

A study to assess the status of rural water supply and sanitation programme under Rajiv Gandhi National Drinking Water Mission in Varanasi district

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■ **ABSTRACT :** The rural population of India is growing rapidly and exerting considerable pressure on rural services. It is evident that rural infrastructure has been unable to keep pace with the growing population. A great challenge for Indian villages is to make villages livable by providing every citizen with basic services of acceptable quality. Rural water infrastructure typically includes water collection and storage facilities at source sites, water transport via aqueducts (canals, tunnels and/or pipelines) from source sites to water treatment facilities; water treatment, storage and distribution systems; wastewater collection (sewage) systems and treatment; and rural drainage. In order to understand what needs to be done to improve the provision of basic services, we need to know the level of provision of these services. It is for this reason I commission a study to assess the Status of Rural Water Supply and Sanitation Program under Rajiv Gandhi National Drinking Water Mission in Varanasi district.

■ **KEY WORDS :** Water, Water management, Water consumption, Conservation of water, Sanitation

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Water, a gift of nature, is a prime necessity for human survival and sustenance of civilization. Water is the most vital natural resource and is becoming scares. Drinking water supply and sanitation are state subjects, included in the eleventh schedule of the constitution among the subjects that may be entrusted to Panchayats by the States. The Government of India supplement efforts made by the States by providing financial and technical assistance under the two centrally sponsored programmes namely, the Accelerated Rural Water Supply Programme (ARWSP) and the Central Rural Sanitation Programme (CRSP). Substantial investment to the tune of about Rs.50,000 crore has been made in the rural water supply sector alone by the Central and State Governments since 1st Five Year Plan in approx. 37 lakh hand pumps and 1.45 lakh piped water supply schemes, crediting the country with one of the largest rural drinking water supply networks in the world. While significant achievement has been made in terms of providing access to potable drinking water – with 95.34 per cent rural habitations fully covered and another 4.28 per cent partially covered, the

sanitation coverage in rural areas continues to be a challenge, with only 22 per cent of the rural population having access to basic sanitation, as per the 2001 Census. A national water supply and sanitation programme was introduced in the social sector in the country in 1954. The Government of India provided assistance to the States to establish special investigation divisions in the Fourth Five Year Plan to carry out identification of problem villages. Taking into account the magnitude of the problem, and to accelerate the pace of coverage of problem villages, the Government of India introduced the Accelerated Rural Water Supply Programme (ARWSP) in 1972- 73 to assist States and Union Territories with 100 per cent grants-in-aid to implement drinking water supply schemes in such villages. The entire programme was given a Mission approach when the Technology Mission on Drinking Water Management, called the National Drinking Water Mission (NDWM), was introduced as one of the five Missions in social sector in 1986. NDWM was renamed as Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991. Presently, Rajiv Gandhi National Drinking Water

Mission (RGNDWM), Department of Drinking Water Supply, Ministry of Rural Development administers the Centrally Sponsored programmes in Rural Drinking Water Supply and Rural Sanitation, sectors. The Xth Plan accords the highest priority to providing the 'Not Covered' (NC) habitations with sustainable and stipulated supply of drinking water. Considerable success has been achieved in meeting drinking water needs of the rural population and 95.34 per cent rural habitations are fully covered with stipulated level of drinking water facilities. The partially covered habitations are 4.28 per cent. The not covered habitations are about 0.38 per cent.

Aims and objectives of study:

As influenced by the aim of the study, the primary objective of this research was to examine and analyze the main problems that assess the status of water supply, sanitation and solid waste management in rural area of Varanasi and to examine how problems such as these can be over come.

Rajiv Gandhi National Drinking Water Mission:

Clean drinking water is a basic necessity of life. A technology mission on drinking water named "National Drinking Water Mission" (NDWM) was launched in 1986, which subsequently was rechristened as "Rajiv Gandhi National Drinking Water Mission (RGNDWM)" in 1991 with three key objectives:

- Providing safe drinking water to all villages,
- Assisting local communities to maintain sources of safe drinking water in good condition, and
- Giving special attention for water supply to scheduled castes and scheduled tribes.

