**Sustainable Water Services Remain a Dream**

Intro: The abysmal state of children’s health is closely related to the state of sanitation and availability of safe water in India

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Waterborne diseases like Diarrhea are still the biggest killers of children globally, with more than 800,000 under-five children dying because of it. For most of us, a bout of diarrhea is not life-threatening because we know it can be cured by medication and bland food.

In India, about 200,000 children under four die every year because of diarrheal diseases caused by dirty water and lack of proper sanitation, according to a study published in the *Lancet* medical journal last April. Scientists suspect that constant exposure to bacteria, virus and parasite-laden faecal contaminants may be impeding attempts to end malnutrition, which is the underlying cause of roughly 400,000 infant deaths in India.

In rural and urban India respectively, 59.4 per cent and 8.8 per cent of households had no latrine facilities, according to the 69th round of the National Sample Survey office. India has done better in providing ‘improved source of water’; it was observed in the survey that 88.5 per cent of the rural and 95.3 per cent of the urban households had improved source of drinking water in 2012.

**Current scenario**

It is a well-known fact that availability of safe and adequate water for drinking and domestic use is fundamental to the development process, with benefits like improved longevity, reduced infant mortality, health, and productivity. Eighty seven per cent of households at the national level now use improved sources, like tap, tube-well, hand-pumps and covered wells as the main source for drinking water. However, only 47 per cent of such households have source of water within their premises. Approximately 36 per cent households are forced to fetch water from a source as far as 500 meters from their premises in rural areas and 100 meters in urban areas. Through the combined efforts of both the central and state governments who have together invested more than 15 billion pounds in flagship programmes like National Rural Drinking Water Programme (NRDWP), India may have achieved the Millennium Development Goal target for drinking water (JMP Report).

But the goal of providing safe and adequate domestic water to every person in the country still remains to be fully achieved. Service delivery is failing, drinking water supply systems are unsustainable and outcomes are poor. On an average, 30-35% of the schemes are dysfunctional, yet another 30% are functioning sub-optimally, leading to a high rate of slippage and poor service levels. Similarly, sanitation and hygiene continues to be a big issue in India. According to the India Census 2011 report on water and sanitation, only 46.9% of the 246.6 million households have lavatories while 49.8% still defecate in the open, the remaining 3.2% use public toilets.

**Water: Overburdened and mismanaged**

The Government of India (GoI) drinking water supply strategy plan 2010-2022 sets out the target that every rural person in the country will have access to 70 litres of water per capita per day (lpcd) within or near their premises by 2022. By 2017, at least 55% of rural households are to be provided with piped water supply. The plan also calls for a shift in focus from construction to service delivery. In other words the GoI is targeting universal, sustainable and inclusive coverage by 2022, which is perhaps too ambitious to achieve.

Similarly the National Water Policy has assigned the highest priority for drinking water supply needs – and the Ministry of rural Drinking Water and Sanitation has increased its financial outlay through its flagship initiative National Rural Drinking Water Programme. But availability of potable drinking water in rural areas, especially during the summer months, is still far from satisfactory. Many areas are reeling under severe domestic water crisis as there is growing problem of “slipback” of habitation, suffering a fall in water level and quality of water. The fact that it is usually the same aquifer which is tapped for both irrigation and drinking water without any coordinated management of resources, has greatly aggravated the availability of drinking water. The water table decline has most seriously affected north-western states; recent satellite measurements indicate an average decline of 33 cm per year from 2002 to 2008. Local observations of annual water table decline exceeding 4 metres are common throughout India. This underlines that still we have to achieve the infrastructure and institutional capacities that allow us to manage our domestic water supply in a way that allows efficient and sustainable access.

The challenges of safe drinking water are even greater in urban India due to factors like burgeoning populations and unfolding of fast pace of urbanization processes. And this leads to a growing demand for water, rapid pollution and depletion of major sources of water. In recent decades the increasing population, neglect of existing water harvesting storage structures, encroachment of natural drainage system and pollution of rivers and surface water bodies has resulted in severe water crisis in cities.

It is also experienced that service efficiency is weak, which means utilities have low cost recovery, only about 20 percent of connections are metered, and nonrevenue water averages over 40 percent in most cities. The coverage in Indian cities through piped water supply ranges between 55 percent and 89 percent. Though per capita availability is fairly high, at 90 to 120 liters per day, no city yet offers continuous water supply. In the current water supply there are enormous losses in the distribution system because of leakage and bad management. As per the 69th round of the National Sample Survey (NSS), only 76.8% of the households in urban India got drinking water with in their premises; 21.1 % of the households in urban India had to travel as long as half a kilometre to fetch drinking water.

In many large cities the biggest source of water supply are surface water bodies which are becoming dangerously polluted. Take the example of Delhi, here river Yamuna -- the main source of water -- is dangerously polluted and also the rate of depletion of ground water has dwindled to alarming level in many parts of the city. The public utility in charge of procuring, managing the water sources and allocating water through its supply and distribution mechanism, is under acute institutional problems, compounded by financial challenges and political expediencies. As a result, Delhi is not able to cover even half of the population, 50% of water supply goes to rich households while they account for hardly 35-40% of the total population, 42% of the total water is lost in leakages etc, and hence it is only a meagre 8% that is available for the largest socioeconomic group of Delhi population: the poor dwellings in slums and informal colonies. More or less similar trends are observed in other mega cities where public utilities are not able to cater to the need of entire population. The poor are typically worst affected as they have to spend a great deal of time and money to obtain water since they don’t have a house connection.

