

RURAL WATER SUPPLY IN INDIA: AN ANALYSIS

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Abstract : The National Rural Drinking Water Programme was started in the year 2013 by the Ministry of Drinking Water and Sanitation to provide clean water to the people living in rural areas of the country. The goal of this program was to launch a campaign to ensure availability of drinking water in rural areas. In this program, it was decided that by the year 2017, 50 percent of the country's rural population will be provided with piped drinking water. At the same time, by the year 2022, the target is to provide 90 percent of the rural population with water through pipes. Under this program, the central government and state governments will work together to make clean drinking water accessible to every household. The Central Government will pay some part of the expenditure on the project and some part will have to be borne by the State Governments. Under the project, there is a plan to set up Gram Panchayat and Sanitation Committee at the Gram Panchayat level as a standing committee to monitor and implement the water supply scheme. Voluntary organizations are also to be included in this program.

Keywords : Rural Water Supply Programme, Safe Drinking Water, Swajaldhara.

INTRODUCTION

Drinking water supply in India is inadequate despite long efforts by various levels of government and communities. The level of investment in water is lower than international standards, although it has increased since 2000. Access to improved sources of clean water increased from 72% in 1990 to 88% in 2008. Also, local government institutions in charge of the operation and maintenance of infrastructure are considered impaired and lack the financial resources to carry out their functions. Numerous tests have been conducted in various innovative approaches to improve water supply in India, most notably in the 2000. These include a demand-driven approach to rural water supply since 1999, total sanitation led by the community, public-private partnerships to improve the continuity of urban water supply, and access to water using microcredit for water supply for improvement, etc. were included.

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India sustains nearly 17 per cent of the world's population but is endowed with just four per cent of global water resources. About 50 per cent of annual precipitation is received in just about 15 days in a year, which is not being brought to productive use due to limited storage capacity of 36 per cent of utilizable resources (252 BCM out of 690 BCM). Leakage and inefficiencies in the water supply system waste nearly 50 per cent of usable water. The ground water level is declining at the rate of 10 cm per year. Over 70 per cent of surface water and ground water resources are contaminated. All this is leading towards a water scarce situation in many parts of the country.

Access to Safe Drinking Water in Households in India

As per Census of India, if a household has access to drinking water supplied from a tap, hand-pump/tube well within or outside the premises, it is considered as having access to safe drinking water. Census 2001 reported the coverage of households in India having access to safe drinking water at 62 percent, comprising over 81 percent of urban households and around 58 percent of rural households. The 59th Round of National Sample Survey on drinking water, sanitation and hygiene estimated that 70 percent of rural households were served by a tube well/hand pump, 10 percent by a well, and 19 percent by taps.

Essentiality of Safe Drinking Water

It may be reiterated and the national government recognized that safe drinking water and improved sanitation play a major role in the overall well being of the people, with a significant bearing on infant mortality rate, death rate, longevity and productivity. The poor, both in rural and urban areas, bear a disproportionately higher burden of the non-availability of water, as well as its poor quality. Seasonal disruption of water supply is common, especially during summer months. Fetching of water for domestic use, sometimes from far-flung sources, is time-consuming physical burden borne by women, particularly in the rural areas.

Apart from repercussions on health, this also affects their overall well-being. Moreover, 70-80 percent of illnesses are related to water contamination and poor sanitation. Women and children are particularly vulnerable to the effects of water contamination. It is also a matter of concern that despite the progress achieved in provision of water supply, the level of water-related sickness continues to be high.

RURAL WATER SUPPLY

The Department of Drinking Water Supply under Ministry of Rural Development has been mandated to provide safe drinking water in all rural habitations, by April, 2004. To achieve this objective the programmes like the Accelerated Rural Water Supply Programme (ARWSP) and the Pradhan Mantri Gramodaya Yojana - Rural Drinking Water (PMGY-RDW) are being implemented. Prior to that the Government had launched the National Drinking Water Mission in 1986, renamed as Rajiv Gandhi Drinking Water Mission in 1991. Considerable success has been achieved in meeting the drinking water needs of the rural population. With an investment of over Rs. 34,000 crore, 91.06 percent of rural habitations have been fully covered (FC) with drinking water facilities and 7.93 percent are partially covered (PC).