Rajiv Gandhi National Drinking Water Mission (RGNDWM) adopts an integrated approach so that conservation and augmentation of water sources is interrelated with rural water supply schemes to provide sustainable supply of safe drinking water to the rural population. The Mission seeks to provide supply of 40 litres of safe drinking water in rural areas.

RESEARCH METHODS

The primary focus of the study was to find out the important factors that affect collective action in water supply and the association between water supply outcomes and collective action in the study area. The following hypotheses were formulated.

- Collective action in water supply is not associated with the socio-economic position of the water users. Group characteristics and characteristics of the locality where interventions have been made.
- User characteristics and organizational features have no impact on equity, efficiency and sustainability of the system.

Instrument:

This study needs to conduct a survey of villages, as in villages these programmes are running. It took the form of close-ended questionnaires which collected demographic data, programme related information and benefit received. The questionnaire will be accompanied by a short cover letter which explained the purpose of the study.

Sample :

For the purposes of the study convenience random sampling was used. The final respondents sample population belonged to various age groups, both sexes and numerous ethnic origins the sample population represented both sexes, literate/illiterate group. A sample size of 100 respondents was drawn from a total of 5 rural village households,. This sampling methodology assumed that the expected rate of occurrence was not less than 90 per cent at the 95 per cent confidence level with a precision level of 3 per cent. Following Arkin and Colton (1963), the sample size (based on a total of 500 households) was computed from the following formula:

$$n = \frac{NZ^2 * p * (1 - p)}{Nd^2 + Z^2 * p * (1 - p)}$$

where,

n = sample size

N = total number of households

Z = confidence level (at 95% level Z = 1.96)

p = estimated population proportion (0.5, this maximizes the sample size)

d = error limit of 5 per cent (0.05)

Data collection method:

Primary data:

Data were collected with the help of a self-administered questionnaire. This questionnaire aims together information related to various facilities under the programme.

Secondary data:

These data were collected with the help of books, research papers, magazines, news papers, journals, Internet, etc.

RESEARCH FINDINGS AND DISCUSSION

The sustainability of water supply facilities mainly depends on a timely and regular maintenance and operation of the system. However, in most developing cities, including Varanasi, it has been found out that operation and maintenance (O&M) of water supply facilities is in a poor state of condition and the sustainability of the scheme is at stake. Regarding this, identified the following underlying problems:

- Inappropriate tariff setting without emphasis on full cost recovery;

- Lack of clear guidelines for rural setting including issues related to fairness, and financial sustainability;
- Inappropriate or lack of institutional incentives for urban WSPs to achieve financial viability and improved operational performance;
- Poor technical and financial capacity among the rural service providers that leads to high levels of unaccounted for water (UFW); and
- Poor or non-existent consumer services and grievance handling system that leads to a lack of willing to pay user charges.

According to the feed back gathered from the participants of the research conducted in these five villages, the following were pointed out to be the main causes for the O & M problems in Kashividya Peeth Block in order of importance:

- Poor organizational setup in the sector coupled with the absence of trained manpower;
- Low community awareness regarding the importance of clean water;
- Absence of adequate repair parts, spare parts, and hand tools;
- Financial shortage to support O & M, and the limited funds that are available are used for new installations;
- Low participation of the beneficiaries in the decision making process;
- Substandard designs, poor construction quality, and inappropriate technology;
- Absence of coordinated supervision and monitoring mechanisms;
- Unwillingness to pay for services;
- Low attention paid to local.

Challenges of water supply in Varanasi:

- Rapid growth of population
- Inadequate water supply
- Unfair distribution of Water
- Loss by leakage
- Limits to water consumption unfair tariff and connection charges for the poor.

Root causes of the problems:

- Management problems,
- Lack of institutional coordination,
- Lack of capacity

The water supply of adequate quantity and acceptable quality is one of the basic needs of human beings, but the provision of potable water in Kashividya Peeth Village's has been inefficient and poor in quality. The situation is getting worse due to the population growth and spatial expansion of the town which outstripped its ability to supply sufficient water for inhabitants. The existing sources of potable water for villages has been underground water which reaches the

customers through public water points. However, since the source is only from underground water which is characterized by decreasing water, especially during peak dry season, the amount of production is not adequate even for those who have access to it. The amount of production is also further reduced by less well working hour, limited number of boreholes and loss by leakage.

