

BOOK REVIEW

The water, energy and food security nexus: lessons from India for development, by M. Dinesh Kumar, Nitin Bassi, A. Narayanamoorthy and M.V.K. Sivamohan, New York, Routledge, 2014, ISBN: 978-0-415-73303-8 (hbk); ISBN: 978-1-315-84868-6 (ebk)

A host of interventions at the global and national levels, including the World Economic Forum's Water Initiative, have helped draw the world's attention to the challenge of water security and more importantly its implications for other areas of global concern such as food, land, energy and the related natural resources that are at the heart of human development. That any risk arising out of imbalances in the availability of these resources makes the developing world most vulnerable cannot be overemphasized. Literature abounds on the subject of managing these risks, but researched insight highlighting public policy options for holistic governance of the water, energy and food nexus remains scarce in the context of developing countries. This edited book affords practitioners, policy makers and academics a ringside view of the issues impacting the security of the above resource chain by bringing together inputs that are seemingly diverse but blend well into an Indian case study.

Beginning with an analysis of the Gujarat agricultural growth story and the water management interventions under the Mahatma Gandhi National Rural Employment Guarantee Act of 2006 (MGNREGA), the book incorporates at least half a dozen chapters that address the impact of water and energy on agricultural production and how the policy space leaves little room for piecemeal reforms in any one subsector. The various flagship programmes of the Union Ministry of Agriculture for enhancing production levels of staple food crops could fare better if project designs at the district level demonstrated stronger linkages with energy and water resource policies. While the benefits of irrigation in enhanced agricultural production and productivity are widely recognized, evidence for the deeper impact of irrigation as measured by irrigated area per thousand rural population in alleviating rural poverty is compelling. Utilizing data available from the Planning Commission of India for eight time points (1973–74, 1977–78, 1983, 1987–88, 1993–94, 1999–2000, 2004–05, 2009–10) across 14 major states, the chapter on irrigation development makes a strong case for the continued relevance of irrigation in driving down rural poverty.

With the nexus between water and agricultural growth and its role in reducing rural poverty well articulated, the book offers interesting insights into raising water productivity through reforms in the energy sector. Pro rata pricing of electricity and jointly managing the supply of electricity with groundwater draft for irrigation are shown to achieve equity, efficiency and sustainability of groundwater use while cushioning the state exchequer against budgetary support of loss-making state-owned energy utilities. The underlying assumption that farmers would be motivated to use electricity more efficiently and in the process rationalize water use for irrigation through both physical and technological interventions, if marginal pricing for energy consumption were implemented, is based on empirical studies from three regions of the country: North Gujarat, eastern Uttar Pradesh and South Bihar. Besides improving the energy economy, the study bears potential for sustaining groundwater resources, over-exploitation of which has thrown up alarming

signals of falling water tables in many regions, such as Karnataka, Maharashtra and Gujarat, that depend heavily on groundwater for crop irrigation and livestock farming.

The jockeying among political parties to woo the farmers' lobby for their electoral votes has rendered it difficult for governments in power to raise power tariffs, even as a measure of partial recovery of the cost of power supplied to the agriculture sector, in all the major states of the country. The lack of this political will stands starkly exposed as the state governments of Punjab and Andhra Pradesh have had to resort to massive cuts in power supply to agriculture in a bid to contain the burden of subsidies. They do not seem to realize that power cuts hurt the farmers more than any attempt at partial recovery of the cost of power supplied to agriculture. The chapter dealing with the impact of rising diesel prices on both well owners and water buyers in diesel-well commands argues very cogently that the rise in the cost of irrigation water due to the recent hike in prices of diesel fuel has been offset at the level of diesel-well irrigators and water buyers by adopting irrigation-efficiency improvements on farm and also changing the cropping patterns and farming systems such that better returns per unit consumption of water are realized. The efficiency gains have been impressive with reference to both crop- and livestock-based farming systems. This study should inspire confidence among policy makers that farmers are more willing to invest both labour and time to improve water-use efficiency when confronted with a higher cost of irrigation arising out of increase in the price of diesel fuel.