ACCELERATED RURAL WATER SUPPLY PROGRAMME (ARWSP)

The Accelerated Rural Water Supply Programme (ARWSP), currently implemented through the Rajiv Gandhi National Drinking Water Mission in the Department of Drinking Water Supply, has been in operation since 1972-73 to assist the States and UTs to accelerate the pace of coverage of safe and adequate drinking water supply facilities to the rural population. The programme focuses on the coverage of all rural habitations specially the un-reached ones, to ensure sustainability of the systems and sources, to tackle the problem of water quality and institutionalize water quality monitoring and surveillance through a Catchment Area Approach. Necessary reforms have been introduced in 1999 so as to gradually replace the government oriented, centralized, and supply driven programme by a people-oriented decentralized, demand driven and community based one. The reform initiative now under implementation in 67 selected pilot districts is being scaled up through 'Swajaldhara' where Block/Panchayat/Village/Beneficiary Group can also avail the benefit of the reforms with 10 percent contribution by the community in cash upfront and full responsibility for operation and maintenance.

The provision of potable drinking water to all villages has been identified as one of the priority tasks of the Government. During the Ninth Plan, 72,859 Not Covered (NC) and 3,52,423 Partially Covered (PC) habitations have been covered with water supply facilities. As On January 2,82,003 there were 12,95,504 Fully Covered (FC) habitations, 1,12,804 Partially Covered (PC) with a balance of 14,356 habitations as Non Covered (NC) ones.¹³ The State wise coverage of habitations under Rural Water Supply is at Table 1.

An area of concern is the re-emergence of uncovered villages in view of non-involvement of people in design/operation/maintenance of assets and fast depletion of ground water levels leading to problems of arsenic and fluoride content. This necessitates addressing of the issues of control on ground water withdrawal, water harvesting, soil and water conservation and community water as an economic asset.

Table 1: Status of Coverage of Habitations Under Rural Water Supply

Sl. No.	States/Union Territories	Status of Habitations				Percentage Distribution			
		NC	PC	FC	Total	NC	PC	FC	Total
1.	Andhra Pradesh	0	13,844	55,888	69,732	0.00	19.85	80.15	100.00
2.	Arunachal Pradesh	325	880	3,093	4,298	7.56	20.47	71.96	100.00
3.	Assam*	441	17,585	52,643	70,669	0.62	24.88	74.49	100.00
4.	Bihar	0	0	1,05,340	1,05,340	0.00	0.00	100.00	100.00
5.	Chhattisgarh	0	0	50,379	50,379	0.00	0.00	100.00	100.00
6.	Goa	8	40	348	396	2.02	10.10	87.88	100.00
7.	Gujarat	50	1,428	28,791	30,269	0.17	4.72	95.12	100.00
8.	Haryana	0	48	6,697	6,745	0.00	0.71	99.29	100.00
9.	Himachal Pradesh	820	9,277	35,270	45,367	1.81	20.45	77.74	100.00
10.	Jammu & Kashmir	1,709	3,576	5,899	11,184	15.28	31.97	52.74	100.00
11.	Jharkhand	235	42	99,819	1,00,096	0.23	0.04	99.72	100.00
12.	Karnataka	1	17,832	38,849	56,682	0.00	31.46	68.54	100.00
13.	Kerala	782	6,879	2,102	9,763	8.01	70.46	21.53	100.00
14.	Madhya Pradesh	0	0	1,09,489	1,09,489	0.00	0.00	100.00	100.00
15.	Maharashtra	1,999	24,019	59,912	85,930	2.33	27.95	69.72	100.00
16.	Manipur	4	183	2,604	2,791	0.14	6.56	93.30	100.00
17.	Meghalaya	327	788	7,524	8,639	3.79	9.12	87.09	100.00
18.	Mizoram	0	454	457	911	0.00	49.84	50.16	100.00
19.	Nagaland	349	569	607	1,525	22.89	37.31	39.80	100.00
20.	Orissa	0	0	1,14,099	1,14,099	0.00	0.00	100.00	100.00
21.	Punjab	1,393	2,114	9,942	13,449	10.36	15.72	73.92	100.00
22.	Rajasthan	5,631	2,521	85,794	93,946	5.99	2.68	91.32	100.00
23.	Sikkim	0	290	1,389	1,679	0.00	17.27	82.73	100.00
24.	Tamil Nadu	0	0	66,631	66,631	0.00	0.00	100.00	100.00
25.	Tripura	93	20	7,299	7,412	1.25	0.27	98.48	100.00
26.	Uttar Pradesh**	0	0	2,43,633	2,43,633	0.00	0.00	100.00	100.00
27.	Uttaranchal	119	913	29,976	31,008	0.38	2.94	96.67	100.00
28.	West Bengal	0	9,060	69,976	79,036	0.00	11.46	88.54	100.00
29.	Andaman & Nicobar Islands	0	121	383	504	0.00	24.01	75.99	100.00
30.	Dadra & Nagar Haveli	30	241	245	516	5.81	46.71	47.48	100.00
31.	Daman & Diu	0	0	32	32	0.00	0.00	100.00	100.00
32.	Delhi	0	0	219	219	0.00	0.00	100.00	100.00
33.	Lakshadweep	0	10	0	10	0.00	100.00	0.00	100.00
34.	Pondicherry	40	70	157	267	14.98	26.22	58.80	100.00
35.	Chandigarh	0	0	18	18	0.00	0.00	100.00	100.00
	All India	14,356	1,12,804	12,95,504	14,22,664	1.01	7.93	91.06	100.00

