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REACHING THE UNREACHED: CHALLENGES FOR THE 21ST CENTURY

Empowering people for water resources management

Surendra K. Jain, India

THE UN AGENCIES promote slogans like "Water means life", "80 per cent of sickness is due to water", "health for all - by year 2000", etc. These emphasize safe water and sanitation concepts to be overriding.

All live cells have inbuilt conditioning which seeks perpetuation of continuing to be alive. This provides the genetic motivation for survival to all living species.

India's ancient thinkers identified five basic elements (*panch tatva*), one being water, without which sustenance of life is not feasible. The concept of sustainability in nature depended on coexistence of all living beings and was conveyed through snippets attributed to revered thinkers.

Amongst common people the important issues were inculcated as a habit so that essential practices were pursued as a natural way of life. Such cultural inputs are available for motivating the people.

For safe water and sanitation to be the thrust area we need to ensure comprehension of the linkages between these two by each living being. Genetic and cultural motivation facilitate adoption of concepts and override constraints like illiteracy amongst humans.

Assuring sustainability necessitates users being closely associated with operation, maintenance and repairs of facilities. People's action becomes essential as outside controls do not assure sustainability.

Mounting population pressures lead to increased contamination. Pollution control assumes greater importance and its challenges stand out sharply.

Conservation measures and judicious usage of available resources become most essential. Assessment of how much water is needed and what is available becomes necessary. Knowledge of how contamination can be contained / avoided / removed has to be sought. Specific involvement of the concerned people is imperative.

Basic knowledge about a subject being a prerequisite for any person to get motivated and take necessary action, a general understanding of what is safe water / sanitation has to be comprehended.

Water has been freely available in nature. It has inherent characteristics which enable life support. What are they?

Life support requires not only adequate quantity of water, its quality has to be assured. Quality aspect is assuming greater importance in view of the heavy population pressures / business and industrial activities etc. which result in excessive contamination / pollution such that the natural processes, which upgrade the water quality, are not able to handle the loads. Understanding of how contamination / pollution occurs and what steps need to be taken to reduce it to the maximum extent, if not completely eliminated. Every user of water has to become aware about quality of water that is available to her / him. The threat is not necessarily due to lack of quantity.

Monitoring the quality of water thus assumes tremendous importance. While estimation of water quantities is comparatively simple, quality measurements are a new subject and require equipment specifically designed for the purpose. A number of such 'kits' are available in the market. However, their reliability needs improvement.

Measurement of water quantities to assess availability to the consumer for various purposes (ingesting / sanitation and personal hygiene / agriculture-horticulture-forestry activities / domesticated animals' needs / business-industrial requirements, etc.) have to be collated both quantity as well as quality wise.

Availability of water and its meeting appropriate quality specifications has to be against each need, for requirement to be met effectively. The quantity and quality for each usage has to be allocated depending on what is available.

Although waters do get contaminated while being utilised it may still be possible to reuse such downgraded water to meet certain categories of needs. Quality assessment of water, after use, would need to be monitored closely, in order to assess its reusability.

It may also be feasible to upgrade the quality of water becoming available as an effluent. Perhaps the upgrading costs can be worked out as part of the water cost and recovered from the earlier user.

Contamination of water has far-reaching bad effects as the contaminant would be carried onwards by the flowing waters both on surface of the ground as well as deposits in the substratas. Thus contamination gets carried over long distances affecting the productive capability of the soil as well as the other water sources which it comes in contact with.

Thus water's blessings can turn into a curse.

The second issue of concern is to find out if available water resources to a community (say a village) are by rivers-streams / stored in natural or man-made tanks-ponds-dams etc. / or from underground stratas (due to percolation through the soil). In all the cases the real source of water is rainfall. It may be within the village area or outside. Rivers-streams could be dammed up thus preventing availability of such waters. Similarly excessive surface flow could also be held back before it reaches

the village area. Thus the only reliable supply of rainfall water would be what would fall within the village land area. Measuring rainfall within a village is therefore necessary. A simple rain gauge could be installed and regular readings taken, thus making it feasible to know the available water to the community.

At the time of rainfall being received on the ground the quality of water can be assumed to be superior most fit for potable purposes.

The above quantity of rain water would partly get re-evaporated / percolate into the ground and balance form the surface runoff. The last two components (i.e., percolation and surface runoff) could pick up contaminants depending on the soil condition. As such their quality would need to be checked.

Measuring the rainfall / re-evaporation / percolation quantities can be by using simple instruments which perhaps could be fabricated / made locally. Close involvement of the people and the computed information being displayed for anyone to become aware of the position vis-à-vis the water availability is most essential.

Ambient temperature and moisture / soil temperature and moisture / wind velocity and direction / solar incidence need to be measured in order to comprehend their effect on water needs-availability. Remedial measures to counter / offset the effects would have to be understood and put into practice through individual / community action so that appropriate conservation measures in storage as well as use can be practised.

In order to optimise productivity in plant growth the water needs of each species of plants would have to be known. The parameters indicated in the previous paragraph would effect them and irrigation would have to be controlled appropriately to assure desirable soil moisture is maintained.

Selection of plants which can be grown most economically — from production as well as marketing angles — is another important issue. Utilization of water for growing of plant life is not to be under-rated because they fulfil the basic needs for survival of all animal and human beings and provide the keystone for maintenance of ecobalance.

Quick appraisals of a number of NGOs work does provide reasonable assurance that illiteracy creating a barrier to comprehension capabilities is more of a myth and the people's will to live does enable them to go forward with their native sensibilities. Perhaps the educated elite is more interested in reining them in every child is born with inherent capability to stand up and run. The process can be facilitated by sympathetic egging on. The people's science need not be a clone of the postgraduates'. Let us give the deprived a chance to develop in their own ways.