

CHAPTER 4: LITERATURE SURVEY

An extensive relevant literature survey has been carried out to build up the concept of ground water scenario in the country and further to understand the existing legal and institutional framework prevailing for sustainable management of ground water resources in the country. Reports, papers and case studies were referred from various developed and developing countries which have adopted regulation and control on ground water development through ground water laws / legislation.

Documents published by Central ground Water Board on ground water resources assessment, report of Ministry of agriculture and Ministry of Water Resources were referred for statistical data on historical development of ground water abstraction structures and irrigation potential created and utilized.

Groundwater Management & Ownership, a report of expert group of Planning Commission, Government of India takes stock of the availability and use of groundwater and outlines the extent, causes and consequences of overexploitation. Subsequently, the scope and efficacy of groundwater recharge is discussed. It reviews the legal position and the emerging role of Central Government in groundwater management. The report in detail discusses the domestic and international experience respectively in groundwater management and draw lessons from them. Number of initiatives to promote groundwater sustainability has been suggested in the report.

Published documents and reports of Planning Commission, World Bank, Food & Agriculture Organisation (FAO), UNESCO, UN and IWMI on ground water ownership, governance and participatory ground water management were referred while working on this thesis.

World Bank, 2010. Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Exploitation in India. Washington, DC: World Bank and *India, Groundwater Governance case study, Water Papers*, published by the Water Unit, Transport, Water and ICT Department, provides an outline of

how this could be achieved by initially working within the present legal and administrative framework, while developing a parallel track of governance reforms. While the way forward can be envisaged from this analysis, putting it into practice will require a major commitment from the governments of India with assistance from the international community.

The case study and background paper of the World Bank economic and sector analysis (ESW) entitled “*Too Big To Fail: The Paradox of Groundwater Governance*” aims to understand and address the paradox at the heart of the groundwater governance challenge in order to elevate the need for investing in and promoting proactive reforms toward its management. The project examines the impediments to better governance of groundwater, and explores opportunities for using groundwater to help developing countries adapt to climate change. The case study focused on the national, state and local levels. At the national and state levels, it analyzed the policy, legal, and institutional arrangements to identify the demand and supply management and incentive structures that have been established for groundwater management. At the local level, it assessed the operations, successes, and constraints facing local institutions in the governance of a number of aquifers within peninsula India, on the coast and on the plain of the Ganges river valley.

The situation with groundwater use in India is well described in a number of recent publications, such as “Deep Wells and Prudence”¹⁸ and *Taming the Anarchy*¹⁹ and several publication of *GWmate*²⁰. The problems of over-abstraction in India in both rural and urban settings are well known, with aquifers being depleted in the hard rock terrain of peninsula India, in the coastal regions, and in the sedimentary aquifers of the Ganges valley. This report¹⁷ also draws attention to the threat from pollution – long before they are depleted, some aquifers will become unusable because of industrial pollutants,

¹⁸World Bank. 2010. *Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Exploitation in India*. Washington, DC: World Bank.

¹⁹Shah, T. 2009. *Taming the Anarchy*. Washington DC, and Colombo, Sri Lanka: Resources for the Future, and IWMI.

²⁰Strategic Overview Series World Bank. Accessible at www.worldbank.org/gwmate.

human wastes, and agricultural chemicals. These problems are not unmanageable. The report gives examples where far-sighted village councils have taken charge of over-abstraction and brought it under control; where polluting industries have reformed their practices and now use their waste streams for productive purposes; and where one municipal corporation has taken the brave step of attempting to introduce volumetric charging in order to introduce some demand management and to accumulate sufficient finances to develop additional sources of supply.

In spite of the anarchy, in groundwater development in India, this report¹⁸ implicitly believes that the current problems with groundwater management can be overcome if governments work with groundwater users rather than attempting to regulate and control them; if technical solutions are used judiciously where there are clear net benefits; and if demand management is implemented where opportunities arise. This will be far from easy – it will require a major shift in culture from the top. Barriers between both national and states bureaucracies and between the powerful water using sectors (irrigation, industry and urban development) will need to be removed. Water agency staff will face a major cultural shift from engineering based supply approaches to water resources protection, wherein they share responsibility and information with communities of groundwater users. Water users themselves will need to gain a better understanding of the shared nature of groundwater and the need to protect it from pollution if they are to be successful managers. All this will require a completely different approach to governance.

Published volume of National & International seminars and symposium were referred for analyzing the opinion of experts, technocrats, NGOs, planners etc. on prevailing legal and institutional framework of ground water governance in India.

The data and information referred or used are dully acknowledged.