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Rural Drinking Water Supply In India- On Overview

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Abstract: A safe water supply is the backbone of a healthy economy, yet is fully under prioritized globally. Less than 50 percent of the population in India has access to safely managed drinking water. Chemical contamination of water, mainly through fluoride and arsenic is present in 1.96 million dwellings. With 700 million people residing in rural India over a large and diverse topography, providing access to safe drinking water is a significant challenge. The government has tried, playing a key role in financing and implementing drinking water schemes. However about 50% urban and 90% of rural households still Depend completely on untreated surface or ground water.

The health and economic burdens of poor drinking water are enormous. It is estimated that about 21% of communicable diseases in India are water related.

Keywords: Water Resources, Rural Water Supply, Drinking Water, Water Quality.

Introduction

The rural population of India comprises more than 700 million people residing in about 1.42 million habitations spread over 15 diverse ecological regions. It is true providing drinking water to such a large population is an enormous challenge our country is also characterized by non-uniformity in level of awareness, socio-economic development, education, poverty, complexity of providing water.

The provision of clean drinking water has been given priority in the Constitution of India, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State. The government has undertaken various programmes since independence to provide safe drinking water to the rural masses. Till the 10th plan, an estimated total of Rs.1,105 billion spent on providing safe drinking water. One would argue that the expenditure is huge but it is also true that despite such expenditure lack of safe and secure drinking water continues to be a major hurdle and a national economic burden.

Water quality is affected by both point and non-point sources of pollution. These include sewage discharge, discharge from industries, run-off from agricultural fields and urban run-off. Water quality is also affected by floods and droughts and can also arise from lack of awareness and education among users. The need for user involvement in maintaining water quality and looking at other aspects like hygiene, environment sanitation, storage and disposal are critical elements to maintain the quality of water resources.

In 2015, India achieved 93 percent coverage of access to improved water supply in rural areas. However with the shift from the Millennium Development Goals (MDGs) to the sustainable development Goals (SDGs) the new baseline estimates that less than 49 percent of the rural population is using safely managed drinking water.

Water Resources and Utilization

- India has 16 per cent of the world's population and four per cent of its fresh water resources.
- Estimates indicate that surface and ground water availability is around 1,869 billion cubic meters (BCM). Of this, 40 per cent is not available for use due to geological and topographical reasons.
- Around 4,000 BCM of fresh water is available due to precipitation in the form of rain and snow, most of which returns to the seas via rivers.
- Eight nine per cent of surface water use is for agricultural sector and two per cent and nine per cent respectively are used by the industrial and domestic sector.

Rural Water Supply

The provision of clean drinking water has been given priority in the Constitution of India, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State. Rural water supply (RWS) programmes in India can be divided into several distinct phases.

- 1949-The Environment Hygiene Committee (1949) recommends the provision of safe water supply to cover 90 per cent of India's population in a timeframe of 40 years.
- 1950-The Constitution of India confers ownership of all water resources to the government, specifying it as a state subject, giving citizens the right to potable water.
- 1969-National Rural Drinking Water Supply programme launched with technical support from UNICEF and Rs.254.90 crore is spent during this phase, with 1.2 million bore wells being dug and 17,000 piped water supply schemes being provided.
- 1981-India as a party to the International Drinking Water Supply and Sanitation Decade declaration sets up a national level Apex Committee to define policies to achieve the goal of providing safe water to all villages.
- 1986- The National Drinking Water Mission (NDWM) is formed.
- 1987-Drafting of the first National Water Policy by the Ministry of Water Resources.
- 1991- : NDWM is renamed the Rajiv Gandhi National Drinking Water Mission (RGNDWM).
- 1994-The 73rd Constitutional Amendment assigns panchayati raj institutions (PRIs) the responsibility of providing drinking water.
- 2002-Nationwide scaling up of sector reform in the form of Swajaldhara.
- 2004-All drinking water programmes are brought under the umbrella of the RGNDWM.
- 2005-The Government of India launches the Bharat Nirman Programme for overall development 2005: of rural areas by strengthening housing, roads, electricity, telephone, irrigation and drinking water infrastructure.
- 2007-Pattern of funding under the Swajaldhar 2007: a Scheme changes from the previous 90:10 central-community share to 50:50 centre-state share. Community contribution is now optional.

