

Water Problems of Bengaluru – the Fastest Growing City of India – Amar Kumar Majumdar, formerly from Geological Survey of India

Water crisis and its management in Bangalore, the central theme of the present memoir, is a problem created by progressive degradation of an idyllic environment of the Garden City of India under ever-growing population pressure in the last few decades. “Bangalore Boom will be its Doom”—title of one of the articles, (M.N. Thippeswamy) very aptly outlines the Catch 22 situation in which the fast growing city known as the Silicon Valley of India is presently bogged down. To quote an excellent overview of the entire scenario in the very first paper—the advantage of “an ideal physiography”... was totally lost due to “unplanned expansion and urbanization without regard to natural drainage system” causing disruption of “the earlier water supply system with shrinking of surface water bodies and reduction of recharge to groundwater.”... Depression of the water table due to overexploitation of groundwater has put this “supplemental source in a great distress.” Not only shrinkage, in the fourth paper (V.S. Prakash) we find a list of 22 vanished lakes yielding place to various urban infrastructures ranging from Football and Hockey Stadia to Medical Colleges and Residential Complexes.

In his excellent introduction, the erudite editor has succinctly summarized the essential water supply problems of Bangalore City and their proliferations concomitant with the booming growth of the Silicon City. Highlights of the articles published have been deftly analysed with editorial comments. All the relevant points of discussion and suggestions of the various authors have been nicely presented.

The bane of the problem of over-exploitation of groundwater in the growing metropolitan cities, with particular reference to Bangalore has been briefly and admirably dealt with by the doyen of groundwater geologists, Dr. B.P. Radhakrishna. He has strongly emphasized the utility of Rainwater Harvesting in this context.

The fifth paper provides a highly informative and well documented account of the various aspects of Water Supply and Management of Bangalore City along with detailed remedial measures (M.S. Mohan

Kumar et al.), with global examples of their application. Another well-documented paper on Hydrogeological Mapping of Bangalore City (T.M. Hunse et al.) gives a comprehensive insight into the geology, land use and groundwater resources of the surrounding area vis-à-vis the physiography and landforms.

Application of Remote Sensing and Geographic Information System (GIS) forms the subject of the eighth paper by V.Shreedhara and M.H. Balakrishnaiah. Periodical changes in the water bodies were accurately delineated from toposheets and satellite photos and their association with structural features elucidated. An increase in annual rainfall has been observed in Bangalore City during the pre-monsoon and monsoon seasons only by A. Muthuchani during his meteorological studies between 1961 and 2008.

Rainwater Harvesting and Water Conservation Measures form the topic of K.R. Sooryanarayana’s paper, including two case studies in Bangalore. Importance of Rainwater Harvesting for water conservation has been emphasized by most of the authors.

Withdrawal of groundwater in excess of recharge leads to groundwater mining resulting in declining water-level and increasing pumping costs often associated with deterioration of environment. Over-exploitation of groundwater and its ill effects are focused in the 9th paper by K.V.Raju et al. documented by case study in Ward No.39 in Bangalore. 873 tubewells in a 2.9 sq km area depressed the groundwater level from 28 m in 1970s to 152 m at present.

T.J. Renuka Prasad of Bangalore University feels that conjunctive use of surface water and groundwater in the region is essential. In view of this, status of drainage and water bodies in and around Bangalore was studied based on the Yele Malappa Shetty Kere (YMSK) watershed and Arkavathi basin. Over the years several small order streams are found missing and innumerable large water bodies vanished due to urbanization. Restoration, conservation and maintenance of surface water bodies are necessary along with

augmentation of groundwater through artificial recharge. Zones of artificial recharge were delineated in the Arkavathi basin using Remote Sensing – generated thematic maps and hydrogeological informations on GIS platform. The wide variety of environmental problems in Wetland Conservation is highlighted in the 14th paper by N. Nandini et al. of the Environmental Science Dept. of Bangalore University.

The importance of Roof Top Rainwater Harvesting both for augmenting city water-supply, and groundwater to be used later during rainfall deficiency, forms the topic of the 15th paper by C.S. Ramasesha, formerly of Central Ground Water Board. Utilisation of technically simple and cheap devices are described with illustrations.

Water Security in Bangalore City and the need for an integrated management is discussed by S. Vishwanath, while Groundwater Legislation constitutes the subject of the last two papers by M.A. Farooqi and S.N. Ramaiah, and T.N. Venugopal respectively. M.A. Farooqi and S.N.Ramaiah have deftly and succinctly summarised the root causes of the groundwater crisis and outlined the entire canvas of the legal scenario as prelude to the constitution of the Central Ground Water Authority.

The epilogue is a comprehensive account of all the points discussed by the authors. Starting from the physiographic set up of the city and tracing the evolution of the water-supply system for over a century, the editor has analysed in detail the current problem of the water crisis of Bengaluru, and has suggested remedial measures which hold good largely for other metropolitan cities too.

Geological Society of India deserves hearty congratulations for bringing out this memoir, which sounds a timely warning for urban society in general and those concerned with the water supply of Bengaluru in particular, to take heed and initiate urgent and suitable remedial measures, realizing the gravity of the situation.