



Sustainability of rural water supply

J.M. Barot, India

PROVISION OF WATER Supply to the communities is an important function of a welfare State. Since upon it the health and development are dependent. In view of the exploding population, improving life style and rapid industrialization, this issue is assuming challenging dimensions. To locate a safe dependable source and also to maintain it on a sustainable base is very difficult. The vagaries weather and complex Geohydrological conditions of the region are aggravated the situation. The financial viability of the services is also posing a serious constraints where the communities expect water as a free commodity.

Gujarat is one of the States in India which is worst blessed so far as availability of water is concerned. The complex Geohydrological conditions are posing serious challenges to the authorities. Drought is a regular phenomena in the State, in addition to a large area under the effect of salinity and arid conditions. The systems once developed, many a time get exhausted and the villages re-appear as problem villages once again. Important sector issues which have emerged in the State are highlighted.

To ensure safe and protected supply of drinking water on sustainable basis, keeping in mind the emerging issues, the authorities have initiated commendable actions which are narrated in the paper.

Profile of Gujarat State

The State of Gujarat is located in western part of India between 20° 6'N to 24° 4'N latitude and 68° 10'E to 72° 28'E longitude. It is the 9th largest State in the country having an area of 1,96,000 sq.km. It is one of the important maritime States and has 1600 km long coastline which is 1/3rd of the country's total coastline. 1.9 million hectare area (10 percent of total area) is under the forest cover.

As per 1991 census, the population of the State is 41.20 million (Ranking 10th in the country). Rural population is 65.50 per cent and urban is 34.50 per cent. Effective literacy rate is 61.29 per cent (Male - 72.54 per cent and Female 48.80 per cent), ranking 9th in the country. It has 18275 villages and 264 towns.

It has sub-humid and semi-arid climate having temperature variation from 0° to 45°C. Rainfall varies from 200mm to 2000mm with an average of 800mm. 47 per cent of the total area is rocky, 12 per cent is desert and 22 per cent under the effect of salinity. The State has only a few perennial rivers all of them in southern region. The State ranks first in the industrial development having more than 16000 working industries employing over 8 million people.

Current Status

The State Government has accepted the responsibility of providing water supply facilities to the villages having problem of quality or quantity termed as no-source villages. Out of 18275 villages, there are as many as 14370 villages declared as 'no-source' villages. Out of them as on 1.4.1995, 14407 villages are covered under the programme of providing safe and adequate water and only 96 villages are remaining.

The no-source villages are getting 100 per cent subsidy for the system under the Minimum Needs Programme (MNP) which is supplemented by Union Government under Accelerated Rural Water Supply Programme (ARWSP). International agencies like The Netherlands Government, UNICEF and the World Bank are providing financial assistance.

Systems provided

Habitation having population up to 10000 is considered as a village for providing No-Source scheme. The systems provided for public water supply in villages include Open wells, Hand pumps, Tubewells, Radial wells and surface water (after treatment) supply. Habitations having population up to 500 persons are provided with open wells. Where open wells are not feasible, hand pumps (India Mark-II and III) are provided. For first 150 persons one hand pump is provided, for the remaining population, addition hand pump is provided per 100 persons. Villages having population more than 500 are provided piped water supply facility with pumping machinery and ground level storage tank with 12 hrs. storage capacity. If the population of a village is more than 3000 persons than elevated service reservoir is provided. If acceptable and adequate water supply is not available from a local source than water is imported from other potential areas through pipelines or through road tankers. There are 300 comprehensive piped water supply schemes providing water to about 3000 villages. And there are about 250 road tankers catering to the needs of about 800 villages particularly in summer/scarcity months. 40 litres water per capita per day is supplied in rural areas with 30 litres more per cattle in desert areas. In the no source schemes only storage tank and public stand post are provided but no house connections.

Operation and maintenance

Presently the operation and maintenance of rural water supply schemes is handled by either the local body (Gram

Panchayat) or the Gujarat Water Supply and Sewerage Board (GWSSB). In case of an individual scheme for a single village, the facilities are developed by the GWSSB and handed over to the local body (Gram Panchayat) for routine O&M. If it is a group (for cluster of villages) or a comprehensive (Regional scheme for large number of villages) scheme, the O&M is handled by the GWSSB. Also if any village is provided desalination or defluoridation plant then also such scheme is maintained by the GWSSB. The maintenance of all hand pumps provided by the Government are also repaired by the GWSSB. Three tier system exists for the repair of the hand pumps in rural areas.

