Working Paper

ACCESS OF THE POOR TO WATER SUPPLY AND SANITATION IN INDIA: SALIENT CONCEPTS, ISSUES AND CASES

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ACCESS OF THE POOR TO WATER SUPPLY AND SANITATION IN INDIA: SALIENT CONCEPTS, ISSUES AND CASES

Nitish Jha*

ABSTRACT

Access to safe water is necessary for lives and livelihoods. In India, a mid-term assessment reveals that the country has already met its MDG (Millennium Development Goal) in terms of expanding access to water infrastructure although in the parallel subsector of sanitation progress is falling far short of the mark. In reality, most basic observations indicate that water supply coverage is not as good as the figures show while national sanitation continues to be poor even after almost six decades of efforts to eradicate open defecation.

It argues that economic, technical, institutional as well as social factors constrain access to safe drinking water and proper sanitation in India for both the urban and rural poor, and that coverage figures do not reflect this restricted access. It finds that, increasingly, communities are being required to manage their own water and sanitation schemes, not just in rural areas but in urban ones as well. There are definite advantages to such an institutional arrangement if the transition to community management is carried out smoothly. Often, however, the chances of success of community management are vitiated because policy makers misunderstand and misapply three interlinked concepts that are crucial to the success of community-managed water and sanitation schemes—participation; water and sanitation burden; and project ownership. The paper concludes by clarifying these concepts and the implications they have for policy implementation in this sector.

Keywords: India, rural, urban, water supply, sanitation, access, community management

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1 INTRODUCTION

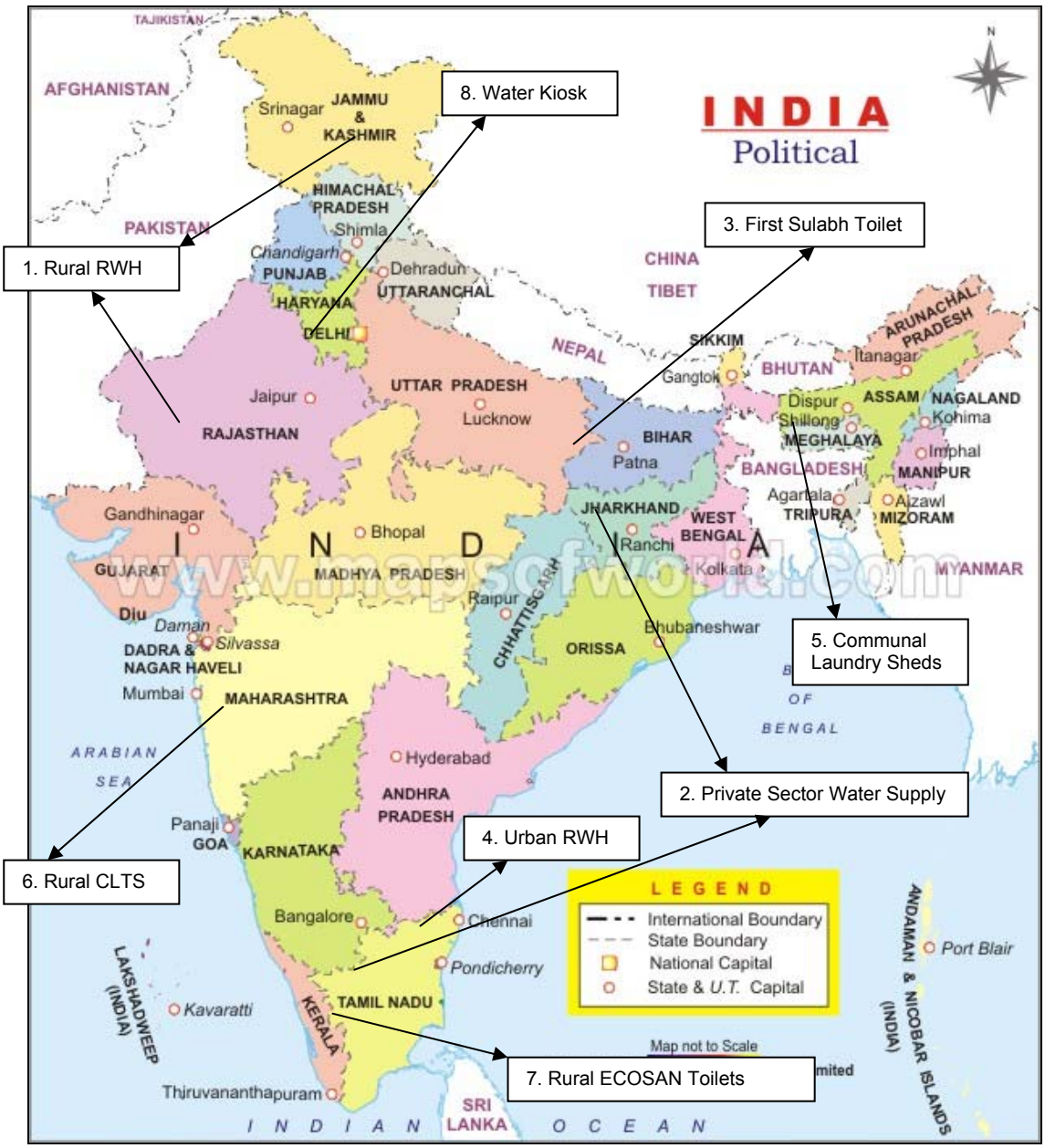
Water in India is used for a variety of consumptive and productive purposes but in most places in the country the delivery of this essential utility, along with that of sanitation, ranges between insufficient and non-existent. The consumptive use of water includes such universal activities as drinking and cooking, bathing, laundering clothes and washing vessels, and stock watering. Additionally, the productive uses of water also need consideration, e.g., water used in cooking for commercial purposes such as food vending, water used to grow home produce destined for the market, water used to brew country liquor, or else used in cottage industries and small-scale enterprises like haircutting, potting, tanning, textile dying, etc. (see James, 2003; Moriarty and Butterworth, 2003). In analytical terms, sanitation is a consumptive use of water. It is usually treated separately from water supply because of its utilisation of large amounts of water, the substantial scale of infrastructural investment it requires—distinct from that required for water supply—as well as its potentially deleterious impact on individual and community health if not dealt with adequately.

Unsurprisingly, access to safe water and sanitation are partly functions of income. The poor may not consume as much water as the rich but often the marginal productivity per unit of water—whether measured in terms of good health, longevity or income—is much greater for the poor than for those who are more affluent. This is because the access of the poor to safe water is so limited to begin with that even a slight improvement in its quantity or quality is likely to have a far more noticeable impact on their lives and livelihoods. Therefore, the term "water security" refers to the vulnerability of economies and ecosystems and also individuals and communities, to the escalating stresses on the world's limited water resources (World Water Council, 2000).

This paper focusses on the factors that restrict the access of the poorest individuals to these two basic services—water supply and sanitation—in rural and urban India.[1] Sections 2 and 3 deal, respectively, with domestic water supply and sanitation. In each section, a historical overview of the phenomenon in rural and urban India is followed by a critique of available figures for coverage which, it is contended, seem exaggerated because they do not account for the several constraints to access. Section 4 addresses the specific institutional problems faced in the public sector delivery of these two utilities in India while Section 5 deals with the parallel yet thus far limited presence of the private sector in these twin arenas. The penultimate section deals with the re-emergent paradigm of community self-reliance in terms of water supply and sanitation. It argues that three key concepts central to participatory development are at risk of being misunderstood and, therefore, misapplied by those in charge of devolving authority over water supply and sanitation schemes to the local level. The conclusion stresses that concepts guiding policy can have profound implications for how any water supply or sanitation project is borne out in reality. Throughout the paper, reference is made to some promising technical and institutional innovations in different parts of the country that have enabled better access to safe water and sanitation by the poor. These examples are used to illuminate some of the issues and concepts discussed.[2]

FIGURE 1

Locations of Illustrative Cases in India



2 DOMESTIC WATER SUPPLY IN RURAL AND URBAN INDIA

2.1 HISTORICAL OVERVIEW

In precolonial India, water provision was primarily in the hands of communities themselves. Apart from fetching water from open sources such as springs, streams and lakes, people came together to build, maintain and use water harvesting structures such as wells, check dams and tanks. Such community efforts were typically small in scale and found in both rural and urban areas. Occasionally, and typically through the recruitment of corvée labour, rulers built larger, reticulated systems that supplied water to public collection points in the main urban

settlements under their control. Many of these efforts at hydraulic engineering were quite sophisticated as they not only tapped rainwater but also channelled water from rivers, streams, lakes and springs, using a mixture of lift, gravity-fed, storage and recharge technologies like artesian wells (*qanat*), aqueducts, artificial lakes, reservoirs or tanks, check dams, water mills, irrigation works, and deep, multi-storeyed step-wells (Agarwal and Narain, 1997).

BOX 1

Rural Rainwater Harvesting: Reviving Traditions, Making Local Innovations

In the state of Rajasthan, much of which is arid or semi-arid, the annual rainfall range is between 450 and 600 mm. Meanwhile the groundwater table is as deep as 200 feet (60 m), and at places the water is hard and saline. The people in the region have traditionally depended on rainwater harvesting for their drinking needs. The rain that falls mainly in July and August is stored in open tanks constructed specially for the purpose and used throughout the year. These traditional rainwater storage tanks, called *johad*s, fell into disuse due to the government's intervention in water supply and the large-scale deforestation that occurred in watersheds as forest management, too, was appropriated by government agencies. In 1985, during a massive drought, the government's rural water supply was very deficient. At this time, a state-based NGO (the Tarun Bharat Sangh) started to mobilise people to restore johads, whose technology was indigenous and easily understood. Since then, 4,000 such harvest-cum-recharge structures—covering 750 villages and an area of 6,500 sq km—have been built with local support. The NGO subsidises the construction of both community and individual *johad*s, underwriting them to the extent of 66 per cent and 33 per cent, respectively. Decisions are made by representatives of the community, mostly men, who take decisions on behalf of their joint family households. There are claims, too, that previously dry rivulets have become perennial rivers as the groundwater has recharged. On one such river, a "parliament" of 70 villages was formed to oversee the management of the river and the *johad* feeding it. It has 140 members, of which 20 are women, and meets twice a year to discuss issues related to the river and the lives and livelihoods that depend on it. Water from the river and the recharged aquifer is used for both irrigation and drinking purposes. There are criticisms that the decision-making forums, whether in the river parliament or in individual villages, are not representative, especially of women. Some critics dispute the claims of the NGO about the hydrological efficiency as well as the cost-effectiveness of the *johad*s. Others assert that harvesting the rainwater in this manner means that villages further downstream in the catchment do not get the runoff that otherwise used to flow to them. Yet, according to local reports, there has been an appreciable rise in the water level in wells in the village. No longer do humans or livestock suffer for want of drinking water even in the driest of summers.

The northern region of Ladakh, bordering Tibet, is a cold desert. Here, an innovative decentralised approach to water harvesting has been devised and implemented. In this area, glaciers are the chief water source but the water from them is plentiful only in late summer, when they begin to thaw. Led by a retired engineer of the state's Department of Rural Development, people have found a way to create artificial "glaciers" by building check dams near villages in order to store water diverted from distant streams and rivers. Given the large diurnal temperature range, this water freezes overnight but melts slowly over the course of the following day, emptying into canals that feed the villages below it. The flow of the streams created by it is greatest in the late evening. As with Rajasthan's *johad*s, the people of Ladakh have built a system of water reservoirs to meet their water needs. These so-called glaciers produce water that is used for both domestic needs as well as farming in the spring, when water from natural glacier melt is most scarce.