Thus, it is observed that the water supply approach in the villages is concentrated on traditional systems of service coverage, service pricing and mandated institutional arrangements for service delivery rather than identifying self selection of the service type, consumers' willingness to pay, consumption based service charging and emerging partnerships with NGO, CBOs and private sector. Because of these poor functioning of the existing water supply service most of the households in the village are willing to pay higher price for improved water supply service if government provides it. This prevalence of willingness to pay implies two things: there is further demand and the existing water supply service is not convenient for the customers so that they need better service at higher price. Thus, RWSS under Rajiv Gandhi National Drinking Water Mission could have been generated sizable revenue if it could provide better water supply than the existing one.

Therefore, the problems of water supply in Kashividya Peeth or Varanasi district are multidimensional in terms of both efficiency and equity. Among the problems identified inadequate water supply, inequitable and inefficient distribution system, low coverage, unfair price and the resultant limited consumption are the major ones. These problems imposed different challenges on inhabitants such as loss of time, energy and money; exposure to water borne and related diseases which penalizes the poor medical cost and pay high price for water vendors.

The root causes of these problems and challenges are management problems: inefficient organizational structure, under staffing, lack of staff motivation; lack of institutional coordination; lack of sufficient funding and capacity and absence of community, private, CBOs, and NGOs participation in the implementation of RWSS UNDER Rajiv Gandhi National Drinking Water Mission activities.

Thus, policy and planning on development of adequate, reliable, fair, sustainable and effective water supply should be established based on a better understanding of what impediments are there in water supply management and what improvement in water supply service people need and willing to pay.

Conclusion:

Improving the existing water supply service in the Varanasi both in terms of quality, quantity, reliability and sustainability means upgrading the socio-economic welfare of the people in the town. Thus, the following measures need