Cost recovery

No cost recovery towards capital cost of the rural water supply scheme is made, as it is provided as 100 per cent subsidy from the State Government. The capital cost varies area to area depending upon the type of the scheme between Rs.500/- to 2500/- per capita. However, for the schemes maintained by the GWSSB, Rs.14/- per capita per year is collected towards O&M cost which is about 25 percent of the actual cost. The cost for maintenance of the individual scheme which is looked after by the local body is collected individually by the concerned local body. The rates vary from Rs.50 to 100 depending upon the local situation. Where house connections are provided by the local bodies, Rs.200 to 300 is collected at the time of installation by the local bodies. No cost for maintenance/repair of hand pumps is recovered from the consumers as it is paid by the State Government which is very nominal. It may be noted that the current exchange value (May 1995) is 1 US\$ = Rs.31/-.

Emerging sector issues

After the water decade and launching of Rajiv Gandhi National Drinking Water Technology Mission, by Government of India, lot of awareness on the part of people, professionals and politician has been witnessed all over the country. As a result, the water supply sector has gained an important status and in the State Government programmes, this sector now finds priority for implementation. Many External Support Agencies (ESA) are also coming forward to provide necessary aid. All out efforts are made to provide safe and adequate water supply to all which will be evident from the coverage of no-source villages. In this process, certain important sector issues have emerged which needs to be addressed to achieve sustainability of system.

The emerging sector issues could be summarised as under :

Organisational issues

The main organisational issues are as under:

- Lack of adequately trained and motivated manpower supporting staff.

- Centralisation of powers with TOP-DOWN approach and poor decision making creating procedural delays.
- Lack of coordination among various agencies concerned with the project like Water Resources, Health, Education, Rural Development, Panchayat, NGOs etc.
- No role for private sector.
- No concept of sustainability.

Managerial issues

- Lack of management policies and foresight at the planning stage.
- Inadequate training facilities and motivation.
- Poor monitoring and evaluation system.
- Political interference.
- No participatory approach.

Social issues

- Lack of peoples awareness and community involvement mainly due to poor literacy rate particularly in rural areas.
- Apathy towards gender issues and appreciation of the role of women in water supply sector.
- Unequal distribution among different economic and social groups and suppressing the rights of poor and backward people.
- On-line theft of water, vandalism and illegal house connections.
- Conflicts between urban v/s rural interest.

Technical issues

- Regional imbalance in availability of water coupled with frequent droughts.
- Over exploitation of ground water particularly in agriculturally potential areas.
- Absence of alternate water resources in arid and semi-arid regions where no reliable spot sources are available.
- Deteriorating quality standards and their subsequent health impacts.
- Increasing water demand due to exploding population and improving living standards.
- Recurrence of problem villages due to drying up of sources.
- Poor workmanship of physical infrastructure.
- Poor operation and maintenance.
- Power supply interruptions.
- Limited choice for right type of technologies.

Environmental issues

- Low priority for environmental protection of water supply sources.
- No provision for disposal of waste water ameniting from the rural communities.
- Pollution of resources because of indiscriminate discharge of industrial and domestic effluents.
- Inadequate provision of toilets resulting in open defecation.

- Deteriorating water quality due to increase in salinity, nitrate, fluoride, etc.
- Poor health and hygiene habits.

Financial issues

- Inadequate funds for large projects and long term solutions.
- Unwillingness of people to pay water taxes expecting water as a free commodity from Government.
- Problems with resource mobilization and utilization.
- Absence of efficient cost-recovery system

Towards sustainability

To produce intended benefits of a system for long period of life in the economic way is most essential. This could be ensured by achieving the **sustainability** of the system. The term sustainability describes the ability of a project to maintain an acceptable level of benefit flows through its economic life.

Sustainability of a water supply project means assurance of safe and adequate water at reasonable cost on long term basis. It includes reliability of source, protection of health, adequacy of supply, assurance of quality and economy in production and conveyance. Government of Gujarat through its Water Supply Board (GWSSB) has initiated commendable actions towards achieving sustainability of system. Gujarat (GWSSB) has taken following action towards achieving sustainability.