Sources: Agarwal and Narain (1997); Agarwal et al. (2001); Jacob (2008)

With the advent of colonial rule, the government started taking an active role in provisioning individual homes, especially in the garrison areas of towns where members of their own nationality were primarily resident. This was true of all the colonial powers that had bases in India, including the British, French, Portuguese and Danish. Under their respective jurisdictions, rural areas continued to be ignored.

After independence, the state's efforts at service delivery in the water sector were also extended to rural areas. However, due to the physical isolation of many of the waterworks themselves, most rural schemes under the purview of the government were not designed with the same parameters of hydraulic capacity or efficiency as the urban ones. The continuing reality was that many rural and urban poor had limited access to state-provided services. Yet, given the successful image of the welfare state providing free services to all, the government slowly came to be seen as the sole provider of water utilities throughout the country. Consequently, in many urban and rural areas, the traditional systems of water harvesting and conservation fell into disuse. This was partially due to the growing mind-set that viewed them as old-fashioned, and the water that they stored or carried as being of an inferior quality. Other motivations that encouraged a reliance on the government supply of water included the need for less local investment in terms of materials, money and labour in community-managed water supply sources. The reality in many villages is that utility delivery is so poor that self-provisioning—by the community as well as at the level of individual households—continues to occur, from sources that are limited in quantity and of questionable quality. (For the resurgence of interest in traditional water management, see Box 1.)

State-provided Indian villages usually have mono-source schemes or, less frequently, are linked to the distribution network in regional water supply schemes. The practice of supplementing inadequate government water supplies continues to this day in many rural areas. Demographic pressures mean not only that populations are exceeding the capacity of the schemes built to serve them but that sources are either drying up or becoming more contaminated than before. Additionally, the cost of putting in place new water—and sanitation—infrastructure is rising as the distance between source and user increases (G. Pangare et al., 2006).

Likewise, in urban areas, water delivery to poor neighbourhoods and slums is usually through public standposts that supply water at fixed times during the day. However, in urban and peri-urban areas that are unserved or underserved, people usually resort to whatever natural surface sources are available for most uses (except drinking and cooking). For uses that require potable water, they often buy water from vendors, including pushcarts and tankers. The contradiction is that, unlike more well-off citizens who resort to the same practice, the poor allocate a disproportionately greater amount of their household budgets to obtain the water they require, paying per unit rates that far exceed what is charged for private piped water supply to wealthier households by municipal authorities.

TABLE 1

Development of the Water Supply and Sanitation Sector in Independent India (post-1947)

Year/Years	Milestones
1951-56 (1st Five-Year Plan)	Water Supply and Sanitation added to national agenda. Sanitation not accorded any importance and barely mentioned under Water Supply.
1954	First National Water Supply and Sanitation programme launched as part of Health Plan. Equal funding provided by centre and states for rural piped water supply schemes and also for wells and borewells. Rural schemes provided to settlements with fewer than 5,000 people.
1956-61 (2nd Five-Year Plan)	The sector did not figure at high priority level, but funding provided to develop and strengthen state Public Health Engineering Departments (PHEDs)
1961-66 (3rd Five-Year Plan)	"Problem Villages" identified as those without drinking water source within distance of 1.6 kilometres (in the plains) or an altitude of 100 metres (in hill areas), those endemic to water-borne diseases and those where water sources contain excess salinity, iron, fluoride or toxic elements.
1968	States given financial authority to sanction rural water supply schemes, which were expanded to include population units less than 20,000. Priority given to villages with acute scarcity of drinking water.
1972-73	Accelerated Rural Water Supply Programme (ARWSP) launched to supply water to villages with "backward class" populations
1975	ARWSP was replaced by 20-Point Minimum Needs Programme (MNP) aimed at full coverage
1977-78	ARWSP reintroduced, but funds provided by the states through MNP
1980-85 (6th Five-Year Plan)	Importance given to the sector increased, in keeping with the UN Mar del Plata declaration of March 1977 about the International Decade of Drinking Water Supply and Sanitation from 1981-90
1980-81	Low-cost sanitation scheme initiated for urban areas
1985	Rural Water Supply and Sanitation, which was under the Ministry of Urban Affairs and Employment, was handed over to the Department of Rural Development, then under the Ministry of Agriculture
1986	Central Rural Sanitation Programme and National Technology Mission launched. The latter was created after a mid-term assessment of the progress made under the ARWSP in the International Drinking Water Supply and Sanitation Decade revealed that progress was slower than expected. [Check this]
1987	National Water Policy drafted for the first time by the Ministry of Water Resources, with an emphasis on domestic water supply, protection of groundwater sources, and water quality monitoring and mapping.
1991	National Technology Mission renamed the Rajiv Gandhi National Drinking Water Mission aimed at covering rural areas cost-effectively before the end of the 8th Five-Year Plan.
1992-97 (8th Five-Year Plan)	Problems with the sector identified and reform agenda put forward. Emphasis on treating water as a commodity, privatisation, local bodies for operation & maintenance, proper linkage between water supply and sanitation.
1993-94	Accelerated Urban Water Supply Programme (AUWSP) initiated to provide water to towns.
1994-95	Mega-City Scheme launched for five metro cities

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1999	After many changes back and forth, the Ministry of Rural Development was created in its current form. Within it, the Department of Drinking Water Supply started to oversee rural water supply and sanitation programmes. Urban water supply and sanitation allocated to the counterpart Ministry of Urban Development, under overall guidance for planning and coordination of the Ministry of Water Resources.
1997-2002 (9^{th} Five-Year Plan)	Objective: 100 per cent water supply coverage in urban and rural areas, 60 per cent sanitation coverage in urban areas and 30 per cent in rural areas, emphasis on decentralisation and privatisation, both in rural and urban sectors.
2002	National Water Policy (NWP) amended. Shift in focus: priority to providing drinking water to humans and animals, regular monitoring of surface and ground water quality, regulating the use of ground water.
2002-07 (10^{th} Five-Year Plan)	Objective: 100 per cent coverage of urban and rural population, water to be managed as commodity, change in the role of government from direct service provider to facilitator leading to privatisation. Focus not only on investment requirements but on institutional restructuring, better services, people's participation, and also managerial improvement.

Source: Adapted from G. Pangare et al. (2006, p.83) and TERI (2006).

The right of access to safe water is not stated in the constitution but Indian courts have interpreted the constitutional right to life as including the right to clean and sufficient water (Sangameswaran, 2007). The National Water Policy of 2002 also gives primacy to water for drinking purposes. The Eighth Five-Year Plan (1992-97), however, specified an amount of 40 lpcd (litres per capita per day) for small towns with standposts.[3] So it is likely that rural areas with their poorer infrastructure received an even smaller quota (Ramachandraiah, 2001). Although the national and state governments have promulgated a number of acts regarding drinking water supply (see Table 1), neither the state water policies nor the National Water Policies (Ministry of Water Resources, 1987 and 2002) on which they are based, legally guarantee the right to drinking water.

2.2 COVERAGE

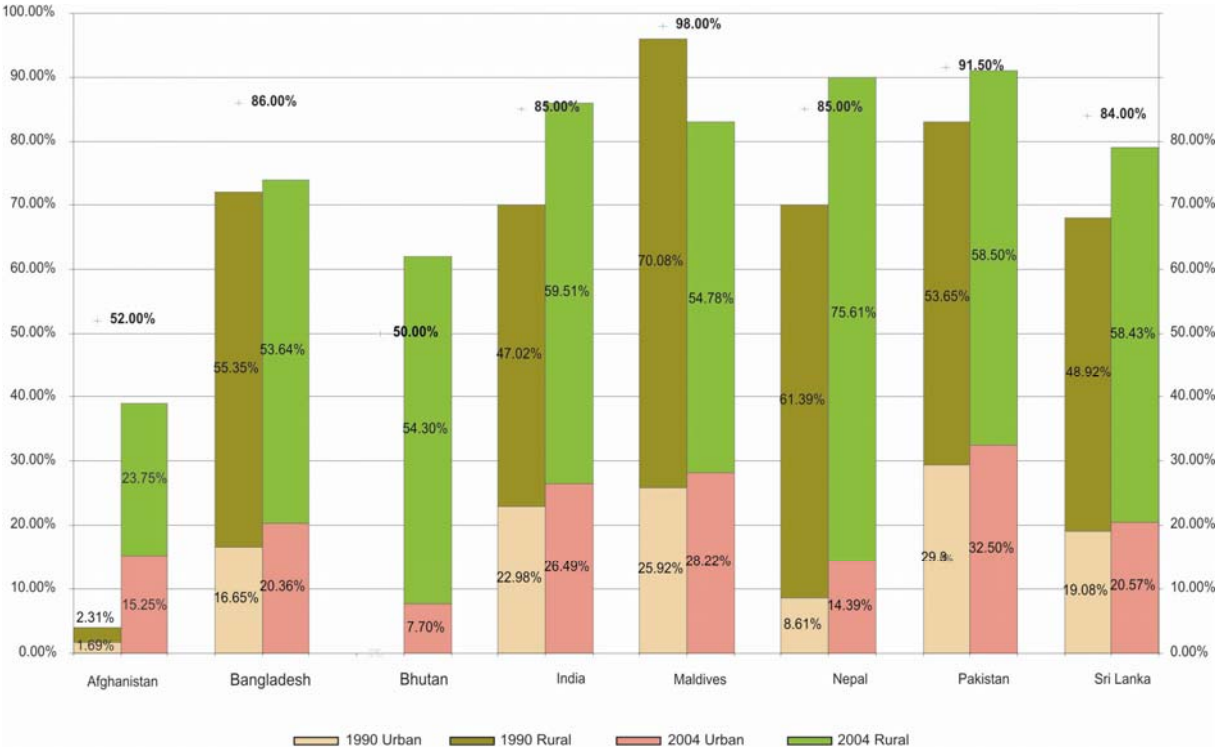
Despite the large investments in infrastructure for drinking and other domestic uses, India still ranks 133^{rd} among 180 countries for its poor water availability of 1,880 cubic metres per person annually. Over 480 million people (or 45 per cent, at least, of the total population) still do not have access to adequate safe drinking water (G. Pangare et al., 2006, p.81). And yet, figures depicting coverage in terms of water supply show that India is well on its way to covering its entire population of more than a billion (see Figure 2). The mid-term assessment report of the MDG for water supply and sanitation shows that India has surpassed Target 10, in terms of the nation-wide coverage of water supply (WHO and UNICEF, 2006). According to these figures, water supply coverage in 2004 was 87 per cent of the population, up from 70 per cent in 1990. Of those covered in 2004, almost 70 per cent lived in rural areas. These national-level statistics seem to be at odds with unofficial sources but even if true, they conceal wide regional disparities.

What is hidden behind this ostensible contradiction is the fact that coverage per se does not account for the actual operating capacity of a water supply system, its adequacy, the regularity and duration of supply, water quality, equity of distribution or access, and

sustainability of the coverage.[4] For example, the statistics reflecting coverage gloss over the difference between availability and access whereas, in fact, they really reflect only the former. A village may have water available but not everyone might have access to it. Availability, therefore, is a function of technology while equitable access is a social matter. So, in fact, a smaller proportion of the population might receive adequate amounts of safe water than it would seem at first glance.

