

Integrated Water Resource Management

A Response

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By questioning the applicability of integrated water resource management (IWRM), Tushaar Shah and Barbara van Koppen in their article (August 5, 2006) reveal their thin understanding of the complex water management scenario in India. The authors make a proposition that formal mechanisms of governance are better equipped for IWRM packages. In this paper, I argue that IWRM in its current package has been dismal worldwide. Further, I argue that formal and informal mechanisms both have their advantages and disadvantages, and it is the combination of these that contributes towards integrated water resource management.

Ready-made Global Data

The authors examine the ready-made global data base to draw a neat relationship between water poverty and overall economic development to justify their presumption that lower the level of economic development, the more informal is the water economy. First, are these readymade global data bases comparable? The authors consider water access poverty (WAP) as the real indicator of water poverty. The three variables used to derive the values for the variable WAP are: (i) percentage of population with access to clean water; (ii) percentage of population with access to sanitation; and (iii) percentage of population with access to irrigation adjusted by per capita water resources. These indicators cover services provided by formal mechanisms, and do not capture those provided by informal mechanisms, especially in a country like India. As the authors themselves point out “nearly 80 per cent of India’s rural households surveyed self-supply their domestic water requirements” (ibid: 3416). The situation is similar for

sanitation and irrigation services. With formal and informal mechanisms both providing services in India, conventional indicators, like the above, do not capture the complete picture of service provision. This questions the comparability of a ready-made global data base.

The water economy in any nation is served by both formal and informal mechanisms, the contribution of each varies depending on the nation’s history. For instance, nations such as the US and Australia were colonised by Europeans. In these colonised lands, the informal mechanism of governance by the native population was ignored and discriminated against the colonisers to reinforce their authority in a written formal form. This is in contrast to nations, such as India, where mechanisms to govern water are largely socially embedded in nature. With independence came a statutory written form of governance. However, this does not justify the author’s presumption that formal mechanisms of governance help in orderly functioning of IWRM in the industrialised countries, and the highly informal nature constraints developing countries from functioning in an orderly manner (ibid: 3415). First, IWRM has been dismal¹ worldwide [Biswas 2004], whether it is the US, Australia, South Africa or India. Though a comprehensive and cross-country evaluation of community-based IWRM is lacking, large-scale and comparative evaluation studies within nations are enough to draw a negative picture in both the developed and developing worlds. A snapshot of watershed initiatives in the western US reveals inadequate attention or funding from government, inadequate interagency coordination, lack of public involvement and inadequate management laws being the major concern to IWRM [Kenney et al 2000]. Singleton (2002), examining watershed programmes in the

US west identifies a “good, bad and ugly” face to the implementation of IWRM. The situation in Australia is no different. Examining IWRM in Australia, studies [Bellamy and Johnson 2000; Bellamy et al 2002] have raised concerns regarding the balance of efforts between planning and implementation. Fullerton (2001) demonstrates how juggling interest of powerful groups in achieving their own needs has mismanaged the Murray-Darling basin in Australia. Examining watersheds in both Australia and the US, Margerum [Margerum 1996 and 2002] concludes actors having difficulty in implementing consensual decisions due to lack of strategic direction, limited public participation and lack of actor’s commitments.

Shah and van Koppen in their article idealise South Africa’s water reforms as a model in an emerging economy context. Their assessment of South Africa as a model emerges from its ability to generate around two billion rand/year as income from water tariffs.² In spite of the fact, they recognise that “only two fledgling catchment management agencies (CMAs) have been formed so far with a far more modest role than was originally envisaged” [Shah and van Koppen op cit 3418]. India has followed these nations in the Parthasarthy Committee report [GoI 2006] to set up layers of watershed authority structures from the national to the watershed level, early this year. It is often presumed by the authors and by the committee that the “IWRM package” once formulated by setting up various structures can guide all players in the sector, promote coordinated action, enhance river basin planning and management, help in efficient allocation and usage, and make “water everybody’s business” [Shah and van Koppen op cit 3413-14]. Such linear assumptions fail to recognise the complex reality of water resource management, leading to potential pitfalls in the contemporary “IWRM package”.

IWRM Package

Water resources are integrated at various levels by diverse actors in space and time. A diagnosis of integration reveals various problem areas [Saravanan 2006]:

(1) There is no linear relations between policy-implementation, rather they are in ebb and flow, with policies contested, multiple and overlaid; (2) The management region is socially constructed and dynamic, the river basin is not necessarily the appropriate scale for management [Lane et al 2006]; (3) Participation of actors is diverse, not necessarily communicative and collective; (4) Knowledge of water resource management emerges through constant interaction among actors as part of their daily struggle with the environment and the prevailing rules; (5) Functional attributes that determine integration are diverse in the social realm of resource management. These dimensions only reveal the complex nature of integration involved in water resource management that are not close to the current normative and ideological package. In this complexity, the normative and idealistic concept of "IWRM package" that focuses on promoting collective and consensual management of natural resources by bringing stakeholders to participate within a watershed are prone to potential pitfalls. One way to move forward is to understand the process of integration of both formal and informal mechanisms of the water economy. This will help in identifying opportunities to facilitate the process. The interactions between formal and informal mechanisms of water economy are very well-illustrated by a number of studies [Bruns and Meinzen-Dick 2000; Mehta et al 1999; von Benda-Beckman et al 1997] in different parts of the world. Here the integration represents a complex system [Railsback 2001] that consists of four characteristics: (i) they are open; (ii) they are composed of diverse mechanisms; (iii) they interact in a non-linear fashion and frequently have response delays and feedback loops among them; and (iv) they exhibit heterogeneity in both time and space. In spite of complexity, they characterise emergent properties, multi-scale interactions, unexpected behaviour and self-organisation capacity, which all make them a "complex adaptive system".