Awareness

A massive programme of creating awareness of community at all levels viz. people professionals and politicians has been taken up. This include field level camps, exhibitions and use of media. These activities are co-ordinated by the training institute of the Board which are supported by NGOs and other agencies. The main focus of such awareness programmes is toward explaining the importance and value of water, its conservation and protection of resources. Moreover people are also persuaded to participate in programmes of Water Supply and share responsibilities.

Formation of Pani Panchayat

Formation of village level Water Committee (Pani Panchayat) is an important aspect to get the community involved in the sector programmes. The Pani Panchayat is a village level local group of voluntary members supporting the administration in the local affairs, particularly O&M village level distribution and protection of assets. The State Government through a resolution has directed all local bodies (village Panchayats) to form Pani Panchayats involving various groups with women representation. Such Pani Panchayats are expected to support the local administration in day to day problems of water supply/sanitation and also extend assistance in collecting water changes.

In about 250 villages where Water Supply is provided through Dutch assisted comprehensive piped water Supply Schemes, Pani Panchayats are been formed.

Capacity building

Trained and motivated man power helps in strengthening the organization through efficient and economic implementation/ maintenance of programmes. The Board has shown keen interest in developing HRD facilities through establishment of a State level Training Institute, IEC Cell, and Socioeconomic unit, which are functioning very well over a period of last five years more than 20000 persons have been provided training and awareness.

Support of NGOs

NGOs are a missing link between the programme implementing authorities and the beneficiaries. The work as a catalyst and motivator. In the present day context their role is very vital Gujarat is very fortunate to have a rich heritage of voluntary action. A large number of NGOs are working in the field and support is received in the sector activities. They are initially involved in software activities and efforts are on to involve them in O&M and other activities leading to community management.

Operation and maintenance

O&M of Rural Water Supply Schemes is an important aspect to deliver regular and satisfactory supply to the communities. Many a time, for want of proper O&M, the schemes are becoming defunct, defeating the purpose and objectives.

Since village level organisations are not capable to operate comprehensive schemes (Major Schemes covering large number of villages), such schemes are operated by the GWSSB (Govt.). Moreover many villages are not able to pay electricity charges of the water works for which the scheme remain idle (Electricity department will disconnect the supply due to failure to pay the bill). The State Government has therefore recently decided to pay the electricity bills of rural water supply from Government funds. Moreover the formation of Pani Panchayat is also expected to improve the O&M system. Maintenance of Handpumps is arranged through three tier system and support of NGOs is also taken.

Protection of sources

Reliability of a source developed for supply of water is very important. If the source fails than the scheme again become defunct and the village reappear as a problem village. Many such incidence's have happened in the past. Most of the sources are dependent on ground water supply. Ground waters due to over exploitation and inadequate recharge either dwindle out or get deteriorated in quality due to ingress of salinity and other factors.

To avoid over exploitation, general awareness and other measures are taken. To improve the recharging, water harvesting and recharging programme are taken

up. To control abstraction through legislative actions is also thought of.

Sanitation and health education

To improve the environmental sanitation in the surrounding of the source, distribution places (Standposts) and houses maintenance of clean sanitation is an essential activity. Open defecation also contribute heavily towards contamination of sources and spread of diseases. To ameliorate this situation programme of Low Cost Sanitation is taken up in a big way. Support of Government of India. The World Bank and the Netherlands Government is available in this programme. Help of NGOs is also taken.

Other activities

Other activities, initiated to achieve sustainability of Rural Water Supply include following actions.

- Formation of District Level Advisory Committees and State Level steering committee having representation of all groups is made to review and monitor the activities.

- To improve the cost recovery, the existing system is strengthen and support of Pani Panchayats/NGOs envisaged.
- To improve the socioeconomic status of the beneficiaries, income generating activities are taken up.
- To appreciate and enhance the involvement and role of women in particular, gender sensitization activities are taken up.

Conclusion

For the welfare and health protection, safe and sustainable water supply is most essential requirement. In the rural areas, particularly in developing countries, this aspects poses certain challenges, siting the example of Gujarat State in India, an attempt has been made in this paper to explain what are the systems available, which are the emerging constraints and how they can be redressed. It is heartening to note that thorough certain innovative actions, it is fast progressing towards sustainability of sector system.

© Director, Gujarat Jalseva Training Institute, Sector 15, Gandhinagar(Gujarat), India