

## **Sustainability of decentralized, community-owned drinking water supply systems – Experiences in Odisha**

Gram Vikas is a rural development organization working with poor and marginalized communities of Odisha since 1979. Since 1995, Gram Vikas has been implementing a community-based sanitation and water supply programme, in which each family in the village builds its own toilet and bathing room and the village builds a piped water supply system. MANTRA (Movement and Action Network for Transformation in Rural Areas) is the overarching framework of Gram Vikas' development initiatives.

As of March 2018, about 1200 villages have established their own drinking water supply systems. The system consists of a source, an elevated water reservoir, distribution system and three tap connections to every household in the village. In 51% of villages, the water source is a drilled bore wells, while 12% are shallow dug wells. In the remaining villages, drinking water is sourced from a spring or a mountain stream. No energy is required in these cases for drawing water into the overhead reservoir. In case of wells, grid or solar electricity is used to run pumps that draw water.

### What has happened so far?

In the early days of the intervention, in the late 1990's, Gram Vikas and the village communities believed that drilled bore wells were the most suitable source of water. Chances of contamination were low, it was fast and cheaper to drill the well and given availability of electricity, posed least amount of operational difficulties. For the villagers too, the bore wells provided a sense of difference, given that they were used to traditional dug wells or ponds as the primary sources of water. Drawing sub-soil water also increased the risk of fecal contamination given the widespread open defecation practices. In case of villages in the hilly parts, where electricity was unavailable and the drill machine access impossible, the spring sources were preferred.

Compared to a public water supply system, provided by the Government, the community-owned and managed water supply system has several advantages. Users have far more control over the supply, in terms of determining when and how much water to be distributed; better understanding of supply related issues and little dependence on outside agencies.

This also means that the users pay relatively higher price for the water they use, directly or indirectly, compared to a situation where public water supply exists. The Village Water and Sanitation Committee (VWSC) that owns and manages the system is a self-governed village institution. Government or outside financial support is limited to paying for the capital expenses to establish the system. The VWSC has to mobilize village level resources to operate and maintain the supply. They have to pay for any repairs in the system. In cases where grid electricity is used for pumping water the electricity charges is the largest cost item. Managing the VWSC and the water supply system also requires the representative leaders to devote time to organizational matters, including keeping and managing books of accounts, bank account operations and being accountable to the village community as a whole.

Communities across the states of Odisha, and Jharkhand, who work with Gram Vikas have realized that the benefits of having their own village-level piped drinking water systems far outweigh the additional costs.

### **Issues in availability, skills and technologies in localized water supply solutions**

Community level drinking water supply and its sustainability, face a set of issues and challenges, which cannot be fully explained only based on the past experiences. Accessing groundwater through drilled bore wells is becoming a risky affair. Failure rates are rising by the day and yields are often insufficient to meet even the drinking water needs of the community. Increasing contamination of ground water in various forms and fall in the perceived quality of drinking water are related issues.

Digging shallow wells in most of parts of Odisha has to be done manually. This requires specialized stone masonry skills, which is difficult to find. There is however an increasing realization among communities that shallower wells can be better managed.

Traditional water divining abilities that communities relied on, are no longer available. Scientific geo-hydrology practices in vogue do not produce reasonable results in terms of certainty of locating water sources for drilling/digging wells.

“Our springs used to be perennial and have sufficient discharge to meet our requirements for agriculture and piped water supply. This has drastically with reduction of forest cover. We're now realizing the importance of forests and its role in the water cycle.”

Simanchal, Mardiguda village, Thuamul Rampur Block, Kalahandi, Odisha

Communities in the hilly terrains, where availability and quality of supply of electricity are erratic, depend on spring sources for water supply. While this seems to be an ecologically sustainable option, the problems over the past years have been many. Seasonal nature of water availability and drying up of sources during summer is increasingly becoming the norm. Human and natural activities around the spring source or the in-take wells are also causing water quality issues. There is very limited scientific understanding of spring aquifers and the management regime they demand. Access to spring sources, often in the higher reaches and within reserved forests, is limited due to forest laws that prevent access to forest lands. Even if physical access is possible, any treatment of the source is difficult as several clearances are required from the forest department and these are seldom given.

The journey has been one where a prevailing set of problems has been addressed with success. In the efforts to make the solutions sustainable, together with changing contexts, newer challenges have emerged which need to be addressed.

### **The political economy of decentralized water supply systems**

Traditional community bonds are being re-defined by the emerging economic and political realities. The older generation that saw value in having their own village level basic services,

like drinking water supply, have moved on. The younger generation in the villages migrate for employment more often today, many on a more permanent basis than earlier. Communities have increased political awareness, better understanding of rights and entitlements and greater engagement with local governance. While this typically should lead to more empowerment of the communities, it appears to actually work the other way. Village communities, are becoming more dependent on the government and people-friendly public service policies. The question often asked now is, “why we should contribute to build and manage our own water supply system when it is the duty of the government to provide us drinking water?”.

Public water supply is getting more centralized. The focus has moved to ‘mega’ projects that draw water from one source to cater to large populations, often exceeding twenty thousand people. Per capita capital and operational expenditures are much higher in these cases. The locus of control moves away from the communities to more bureaucratic and technical means.

### What lies ahead?

“The entire village had worked together to create watershed structures along the catchment area 15 years ago. We are reaping the benefits of our hard work now. The youth who have observed the changing landscape during this 15 year period understand the importance of forests and water. They will carry forward the work and protect our forests.”

Banamali, Tukuguda village, Thuamul Rampur Block, Kalahandi, Odisha

Water resource management including conservation in the context of Gram Vikas’ work is as much a social-cultural and political issue as it is a technical one. There is urgent need for better knowledge and practice of groundwater, demystification of the science of geohydrology, so that it can be used at the community level.

At the same time, continuing to build motivation and capacities of village communities to manage the demand for and, use of water – for drinking, domestic uses and farm production – is of equal importance. This is particularly critical in the emerging political environment and how politically empowered communities will address their needs of basic services.

Among the most critical challenges before Gram Vikas is getting the younger generation in the villages interested to work on the governance and management of community level provisioning of basic services. Modern information and communication technologies and applications can potentially be leveraged to engage and involve them.

Crucially, the domain of policy for centralized versus localized and decentralized solutions needs to be addressed. The dependence on monolithic applications of technologies, at scales and levels far removed from the communities needs to be questioned, and at the same time alternatives that match up to the technology fetish need to be developed and demonstrated.