

## **India's Traditional Science and Wisdom of Water Management – A Review**

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Prof. K.G. Vyas, himself a geologist of note who made water the focus of his work, has written a landmark tract on the traditional Indian approach to water and water bodies. Because the country is divided into clear zones, the Indo-Gangetic plains and peninsular or plateau India, the approach to water in these two zones is completely different. The rivers of the Indo-Gangetic system are snow-fed and after descending from the mountains they traverse a rich alluvial land mass. Snow melt ensures that the rivers are perennial and though they swell during the monsoon and shrink during the dry season, they always contain some water and are amenable to storage through large dams. The Indus irrigation system, based on the Indus River and its five major tributaries of the Punjab, constituted the largest perennial irrigation system in the world. Unfortunately the manner in which Pakistan's agriculture sector has fared since independence has substantially ruined the irrigation system. Perhaps India has been somewhat wiser and, therefore, the Sutlej and the Beas have been harnessed to bring great agricultural prosperity to Punjab, Haryana and parts of Rajasthan. Western U.P, thanks to the Yamuna, is irrigated by an irrigation system on rivers which form a part of the Indus system and partially the Gangetic system. Both in terms of flow irrigation and lift irrigation the area north of the Vindhyas has more or less assured water.

South of the Vindhyas is another story because we are up on the plateau, which is based on a virtual ocean of volcano created dike and basalt. Here the depth of the top soil varies, but obviously it cannot match that of the Indo-Gangetic Plain. The rivers here are seasonal and run of the river irrigation and power generation, which is partially possible in Northern India, is nonexistent. Therefore, it is on storage made in ponds, lakes and through reservoirs created by dams on rivers that in peninsular India we can ensure water availability. The traditional wisdom regarding water in peninsular India aims at (1) creating water bodies for storage (2) harnessing existing waterways such as rivers and streams, partially for storage and partially for ground water recharge. Here irrigation is not profligate as in the Indo-Gangetic Plain. That is why in a district such as Tikamgarh in Madhya Pradesh, located in Bundelkhand, the whole water regime was improved and made capable of providing irrigation in small commands through ponds and small lakes. Through this very austere but economic water management fifty-four percent of the district was irrigated. This is the kind of wisdom that our ancestors possessed and which we are rapidly forgetting. Prof. Vyas, in his tract, has virtually taken us on an exciting journey in which the traditional wisdom regarding water management unfolds before us effortlessly because of the word pictures that the author has drawn. He has looked at the water management systems in valleys, upland areas, the flat plains of Malwa and the alluvial plains of Northern Madhya Pradesh. He has looked at different systems of water recharge, ground water storage, the use of water for aesthetics and the difference that genuine participative management makes. In fact this could be a text book on how to take watersheds and manage them in order to bring about prosperity to a local region.

Any work of an author must be looked at critically, not to find fault per se but to suggest how the matter could have been improved. I have tried to apply the benchmark to the present work, but find that however I might like to look at it through a jaundiced eye, it is difficult to better what Prof. Vyas has written. In fact he has left no missing links, though I would suggest

that he expands the scope of the work into a much larger treatise which could act both as an encyclopedia and a manual for future programmes of water management. In this behalf I would suggest that he considers the question whether modern, large reservoir based flow irrigation systems have worked to the detriment of traditional water management practices. For example, many village ponds have fallen into disuse and disrepair because of the Tawa Project. Tail end water of the canals is either allowed to flow into the river downstream, or water –logs the fields. Suppose the ponds are revived, surplus canal water siphoned into them, stored and later used, could we create a new synergy between modern and traditional water management practices? Such a study could give us a new paradigm of water management.

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