

Ruth Meinzen-Dick and Mark Svendsen (eds). *Future Directions for Indian Irrigation: (Research and Policy)*. Washington, D. C.: International Food Policy Research Institute. 1991. xiv + 333 pp.

The editors of the book have divided their subject matter into four broad categories. The first category deals with irrigation development in India, focusing on important issues confronting the use of water resources and on alternate scenarios for future development. The second category examines the improved performance of the existing irrigation system and emphasizes the need for improvement. The third part highlights the issues relating to the process and sustainability of managerial improvement in system management. The last category pinpoints the special problems related to irrigation in Eastern India.

The book comprises twenty chapters, with a brief chapter of introduction and four others that present overviews of each of the categories. Fourteen of the remaining chapters cover the main body of the text, with a concluding chapter on a model that promises to resolve the irrigation issues. The overview before each category is quite lucid and often critical, leaving little room for review. However, brief comments are presented for the interested readers.

The third chapter in the first category deals with critical issues facing Indian irrigation; issues like small versus large irrigation projects and the delays in their construction, their use, quality, and improvement, the productivity and pricing of water input, and equity and environmental concerns are not new. These problems have been the subject of academic discussion for the past three decades, and are those generally faced by any surface irrigation system. Although this chapter presents a scholarly treatment of the subject, yet it offers no new approaches to deal with these irrigation issues. Apart from innovative approaches and solutions, there is a demonstrated need for a strong political will to tackle the irrigation problems of India and other countries of the sub-continent.

The fourth chapter deals with a technical perspective of the macro planning of the water sector. The analysis paints a gloomy picture of the existing gaps, the lack of adequate planning of irrigation projects, and government apathy towards streamlining the planning process. The analysis reveals that planned targets are close to the actual resource use, i.e., gross irrigated area deviates only 4-5 percent from the gross cropped area. However, as the author points out, there are major flaws in the existing water statistics. Two other important highlights of the chapter are the conjunctive planning of ground/surface water development and the yawning gap between the potential and the actual use of water input. The suggestion of conjunctive planning is a step in the right direction which should be followed in all water development projects in India and other countries having irrigated agriculture. The simulation model described in the text needs empirical validation. There is a

continued need for mining the aquifer for a balanced use of ground and surface water.

The last chapter of this part deals with future sources of growth in Indian irrigated agriculture. The important conclusion drawn in this analysis is that future growth in Indian agriculture would come mainly from the optimal use of irrigation water rather than area expansion. Optimal use includes the operational efficiency and performance of the surface irrigation system, as well as conjunctive and improved extraction of ground water, and the allocative efficiency of water and its interaction with inputs coupled with improved irrigation technologies. The development of water markets would help avoid the utilization gap of this vital resource. However, institutional arrangements need to be made to regulate the water markets and check the over-exhaustion of the aquifer.

The second part of this book focuses on the improvement of system performance. The five chapters (7–11) presented in this section discuss the concept, the indicators, and the measures to judge the performance and efficiency of the system. The analysis in Chapter Seven is based on four case studies (Rajasthan, Andhra Pradesh, Tamil Nadu, and Gujarat) of the water allocation strategies. The allocation strategies include rotational supplies by branch command, rotating wet and dry crops by year and season, localizing wet crops, and restriction of crop choice and irrigation intensities. All these strategies entail attendant concerns of equity and efficiency. The irrigators have the least choice in a supply-led resource base, which in turn is not based on crop water requirements.

Chapter Eight considers the experience of improving the main system management through an improvement of the physical structure, water management, and augmentation of system supplies. The chapter that follows focuses on coping with drought and the role of reservoir management. But the observations and conclusions are tentative, demanding further research. The text of these chapters brings out good researchable topics and the results of the case studies can be replicated elsewhere in the subcontinent. Chapter Ten presents a unique analysis of economic linkages with irrigation sources and highlights the beneficial role of canal seepage. However, the model is based on naive assumptions to assess the impact of ground water and canal seepage on farm productivity. Canal seepage causes externalities such as waterlogging and salinity that need to be accounted for. It is difficult to discern whether indirect benefits of canal seepage outweigh the diseconomies of the twin problems of waterlogging and salinity. The final chapter of this section develops a powerful simulation model to demonstrate the benefits of the conjunctive use of tank and well irrigation. Again, the results of such a model based on poor data could lead to wrong conclusions.

The third category comprises three chapters. Chapter Thirteen reviews the recent experience of management interventions, and their sustainability, in major

and medium surface irrigation systems in India. The emphasis in such efforts has been more on strategies of improvement beyond the irrigation outlets rather than on the main system hardware. The analysis in this chapter presents the sustainability of four specific interventions, namely, on-farm development works, rotational water supply, farmer organizations, and organizations managing the public irrigation systems. Chapter Fourteen discusses current policies of irrigation financing and cost recovery. An evaluation of various methods of water charges and collection methods is also undertaken. The chapter that follows looks at the performance of an autonomous service body (The Kerala Water Authority) which is organized on principles different to those of a typical irrigation department. The partial evidence on these issues does not lead the policy-makers to arrive at firm conclusions and make appropriate decisions. I am in agreement with the editors, in Chapter Twelve, as they suggest further research in the areas mentioned in this category as well as in the earlier chapters.

Part IV identifies needs and the potential for ground water development and conjunctive use of water in eastern India. The first two chapters establish the evidence that the eastern region lags behind the rest of India in agricultural production and other economic indicators. This has happened in this well-endowed region despite plentiful ground water and other natural resources, which are the *sine qua non* for development. Incidentally, the same situation prevails in other regions of the subcontinent. Chapter Nineteen of this category presents some empirical evidence from Gujarat in western India, pinpointing a strategy for developing conjunctive use of ground water in the command of surface irrigation systems.

The final section of the book presents a simulation model which could capture the aggregate supply and demand effects of system level irrigation investment. However, the model is still at a conceptual stage which needs validation and empirical testing.

The book under review covers a wide range of topics in surface irrigation and ground water development. The material presented in the book will provide the students of water resource economics with useful insights and expose them to the problems confronting the irrigation system in eastern India and other countries of the subcontinent in the next century. It must be said, though, that it offers to the policy-makers very little that is new.

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