FIGURE 2

Water Supply Coverage of National Populations (%) – India in South Asia



Source: Graphed using data from WHO & UNICEF (2006, p.32).

One of the problems hidden by statistics of growing coverage is the fact that duration of water supply has fallen over the same period, i.e., that a particular area is underserved. However, data for this is difficult to find and is largely anecdotal in nature (cf. Subramanian, 2002). The likelihood of an inverse relation between coverage and duration or quantum of supply has not been systematically studied.

Another serious problem is whether or not the distribution system or location—whether for water supply or sanitation—lends itself to equity. As water becomes scarce and less is available for distribution over time, it is imperative to analyse which sections of the population are more deprived. It is hard to tell whether an extension in coverage is being achieved at the cost of falling availability for particular areas. If it is the case, it becomes necessary to examine who the winners and losers are.

Statistics about coverage reflect data pertaining to mainly government schemes rather than to schemes by all providers in the sector. In contrast, since 1990, data has been collected from within communities in order to understand the extent and nature of all types of coverage:

community, NGO, private sector and state provision (WHO and UNICEF, 2006). This approach reflects reality and accounts for such factors as duration of delivery and system efficiency. But it is problematic in terms of the reliability of data collection methods and its inability to measure sustainability, equity and quality of water supplied (Subramanian, 2002). Due to its expanded scope, the new set of data also reduces comparability with data collected before 1990, which was defined as the base year for calculation of the MDG targets.

Even accounting for the different kinds of service provision, it is widely acknowledged that there is a great shortfall in domestic water supply in districts and municipalities all over India. In many rural districts, people still fetch water from distant sources, relying on small quantities of dubious quality. In urban areas, on the other hand, there is no consistency to municipal water supply, which can sometimes be both deficient and excessive within a single jurisdiction. In some neighbourhoods, water supply is intermittent and the supply can go down to 30 lpcd while in others unrestricted water supply is commonplace. Furthermore, the wastage of water due to leakage from municipal piped water schemes in many towns and cities is reckoned to be to the order of 40 to 45 per cent. In places, tensions have arisen due to fast-depleting water tables—a consequence of the large-scale extraction of groundwater in rural and peri-urban areas for transport to nearby cities where it is used by households as well as commercial establishments (Vaidyanathan and Saravanan, 2006). Water supply in all these cases seems to be correlated to the wealth and political connectedness of the residents of certain areas.

3 SANITATION IN RURAL AND URBAN INDIA

3.1 HISTORICAL OVERVIEW

Sanitation in India, like in the rest of South Asia, has always been intricately linked with water supply. Large amounts of water are required for sewerage, cleaning toilet structures and also for personal cleansing post-defecation, in what is essentially a culturally-dictated but widely-observed behavioural pattern (Jain, 1987; Mukherjee, 1990). Nonetheless, since sanitation involves its own infrastructural and institutional complex it is important to distinguish it from the other uses to which water is put.

The notion of indoor sanitation is not new in India. One of the earliest records of indoor plumbing anywhere in the world, dating circa 2,800 BCE, comes from the several sites of the so-called Indus Valley Civilisation in what is today northwest India and southeast Pakistan. Brick bath-cum-toilets were built into the outer walls of urban homes. According to archaeologists, both faeces and bathwater emptied from drains into public sewers that were covered with stone slabs (Ratnagar, 2001). What is remarkable is the evident knowledge of public health engineering and the concern for personal and environmental hygiene among the inhabitants of these towns. This prior fact of India's sanitary contribution to the world seems paradoxical given the country-wide dearth of individual and public toilets as well as the pervasive nature of open defecation today.

The record of sanitary facilities available in subsequent periods of India's history is scantier but the archaeological record shows that personal toilets were used in precolonial times by members of the nobility or by royalty. The indication is that almost everyone else practiced open defecation in accordance with the prevailing social norms. It is difficult to say how

environmentally sustainable the practice of open defecation used to be because the evidence for past population and its density is either circumstantial or anecdotal. The hypothesis is that because populations were much lower, this behaviour was more sustainable than it is nowadays. This view, however, discounts the pollution of both ground and surface water sources that must have taken place due to faecal contamination.

The contemporary notion of sanitation was introduced only in the colonial era and was, like water supply, limited to those areas where the colonisers lived. But wherever there were specific subcastes of so-called "untouchables", whose sole occupation was the cleaning of sanitary facilities and the removal of faeces from household toilets to dump sites outside the immediate settlement, colonial authorities tapped into the existing social system to make use of them. These workers were euphemistically termed "nightsoil" lifters perhaps in reference to the time of day when defecation was presumed to be most frequent (Ramaswamy, 2005).

Some of these subcastes continue to perform this kind of degrading work in both urban and rural areas in India even though there are laws criminalising the more general practice of untouchability. Efforts made by several NGOs, mostly after India's independence in 1947, have aimed at rehabilitating members of these castes by providing them alternative sources of employment. The prevalent discriminatory social attitude to members of these castes is, however, still deeply rooted in many conservative, upper caste Indians. Besides such entrenched attitudes towards people engaged in sanitary work there is also a widespread distaste for the contemporary idea of indoor sanitation for all.

The problem of sanitation is two-fold: a lack of proper sanitary infrastructure, and the widespread and inimical attitude to indoor sanitation. As a result of the latter, even available sanitary infrastructure lies unused or is misused. People in rural areas, especially those with less awareness about the benefits of proper sanitation, still prefer open defecation. From the perspective of gender, women in rural areas are often more inconvenienced by this system than are their male counterparts. In most rural communities across India, open defecation is segregated by gender and there is often a tacit understanding of not only the place but also the time of the day for open defecation by people of either gender.[5] Frequently, women rise earlier or stay up later than men in order to "go to the fields". During periods of menstruation or illness, such strictures on controlling their sanitary habits place an additional burden on women (Jha n.d.). Women may also risk human or animal predation if they travel far away from their settlements for open defecation or to fetch water at certain times of the day or night.

Besides security and convenience, the most pressing factor that pushes people to adopt indoor sanitation are the social strictures or the feeling of shame associated with defecating outdoors. But where there is social approval for this practice, attitudes towards open defecation are harder to change. In such circumstances, households who build and/or use toilets do so because their members have in some way been exposed to or influenced by more "modern" notions of sanitation, usually through education or travel to urban areas where the use of toilets is relatively widespread. Due to societal norms, even rural-urban migrants who were used to indoor sanitation in urban settlements revert to open defecation when returning to their villages, either on a temporary or a permanent basis. Furthermore, the use of toilets may be partial, with differentiation occurring among household members on grounds of gender or age, with women and younger people more readily adopting indoor sanitation

than men and older people. In many parts of rural India, however, such households are usually exceptions to the societal norm.

From a social or religious point of view, the lack of adoption of indoor sanitation is due to the perception of faeces as ritually and literally polluting. This is worsened by the negative view of toilets being located so close to homes, on account of the smell they generate. Yet another major obstacle to toilet adoption is the need for maintenance. In the case of households, this duty—along with fetching of water needed for personal cleansing post-defecation as well as the socialisation of children in matters of sanitation and hygiene—usually falls to women and increases what might be termed their "sanitation burden" (see Jha, n.d.).

Communal toilets are more cost-effective than individual household toilets in terms of investment and land requirements, although there is the problem of maintenance. Different castes, religions or ethnic groups in a community have their own social norms, which include restrictions on interactions with others. Such limitations on group members not only include rules about whom they may trade with or marry but also more mundane matters like whom they may eat, bathe or share a toilet with. This oversight on the part of outside agencies (whether governmental or non-governmental) frequently results in communal toilets being built in a sanitary "no man's land" or else right in the area where one social group uses it to the exclusion of all others. The issue of training one or more individuals to maintain these toilets is rarely paid much attention. Hence, the lack of well-defined roles and duties results in such structures being poorly maintained and ultimately falling into disuse.

Conversely, there are some counterintuitive attitudinal factors that result in some village residents preferring open defecation to indoor sanitation. For instance, for relatively wealthy, high-caste women who are otherwise subject to ritual seclusion, communal defecation allows for a degree of social interaction that they would lose if they opt for toilets in or near their homes.

In contrast, in urban areas, there is a certain degree of social anonymity that allows people from different groups to mix and use what facilities are available without taking into account one another's social, religious or ethnic background. However, the very constraint that makes people want to resort to using toilets in an urban environment—namely, the lack of physical space—is also the major obstacle to the construction of toilets, whether individual or communal. So slum dwellers in towns and cities in many parts of India make do with what outdoor space is available: in sports fields and public gardens, besides railway tracks and roads, on beaches, in scrubland, on river banks, and other similar open spaces.

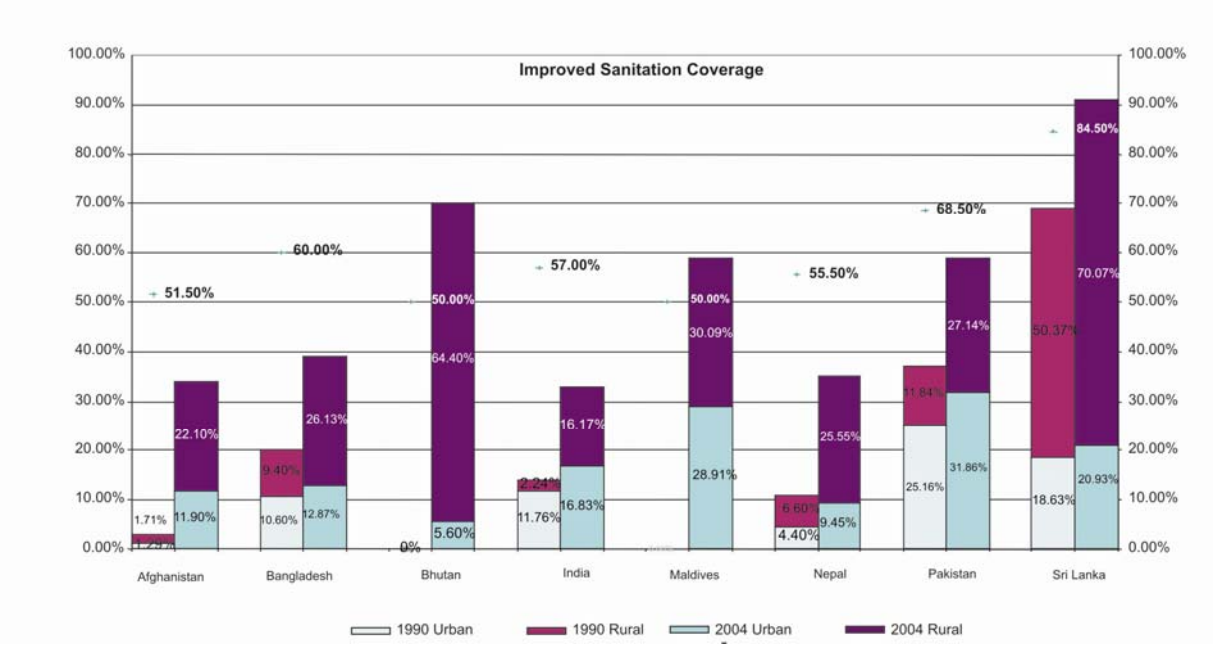
There are fifty cities in India with more than a million inhabitants each and three Indian metropolises—Mumbai, Delhi and Kolkata—rank among the ten largest urban agglomerations in the world (Ruet et al., 2002). Throughout the country, where indoor plumbing exists, sanitation uses considerable—some claim excessive—amounts of water. In stark contrast, in poor urban neighbourhoods, inadequate sewerage infrastructure leads to the improper removal of human waste and, consequently, the pollution of ground or surface water resources and an increase in water-borne diseases. Increasing rural-urban migration and rapid, endogenous population growth in these already densely populated areas contribute further to their unplanned growth. Thus, the lack of sanitary facilities together with cramped living conditions in urban slums and poor neighbourhoods makes the practice of open defecation less sustainable than before.