In this complex adaptive water economy, diverse actors ranging from international agencies to individuals have evolved both formal and informal mechanisms to govern the water economy [Saravanan 2006]. No one mechanism is superior to other. In fact, each of them has advantages and disadvantages. For instance, formal mechanisms are better positioned to bring

in macro social and physical changes and values, they are rigid, have high transaction cost, low pay-offs and bring in commonly prevailing rules in a particular jurisdiction. The informal mechanisms are better positioned to reflect social values that cut across administrative jurisdictions, have less transaction cost, high pay-off and are easily adaptable to growing uncertainty in water economies. It is a myth for authors to presume that it is only a formalised water economy that can be externally catalysed, while informal economies are not "ripe" for IWRM.

The discussion here primarily argues that it is not as if India is ripe for IWRM, rather IWRM in its current normative and ideological packages has not worked well globally. Finding a way out for sustainable water resources management requires researchers to evolve adequate conceptual and analytical tools to understand the complex process of integration rather than succumb to ideological and normative presumptions. [\[EW\]](#)

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Notes

[The author acknowledges the scholarship provided by the International Postgraduate Research Scholarship and University of Queensland, and the International Water Management Institute (IWMI) doctoral fellowship in 2004 for the field research.]

- 1 Though the concept has recognised the importance of communities and their involvement in resource management decisions, in the process brought them closer to government, promoted conceptual understanding for sharing of resources and building consensus on resource management problems [Saravanan 2002].
- 2 Olifant basin is cited as one of the most developed basins in South Africa, what authors fail to acknowledge or even recognise is the role of International Water Management Institute (IWMI) and other international agencies in facilitating the basin development by pumping in money and research activities for years.

References

- Alerts, G J (forthcoming): 'Institutions in River Basin Management: A Synthesis of Lessons in Developing Cooperative Arrangements' in G J Alerts and G L Moigne (eds), *Integrated Water Management at River Basin Level: An Institutional Development Focus on River Basin Organisations*, World Bank, Washington.
- Bellamy, J A and A K L Johnson (2000): 'Integrated Resource Management: Moving from Rhetoric to Practice in Australian Agriculture', *Environmental Management*, 25(3), pp 265-80.
- Bellamy, J A, H Ross, S Ewing and T Meppem (2002): 'Integrated Catchment Management: Learning from the Australian Experience for

- the Murray-Darling Basin', CSIRO, Canberra, Australia.
- Biswas, A K (2004): 'Integrated Water Resources Management: A Reassessment', *Water International*, 29(2), pp 248-56.
- Bruns, B R and R S Meinzen-Dick (2000): 'Negotiating Water Rights: Implications for Research and Action' in B R Bruns and R S Meinzen-Dick (eds), *Negotiating Water Rights*, International Food Policy Research Institute, Washington and Vistaar Publications, New Delhi.
- Fullerton, T (2001): *Watershed: Deciding Our Water Future*, ABC Books for the Australian Broadcasting Corporation, Sydney.
- GoI (2006): *From Hariyali to Neeranchal: Report of the Technical Committee on Watershed Programmes in India*, Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi.
- Kenney, S D, I McAllister, H C William and S J Peckham (2000): *The New Watershed Source Book: A Directory and Review of Watershed Initiatives in the Western United States*, Natural Resources Law Centre, University of Colorado School of Law, Boulder.
- Lane, M B, G McDonald and T Morrison (2004): 'Decentralisation and Environmental Management in Australia', *Australian Geographical Studies*, 42 (1), pp 103-15.
- Margerum, R D (1996): 'Integrated Watershed Management: Comparing Selected Experiences in the US and Australia', Discussion Paper No 6, Centre for Water Policy Research, Armidale NSW.
- (2002): 'Collaborative Planning: Building Consensus and Building a Distinct Model for Practice', *Journal of Planning Education and Research*, 21, pp 237-53.
- Mehta, L, M Leach, P Newell, I Scoones, K Sivaramakrishnan and S A Way (1999): 'Exploring Understanding of Institutions and Uncertainty: New Directions in Natural Resource Management', IDS Discussion Paper, Sussex, UK.
- Railsback, S F (2001) 'Concepts from Complex Adaptive Systems as a Framework for Individual-based Modelling', *Ecological Modelling*, 139, pp 47-62.
- Saravanan, V S (2002): 'Institutionalising Community-based Watershed Management in India: Elements of Institutional Sustainability', *Water, Science and Technology*, 45(11), pp 113-24.
- (2006): 'Integrated Water Resource Management: Actors and Rules Negotiating Water Management in Indian Himalayas', PhD thesis, submitted to School of Geography, Planning and Architecture, University of Queensland, St Lucia, Brisbane, Australia, July.
- Shah, T and B van Koppen (2006): 'Is India Ripe for Integrated Water Resources Management: Fitting Water Policy to National Development Context', *Economic and Political Weekly*, 41(31), pp 3413-21.
- Singleton, S (2002): 'Collaborative Environmental Planning in the American West: The Good, the Bad and the Ugly', *Environmental Politics*, 11(3), pp 54-75.
- von Benda-Beckman, F, von K Benda-Beckman and J H L Spiertz (1997): 'Local Law and Customary Practices in the Study of Water Rights' in R Pradhan, von F Benda-Beckman, von K Benda-Beckman, J H L Spiertz, S S Khadka and A K Haq (eds), *Water Rights, Conflicts and Policy*, International Water Management Institute, Sri Lanka and Kathmandu, Nepal.