-banned urban wells without providing feasible alternatives. But the study's new usage statistics — extracted from DHS, where data on wells have been available for years but never previously compiled and publicised — indicate that urban well water is a vital resource, needed by far more people than most officials and funders have imagined.

What's more, backyard wells do not always represent a health risk. Some yield contaminated water, but others don't; the cause of problems is generally not the use of groundwater per se, but pollution, including poor sanitation — often latrines are too close by, or they lack roofs and flood in the rainy season. On the other hand, not all water used by households needs to be potable. The researchers noted that according to previous studies, the quantity of water available to the poor is sometimes more important than the quality, because access to more water encourages handwashing and other hygiene measures. Thus, provision of pure water in scarce amounts can lead to more disease outbreaks than a plentiful supply of impure water.

residents. Local conditions must be assessed, including an area's hydrogeology, how its wells are monitored, government policies, institutional capacity and interventions by foreign aid programmes and NGOs. Without this knowledge, it will be practically impossible to track the impact of groundwater pollution and over-exploitation, and to implement evidence-based sustainability policies. Highlighting the significance of urban wells is the first step towards sustainable use. A new look at wells is also warranted by research showing that access to well water, even of low quality, can help control water-washed diseases.

### KEY LESSONS LEARNT & INNOVATIONS

- Thirty per cent of the urban poor in Asia and sub-Saharan Africa rely on groundwater from household or neighbourhood wells, and efforts to supply piped water often do not meet their needs.
- There is a striking lack of information about urban self-supply of groundwater, especially given the amount of attention to water quality and availability for piped water systems. Climate change makes this gap even more worrying.
- Government can do much to improve the safety and sustainability of well water for low-income households. Measures that would support poor communities include hydrogeologic surveys, sanitation upgrades and hygiene campaigns.

### PARTNERS' VIEW

*There is generally a lack of formal water provision, which leads people to look for alternative sources. Water is life, and people will do anything to get it – they will pay for it, get it from neighbours or dig a shallow well. In Lusaka, the water table is fairly high and the use of shallow wells is therefore an obvious solution.*

Cathryn Mwanamwambwa  
Care International Zambia

### IIED HUMAN SETTLEMENTS GROUP

The Human Settlements Group works to reduce poverty and improve health and housing conditions in the urban centres of Africa, Asia and Latin America. It seeks to combine this with promoting good governance and more ecologically sustainable patterns of urban development and rural-urban linkages.



Governments should work with communities to make urban wells safer rather than discouraging their use.

These complexities are not reflected in plans at the local or international levels. The Millennium Development Goals, for example, include access to clean water and prescribe a transition from 'unimproved' to 'improved' wells, but don't recognise the value of water quantity as well as water quality.

### Wells and warming

Because decision makers have assumed that urban wells are undesirable and unimportant, extraction of groundwater by poor city dwellers is almost completely unmonitored. But given that hundreds of millions actually rely on this resource, authorities must integrate it into their measurements and water resource management plans – especially as climate change begins to alter water regimes in growing Asian and African cities. With glaciers disappearing and rainfall becoming more irregular, many rivers and lakes currently tapped by water utilities are expected to start drying up. Increasingly, cities will turn to underground aquifers. Whether or not this may trigger crises of groundwater supply still remains to be shown. What is certain, though, is that to ensure groundwater use remains sustainable – and sustains life in poor settlements – planners must take neighbourhood wells into account.

This will require detailed surveys, ideally including hydrogeologic surveys of aquifers underlying the wells, as well as attention to residents' needs. In a one-day international workshop that

IIED held for groundwater experts, participants agreed that urban groundwater is rarely investigated. The new set of data was received with great interest.

Governments should also work closely with communities, the study concludes, not to stop the spread of wells but to make them safer and improve hygiene practices. Sanitation can be upgraded, and the use of chlorine and other chemical purifiers promoted. The researchers noted that in many cases it would cost less to improve water and sanitation than governments spend fighting cholera and other water-borne diseases.

Having completed our survey of the problem, IIED next hopes to run a two-to three-year practical project to implement and test some of these recommendations. We are also disseminating the survey's findings in reports and via the media: more than 30 news outlets have picked up the story. To date, urban wells have been doubly invisible: they are associated with often-ignored poor communities, and they tap a resource hidden underground. By continuing this line of research, we aim to bring them into the spotlight.

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