3.2 COVERAGE

Coverage statistics reveal that sanitation lags far behind water supply. A recent report asserts that India trails its poorer South Asian neighbours Bangladesh, Pakistan and Sri Lanka because the government is not able to provide sanitation (Chauhan, 2008). In the opinion of several experts, however, the problem is more one of changing attitudes towards sanitation than the delivery of sanitation infrastructure itself.

FIGURE 3

Sanitation Coverage of National Populations (%) – India in South Asia



Source: Graphed using data from WHO & UNICEF (2006, p.32).

Only some of the indicators concerning coverage statistics for water supply are relevant for measuring sanitation access, namely, equity, sustainability and the nature of the provider. The fact that sanitation facilities may be supplied but not actually utilised leads to a marked divergence between what might be called "nominal sanitation" and "effective sanitation". It is worthwhile stressing that attitudinal factors are major components affecting the use of sanitation facilities.

According to the assessment report by the WHO and UNICEF (2006), sanitation coverage has gone from a mere 14 per cent to 33 per cent in the period 1990-2004 with most of the gains occurring in rural areas (see Figure 3). The estimates seem quite low already. Yet it is possible that the reality is worse because these figures themselves are based on physical infrastructure delivered rather than on observations of the actual practice of indoor sanitation. But even in terms of nominal sanitation, indicated by standard coverage, India appears to be worse off than some countries in Sub-Saharan Africa (WHO and UNICEF, 2006).

4 INSTITUTIONAL PROBLEMS IN THE PUBLIC SUPPLY OF WATER AND SANITATION

So far the government has been responsible for the delivery of water supply and sanitation to the bulk of the Indian population. In comparison, the private sector and NGOs have a limited presence in this area. Apart from the problems discussed so far, the government faces institutional barriers to the smooth implementation of its water supply and sanitation projects. These fall under six heads, including the: (a) lack of uniformity in policy and implementation at the national level; (b) lack of institutional convergence, whether at the national and the state levels; (c) the nature of project implementation; (d) stress that is often placed on meeting delivery targets—counted in terms of infrastructure delivery—rather than on the long-term sustainability of schemes, which depends on user attitudes; (e) the absolute discretionary authority and lack of accountability in delivering schemes, which undermines any prospect of their ownership by the community; and (f) lack of credible national forums where a dissemination of best practices can occur.

a) The foremost institutional obstacle to the uniform implementation of policy in the water and sanitation sectors stems from the Constitution in India. According to it, water and sanitation are subjects under the purview of state governments. The division of responsibilities between central and state governments, with the former in charge of drafting water-related policies and the latter in charge of policy implementation, makes this a dysfunctional arrangement.

   The polity of India is federal in its structure. Although there are some centrally administered schemes, matters of water supply and sanitation fall largely under the purview of individual states. India's National Water Policy (NWP) is a short set of guidelines and adherence to it has been rather weak. Even though every state is meant to have its own State Water Policy, only a few have drafted such documents. However, even these are not comprehensive as they frequently fail to address even the question of minimum per capita water allocations for urban, peri-urban and rural areas under their jurisdiction (see India Water Portal, n.d.).

   Since drafting and implementing water policy is strictly within the domain of individual states, there are potentially at least 30 different water and sanitation policies or strategies, with little scope for cross-learning and the omnipresent risk of project implementation at cross-purposes where river basins or aquifers are shared by neighbouring states.

   Apart from disbursing funds for water and sanitation projects by supplementing state contributions, the main functions of the national Ministry for Water Resources are drafting national guidelines on topics that fall under the aegis of the relevant ministries that are entrusted with this subject. Moreover, it plays an advisory role in matters pertaining to water, and sometimes acts as an arbiter when disputes over water cross state boundaries (Sangameswaran, 2007).

Tariff structures for water are not standard across the country and some states do not charge for water at all (G. Pangare et al., 2006). Furthermore, there is no common, centrally-devised framework by which states can collect and make available more rigorous data about parameters regarding water utilisation. Greater water literacy—based on the widespread availability of better water use data—and a more standard system of water tariffs regardless of location, will facilitate more equitable access to water.

b) Related to the absence of uniform policy implementation is the problem of a lack of institutional convergence. There is no clear division of responsibility for the provision of water supply and sanitation among various national-level ministries or state-level departments. Depending on the aspect of use or else the place under consideration, water and sanitation are concerns of the ministries or departments dealing with water, rural development, urban development, local government, health, and even agriculture. In some rural areas, schemes and check dams built principally for the purpose of irrigation also serve as collection points for domestic or household water. The result is that there is frequently an overlap of projects and funds that repeatedly attempt to address the same developmental problem of a lack of delivery of either of these utilities (TERI, 2006).

c) Project implementation is problematic when projects themselves are often understaffed and of limited duration. Over time there has been a growing dependence on government—through its relevant agencies—to supply water in villages, towns and cities. Government personnel are often in short supply and not sufficiently motivated to oversee the proper implementation of these schemes.

d) Public budgets have been stretched and funds allocated to this sector have focussed on infrastructure construction rather than proper use and maintenance of the scheme, local capacity building, and, therefore, long term scheme sustainability. On the face of it, it would seem that there has been a substantial improvement in terms of the coverage of water supply and sanitation schemes all over India. But, in reality, there is no simple way of determining whether these composite data represent actual improvement in people's lives or whether these schemes are lying defunct or unused. Meeting delivery targets does not always imply that the schemes so delivered are functioning well or are capable of being maintained by the communities that use them.

e) The degree of corruption in project planning and implementation by politicians and bureaucrats who collude with local government functionaries and contractors is also difficult to gauge but is estimated to divert a substantial proportion of funds meant for the projects themselves (Srivastava, 2003; McKenzie and Ray, 2005; Kapur, 2007). The unchecked discretionary authority of decision-makers combined with their lack of accountability not only leads to the persistence of corruption but simultaneously wears down the long-term resilience of projects that suffer as a result of it (see Briscoe and Malik, 2006).

The lack of sustainability also stems from the lack of effective community demand for and ownership of these projects, a point that is addressed in a later section.

f) Lastly, there are no forums that meet periodically where states can share their experiences—challenges and success stories—in the twin matters of water supply and sanitation. As a result, as outlined in the boxes in this paper, there are several cases of success that are reported in the literature but most of them remain localised, rarely being replicated.

In the water sector in India the government remains the chief provider. In its schemes, low efficiency and low cost provision reinforce each other. People refuse to pay more than they are already doing for what they view as their right, viz., water. This means that there is less revenue to motivate the state utility provider to increase supply to existing customers and reach out to new ones. So system capacity is deliberately kept low. Users then see this as a justification not to pay more than the nominal charges that they are currently paying or not paying at all, as is more often the case. Moreover, in cities and towns, the quantity and quality of water supplied to different neighbourhoods varies widely (Saini, 1996).

One of the reasons why government agencies have been unable or unwilling to supply sufficient amount of water in urban areas appears to be the low price charged for the water supplied. In domestic water supply, when water prices are too low to cover the costs of laying new pipes, each new customer entails a loss for the provider rather than a profit, which makes the distributor unwilling to extend the network. The consequence is poor network coverage for most water supply systems in India, and the poor not having access to safe drinking water supply.

Similarly, supplying more water to the existing customers is also a losing proposition for public sector utility providers, as the fee levied for water from the very beginning is lower than the cost of its distribution. It appears that charging higher prices for water initially—in order to cover at least infrastructural investments and repair—may solve some of the problems. This will undoubtedly result in an increase of water prices for those already connected to water supply network, but they will get reliable supply, as supplying more water becomes a profitable venture. Moreover, if the distributor makes a profit, it gives the distributor both the resources to enlarge the network and the incentives to reach as many new customers as possible, as more customers in this scenario mean more profit. This way, the water supply network may be extended through market forces. Surveys have shown that households not connected to the water supply network—usually among the poorest—often purchase lower-quality water from vendors, paying on average up to 12 times more than they would for piped municipal water supply (Saini, 1996). Otherwise, they have to travel long distances to collect water of dubious quality from various natural sources. Thus, given the opportunity cost, such people will likely pay for non-subsidised water from an extended supply network. Prorated tariffs may also induce wealthier consumers with higher rates of water consumption to conserve this resource, as this will mean reduced water bills. Finally, charging higher prices for water may induce the distributor to invest in leak detection and prevention technologies, leading to water conservation in supply.

Alluding to the prevailing lack of political will to charge for water, critics have claimed that the chief problem is not the willingness to pay but rather the willingness to charge. As discussed in Section 2, rural and urban residents in India have managed their own schemes for centuries. The management of these schemes involves considerable costs in terms of cash, materials and labour. For the poorest in the community, who have neither cash nor material resources, the option of contributing labour required for day-to-day operations has always been allowed (see Agarwal and Narain, 1997; Evans, 2007). Indigenous schemes also use financing mechanisms that today would be labelled cross subsidising or redistribution, where a wealthier class of consumers either directly or indirectly underwrites its poorer counterpart (for a contemporary example, see the case of latrine construction in the Maharashtrian village in Box 6). These small, community-based schemes show that higher water tariffs conceived and applied in keeping with local social norms find greater acceptability and thereby enable appropriate direct and cross subsidies. Public funding to these schemes should, first and foremost, help provide access to their poorest users.

However, driven by the paucity of public funds and personnel, and further fuelled by the mandates of bilateral and multilateral donor agencies, a growing trend in India is the stress on community participation in rural and sometimes urban schemes. So communities are being asked to either retain or, in cases where this role has been abdicated or forgotten, to take on the role of suppliers and managers of water schemes with little or no outside support.

NGOs and civil society agencies are stepping into the breach, in terms of raising awareness and also providing these communities with assistance in capacity building. Less frequent is the engagement of traditional institutions, which are customary village-based governance bodies that exist throughout India, not all of them inclusive in terms of decision making (for cooperation between elected and hereditary leaders, see Box 5). Rarer still and more noticed for that fact, is the private sector's role in the water supply and sanitation sectors. Before analysing the community provision of these utilities, it is useful to consider the small but growing part that the private sector is playing in this arena.

5 PRIVATE SUPPLY OF WATER AND SANITATION IN INDIA

Until a couple of decades ago, in India, the role of the private sector in utility delivery was almost absent. With the trend towards liberalisation that began in the 1990s, foreign direct investments as well as domestic private sector investments have occurred in utility delivery, mostly in the energy sector and to a lower extent in water supply (for some examples, see McKenzie and Ray, 2005). More recently, an American multinational, the Dow Chemical Company, in collaboration with a local NGO, has entered the arena in a small way through the establishment of water treatment plants in three villages in Gujarat state, with plans to extend this scheme to another fifteen in early 2009. The promise is to provide potable water at a very low cost to village households, viz., at one rupee (or 2 US cents) for 10 litres (NewKerala.com, 2008; Pandit, 2009). There are currently no critical assessments of this project but, besides this modest rural endeavour, there are a small number of urban schemes in India where the private sector is involved (see Box 2).