The approach paper for the 11th Five Year Plan calls for a comprehensive approach which encompasses individual health care, public health, sanitation, clean drinking water, access to food and knowledge about hygiene and feeding practice. It also states the need to upscale more schemes related to community management of water reducing the maintenance burden and responsibility of the state.

Problems of Drinking water quality

While accessing drinking water continues to be a problem, assuring that it is safe is a challenge by itself. Water quality problems are caused by pollution and over-exploitation. The rapid pace of industrialisation and greater emphasis on agricultural growth combined with financial and technological constraints and non-enforcement of laws have led to generation of large quantities of waste and pollution. The problem is sometimes aggravated due to the non-uniform distribution of rainfall. Individual practices also play an important role in determining the quality of water.

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1. **Bacterial contamination**: Bacterial contamination of water continues to be a widespread problem across the country and is a major cause of illness and deaths with 37.7 million affected by waterborne diseases annually.

2. Contamination due to over-exploitation: In the 1980s and 1990s, groundwater tables buckled under increased extraction as water tables started to decline and bore wells ran dry. What was more disturbing was that by then, 80 per cent of drinking water sources were groundwater-dependent.

3. Effluents and industrial waste: Another major cause for concern is the pollution of ground and surface water from increased fertilizer and pesticide use in agriculture and from industrial sources. The rise in the usage of such compounds has degraded the quality of surface water resources by causing nitrate contamination.

4. **Behavioural practices**: Interventions for providing safe drinking water can become ineffective in the absence of improved sanitation. In order to provide access to sufficient quantities of safe water, the provision of facilities for a sanitary disposal of excreta, and introducing sound hygiene behaviour are of utmost importance. The ways and means by which water is collected also has an impact on its quality.

5. Cultural practices: There are various religious practices that revolve around sources of water. Immersion of idols in surface water bodies is a prime cause of deteriorating water quality. Water bodies have been used as dumping grounds for various offerings that have degraded the potability of surface water. Defecation on boundaries of of water bodies results in bacteriological contamination.

Water Quality Monitoring

In India, the financial and technical support for rural and urban water supplies are provided by the central government while the planning, designing, construction, operation and maintenance is undertaken by state government agencies. While larger cities have their own laboratories for testing water, institutional framework for water quality monitoring and data processing is inadequate in rural areas.

Priority and programmes

- Since 2000, water quality monitoring has been accorded a high priority and institutional mechanisms have been developed at national, state, district, block and panchayat levels.
- The Government of India launched the National Rural Drinking Water Quality Monitoring and Surveillance Programme in February 2006. This envisages institutionalisation of community participation for monitoring and surveillance of drinking water sources at the grassroots level by gram panchayats and Village Water and Sanitation Committees, followed by checking the positively tested samples at the district and state level laboratories.
- From 2006-07 onwards, the states have been directed to earmark up to 20 per cent of Accelerated Rural Water Supply Programme (ARWSP) funds for tackling water quality problems.
- With the aim of setting up laboratories, the Government of India has sanctioned 430 district level laboratories out of which 252 have been established till 2005. Various state governments and other organizations have also established 158 laboratories.

Service Providers

In India, the primary responsibility for providing drinking water and sanitation facilities lies with the state governments. With the 73rd and 74th Constitutional Amendments, the states have the authority to give the responsibility of local supply of water to Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs).

The role of the Centre is to allocate funds and guide investments, encourage research, develop human resources through training and other capacity-building efforts, promote water quality monitoring, provide guidelines for various programmes and ensure the implementation of the water supply programmes.

Responsibility of various agencies

- The role of the Central government Central government Central government is to guide investments in this sector, encourage the need for training and research, and also to promote water quality monitoring and human resources development programmes.