NC: Not Covered, PC: Partially Covered, FC: Fully Covered

* In case of Assam F.C. habitations include 114 habitations which are not in existence now.

** In case of U.P, habitations include 125 habitations merged in urban areas.

Source: Economic Survey 2002-03, Government of India.

SWAJALDHARA

An ambitious programme for providing drinking water to all the villages in the shortest possible time at a minimum cost, named as Swajaldhara was launched by the Prime Minister on 25th December, 2002. The Swajaldhara scheme envisages people's participation in the programme in the form of contribution to the extent of 10 percent of the project cost and ownership and maintenance of the project itself. However, Panchayats/Villages where SC and ST population is at least 50 percent, need to share only five percent of the cost. Under the scheme, the Ministry of Rural Development is increasing its share of the funds for financing the water supply schemes to 90 percent. The Swajaldhara programme is an extension of reform initiative in rural drinking water supply where the community will plan, implement, operate, maintain and manage the asset. To begin with, 882 projects worth Rs. 87 crore have been sanctioned. Initially the project is being launched in eight states. They are Andhra Pradesh, Orissa, Himachal Pradesh, Haryana, Maharashtra, Madhya Pradesh, West Bengal and Uttar Pradesh.

Besides meeting rural drinking water requirement, the scheme is considered as an important step towards decentralization of the power in favour of the local bodies. Under the scheme, the Gram Panchayats/Villages/ Communities can plan, implement, and operate maintain and manage the drinking water scheme. The project proposals involve mini pipe water supply, bore-well, water harvesting and regeneration of water bodies. An amount of Rs. 500 crore is expected to be spent on the scheme this year (2002-03). The Ministry has been mandated to make provision of safe drinking water to all habitations by 2004. Under Accelerated Rural Water Supply Programme (ARWSP), the budgetary support has been increased from Rs. 1,960 crore in 2000-01 to Rs. 2,235 crore in 2002-03, which is more than 30 percent increase over 1998-99. Out of the total number of 14.22 lakh rural habitations in the country, almost 12,84,555 rural habitations are fully covered with drinking water facility, about 1,23,014 habitations are partially covered and only about 15,095 habitations are not covered.

A REVIEW OF THE RURAL WATER SUPPLY PROGRAMMES

It has been acknowledged that the task of providing safe drinking water to all is a difficult one. We have already mentioned about the plethora of policies and programmes, which have sought to accelerate the pace of coverage of drinking water supply in India's villages. A significant investment has been made by the central as well as state governments, which has led to the creation of about 37 lakh hand pumps and 1.45 lakh piped water supply schemes. This has enabled to provide at least 40 litres of water per capita per day in 12.80 lakh rural habitations. There is to be a water source for every 250 persons; one within 1.6 km. of a settlement in the plains and within 100 mm elevation in the hills. Yet, available reports based on micro studies indicate persistent paucity of pure drinking water in many villages in different parts of the country.