BOX 2

Private Sector Water Supply: Rare Instances

In two of the most prominent cases of satisfactory water supply in India, it is private companies who have taken the helm. In India's "Steel City", Jamshedpur, the population of 1.1 million has one of the highest per capita incomes and literacy rates in the entire country. A single company, Tata Steel, dominates the local industry and supplies all utilities to the town. Founded circa 1907, Jamshedpur is the only city in India without a municipality. All infrastructure and utilities are maintained and operated by the Jamshedpur Utilities and Services Company Limited (JUSCO), a 100 per cent owned subsidiary of Tata Steel. All areas of the city under the company's jurisdiction have an adequate water supply (eight hours a day, on average), something still uncommon in most of urban India. The company also manages other utilities and social services such as sanitation, electricity, health and education. However, in areas outside the original core, which are not maintained by JUSCO, there are intermittent power cuts, bad roads and poor water supply, much like the other cities in India.

In the South Indian hosiery manufacturing town of Tirupur, a public private partnership (PPP) was created to oversee the operation and maintenance (O&M) of a municipal water supply scheme. The federation launched to oversee the development of infrastructure for utility delivery comprised a consortium of local companies (the Tirupur Exporters' Association), the municipal corporation and the ILFS (Infrastructure Leasing and Finance Services Ltd) Company. One of the consortium's member companies was nominated to manage the scheme on a day-to-day basis. Significant investments in water were made not only to meet domestic demand but also to supply the hosiery industry, which used water in significant amounts. Thus, although water is provided to the domestic and services sectors at nominal rates, it can be argued that the prime reason for the establishment of this PPP in water supply was the critical scarcity of clean water required by the town's hosiery units.

Sources: The Financial Express (2003); World Bank (2006); Madhav (2008).

Meanwhile, as mentioned above, the prospect of privatisation of water distribution continues to meet with resistance in India's civil society. The main argument of the anti-privatisation movement is that: privatisation increases prices, making water unaffordable for millions of poor people. Also it is argued that since access to water is considered a human right, its distribution must be handled democratically; that is, it should remain the responsibility of the government and not be handed over to private profit-seeking interests.

The arguments in support of privatisation are as follows: (i) prices will go up mainly for middle/upper middle class people, who are capable of paying more for water. This is, in essence, an argument for a cross subsidy. And (ii) poor people already pay high prices for water, or spend a long time collecting water from polluted natural sources. For such people, water may be available at lower prices after privatisation and extension of the water network.

Since municipalities have been inefficient in supplying water, alternate models of water supply systems are being experimented with. Nowadays, public-run water utilities, NGOs using social entrepreneurial models, and many multi-national water companies have also entered the international water supply market. Given the growing presence of non-governmental stakeholders in India, too, the government should consider the establishment of a regulatory body in the water supply sector. A strong regulator is required to lay down tariffs, fees and service and infrastructure standards. It appears that a private system will only work as long as there is a competitive environment in service provision and a transparent regulatory

authority to oversee the sector. But the first hurdle to overcome in the Indian context is the ideological one that labels all private providers as bad.

Hence, what seems paradoxical at first is that there is a prominent private utility provider in the sanitation sector. This entity, Sulabh International, offers a very successful "user pays" model for how urban sanitation for the poor can be achieved (see Box 3). The difference is that it functions on a not-for-profit basis, operating on the principle of recovering its own costs. What is unexpected is that users are willing to pay for the services when, in fact, sanitation in India has long been viewed as secondary to water supply. Here again, the reason may actually be attitudinal; while water is viewed as a right that the government must provide, there is no corresponding view about sanitation, which is seen as largely an individual concern.

In other words, the consideration of a utility as an entitlement may actually militate against people's willingness to pay for it. The resort to indoor sanitation—a contemporary notion in India—was long thought of as a matter of individual choice. It is only recently that various groups have begun to campaign for access to proper sanitation as a right, citing personal security, dignity and health as well as environmental hygiene as reasons in its favour. What consequences this view will have for the willingness of people to pay for their own sanitary facilities—in cases where they opt for them independent of any external interventions—remains to be seen.

BOX 3

Sulabh: An International Model in Urban Sanitation

Founded in 1970, Sulabh is a pan-Indian NGO that has gained international recognition for its model of urban sanitation. It has come up with solution to the twin issues of rehabilitating members of hereditary scavenging subcastes and providing well-maintained sanitary facilities for toilet-less urban residents upon payment of a nominal fee. The first of its nearly 6,000 toilets—and counting—was built in the city of Patna, the state capital of Bihar. The success of this NGO has been such that it serves not only slum dwellers in several Indian cities but has also been contracted to build and operate toilets in popular tourist and pilgrimage sites, used by Indians and non-Indians from all socioeconomic backgrounds. It has also undertaken some work in other countries where the need for urban sanitation is keenly felt, most recently in Afghanistan. The sewage from many Sulabh toilets fuels street lights and cooking stoves through its production of biogas, and the waste water is treated and recycled to the extent possible. Supervisors and managers of these toilets are typically from the subcastes that were formerly discriminated against and forced to engage in manual scavenging. The user fees they collect cover their wages and the costs of toilet construction and maintenance, while the very fact of their employment in such managerial positions raises their social and economic status. In 1994, Sulabh opened an International Museum of Sanitation in New Delhi that highlights the history of sanitation in India and the world, and also the plight of sanitation workers in India.

Sources: Pathak (1991); Singh (2005).

Whatever the motivation, private sector involvement in the water supply sector is rare. As it is currently envisioned, the bulk of the responsibility for water and sanitation in the future lies with local communities. However, the modality of community provision is different from what existed before. Whereas previously communities were primarily engaged in managing only water supply, in the ongoing devolution of authority over schemes to their users, the

emphasis is on combining water supply with improved sanitation. In light of this trend and its various implications, it is necessary to evaluate whether this process of decentralisation is achieving all that it is envisioned to do.

6 CREATING "HYDRAULIC REPUBLICS"—FOSTERING COMMUNITY PROVISION IN WATER SUPPLY AND SANITATION[6]

The perceived failure of the state in planning and implementing sustainable water supply policies has led non-state actors, such as bilateral and multilateral aid agencies, local and national NGOs, civil society networks and groups, private suppliers, communities, and even individuals,[7] to develop alternative provision schemes. Simultaneously, recent policy thinking about speeding up service delivery in rural areas has led to an international consensus whereby governments strapped by financial and personnel constraints are opting to transfer the management of drinking water supply and sanitation schemes to user communities. Throughout India as well, state governments are at the forefront of establishing schemes that will ultimately be managed by the villages they are meant to serve. The principal objective of these efforts is to increase the efficiency and effectiveness of water delivery by making communities self-reliant in participatory scheme management.

To this end, previous programmes that focussed only on supplying water to villages are being succeeded by ones that stress community consultation and participation in the delivery of a combined water-and-sanitation package. However, as described below, the conception of what constitutes a burden for the community is usually very narrowly conceived. For instance, the presumption is that the act of supplying water per se lifts the water burden off a village. In reality, the burden increases because the tasks related to water management multiply.

The development of this new model for service delivery has progressed to the extent that several state governments in India are already experimenting with turning over schemes to users, especially in rural areas. Since municipal corporations are still nominally in charge of such service provision in urban areas, the role of the community in self-provision is not as explicit. Yet there are already a few isolated instances of urban communities taking it upon themselves to provide members with adequate services (see Boxes 3, 5 and 8).

With these developments, therefore, the role of community as provider has come full circle. The Indian government (and its various agencies), which replaced communities as self-providers in the water supply and sanitation sector in the post-independence era, is now keen to see communities retake the lead in this respect. Over the course of time, technology for water and sanitation delivery has changed considerably, so the schemes that communities are being given charge of today are very different from those that they were used to handling in the past.[8]

It is hoped that community members, led by locally-elected water committees, will be capable of running these schemes with minimal external assistance. The problem is that the user communities interested in an assured supply of water or working sanitary facilities lack the technical, economic and managerial capabilities required to manage their own schemes, and often any capacity building carried out before schemes are handed over is perfunctory in nature (Jha, 2007).

If schemes are to be managed primarily by communities, it is not enough that communities have the requisite managerial capacity. In order to ensure that a scheme's benefits reach its poorest users, it is just as important that the principle of equity operates in service provision. To this end, policy makers and development practitioners stress that all users should be able to participate in decision making processes. To lift the "water burden", they argue, community management must be participatory and the community as a whole must "own" the project. The three inherent concepts are "participation", "water burden" and "ownership". An incomplete or faulty understanding of these concepts has led to their becoming blind spots in the process of development, which condemn a project to failure even before its implementation.

The remainder of this paper aims to clarify these conceptual blind spots based on the assertion that service delivery in the water supply and sanitation sectors is still problematic because the most appropriate solutions are not considered.

6.1 PARTICIPATION IS NECESSARY (BUT NOT SUFFICIENT)

In the thinking about the devolution of scheme management to users, "participation" is arguably the dominant contemporary paradigm. Laudable as this objective is, community participation in development projects is a complex and often problematic phenomenon in reality. In fact, participation by itself does not fully explain the success of projects, which is frequently achieved in spite of the emphasis placed on participation. Therefore, it is important to consider other variables as well, in the context of community management of schemes.

Decentralisation should not be an end in itself. Decentralised management of a scheme does not always ensure that decision-making within it is participatory in nature. To the contrary, decentralised management can imply the control of decision making processes by the local elite. Hence, the challenge is guaranteeing participation while devolving managerial authority over a scheme to a community of users.

Participation has been the most influential idea in the field of development for almost three decades. Only recently have critiques of participation started to emerge. Some of these argue that governments and agencies funding or facilitating development merely pay it lip service. In this vein, one of the more stringent criticisms of participation is that it entails people's involvement in schemes devised by governments or multilateral lending agencies without adequate consultation with the intended beneficiaries themselves (Cooke and Kothari, 2001). Therefore, it is not about the government participating in people's schemes but the other way around. And so the term participation as applied to such development interventions is misleading because, in fact, such interventions co-opt people's resources to the government's own ends. This stance finds that colonial and post-colonial states frequently adopt and exploit the ideology of participation, cooperation, local collective action or mutual labour exchange (Bowen, 1986; Mosse, 2001). People are then induced to part with their resources (labour, time and money) in order to operate and maintain their own projects. But even if one accepts this contention at face value, can one work within these constraints to ensure that utility delivery schemes are successful? If community members must use their funds, time and effort to run their own water and sanitation schemes, this needs to be done in the most optimal manner possible.

Unfortunately, participation is an ideal difficult to achieve fully, especially when communities have been marked by social differentiation for centuries, on grounds of social origin (caste or tribe in India), economic background (class), gender, age and religion. Nevertheless, when schemes are transferred, the very process of building local managerial capacity should be used to intervene in order to chip away at some of these longstanding social barriers. Given the limited degree and duration of most agency-community interactions, not many interventions make use of this opportunity to subtly empower some members of the community.