- The states plan, design and execute water supply schemes and operate through departments like Public Health Engineering Departments, Panchayati Raj Engineering Departments or Rural Development Engineering Departments and Water Boards.
- The Central Water Commission (CWC) in the Ministry of Water Resources (MoWR) is responsible The Central Water Commission for regulating the use of surface water for irrigation, industry and drinking water purposes. It also mediates in inter-state water allocation disputes.
- National Rivers Conservation Directorate (NRCD) National Rivers Conservation Directorate under the Ministry of Environment and Forests (MoEF) oversees the implementation of Action Plans to improve the quality of the rivers in India
- Rajiv Gandhi National Drinking Water Mission Rajiv Gandhi National Drinking Water Mission (RGNDWM) under the Department of Drinking Water l Drinking Water Mission Supply, Ministry of Rural Development (MoRD) formulates policies, sets standards, and provides funds and technical assistance to the states for rural water supply and sanitation activities.
- Life Insurance Corporation (LIC) which is owned by Life Insurance Corporation the Government of India as part of its statutory requirements has to invest 25 per cent of net accretion from its controlled funds in socially oriented schemes such as housing, education, water supply and road transportation. It has been advancing loans to local bodies and state level water supply and sewerage boards.

Towards cleaner water

Providing safe drinking water to all in rural India is a challenging task. Given the diversity of the country and its people, solutions have to be diverse. One has to look at an approach that seeks the participation of users through interventions engaging the communities with various government schemes and policies. Citizens should be made aware of the demand for clean drinking water as a right. Such an integrated approach would incorporate collaborative efforts of various sectors involving the government, civil society and needless to say the people.

Role of Government

1. Supporting awareness drives: One of the major challenges is to make people aware on the need to consume safe water. There are examples where despite being provided potable water by the government, people drink water from contaminates surface sources.

2. Testing and remedial action: There is an urgent need to enhance the monitoring network by establishing monitoring stations across all regions and seasonal assessments of all water sources. In case of contamination being detected, an action plan for dealing with sources should be provided.

3. Capacity building of communities: The roles of panchayats are becoming more important and stress is being laid on community-based approaches in dealing with water-related problems.

4. Making the service provider accountable: 21 of the Constitution of India, relates to the Protection of Life and Personal Liberty and the right to pollution-free water is guaranteed under this provision. The user has the right to know whether water being provided at source is free from any contamination as claimed by authorities. Financial expenditure on water supply schemes and testing water quality should be known to the public.

5. Programme: School Water Supply, India has one of the largest numbers of school going children, especially in rural areas with about 6.3 lakh rural schools. As per National Family Health Survey 75 percent of the children in the age group of 6-14 years are attending schools in rural areas. A matter of concern is that out of these 6.3 lakh rural schools only 44 per cent have water supply facilities.

6. Looking for alternate water sources: Water Harvesting: Rain Water Harvesting and subsequent recharge of groundwater can help lower the concentration of minerals in aquifers. Setting up community-based water harvesting units will involve creating social mobilisation, awareness and confidence among all sections of the community.

Conclusion

In India, investments in community water supply and sanitation projects have increased steadily from the 1st plan to the 10th plan. However, the health benefits in terms of reduction in waterborne disease have not been commensurate with the investments made.

India has witnessed significant improvement in rural water supply with increasing coverage of areas and a large volume of financial resources made available. A series of schemes are aimed at improving the supply of drinking water for rural habitations and now for monitoring and ensuring quality. The past few years have seen greater emphasis on water quality monitoring and surveillance with specific allocation being made under Central grants. There has been great focus on setting up and upgrading laboratories at the state and district levels, and on water monitoring through field testing kits.

One of the greatest challenges has been the convergence of various departments associated with water: water and sanitation programmes have operated largely in isolation from programmes in health and education. A wider approach is needed where water and sanitation issues are looked at with the aim of reducing disease, improving hygiene, improving educational levels and reducing poverty.

There can be little doubt that water is a basic necessity for the survival of humans. There is interplay of various factors that govern access and utilisation of water resources and in light of the increasing demand for water it becomes important to look for holistic and people-centered approaches for water management.

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