A recent project undertaken by Tata Energy Research Institute (TERI) with United Nations Population Fund (UNFPA) appears to indicate that while these programmes have made a dent, they have not truly delivered. Even where water schemes have been put in place, various factors deter any significant improvement in the quality of lives of the people (TERI 2002-Impact of Population Growth on Water and Quality of Life). The study entailed micro studies in 20 villages in four districts - Solan (Himachal Pradesh), Thiruvananthapuram (Kerala), Raichur (Karnataka) and Bikaner (Rajasthan). The study identified various factors for inter-region and inter village variations in the nature and extent of water stress. These include:

Natural Factors: For instance, arid and semi-arid conditions in Bikaner and Raichur; hilly terrain in Solan which makes the chore of water collection more arduous; proximity to the coast in Thiruvananthapuram which causes salt water incursion in wells-all exacerbate water-related concerns.

Demographic Force: Of the demographic forces, population density of settlements was an important factor affecting not only per capita water availability, but also the quality of water at source because drinking water sources were being used for washing of livestock as well in some cases.

Socio-Economic Factors: Poverty is evidently an aggravator of water related stress, given the inability of poor households to invest in water collection, storage or purification. Further, caste continues to play a role in determining access to water in some villages, as the study found in Bikaner.

Problems with Water Supply Scheme: The study observed that the existing water supply had various constraints: (i) few sources relative to the population served; (ii) water availability restricted by inadequate and erratic power supply in the villages; and (iii) poor maintenance - broken taps, cracks in tanks, and unclean storage tanks commonly found.

EXPECTATIONS FROM SWAJALDHARA

The question is raised whether the well-intentioned and full of promises, will Swajaldhara be able to deliver what the earlier schemes could not? Swajaldhara is stated to have the following key elements: (i) demand-driven and community participation approach; (ii) panchayats/ communities to plan, implement, operate, maintain and manage all drinking water schemes; (iii) partial capital cost sharing by the communities upfront in cash; (iv) full ownership of drinking water assets with gram panchayats; and (v) full Operation and Maintenance (O & M) by the users/panchayats. Undoubtedly, the involvement of the local communities in all aspects of the water schemes including cost-sharing is an important step towards the impending water crisis in India. Nevertheless, the scale and complexity of the problem calls for tripartite ventures involving the government, NGOs and the local villagers. Further, given the limited resource, it may be worthwhile for each state also to identify priority areas for the provision of water for various uses - drinking, other household activities and for irrigation. Several important issues related to water supply must be addressed for ensuring that the Swajaldhara initiative improves the quality of life for those most affected by water stress, viz. poor households, women and children. This requires either an enhancement of the scope of Swajaldhara or simultaneous implementation of other programmes as complementary activities.

Summing up, it has been universally observed that when there is an improvement in the access to water there is a decline in the perceived value of water, leading to wastage and inefficient use. Therefore, awareness creation about the value of the resource and the need for conservation should lie at the core of water initiatives like Swajaldhara. It needs to be borne in mind that the supply of water is by and large limited by natural availability; technologies for harnessing, recycling and re-using can enhance supplies, but only to a limited extent. Therefore, the crux of water management lies in managing demand and it is, therefore, essential to integrate Swajaldhara as a part of the rural development planning process and customize the initiative to local needs and priorities.

How the Rural Water Supply Component Works

Under the project, a local panchayat is responsible for identifying those areas in its village that lack adequate year-round access to safe water. The district administration then consolidates this information from all panchayats under its jurisdiction and advises the state's Department of Rural Development. The department dispatches a survey team to a village to determine the likely soil depth at which water will be struck, the soil profile, and the likely water output. This team surveys common land around a household cluster to select the best location for the borewell and to ensure access for all intended beneficiaries.

