



R&D institutions and water resources management

Subhra Chakravarty and Rekha Sharma, India

MANAGEMENT OF WATER resources involves application of diverse technologies in an integrated manner for achieving sustainable supply of good quality water at the place of need, with the objective of catering to the entire population. The country's research institutions are at one end of this activity, while the people or users of water are at the other end. Various agencies with financial/technological/sociological/health responsibilities are placed in between these two ends. It requires a great deal of coordination/integration with extension management capabilities to make the both ends meet.

In a diverse country like India, the lifestyles, practices and expectations of people in different geographical regions vary widely in accordance with the local environment and culture, which makes coordination for providing greater satisfaction levels difficult.

The Government of India has launched a Mission Programme called the Rajiv Gandhi National Drinking Water Mission for providing potable water in residual problem villages at low cost. A number of research organisations, service organisations, administrative departments at Central and State level, NGOs, professionals and social workers, health workers etc. are involved in various stages of the projects with a great degree of interdependence in performing their respective roles. The aim is to achieve the ultimate objective of a sustainable, potable supply through the involvement, education and acceptance of people.

The desired concept

For sustainable deployment of resources in water management, it is necessary to provide:

- A sharper identification of needs.
- Mobilisation of local resources.
- Added input of traditional knowledge.
- Monitoring closer supervision of work.
- Improved organisation of work.
- Authentic feedback.

Provision of these inputs requires community participation at virtually every step, beginning from the preplanning stage onwards. A continuous dialogue between the project manager and the community leading to cohesive decisions in matters such as identification of drinking water problem, utilisation of indigenous technical knowledge regarding water harvesting, etc. is another essential pre-requisite of effective community participation.

Similarly, integration of the knowledge acquired with the technical aspects of the proposed scheme, selection of sites to ensure maximum social benefit, contribution towards both the capital cost of construction and the cost of O&M, keeping the water sources neat and clean as well as conducting periodic evaluation of the project are also necessary for obtaining the desired results.

There must be scientific planning at the level of the micro watershed, using not only technical data but also local knowledge and perceptions. It should be ensured that new and additional sources of water do not replace the traditional and existing sources. Instead, as far as possible, the former should complement the latter, and should be integrated into the traditional water management ethos. Similarly, the technologies introduced into the village system must be internalized by the community through training and experience.

The Technology Mission was to adopt an integrated approach to place adequate stress on generation of cost effective aspects of technology through involvement of R&D institution.

The Mission and the institutions should coordinate on the matter of according priority in the water resources development programme. To achieve the desired concept of sustainable deployment of resources, the R&D institutions should play a professional nodal role to ensure a time bound and cost effective approach for developing techniques/technologies.

The institutions should focus mainly on monitoring, scientific assessment and technology development. The information generated by State Govt./PHED should be immediately transferred to Research Institution for analysis and interpretation so that technical solutions are provided for field problems.

Case study

The National Programme on Guinea worm Eradication coordinated by the National Institute of Communicable Diseases (NICD), owes its success to careful planning, guiding, monitoring and evaluation. Before long, it became an example of a well integrated and smoothly functioning programme. The important factors that led to the success of the programme are:

- National Institute of Communicable Disease (NICD), focused its priorities right and pursued them systematically.
- Clearly defined goals and targets for all components of programme and for the operation as a whole.

- Integration of participating departments at field level.
- Appropriate technology interventions.
- Excellent Information, Education and Communication.
- Policy decisions were taken after analysing an elaborate reporting system.
- Mid-course corrections were taken up on the basis of concurrent evaluation and independent studies.

The sub-mission on Defluoridation was not fully successful as Handpump attached defluoridation plants have been a failure due to unsuitability with community perceptions and lack of community involvement. Fill and draw type defluoridation has been accepted at community level. The failure of Handpump attached defluoridation plant could be the result of:

- Operation and maintenance models could not be developed to suit techno-economic perceptions in the rural areas.
- An immediate action plan could not be prepared for rehabilitation of non-functional treatment plants under various programmes.
- State PHEDs were not involved to the desired level to take up field-oriented R&D projects.
- Field visits (sites of plants installed) would have helped in acceptability of technology, integration of services and programmes of related department and sustainability.

Institutional set up

The mission mode functioning of an institution requires highly motivated staff to integrate and pool their expertise, resources and efforts to achieve objectives in a cost effective and sustained manner.

The Institute should prepare special training modules for identification of the elements to be integrated, and to achieve proper orientation to develop a culture of cooperation with related department and agencies. There should be a Central High Powered Committee to approve, review and monitor the programme of the technology mission. This committee could have sub-groups for specific assignment as and when needed. R&D Institutions could earmark allocation for drinking water.

Professional re-orientation

A human resource development cell should be created with suitable secretarial assistance. The mission approach gave special emphasis to reorientation of professionals, which was sought to be achieved through conducting Human Resource Development (HRD) Programmes. The objective of the HRD programme was to have at least one trained person at the village level. In addition to this,

it is necessary to train at least 20 per cent grass root functionaries at the village level, at least 15 per cent middle level supervisors and 10 per cent of top level decision makers every year.

The training module should be need based and practice oriented. The Government should evolve national level and easy procedures for release of personnel at various levels. In case of transfer of the trained personnel, arrangements should be made well in advance so that necessary inputs required for rural water supply schemes are not delayed.

The personnel selected for training in Rural Water supply systems should have a minimum qualification of ITI or Diploma so as to learn the operation and maintenance of the plant and to impart training to new entrants.

Training by R&D Institution

The R&D institution can play a special role in the programme by imparting training to the trainers who would then train the implementing officers and beneficiaries by adopting the following approach:

- Trainees should be trained in a campaign mode to create an environment conducive for instilling awareness and self reliance.
- Complete locational data/information should be obtained to indicate micro - level data pertaining to slope, erodibility, soil texture, depth water availability etc. depending upon local conditions and natural setting.
- Association with community at all levels, i.e. from preparation of action plan and during implementation stage. To enhance effectiveness, a Technical support group has to be formed ideally through the Panchayat with personnel having a technical background. To form this group, functionaries must be drawn from health, water supply schemes, hydrogeological investigations, soil conservation and agro irrigation.
- To evolve a sustainable model of water supply by combining the community's traditional knowledge of land and water resources with the technical knowledge of the experts.

Conclusion

New technological concepts can be imbibed in field level projects and objectives fulfilled only with the active involvement of R&D institutions who should not be treated as outsiders or secluded. To remove bottlenecks, it is essential that those responsible for project implementation as well as the R&D institutions should reorient themselves to ensure optimum utilisation of resources deployed.