Another important challenge in India which restricts the availability of safe water is water quality, which is alarmingly poor as both anthropogenic and geogenic factors have led to the deterioration of water quality. Around 60% of the world’s open defecation takes place in India. This has resulted in biological contamination of potable and safe water, making scarcer the availability of fresh water of acceptable quality with respect to aggregated demand. A multi-district assessment on water safety was conducted by UNICEF in 12 states of India. The findings were astonishing, overall 47% sources were found contaminated with Faecal Coliform. “Faecal coliforms” or “thermotolerant coliforms” (FC/TTC) ranges from 3% in Chhattisgarh to 92% in Gorakhpur in U.P. This clearly reflects the vulnerability of drinking and domestic water sources to faecal contamination which is the cause of many diseases.

With the advent of bore-well technology, and overexploitation of ground water, geogenic contamination poses a serious challenge to accessibility to safe water. Despite massive efforts launched by the ministry of drinking water and sanitation, more than 23,000 and more than 5,000 habitations are affected by fluorides and arsenic contamination across the country. Fluoride and Arsenic cause a set of health symptoms known commonly as Fluorosis (dental and skeletal) and Arsenicosis (skin disease). These two contaminants have emerged as serious threat to public health as they have a general debilitating impact on the affected families. While fluoride is widespread in the arid to semi-arid states of Rajasthan, Madhya Pradesh and Gujarat and in the southern states of Andhra Pradesh, Karnataka and Tamil Nadu, arsenic in ground water is emerging as a widespread problem in the flood plains of rivers Ganga, Brahamputra and Meghna.

In India, many areas from west Bengal have shown to be affected, whereas Bihar is struggling with high arsenic contamination. The presence of Nitrates and salinity are other limiting factors for the availability of potable domestic water; more than 64,000 habitations are affected by Nitrate and 24,000 by salinity. In coastal areas, excessive pumping of ground water causes intrusion of seawater into fresh water aquifers, making well waters too saline for drinking.

**Over Dependence on Groundwater:** Around 80% of our domestic water needs are dependent on groundwater. Over the years, technology for drilling of bore wells has become easier and less expensive. As a consequence we have seen a sudden spurt in the exploitation of ground water. This Intensive development of ground water has resulted in over exploitation, widespread and progressive depletion of groundwater tables in almost all part of the country including areas falling in the Gangetic plain, which is otherwise considered as one of the largest ground water repositories in the world. As per central ground water board estimates, the stage of ground water development in the country is 61%; out of 5,723 of assessment administrative units (blocks/taluks/ mandala/watershed), only 70% falls under safe category and remaining 30% are under semi critical (550 units), critical (226 units) and overexploited categories (839 units). States like, AP, Punjab, Rajasthan, Tamil Nadu, Karnataka and Haryana have maximum number of overexploited blocks which poses serious challenge to drinking and domestic watersecurity.

That means in many western and peninsular states we are withdrawing more water than the annual rate of replenishment leading to continued decline of water table and drying up of large number of drinking water sources. Depletion of groundwater is not simply a case of drawing down a replenishable resource, but potentially one of permanent degradation. Since the 1970s, the government of India has put forward several model Bills to regulate ground water for adoption by the states. But these model Bills only introduced a limited regulatory framework and amount to little use. What is more surprising is that some of the most important legal principles governing ground water even today were laid down in British common law as early as middle of 19th century and have not been updated since. Now as part of the 12thplan, a model Bill for state water regulatory system has been drafted.

The way forward

India, as a country faces a severe water shortage. We can boast of bringing 4th generation mobile phones, but, as a nation, have not been able to achieve access to safe and sustainable water for all even after more than six decades of Independence. The negative impact for vulnerable populations through lack of access to safe water, which is typically one among several obstacles to development they face, merits a significant investment of resources and expertise to address this issue. The situation is not beyond redemption, by taking immediate corrective actions, we can become a country that is water-surplus:

Recommendations

1. India’s 12thfive-year plan (2012–17) puts great emphasis on aquifer mapping, watershed development, involvement of NGOs, and efficiency in developing irrigation capacity.  The central and state governments should empower local groups with knowledge, understanding, and real-time information on the status of groundwater so as to manage extraction in a cooperative way
2. Similarly, investment in water supply must focus on demand management, reducing intra-city inequity and on quality of water supplied. This will require cities to plan to cut distribution losses through bulk water meter and efficiency drive. User charges should plan to cover a higher proportion of operation and maintenance cost. To ensure an equitable access a differential tariff regime can be introduced. To achieve this, strengthening of Urban Local Bodies and streamlining decentralized governance systems will be critical first steps. Similarly, Panchayati Raj Institutions, especially the lowest tier i.e. the Gram Panchayat can play a critical role in planning, implementation and sustained operation and maintenance of drinking water sources in rural areas, if efforts are made towards power devolution and their structured capacity building.
3. Finally, citizens should be made aware through mass campaigns about the need to conserve water and use it judiciously.

A safe drinking and domestic water supply system is a viable and doable option both for rural and urban areas in the country. When achieved, this will have a tremendous positive effect on the health of the population, and will drastically reduce child mortality.