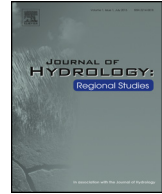




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Shaping the contours of groundwater governance in India



Himanshu Kulkarni^{a,*}, Mihir Shah^{b,1}, P.S. Vijay Shankar^{b,2}

^a Advanced Center for Water Resources Development and Management, 4, Lenyadri Society, Sus Road, Pashan, Pune 411021, India

^b Samaj Pragati Sahayog, Bagli 455227, Madhya Pradesh, India

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ABSTRACT

Study region: India.

Study focus: India's groundwater dependence and the crises of depletion and contamination of groundwater resources require the development of a robust groundwater dependence framework. Understanding the challenges of developing a groundwater governance framework for regions of extensive groundwater development versus relatively less-developed areas of groundwater development is important. The groundwater typology is a function of both, the hydrogeological aspects of groundwater and the socio-economic milieu that defines dependency on the groundwater resource, which is significant across users and uses in India. An interdisciplinary perspective is important while managing groundwater resources in India and helping establish groundwater governance.

New hydrological insights for the region: Participatory forms of groundwater management, using 'aquifer-based, common pool resource' approaches have begun to find their way into the practices and policies dealing with groundwater in India. Participation at all levels is important in management decisions as well as in the development of a governance framework, knowing that groundwater development in India has been 'atomistic' in nature. Developing a regulatory framework that is supportive of 'protection' of the resource as well as 'good practices of participatory groundwater management' is essential in groundwater governance. Interdisciplinary 'science' must form the medium of promoting both groundwater management and governance instead of using it in the largely business-as-usual approach to groundwater resource management that remains 'infrastructure' based, 'supply-side'.

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* Corresponding author. Tel.: +91 20 25871539.

E-mail addresses: acvadam@gmail.com (H. Kulkarni), mihir.shah@nic.in (M. Shah), viju28@gmail.com (P.S. Vijay Shankar).

¹ Former Member, Planning Commission, Government of India. Tel.: +91 271 275757.

² Tel.: +91 271 275757.

1. Introduction

Innovative processes to produce food and provide for drinking water by millions of farmers from different parts of the world has been aptly labelled ‘silent revolution’ of groundwater development (Fornés et al., 2007; Llamas and Martinez-Santos, 2005). The trajectory of groundwater development in South Asia, labelled as ‘atomistic’ development by millions of farmers, is a clear example of this revolution (Shah, 2009). India is a groundwater-dependent nation. Even at conservative estimates, 85% of rural drinking water in India is derived from wells (The World Bank, 2010). With nearly 88% of the total annual groundwater drawn from all the wells in India being used for irrigation (IDFC Foundation, 2013), we estimate that nearly 700 million Indians who live in Indian villages, almost entirely depend upon groundwater for their daily needs. The growing demand from India’s towns and cities and by the industry has meant increased groundwater use not only from within urban agglomerations, but also the export of water from adjoining villages (Janakrajan, 2008). Nearly 48% of the urban water share is derived from groundwater (Centre for Science and Environment, 2012).

Groundwater overexploitation maybe defined as a situation in which, for some years, average abstraction rate from aquifers is greater than or closer to the average recharge rate (Custodio, 2002). The national-level groundwater assessment in India that deals with estimates of groundwater use in proportion to annual replenishment of groundwater, has been made possible through a methodology developed initially by the Groundwater Resources Estimation Committee (Ministry of Water Resources, 1997) and revised later in (Ministry of Water Resources, 2009). Central Ground Water Board (CGWB), the apex national agency dealing with the national-level groundwater assessment indicates through these assessments how the area under groundwater depletion has increased since 1997 (Table 1). A comparison of the CGWB’s assessments of 1995, 2004 and 2009 shows that the groundwater crisis has deepened until recently, although there appears to be a marginal improvement between 2004 and 2009 (Table 1).

However, the national groundwater assessment is indicative of the degree of groundwater usage when compared to the annual availability of groundwater resources. It does not include the dimension of groundwater quality. Indicative data drawn from various sources – (Krishnan, 2009; Kulkarni et al., 2009a,b; Central Ground Water Board, 2010; Vijay Shankar et al., 2011) – shows that groundwater contamination has emerged as a threat to drinking water security in many parts of the country. Groundwater exploitation and contamination have emerged across a diverse range of agro-climatic and hydrogeological conditions in India, with nearly 60% of the districts in India showing evidence of either depletion or contamination or both.

Even at a global level, socio-economic dependency on groundwater cuts across classical divisions of ‘arid, semi-arid and humid’ regions (Burke and Moench, 2000), highlighting the need to tailor responses to situations under which groundwater problems emerge. Moreover, the gap between society and science-technology is larger in the case of groundwater than surface water resources because of the relative ‘newness’ of intensive groundwater use (Llamas et al., 2006).

Three messages are highlighted under United Nations Educational Scientific and Cultural Organisation’s (UNESCO’s) global initiative on groundwater governance³ summarising key messages from its global governance programme as:

- While groundwater use has increased manifold, with major socioeconomic benefits, little attention has been given to its governance and to resource conservation and protection.
- Rather widely, groundwater has in effect been abandoned to chance, intensifying extraction and increased pollution.
- Good groundwater governance is required to provide the right environment to facilitate sustainable management.

³ http://www.groundwatergovernance.org/fileadmin/user_upload/groundwatergovernance/docs/general/GWG.updated_flyer_web.pdf.

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