The department packages a number of borewell projects together and requests bids for their installation on a turnkey basis. In the past, the government supplied all the necessary equipment to contractors. In the project, in contrast, contractors supply all needed equipment according to the department's specifications. Each contract includes installation of the borewell pipe and handpump and construction of a simple concrete platform and soak pit. The borewell and handpump represent simple, easily maintained, internationally recognized technology available in India. Units can take from one day to three weeks to install, depending on whether they are located in relatively easy-to-work hard rock or more difficult mud, sand, or loose stone. Complete costs range from about US\$1,000 for units in hard-rock areas to US\$2,500 for those in sedimentary areas. Borewells-averaging about 100 meters deep-ensure year-round supply.

After the unit is installed, the department tests its water for contaminants. So far, less than 3 percent of the project's borewells have yielded contaminated water. Once certified, the handpump is turned over to the local panchayat. Beneficiaries select a women volunteer from their group to protect the pipe, clean the surrounding areas, and do minor repairs and maintenance. For this she receives training from the Department of Rural Development. For major repairs, a mechanic is dispatched from a regional panchayat union office. The women volunteer also organizes public health campaigns for pump beneficiaries. Health care workers from the panchayat union office come to these meetings and provide information to local residents on the safe use of water, the need to avoid water stagnation around the pump and the importance of hygiene in its vicinity.

Outcomes and Reasons for Success

At the project's completion in 1998, 3.5 million persons are expected to be benefiting from project-financed handpumps, 30 percent of whom will be from scheduled castes and tribes. The project is helping beneficiaries to get safe, dependable water close to their doorsteps, thereby reducing the drudgery of hauling water from open wells and rivers. Village women report that it takes them half the time formerly needed for getting daily water supplies for their households, providing more time for more productive activities such as day labor or childcare. Beneficiaries also tell of dramatic reduction in water related diseases once the pumps go into operation. In addition, simple technology means that the pumps can be easily operated and maintained by local villagers.

These are the key factors in the project's success:

- Strong state government support.
- Good interdepartmental coordination by the project's monitoring and coordination cell.
- A keen sense of ownership and commitment from each department for its part of the project. The project has effectively involved all the departments within the state's Ministry of Agriculture.
- Effective funding arrangements.
- Proactive supervision by IDA using persons familiar with the sector and the state's government.

The rural water supply component represents an effective marriage of initiatives from government departments and beneficiaries: locally elected governing bodies identify groups of villagers who need improved water supplies, and these groups take ownership of and maintain the completed handpumps. The government departments provide key technical expertise to locate the best sites, supervise construction, certify the water as satisfactory for drinking purposes, and provide spare parts.

CONCLUSION

The water problem, particularly in respect of potable water in the rural areas has remained unsolved despite more than five decades of sustained efforts. Though the Ministry of Rural Development has been mandated to provide safe drinking water in all rural households by 2004 and to achieve this objective, many programmes like Accelerated Rural Water Supply Programme (ARWSP) and Prime Minister's Gramodaya Yojana - Rural Drinking Water (PMGY-RDW) are being implemented, from the progress so far, it appears that resolving safe drinking water crisis in all rural habitations may continue to remain a far cry. The guaranteed sustainable supply of water in the rural areas, the quality of which is also good enough to meet requirements of people, is an enormous challenge to the government. The rural water problems include among other things, the rising costs of tapping new water sources, the wasteful use of those already made available, soil degradation in irrigated areas, the overuse or exhaustion of groundwater resources, the release of harmful substances (pesticides, fertilizers, human and animal faeces etc.) into the water with negative effects on the health of water users and massive subsidies for providing water, which militates against the sustainable use of water resources. There are in essence two strategies which need to be adopted to meet these challenges; supply management and demand management. While supply management is no doubt a difficult task in the water scarce areas, with economic growth, increasing competition for water resources and the increase in the value of water, demand management is certainly becoming more important than supply management. The recently introduced Swajaldhara programme is an attempt in the direction of both supply and demand managements. The community participation approach in implementation, operation, maintenance and management of all drinking water schemes may go a long way in achieving the target of providing drinking water to rural inhabitants, if not by 2004, within a foreseeable future.

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