

BOOK REVIEW

WATER: RESOURCE AUGMENTATION, MANAGEMENT AND POLICIES

by H Sarvothaman Asiatech Publishers Inc , New Delhi, 2004, 345p Price Rs 850/-

It is a good augury that more and more people are beginning to show interest in water. But this interest is short-lived. It kindles in times of drought, causing frenzy in many quarters, but suddenly dies down with the first few showers of rain.

Few people realize that India is the second wettest country in the world and receives copious amounts of rainfall. But this bounty is confined to just 60 days in the year. The bulk of it concentrated on the windward hilly regions where it is least required. The *Sahyadri* along the western margin of the Peninsula, which forms a 1500 km long and about 50 km wide mountain belt, receives as much as 3000 mm of rainfall every year. A good part of it reaches the sea unutilised. A small part flowing eastward is stored in dams and water made available for irrigation but there is chronic dispute about sharing this water, because it is inadequate and cannot satisfy the needs of the States through which the rivers flow. Such irrigation facilities as are provided go only to the fortunate few living on river banks. The value of water not being realised, large quantities are wasted and squandered in growing water-guzzling crops. While this is the case with those living in river valleys the water needs of the large majority of the people living in high plateau regions are totally neglected.

People in these arid and sub-arid regions have taken to sinking of wells for their drinking water needs. With liberal grants available for well sinking, a large number have taken to drill deep bore wells which has resulted in using water for irrigating crops. Because of reckless, uncontrolled overexploitation even this resource has gone dry and the country is facing a water crisis. Few have yet realized, the seriousness of the situation.

Sarvothaman in this new book under review sets out the problem but his solution is not better water management practice but development of alternative sources of water to support the activities of human life. Lack of illustrations is a serious deficiency. Figure 7.1 which is presented in colour fails to explain what it should convey. The inadequacy of constructing large dams, the misery caused by displacement of a large section of poor people, and the enormous water losses through evapo-transpiration involved in conveying the water in open channels has not been sufficiently emphasized.

It is difficult to follow the author's argument how geomorphology can locate new sources of water (Chapter 8). In the 5000 years during which agricultural operations have been practiced, all available land fit for agriculture has been identified. What imageries can do is to assist in identifying sites where structures can be built for water to be retained and made to seep underground and augment groundwater resources.

Chapter 9 on groundwater deals with standard textbook matter which has not taken into consideration the type of conditions met with in the hard rock regions of the Peninsula which forms a third part of India. The author pictures the existence of enormous quantities of water below ground, which is not true, as this water has accumulated over hundreds of years. It should be made clear that this deep-seated groundwater is not replenishable and likely to get exhausted when once removed.

Better water management, whether surface and groundwater, is crucial and requires to be emphasized. In irrigation being presently practiced 75% water is lost through evapo-transpiration and conveying water through unlined open canals. Populist policies of supplying water free have not inculcated in the farmer any sense of how precious water is. Regulated water supply through pipes and installation of meters is not even considered. With such practices going on uninterruptedly it is difficult to conserve water. More emphasis should have been given to these aspects.

Wasteland development deserved a separate chapter by itself as this is one activity to which maximum attention has to be paid. The suggestions given are valuable and require urgent attention. Modern technology will prove to be of great help.

Water quality has received elaborate treatment but for the large rural population of India the primary requirement is water – any kind of water. Simple processes have to be devised to make it potable, while the spread of education will take care of this aspect.

Chapters 13, 14 and 15 dealing with methods of augmentation form an important part of the book. Rainwater harvesting must become a mass movement with our energy, intelligence and resources directed to this basic essential – harvesting pure god-given rainwater. People should be educated from a young age to recognize the difference

between water required for drinking and water required for cleaning, washing and other purposes which can be recycled and made available over and over again. The suggestions given in Chapter 15 are valuable and it is hoped municipalities throughout the country will arrange to collect used water (except water used for sanitation), construct recycling plants and arrange for a system aimed at supplying recycled water to every household. This requires very extensive planning and management.

Sarvothaman is probably the only author on the subject of water who has laid emphasis on desalination as an important way of augmenting water resources especially in the coastal regions. The process through intensive research, has to be made economically viable.

The last chapter deals with the management part – who is to do the job. Too much reliance on government machinery and the crowd of civil engineers who pervade the Public Works Departments of most of the States may not have the desired effect. They are overly ingrained in traditions and not receptive to new technology. A new management group, young in spirit, bold in taking decision, and armed with the new technologies (information, space and nuclear) should take over this important business of meeting the water needs of our growing population. Sarvothaman is to be congratulated for his efforts in focusing our attention on the various aspects of the most precious of all resources – water.

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MEASUREMENTS OF GEOMORPHOLOGY AND HYDROLOGY AND CHANGES WITH TIME by John A. Moody, Robert H. Meade and David R. Jones
Circular 1246, U.S. Department of Interior, U.S. Geological Survey, 2003, 100p (Free on application to USGS, Information Services, Box 25286, Denver, CO – 80225-0286)

The efforts of the pioneers in the study of the land with all its attributes were mainly to provide “a scientific basis for planning how society might best live in harmony with the land and its natural resources.”

About two centuries ago (1803-1806) Meriwether Lewis and William Clark were the first to explore part of the Trans-Mississippi west of the United States and give an account of the numerous observations they made including some on the geomorphology and hydrology. Though the observations were mainly confined to the narrow corridors of the rivers along which they made the traverse (mainly along Missouri, Yellowstone, Snake and Columbia rivers, besides Ohio), there was enough material to extrapolate on the nature of land and its use farther inland on both sides.

The ‘geomorphology’ section deals with erosion, sediment transport and deposition processes (pp 11-62) and the ‘hydrology’ section deals with runoff processes including river characteristics, hydraulic geometry and river velocities (pp 63-83). The measurements that they made with the instruments at their disposal of the various features and parameters associated with riverine morphology are reasonably close to what has been found later by sophisticated instruments and in many cases have helped to arrive at the changes that have taken place during the last two centuries.

Water colour paintings made of the landforms of those times and the later colour photographs (terrestrial and oblique aerial photographs), interspersed with hand-drawn sketches of the flow pattern of the sections of the rivers with notes, and the extensive quotations (though here and there with archaic phonetic spellings) from the observations of the above pioneers enrich the text and make a very interesting reading material. A number of clearly labeled block diagrams, coloured sketches and profiles (p 40) drawing attention to the geometry of the features as understood now are welcome additions to appreciate the advances made in our knowledge of the same phenomena, which were mostly described earlier in qualitative terms. Their observations on the flow in the rivers in different seasons of the year (partly collected from the local people) fairly tally with the hydrographs prepared later (p 69). Major changes in the characteristics of the rivers as observed now are mainly due to the construction of dams and reservoirs. It is surprising that they took pains to measure the velocity of the flow (using logline and reel) to be helpful to the navigators (p 71).

Whereas all the above are dealt with in three chapters (83p), chapter 4 is an excellent illustrative summary with photos and sketches (15p) of the changes that have taken place in some sections of the traverses made by them (pp 87-91).