

Wastewater use and periurban water security conflicts and cooperation

Urbanisation processes result in the creation of periurban spaces that reveal both rural and urban characteristics. They are spaces in transition between the village and the city. They often provide resources for urban expansion while receiving urban waste. Uncontrolled urban sprawl leads to encroachment of resources, displacement of bio-diversity and compromises the natural resource security of periurban communities. The effects of these changes are further aggravated by climatic changes.

The CoCooN - CCMCC project on periurban water security is exploring how urbanization and climate change shape periurban water (in-)security and the possibilities for conflict and cooperation around water. Gurgaon, one of the research sites, is a major outsourcing, recreational and residential hub in Northwest India. It has expanded over the last three decades through the acquisition of land and water from the peripheral villages.



Urban expansion shapes rural-urban water flows

The research in Gurgaon is located at the interface of three canals, a wastewater Canal (Popularly called as STP – or Sewage Treatment Plant canal), the NCR (National Capital Region) Channel and the GWS (Gurgaon Water Supply) Channel. The first of these canals carries the domestic waste of the city through the periurban villages while the latter two were built to carry water from the country side to water treatment plants to provide water to the city. The construction of these canals is triggered by the growth and expansion of the city; the periurban villages through which they pass are meant to be recipients of these changes. In particular, they are not allowed to use the water flowing through the freshwater canals. However, these canals turn out to be the lifeline of these villages.

Accessing water along the canals

The periurban communities have devised their own ways to take advantage of their situation. They have adapted through a wide range of technologies and institutions that have sprung up along these canals. Hand-pumps are a common sight along the canals and an important source of drinking water; tube wells were installed to benefit from the rise in the water table when the GWS was dug. However, many of these were removed when the NCR channel was dug parallel to it. Similarly, a wide range of technologies are used to access the wastewater; electric pump-sets, diesel pump-sets, tractors and pipe outlets.

Growing dependence on waste water

In this region, the absence of an irrigation canal and the presence of groundwater salinity have increased the reliance on the wastewater canal. At the same time, there was a decline in rainfall after the 1970s and the disappearance of what locals call the “chaumaasa” – the four month monsoon period. Thus wastewater use has emerged as an integral input

into periurban agriculture. Paddy, wheat and fodder crops (jowar) are grown using it. Most of the wastewater irrigated produce finds its way to the city.

Cooperation in the use of waste water

While there is growing recognition of the value of wastewater in periurban agriculture, little is known about the dynamics of cooperation around it that allow its use to be widespread. Only some farmers whose lands are located along the wastewater canal can access it directly from the canal; however, it is made available to several other farmers whose lands are located at a distance on the basis of mutual norms of cooperation, locally called *bhaibandi*. These norms allow the wastewater to flow – often as much as a kilometre away – through furrows. These forms of cooperation are crucial in sustaining the use of wastewater, growing rapidly in importance in periurban contexts in the face of climate change and urbanisation.



Picture 1: A hand-pump along the GWS channel

Conflicts around the use of wastewater

Conflicts around wastewater, however, are also common. They happen for instance, when water from one's fields overflows to the neighbours' when the latter does not need it, damaging his crops. These conflicts are more common when the land-holding size is small, as such contiguous parcels of land may belong to different owners, than when the plots of land are large, and owned by a single person. Conflicts also happen when there is a mismatch between the wastewater discharged in the canal and the farmers' requirements for irrigation; irrigators then go up the gate works to put pressure on the gate operator to release more water. Sometimes, at the gate works the embankments get eroded, causing the wastewater to spill over into the adjoining farmer's field. This situation is usually resolved through petitions to the Irrigation Department.

Cooperation and community resilience

In a periurban context, as climate change and urbanisation together create an uncertain environment for water access, wastewater will continue to be an important source of irrigation; sustained by local norms of cooperation. These norms of cooperation are imbibed in practices that allow irrigators to build furrows to carry wastewater to their fields located at some distance from the pipe outlet and provide a basis for collective cleaning of the furrows and watercourses. It is important to understand the value of these norms of cooperation in improving the resilience of communities to the impacts of urbanisation and climate change induced water insecurity.

Avoid blue-prints: focus on the local context

Generalisations at the household level are difficult. Drafting a blue – print for intervention is futile. Agriculture and irrigation practices are unique to each household, depending on location of fields and access to multiple sources of irrigation. However, efforts to build the resilience of periurban communities in the face of urbanisation and climate change need to be based on an understanding of existing responses by communities and an appreciation of the diversity of local contexts. In particular, there is a need to take cognisance of local norms of cooperation that strengthen community resilience. Such complexity should not be demoralising; rather an inclusion of periurban communities in the planning of the urbanisation process may prevent their marginalisation and improve their livelihood choices.

Imperatives for action

1. Recognise the role of wastewater in periurban agriculture.
2. Plan for water resources looking at rural-urban relationships.
3. Avoid blue-prints: focus on local contexts
4. Build adaptive capacity based on an understanding of existing practices.

Climate Policy, Conflicts and Cooperation in Peri-Urban South Asia: Towards Resilient and Water Secure Communities

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- Khulna, Bangladesh
- Kathmandu, Nepal
- Gurgaon and Hyderabad, India

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