In addition, recognition is needed of the fact that good development, where it occurs, is fostered by more than just participation. While community participation is necessary for equity in resource management and use, other important factors for long-term scheme sustainability include:

a) good—preferably institutionalised—leadership;

b) knowledge (education, exposure, and awareness);

c) skills (or training); and

d) strong institutional rules. Without these, prospects of direct democracy and a system of accountability are weakened. In conservative communities, catalysing real participation will require generational change. In the shorter term, these other factors can ensure some measure of success in terms of improved water supply and effective indoor sanitation.

In rural India, Village Water Supply and Sanitation Committees (VWSCs) are established and entrusted with the day-to-day management of water supply and sanitation schemes (Jha, 2007). Similarly, in some urban areas, communities have been given the responsibility for the financial, technical and organisational management of either water supply, sanitation or both (TERI, 2008; Singh, 2005). The functioning of management committees set up in both contexts is envisaged as participatory but, all along, issues like leadership, skills and rule-making have been considered to be subservient to participation itself. In fact, participation has been seen as *the* way to promote community management, through empowering the people, while factors mentioned above, like leadership and institutional rules, have long been viewed as adjuncts to participation itself.

Researchers and policy makers in the water and sanitation sector need to be less naïve about participation. Communities that have suffered from the lack or absence of participatory decision-making for centuries are unlikely to be transformed over the limited span of implementation and capacity building in a typical water or sanitation project. Instead, the attempt should be to encourage community inputs in all possible phases of project planning and development, through limited but comprehensive consultation in planning and active participation in implementation. Simultaneously, other options to achieve effective scheme management should be considered. Local institutional rules and sanctions for good resource management—which includes authority, responsibility and accountability—should be fostered through capacity building and consciousness raising, especially in cases where strong and visionary leadership is lacking. Communities that successfully implement water supply and sanitation schemes—whether

self-sponsored or sponsored by the government and other agencies—share the common feature of having a prescient leadership, which is not always elected.

Participation is also made difficult by the lack of capacity within user communities to operate and manage their own schemes and is further hindered by a widespread ignorance of good sanitary and hygienic practices. In such circumstances, the level of investment in educating the community about water supply and sanitation has to be stepped up. In the case of the VWSCs, users do recognise that various managerial, financial and technical tasks need to be carried out. But performance of these tasks is constrained by a profound lack of skills—complicated, in turn, by widespread illiteracy—and an endemic confusion about the link between scheme membership and organisational tasks. Instruction in these matters is poor and perfunctory, and is further hampered by project deadlines which do not allow long-term supervision and support. As is evident from the drive towards comprehensive rainwater harvesting in a southern Indian city, even in urban communities where one can reasonably assume greater levels of awareness and education, people are not equipped to implement and manage their own water supply schemes without external advice and assistance (see Box 4).

Communities managing their own water supply and sanitation schemes are meant to have well-defined boundaries and be headed by committees whose members oversee the day-to-day functioning of the schemes. Often, however, national-level policy statements about the quantum of basic water supplied is at odds with what is available locally, and so there is no correspondence between local hydrological conditions, on the one hand, and rules for appropriation or provision. Consequently, there is scant interest in collective-choice arrangements, monitoring is lax, rules and sanctions (decided, according to custom, in traditional moots) are non-existent, and conflict-resolution mechanisms ineffective (Jha, 2007).

BOX 4

Urban Rainwater Harvesting: Self-Provision by Residents in a Drought-Struck City

In Chennai, the capital of Tamil Nadu, the growing dependence on groundwater since the 1970s is evident in the sinking of increasing numbers of open wells and deep bore wells. This trend, a symptom of the increasing water scarcity in the city, led to a progressive decline in groundwater levels as well as seawater intrusion in coastal aquifers. Faced with this crisis, the state government passed the Chennai Groundwater Regulation Act in 1987, which sought mainly to curb the commercial groundwater exploitation within the city limits. In 2001, rainwater harvesting (RWH) became mandatory in multi-storeyed buildings. The unprecedented and severe droughts in the ensuing two years intensified the groundwater crisis to such a degree that, in August 2003, the government passed an ordinance making RWH mandatory for all buildings (existing and new) in the city and throughout the state. It further set a deadline of 31 October 2003 for this process to be completed.

A vigorous and intensive publicity drive convinced the public that the government was serious about implementing the programme and providing technical advice and help in the design and construction of RWH structures. This led to unprecedented activity across the towns and cities of the state including especially Chennai city and the programme was seen as successful. In this endeavour, however, very few turned to the municipal corporation, private

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consultants or NGOs with the relevant expertise for assistance in designing and building their RWH structures. Most relied on plumbers or their own expertise. Independent experts pointed out several problems with the programme, noting that

(i) the time given for the implementation of this ordinance was too short;

(ii) there were far too few professionals with the knowledge and experience needed to design appropriate systems for the widely varying conditions;

(iii) the supply of trained and skilled labour to implement the works was also inadequate to cope with the scale and speed of the programme;

(iv) the availability of quality materials for implementation was also inadequate; and

(v) there was hardly any systematic follow-up to check the quality of the works reported to be completed. There were widespread but unverified reports that, simply in order to meet the stipulations, grossly inadequate RWH structures had been put in place; the capacity as well as quality of design and implementation leaving much to be desired.

This was an instance of decentralisation that, despite the presence of "felt need", occurred without adequate consultation. The legislation in regard of RWH was welcome but the actual programme was poorly implemented and monitored. Although the programme applied to all classes of housing, it ignored those living in informal settlements such as slums within the city limits. These areas could have benefited from RWH in public building and public spaces—an aspect that received very little attention. Moreover, no steps were taken under this programme to reclaim tanks and wetlands in the city that, in the past, not only functioned as recharge structures but were also used as sources of domestic water by communities.

Source: Vaidyanathan and Saravanan (2006).

6.2 WATER BURDEN AND SANITATION BURDEN

In popular perception, the task of fetching water is the predominant, if not the sole component of the average rural woman's "water burden".[9] Statements of hardship for poor people without easy access to water are framed primarily in terms of the long distances they walk many times a day in order to fetch water for their households. Those who do so are identified primarily as women, and it is commonly accepted that the provision of water supply schemes to a settlement will ease the water burden significantly. It is contended that, with these improved sources, women would walk no more than a couple of a hundred metres to fetch safe drinking water rather than many kilometres they are used to doing. The implication is that such access immeasurably improves the lives of the poor. This popular image overlooks the fact that water management, even prior to the introduction of a new project, encompasses a range of activities that cannot be reduced to the simple act of fetching water.

Men and women, in both rural and urban areas, have traditionally been involved not only in fetching water but also in tapping and protecting their water sources, treating the water they consume, watering livestock, and using the water for a range of other ceremonial, therapeutic, domestic and productive purposes. Many tasks relate to the management of

water, in which the degree of participation of men and women differs according to several other factors, including age, caste, religion, economic class, time, place, etc.

Within a community itself, the water burden often falls disproportionately on some women and men. Similarly, in some communities, sanitation-related tasks such as cleaning drains, disposing of garbage and carting away human faeces are the exclusive function of particular castes (Ramaswamy, 2005). In addition to a "water burden", therefore, there are some in a community who shoulder a "sanitation burden". Tasks can be classified as those concerning water acquisition; water treatment and storage; water use; water supply infrastructure operation and maintenance (O&M); waste water disposal; and miscellaneous water-related issues. Similarly, there are tasks relating to the construction, use and maintenance of sanitation infrastructure; community-wide sanitation management; and sundry sanitation-related matters. Both these listings can be further subdivided into tasks and roles that have customarily existed in a community and those that have been introduced more recently by governments or external agencies.

Programme interventions and, less frequently, community initiatives have led to the construction of water supply schemes as well as individual and communal toilets. The policy imperative urging community-based water and sanitation management implies that people within the community need to take charge of all aspects of these schemes—managerial, financial and technical. Moreover, an improved awareness of proper water, sanitation and hygiene management means that related household tasks—e.g., boiling water, cleaning toilets, bathing children daily, etc.—also increase correspondingly.

But rarely do new schemes replace traditional water and sanitation management altogether. Instead, typically, the newer set-up complements the old one. The introduction of a new scheme brings with it a new set of tasks to be performed and, thus, imposes its own additional burden. Yet insufficient water delivery may lead people to use old and new sources for different ends, or use the older sources as a buffer if the new scheme fails. Likewise, the work load of a resident caste of scavengers may grow if latrines are built throughout a settlement and if everyone stops the practice of open defecation while social relations remain unchanged (cf. Ramaswamy, 2005). As the two systems overlap, the water and sanitation burdens of the community, and especially specific groups within it, increase. Thus, the design and implementation of new schemes should give due consideration to the issue of who performs tasks of system management.

The concept of "water burden" does not take into account the fact that there is a parallel "sanitation burden" borne disproportionately by some household members relative to others and also some community members relative to others. Before implementation of any project that has as its goal the alleviation of a community's "water burden", a comprehensive assessment is required that takes into account both water and sanitation burdens, at household and community levels. Only an explicit accounting of water and sanitation related tasks and roles will reveal the extent of the twin burdens borne at different levels—by individuals, households and groups within a particular village. The first step, therefore, is to study the division of labour through the prism of water and sanitation related tasks and roles within the community as a whole. For example, the prevailing gender division of labour in the rural water and sanitation sector will highlight the exclusion of women from decision-making roles in both household and public realms—despite their responsibility for many of the tasks in this sector. Such exclusion is overlooked at the risk of further increasing

the burden of women. Therefore, based on an appraisal of the gender division of labour in any given community, a concerted effort should be made to ensure that women play a role equal to men in all aspects of decision-making in this sector (Jha, n.d.).

BOX 5

Communal Laundry Sheds and Spring Protection

In Shillong, the capital of Meghalaya, the Municipal Corporation supplies water from a distant dam only to neighbourhoods in the city centre. Other areas get water from seven nearby springs that are community managed. Responsibility for supplying treated water from these springs to the outlying neighbourhoods of the town lies with the state's Public Health Engineering Department (PHED) while distribution itself is in the hands of traditional councils headed by hereditary leaders. In several of these areas, elected representatives of the state legislature have cooperated with traditional chiefs by using funds allocated to them to construct spring protection structures that double as storage tanks for spring water, making it available round-the-clock. Large sheds constructed above these tanks not only shelter users of these springs from inclement weather but also house a number of long laundry platforms. Water continuously flows from the springs through these sheds with no risk of stagnation. Women visit these sheds and accomplish, in a single visit, the two tasks of washing clothes as well as fetching drinking water for their households, thus saving their time and energy. Such community spaces have also made these domestic tasks more enjoyable.

Access to these sheds that combine water fetching points with laundry platforms are useful in reducing the "water burden" of women in Shillong. Similar dual-function structures are also found in Meghalaya's villages but these are typically open to the sky.

Source: G. Pangare et al. (2006).

An analysis on the basis of caste may show that one group bears an inordinately heavy burden for sanitation in the community while being excluded from drawing water from the village well. In India, projects have been scuttled due to local elites capturing resources like money and water. Scheme layouts are often designed to exclude certain user groups based on their (lower) caste status or their membership of a different religious group, which may also correlate to their weaker political and economic status.

Before a scheme is delivered, it is important to determine whether the people who are tasked with most of the work in terms of water and sanitation management are also allowed a substantial role in decision making about how the scheme is to be managed. This exercise has been conducted for gender at some length but it would be equally useful to consider phenomena like religion, caste and class to see how these variables influence the division of water- and sanitation-related tasks and roles in any community. This will allow corrective measures to be taken to reduce the domestic as well as communal water and sanitation burdens of the group or groups that bear the greatest responsibility for these tasks.