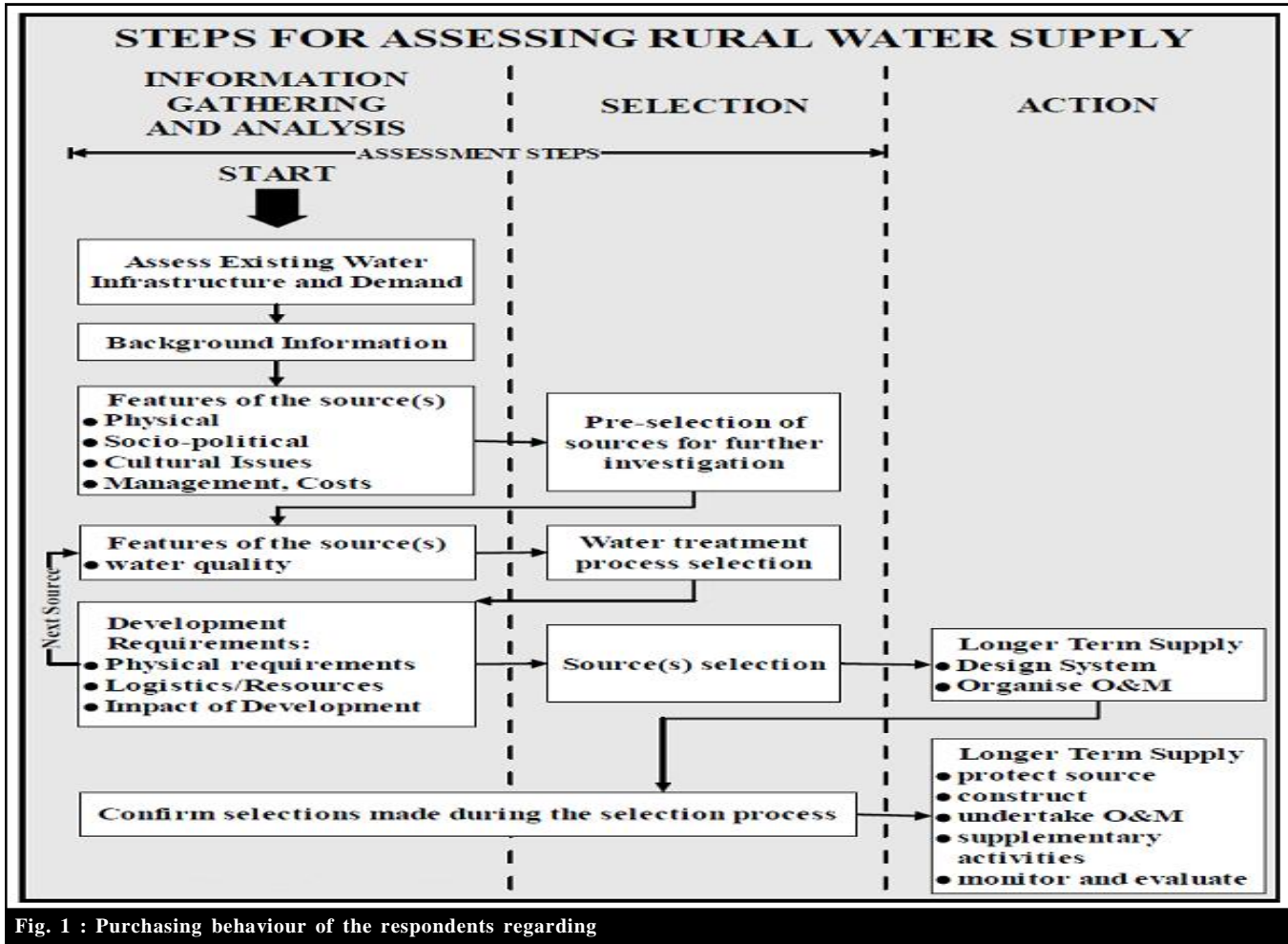


Fig. 1 : Purchasing behaviour of the respondents regarding

to be taken to reverse the existing Challenges under RWSS under Rajiv Gandhi National Drinking Water Mission:

- Conduct detail study: conduct detail study on both underground and surface water and merge both sources to create potential source of water supply if financial and environmental conditions allow;
- Demand oriented supply: design future water supply strategy based on demand orientation.
- Demand management: manage the demand by controlling waste or loss from pipe leakage and consumption through the use of meters and.
- Community participation in decision making: involving the community at all levels of water supply program and allow private sector involvement in different components of water supply.
- Equitable distribution: water points and pipes ought to be evenly distributed in order to address the problem of the low income group.
- Strengthen the institutional capacity: the institutional structure should be staffed with qualified personnel and equipped with required facilities;

- Creating conducive environment: It would be advisable if the government takes necessary steps to create conditions conducive for participation of the private sector in program implementation activities.

- Conserving water resource: Water resources should be conserved and recharged by the natural aquifer covering the water catchments with forests that can regulate water flow and minimize reduction of water table.

- Water recycling: this refers waste curbing and reuse of waste water for purposes such as gardening non-edible flowers, cleaning latrine and etc.

- Construction of ponds: constructing either individual or common ponds to gather water during rainy season for the sake of solving shortage of water during peak dry season would help harness the prevailing challenges.

- Synchronization of water sources: water sources can be used for different purposes. Potable water can be used for drinking and cooking purpose while other sources such as traditional hand-dug well, river, spring and rain water can be used for clothes washing, animal watering, floor washing and bathing etc.

– Using water reservoirs: containers are the guarantee for frequent interruption of water supply. They solve the problem of complete absence of water supply by storing water.

– Employing appropriate technology: appropriate technology that can meet appropriate standards and can have adequate spare parts and fittings should be applied.

– Ensuring the principles of optimal use of water: the available water should be equitably distributed to the community to ensure equity of access. This equitable distribution of water to the community not only ensures efficient use of water but also leads to consumption of water from homogenous sources and maintains sustainability of the source thereby curtailing its depletion.

In the above context, we can follow the under given method to solve the issues of rural water supply under Rajiv Gandhi National Drinking Water Mission.

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