If farmers in diesel-well commands can cope with rising prices for fossil fuels with efficiency gains that also include replacement of old gas-guzzling pump-sets with more operationally efficient ones, there are two lessons to learn from a public policy point of view. First, political executives can be persuaded to raise electricity tariffs to a benchmark level that is comparable with the cost of irrigation in diesel-well commands. Second and more important, if the quality of power supply improves with better cost recovery, there is an ecological incentive by way of reduced carbon footprints as more farmers shift from diesel to electric pump-sets. The study estimates that the roughly six million diesel pump-sets for water supply to agriculture in the country annually emit around 1.75 million tonnes of carbon. If policy initiatives could help reverse the rural de-electrification – replacement of electric motors by diesel motors – that is happening in most eastern parts of India due to the decline in the quality of power supplied to agriculture, the potential for checking carbon emissions is obvious. An accompanying case study on energy policy in West Bengal suggests that small and marginal farmers are more likely to benefit from subsidized micro-diesel engines than from free power connections, provided that the subsidies are targeted fairly and objectively. In this regard, the study differs from some of the recent research articles on the region (IWMI, 2012; Mukherjee, Shah, & Banerjee 2012).

Undoubtedly, the book brings out the nexus between water, energy and food security through a collection of independently authored chapters that allow readers to pick and chose their readings according to their interest and academic inclination. The opening and concluding chapters by the editorial team provide ample guidance to the thematic focus of each chapter. The case studies too can be quite stimulating for both academic and policy-oriented readers. The case study of Gujarat not only amplifies the nexus between water, energy and agriculture growth but also briefly discusses the benefits of import of surface water from the Sardar Sarovar Project to the water-scarce, land-rich areas of North Gujarat. While the infrastructure for pumping surplus water from the southern districts of Gujarat to the northern region has not fully taken shape yet, and the fuller cost of water import has yet to be objectively assessed, the message from the case study is clear: there are limits to groundwater exploitation and more outside-the-box solutions are needed for irrigating crops in semi-arid and arid regions.

Similarly, the case studies relating to the design of water supply surveillance systems through construction of situation-specific vulnerability indices and the evaluation of techno-institutional models developed for managing rural water supply in Maharashtra State are quite illustrative. They serve to sensitize the policy maker to the need to weigh the benefits from decentralized water supply schemes against issues of resource sustainability, besides placing emphasis on capacity building at all levels of the service delivery system. Readers will appreciate that the concept of virtual water trade introduced in this volume is very germane to the embryonic debate on leveraging the global agricultural commodity trade to achieve water security. The roots of this debate lie in international trade theory and the concept of core competence familiar to the world of business strategy. How practical a proposition is it for a country to depend for water security on virtual water embedded in commodity trade driven by investor-oriented enterprises, whether from the Northern or the Southern Hemispheres, is a matter not merely of water security but also of trade policy in terms of the impact that huge importing nations like India can have on global commodity markets.

The chapter that discusses ways to improve the effectiveness of the MGNREGA in the context of different typologies to guide rural water management interventions appears somewhat divorced from the basic spirit of the legislation that governs the rights-based wage employment programme. While much has been written about the performance gaps in the implementation of the MGNREGA across the country and the array of corrupt practices that have been indulged in by project functionaries at various levels, the authors discuss the conceptual flaws in the design of the scheme. However, it must be appreciated that the act has empowered the primary-level panchayat raj institutions, namely gram panchayats (village-level institutions of local self governance). That efforts at convergence of the MGNREGA with various other schemes (including those for water and soil conservation to generate shelves of projects to meet wage seekers' demand for work) have met with serious limitations is well recognized. The primary objective of the scheme is to provide a social safety net for the poorest of the poor, at the bottom of the rural socio-economic pyramid, and progress in water management under the MGNREGA can only be defined by the competencies that gram panchayats can bring to the table. In summary, the book is valuable to readers keen to explore the water, energy and food nexus and how these three resource platforms need to be approached holistically in the course of policy making.

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