It is instructive, therefore, to inventorise some of the potential tasks and roles in this sub-sector along with an estimation of who chiefly performs or occupies any of these tasks or roles: men, women, poor people, or people from a particular caste or religious group. Such a template, based on field observations, is meant to be revelatory rather than analytical or prescriptive; a diagnostic tool for understanding how social dynamics operate in a given

community. In order to improve access to water and sanitation, however, it must be applied before authority for scheme management is devolved upon a community.

6.3 OWNERSHIP IS A FUNCTION OF "FELT NEED", EQUITY, AND CONDUCIVE ATTITUDES

In the literature on participatory development, there is a widespread belief that a community will take responsibility for a scheme only if it partially or fully owns it, in terms of having contributed labour, materials or money to its construction. This initial investment, it is argued, generates a feeling of ownership that then translates into the regular stream of resources that is required for its maintenance. At times some community members may attempt to sabotage the functioning of a scheme that they feel is not in their interests. For instance, in some Indian villages, the strategic siting of a public standpost for water supply or even a communal toilet may favour members of a few communities while discriminating against others. Moreover, not only may the poorest be proscribed from using these assets due to their caste or religion but they may also be required to perform the most menial tasks associated with scheme O&M, e.g., the cleaning of toilets (Ramaswamy, 2005).

"Felt need" is a vital component for the long-term sustainability of a scheme that is meant to rely on local management. People who are the intended beneficiaries of a scheme will only come to adopt it and support it managerially, technically and, most importantly, financially if they actually perceive that they are benefitting from it. This sentiment can be developed even if it is not present to begin with, as often happens in schemes that are delivered to communities unsolicited. In fact, the process is rarely demand driven as substantial state or civil society efforts are invested in first creating awareness and disseminating knowledge about better water and sanitation management at the local level.

For "felt need" to be created, two things are necessary. Firstly, all users, including the poorest among them, need to feel that they are better off with the scheme. This will be true only if the scheme is regarded as equitable in terms of its material or physical returns. In the context of a water supply scheme, for instance, people will tolerate some degree of mismanagement if they are guaranteed a minimum quantity of water (Jha, 2001). Thus, it is essential that equity in access be ensured if the objective is the long-term sustainability of the scheme. In terms of water, observance of the principle of equity would mean a minimum quantum guaranteed to all users, including the poorest and most marginalised.

When a scheme suffers physical or hydrological limitations, ensuring users of some degree of equity in access to water is of critical importance. A lack of equity among users, either in terms of contributions made to a scheme or benefits received from it, will hasten the scheme's demise. Growing disillusionment with the promise of water delivery when combined with inequitable access to the limited water available may lead users to stop financial and labour contributions towards the scheme's upkeep. Thus, inequity in access often leads to the presence of free riders. People will only invest time, effort and money if they feel that the value stream of a project is delivered equitably.

Secondly, the prevalent sociocultural attitude should be conducive to the adoption of a new scheme. In India it is especially true for sanitation, where many schemes have floundered because the attitudes of people run counter to contemporary notions of proper sanitation.

Here, equity implies securing an individual's right to use a toilet. Whether he or she chooses to do so is a separate but equally important issue.

On the other hand, the objections to using a new water supply scheme boil down to personal or communal attitudes about the appropriateness of the scheme itself. If the taste or colour of water supplied from a new scheme is perceived to be poorer than the existing natural source, despite the risk of using the latter, people may avoid using the new scheme for specific uses like drinking. Sanitation schemes are often rejected outright because, given prevailing cultural attitudes about the impurity of faeces, many people find the notion of indoor sanitation itself disagreeable. Attitudes can be changed only through a combination of raising awareness about the benefits of proper sanitation and hygiene and, simultaneously, restricting and penalising behaviour that either encourages open defecation or discriminates against castes that are traditionally associated with manual scavenging. Unless there is a catalyst—an individual, a group, a circumstance, an event or a change in belief—that alters such mindsets and brings about behavioural change, there will be no success in fostering scheme ownership (see Boxes 6 and 7).[10]

BOX 6

Changing Attitudes to Open Defecation: The CLTS Model

The chief proponent of Community-Led Total Sanitation (CLTS), Kamal Kar (2003), claims an unmitigated success for this method. Pioneered in rural Bangladesh and then repeated in villages in Maharashtra state, this socio-psychological technique aims to make people aware of the risks posed by open defecation and at the same time shame them into giving up the practice altogether. It contends that the conversion to using indoor sanitation cannot be piecemeal; that all members of a community must agree to this "revolutionary" idea if there is to be any chance of success. An initial exercise in this process is the so-called "walk of shame", which is conducted through the open defecation sites of a candidate village. Faeces are marked with the names of those responsible for them before a discussion ensues about the dangers of this practice and how it inconveniences women in particular. The possibility of instituting fines for open defecation are explored along with other social sanctions, e.g., not marrying the youth of the village into other villages that continue to practice open defecation, etc. Although independent assessments of the sustainability of this method are yet to be undertaken, there is no denying its promise.

In 2003, in a small Maharashtrian relatively caste-homogeneous community, the vision of a clean and healthy community was propagated at village meetings by its elected leader, a young and dynamic headman. He explained how diseases could be spread from faeces to food and stressed the creation of a faeces-free and, therefore, disease-free environment in the village. A system of fines was agreed for anyone transgressing water (and sanitation) management rules, including those caught defecating in public. However, defaulters in the early days were first given an opportunity to explain their infringement of the rules in the village assembly. It was hoped that the humiliation of this sort of a public explanation-cum-apology would act as a sufficient deterrent for likely repeat offenders. Latrines were built by rich households, who then subsidised the latrines for the poor until coverage was a hundred per cent. Consistent efforts at educating the community about good health and hygiene seem to have wrought a dramatic change as open defecation is now a thing of the past in the village. Community water points were installed and maintained. Near the main entrance to

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the village, communal latrines meant for visitors are kept locked at all times to prevent their misuse. A platform for laundry has been built downstream from water-fetching points in the nearby stream. What is most surprising about this case is that there was no involvement of any external agency in either water supply or sanitation. Here, the key to "CLTS"—if it can be called that—was one man's enlightened leadership.

What this example highlights is the necessity of changing attitudes in order to increase the effectiveness of any sanitation project on the ground. The delivery of toilets is of no consequence if people are not willing to use them. So access may not be a problem but attitudes might. Raising awareness is crucial here. The method by which this is done—whether through consultation with community members or through a mandate—is of secondary concern.

Sources: Kamal Kar (2003); author's field notes.

Given that such catalysts are rarely internal to communities, comprehensive efforts must be made by implementing agencies to raise consciousness and also help establish a system of rules by which to manage water supply and sanitation schemes. Such efforts, however, often fall prey to constraints in budget, time or personnel. What ends up being delivered is the "hardware"—the infrastructure of water supply pipes and toilets—but rarely, if ever, the "software"—the attitudes conducive to scheme sustainability. As a result, schemes fall into disrepair or are sometimes used for purposes other than those for which they were meant. For instance, in some Indian villages, toilets are often converted into store rooms (for fodder and other materials), bathrooms or even phone booths. Thus, it is incumbent on agencies facilitating development to understand how crucial attitudes are to establishing a sense of ownership in any scheme, and invest their resources accordingly.

BOX 7

Eco-Sanitation Compared in Two Neighbouring Villages: Felt Need Expressed

ECOSAN (Ecological Sanitation) is a system that integrates sanitation and agriculture by using human waste as a fertiliser and soil conditioner. ECOSAN toilets collect urine and faeces separately. The urine is applied to fields either undiluted or diluted with water. The faeces are stored and composted before use. ECOSAN toilets are low cost because they do not use traditional plumbing. Instead they have a dual pit system where the faeces flow into a sealed pit for about 1.5 years. The toilet is then switched to the second pit. After the faeces in first pit have fully decomposed, the user is left with odourless manure that can be used for fertilisation. This cycle can be repeated indefinitely. By economising on water use, ECOSAN promises a clear advantage over the traditional water borne sanitation systems. It also puts human waste to good use. But for attitudinal reasons—viz., the view that copious amounts of water are vital for personal cleansing and flushing—community demand for ECOSAN toilets is low to non-existent.

SCOPE is an NGO working in the sanitation sector in rural Tamil Nadu. Besides educating people on how to install low cost toilets they actively promote the use of ECOSAN toilets. While advocating the concept to two neighbouring villages, the NGO staff found that the willingness to adopt the project was far higher in the village with a high water table than in the one faced with water scarcity in terms of both surface and groundwater sources. This finding went counter to the logic that sanitation, as a use, is the top domestic consumer of water in India where water is used

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not just for flushing but also washing after defecation. If anything, one would have expected to find more people adopting water-conserving ECOSAN toilets in the water scarce village. Upon further investigation it was revealed that extensive open defecation in the village with the high water table was leading to the contamination of groundwater and, as a result, the persistent ill health of many children and adults. The community members' understanding of the link between water pollution due to faecal coliform, on one hand, and water-borne and water-washed diseases, on the other, was a motivating factor in their enthusiasm in adopting ECOSAN toilets.

Source: Subburaman (n.d.).

Finally, there is the commonly held belief that total self-reliance is necessary for ownership. Some external agencies specify in their mandate that the delivery of schemes to any community must be "demand driven" by which they mean that community members themselves should perceive the need for a project and then apply for it. However, this presumes that there is not only an awareness of the schemes on offer but also an understanding of the benefits of scheme membership as well as the existence of local capacity for scheme management. In reality, the circumstances of the majority of communities—rural and urban—that do not have water supply and sanitation are due to the very fact that their members are among the most marginalised, in social, economic or political terms (see Box 8). Such communities hardly ever have the information, knowledge and skills to demand and manage their own schemes, a situation that will change only gradually. It is, therefore, unreasonable to expect that the process of development will be demand driven. Let alone the capacity or confidence to demand a project, there may be little intrinsic "felt need" for such a project in a community whose people lack the education or the resources to fully comprehend its benefits.

It bears mentioning that this argument neither patronises communities nor advocates the provision of subsidies for schemes. Rather it is a case for more sustained efforts—real, not nominal—at capacity building within communities whose members are meant to be both users and managers of schemes. While there is some evidence of the relationship between ownership and felt need (or effective demand), the problem lies in making a community aware, helping it express this need and, not least, assisting in scheme management for a reasonable period before hand over. As mentioned earlier, the support from external agencies needs to be consistent and rigorous in this regard. Otherwise there will be little appetite for managing energy- and resource-intensive schemes.

While the absence of "felt need" is critical, the other attitudinal factor that militates against the devolution of water supply schemes to communities also deserves elucidation. This is the notion of water as a right, which has its origins in India's socialist ideology. As previously discussed, this is a widely held conviction in India and is lent further credence by the fact that many states do not levy tariffs on the supply of water for domestic consumption (see G. Pangare et al., 2006). The contrasting view that water is an economic good, which must be properly valued so people will use it sparingly, is rare in the public arena. Yet people from all walks of life pay for water, sometimes at exorbitant rates when they are not supplied by government agencies or public utilities. The management of water supply schemes by communities means that the view of water as a commodity will have to gain acceptance because financial self-sufficiency is a cornerstone of their long-term viability. It is held that fees for water will not only curb demand and lead to water conservation but will also generate

funds to operate and maintain existing water infrastructure, allow subsidies to poorer consumers and enable the extension of water infrastructure to previously unserved areas (Jha, 2007). Funds will also enable the payment of salaries to members of the committees elected to manage water supply schemes, who are currently expected to serve voluntarily.

BOX 8

The Water Kiosk—an Innovative Model in Urban Water Supply

Kalandar Colony, an informal settlement on the outskirts of Delhi, is a cluster of nearly 1,800 households. It is located next to one of the city's oldest landfills and, consequently, its inhabitants are especially vulnerable to health and environmental problems. Acute poverty and abysmal levels of awareness about proper water, sanitation and hygiene further exacerbate the risks from these problems. The previous water supply pipe to the settlement ran under the landfill, allowing organic and inorganic waste to leach into the corroded pipes. The Energy and Resources Institute (TERI), a premier research institute in New Delhi, proposed a solution to this problem in the form of a community-based, decentralised water treatment unit. This "Water Kiosk" is a building housing a Reverse Osmosis (RO) plant that treats raw water supplied by a different water source in the area, to make it potable.

The Kiosk is managed by a committee whose members are drawn from local user households—men and women. This committee was trained in the day-to-day management of the Kiosk, including how to treat the raw water, sell treated water, collect fees, keep accounts, identify technical faults and get a technician to fix them if it could not do so itself. The Kiosk site, timings, payment system, etc., were decided in consultation with community members. The project's financial viability was determined before implementation began. The Kiosk committee collected signatures in order to identify exactly how many households were willing to pay for safe drinking water. Depreciation costs and the cost of annual maintenance, including wages for committee members, are borne by the community but TERI absorbs the costs of more critical repairs. Households currently pay Rupees 35 (or 70 US cents) per month for a daily quota of 20 litres of safe drinking water, or 600 litres, on average, per month. (This amounts to about 1.2 cents for 10 litres.)

This initiative was a sociotechnical innovation on the part of TERI. Through the location of a water treatment facility in an urban neighbourhood, it aimed to serve a previously underserved, low-income settlement that faced serious water availability and water quality problems. In so doing it followed a community-driven approach and also attempted to build partnerships between community, local government and NGOs. This is a relatively new venture. In spite of some teething problems, in terms of local politics threatening to disrupt the project's operation and one major breakdown, the model of a Water Kiosk has immense potential for replication in similar communities elsewhere.

This is another example of "felt need". Its problems apart, community members supported the project after a sustained awareness raising phase only because they saw the value in it.

Source: TERI (2008).

Backed by international research agendas and donor programmes that support participatory development, Indian government agencies are underwriting only the subsidised construction and initial operation of rural water supply schemes. The agreement with the purported beneficiary communities is that they will elect their own water supply committees

which will then take over all scheme-related O&M activities within a fixed period from the date of scheme initialisation. But the lack of monetary or other incentives for these committee members to do so—quite apart from their lack of relevant skills and information—makes the operation of these schemes a difficult proposition. Community members view the management of schemes as an unsolicited imposition, especially when there is no effective demand for them. And, in a difficult economic environment, where jobs and money are hard to come by, there is no spirit of voluntarism that will support this.

7 CONCLUSION

A variety of factors has held up the conventional, that is, government-orchestrated delivery of water supply and sanitation to the urban and rural poor in India. Hence, supported by an international consensus on the benefits to be derived from participatory development, the central and state governments are keen to see the devolution of managerial authority over old and new schemes to user communities. However, the objective of community management of domestic water supply is being thwarted because of organisational factors (e.g., the lack of managerial know-how), financial factors (e.g., people's unwillingness or inability to pay water fees), environmental factors (e.g., an absolute scarcity of water) and cultural factors (e.g., a sense of apathy or dependence with its origins the long period of colonial rule, ongoing caste oppression and the welfarist yet poorly conceived nature of government schemes since independence). If current and future attempts at project implementation in both rural and urban areas ignore these barriers to the devolution of managerial authority to communities, there is every prospect that the majority of community-managed schemes will continue to break down.

In a country like India, with its loose federal structure, decentralised solutions to local problems seem to work well. In its efforts to devolve authority to communities, therefore, the government has the right intent but is utilising the wrong approach. While community provision of water supply and sanitation may be a sensible resolution to the prevailing inertia in this sector, the government should envision a prolonged role for itself and for other facilitating agencies in order to enable communities to better build their capabilities to manage schemes and achieve their long-term objectives in terms of water supply and sanitation. NGOs, civil society organisations and even the private sector must be recruited in the endeavour to raise public awareness and change attitudes, the latter through exhortations of corporate social responsibility.

Central to this endeavour is a better comprehension of the concepts behind decentralisation, namely, participation, the twin burden of water and sanitation, and ownership. During this period of transition from state provision to self-management, the government and its partners in development are attempting to foster community participation. Yet policy oversights resulting from conceptual fallacies about participation can have negative impacts. For example, implementing agencies should study the social division of labour in the water supply and sanitation sector of a community before implementing any project. If policy makers see water fetching as the sole task in which people engage, they not only miss seeing the larger water and sanitation burden that particular groups within a community bear but also do not realise how excluded some of the most burdened are from decision making. Moreover, they risk the danger of essentialising some of these tasks as being

innately feminine, e.g., education about proper sanitation and hygiene, treatment of drinking water, childcare, etc. Thus, in real terms, a policy that is still not adequately enlightened may lead to a perpetuation of roles and tasks after a development intervention has occurred and a scheme that is intended to be community managed has been constructed.

Furthermore, in many Indian communities, participation is nominal due to varied constraints against empowering socially, economically or educationally disadvantaged groups. Generational social change is required before these groups, who have long been relegated to an inferior status, can be accorded some degree of parity in decision-making. In communities that successfully implement water supply and sanitation schemes—whether self-sponsored or sponsored by the government and other agencies—the one common feature appears to be a strong and prescient leadership, which is not always elected. In the short term, where such leadership is missing, the government should help institute a system of rules and sanctions that will foster the rapid adoption of new behaviour.

The sustained involvement of facilitating agencies or governments themselves can act as a catalyst for social change and help alter the decision-making balance in community resource management in favour of those who were previously disadvantaged. Therefore, a responsive and committed government, and a robust institutional framework of rules governing water supply and sanitation can strengthen the hands of the poor and, in the long run, possibly sow the seeds of socioeconomic parity when none existed before.

Among more important specific recommendations is the necessity to create or tap felt need in communities. In order to promote community ownership of schemes, the facilitating agency should not only put in place institutional measures to protect the poorest members of any community but also consider ways for the actual resource managers from within the community to be compensated. If schemes are to be independent, the nature of water as an economic good must be endorsed. If projects are well executed, the potential for cross subsidies will ensure that even the poorest reap the benefits of self-supporting community schemes. Direct cash subsidies should be discouraged as they are prone to misuse. If given, they should be monitored scrupulously by non-local agencies but to the extent possible, any subsidies should be in kind, e.g., in terms of labour required for infrastructure construction.

Particularly in the case of sanitation, a greater emphasis needs to be placed on changing entrenched attitudes that are detrimental to the spread of proper sanitation and hygiene. Some maintain that, in terms of resources, every unit of investment in infrastructure (or hardware) should be matched by at least ¾ units ploughed into improving awareness and skills (or software) (Luijendijk and Lincklaen Arriens, 2007).

Lastly, short of overhauling the constitution of India, national forums need to be created where the multiple stakeholders in the water supply and sanitation sector can disseminate their own lessons and learn from one another's experiences. Some of this has already begun to happen but considering the gravity of the situation, effective measures are needed to rethink how to ramp up these efforts and ensure rapid access to these utilities for the poor. The sobering thought, however, is that even if a few of these recommendations are adopted, we will have barely begun to scratch the surface of the problem of service delivery in the water supply and sanitation sector in India.

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NOTES

1. Often the terms 'domestic' and 'productive' are used as opposites. This obscures the fact of the use of domestic water for productive purposes by the poor, whether in small-scale and cottage industries or in individual enterprises. This happens in both urban and rural areas. Such use of domestic water supply for productive purposes is an important issue that has received little attention from scholars and policy makers (see Moriarty and Butterworth, 2003). In this paper, too, we limit our attention to consumptive uses of water full well recognising that the productive use of domestic water is an issue that requires further study.

2. While most of these examples are based on a literature review, information on two of them is culled from data collected by the author in the course of other research projects.

3. It is worth noting that this is less than the Basic Water Requirement (BWR) of an adult human, which has been calculated to be 50 litres per capita per day (Gleick, 1998). BWR is defined as the essential, minimum water needs of an individual—meant for drinking, cooking, and bathing or washing—independent of what is needed for stock watering, flushing toilets, and economic or cultural activities. A denial of this amount can lead the individual to experience some form of water-related distress, whether in physical or economic terms.

4. To its credit, 'coverage' does reflect trends over time with regard to demographic changes. Shrinkage in coverage may, for example, result from population growth outstripping the growth in service delivery.

5. Separate defecation areas are demarcated for men (and boys) and for women (and girls). Prepubescent children either accompany women or are allowed to defecate close to settlement itself, as children's faeces are considered non-polluting.

6. This is a neologism based on two influential paradigms in the social management of water in recent times: the 'hydraulic civilisation' hypothesis by Karl Wittfogel (1957) and the model of 'village republics' postulated by Robert Wade (1988). Since the new 'idea' in development envisages each village as a democratic and sustainable provider of water and sanitation for its own population, the label of 'hydraulic republic' seems appropriate.

7. So-called 'champions' of water supply and sanitation delivery to the weakest and most marginalised sections of the population. Names like Bindeshwar Pathak, Father Joe Madiath and Kamal Kar keep recurring in the Indian context.

8. This highlights a matter that receives little attention from planners and implementers of rural water supply schemes: the fact that people are unfamiliar with the functioning of a drinking water supply scheme (cf. Black and Talbot, 2005). While men and women in rural areas have been accustomed to traditional methods of managing irrigation and drinking water—often using the same source for both—contemporary drinking water supply schemes pose new challenges. Unlined irrigation ditches are far easier to repair than a cracked reticulation pipe or a broken motor. Compared to traditional modes of water delivery, people take time to adapt to new schemes because of issues such as water treatment as well as the use, maintenance and repair of non-local and largely invisible, i.e., underground infrastructure. In order to overcome its own technical constraints, a community may contract a private company to manage its water supply and sanitation scheme. The company is accountable to the community, which is the ultimate managerial authority. In India, though, perhaps because of the lack of capacity, this is not an arrangement that has been explored sufficiently except with urban RWAs (Residents' Welfare Associations).

9. Valid statements regarding the huge distances some women walk in order to collect water often obscure other important water-related tasks performed by men and women in rural communities (cf. Boserup, 1970). In this light, international policy claims about alleviating the disproportionate water burden of women merely by delivering water to settlements do not tell half the story of what it takes to use and manage water resources in rural South Asia (United Nations Economic and Social Council, 2002).

10. The general ignorance about state-sponsored programmes on offer constrains community members from coming together to demand these. Instead, often it is an enlightened or self-interested leader or group from within the community—e.g., a village development officer, a headwoman or else a local-level politician—who represents (or misrepresents, as the case may be) the entire community's demand for a new scheme. Schemes that end up being delivered in this way do not engender a community-wide sense of ownership.

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