

## Book Review

### **Water for Sustainable Development in the Twenty-first Century**

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*Bombay, India, Oxford University Press, 1993, 273 pp., hardback*

The title of this book is identical with that of the VII World Congress of IWRA, held in Rabat, Morocco, May 1991. There were 700 participants from 55 countries. Of the 200 papers presented at the congress, 24 were selected for publication in this book. This was an achievement, considering the wide scope and complexity of today's water problems, thematically as well as regionally.

All of the papers dwell on this complexity and plead for more coordination and more holistic and multidisciplinary approaches; however, use of such approaches is often difficult owing to contrasting viewpoints, e.g. between environmentalists and developers.

The chapter 'Environment and development: urgent need for a water perspective' by Malin Falkenmark, of the National Science Research Council, Sweden, brings out that reconciliation of these differing viewpoints is particularly urgent in the low-income developing countries. The maps in this chapter show that these countries are mainly concentrated in tropical or arid zones where water—either too little or too much—is a key problem. Falkenmark goes on to show that western thinking may not be appropriate in these countries where water scarcity results in food scarcity, making water-pollution abatement of comparatively lesser importance.

Twelve of the 24 chapters have a regional focus, of which 10 deal with water-resource issues in developing countries. There are three informative chapters on Egypt describing current major programmes for agricultural drainage and groundwater development; also the probable effect of global warming on evapotranspiration. One of these chapters was co-authored by M. Abu-Zeid, currently President of IWRA. For a broader picture of water-resource issues concerning the Nile River basin, this reviewer recommends, at least as a start, a chapter in a more recent book in this series: *Waters of the Middle East—from Euphrates–Tigris to Nile*.

Two chapters deal entirely or mostly with sub-Saharan Africa, which, from a development point of view, is the world's most critical case. The first of these chapters, by Babacar N'Diaye, President of the African Development Bank, describes the high annual loss rate of African tropical forests (3.6 million ha or 5.2%) and the low proportions of clay and organic matter in African soils, making them particularly susceptible to erosion. He stresses that what is desperately needed is strengthening of the basic institutional setting.

The second of these chapters, by R. A. Andersen of the World Bank and W. R. Rangeley, consultant to the World Bank, has the title 'Prospects for development of sub-Saharan rivers'. Reasons for poor performance of existing

River Basin Organizations are given which, by and large, may be characterized as being of an institutional nature or due to lack of political will. In connection with this topic, this reviewer recommends another recent reference: *Irrigation in Sub-Saharan Africa—The Development of Public and Private Systems*, World Bank Technical Paper No. 123, by S. Barghouti and G. Le Moigne, May 1990. This paper makes a strong plea for basically privately developed small-scale irrigation which would, however, be supported by agricultural credits from banks (either government or private) and by government-provided infrastructure (for electricity and for road transportation).

Three chapters deal with sustainable development related to water in developed countries: Japan, The Netherlands and Australia. Situations are described illustrating how various environmental needs have been reconciled with other needs such as urban development and preservation of wetlands and as such have relevance for the developing countries. However, as cautioned by Falkenmark, differences have to be considered such as water shortages in arid and semi-arid countries with high rates of population growth.

Countering a propaganda war launched by some environmentalists against dams, a chapter by J. A. Veltrop of the consulting engineering firm Harza defends the utility of dams for water supply and hydropower. It will seem practically obvious to water-planning professionals that all that is needed is objective analysis taking into account positive as well as negative benefits. With such an orientation, there still remain important sites in the world for dams that will provide substantial and adequately sustainable benefits. A case in point is that of the Amazon region in Brazil, described in a chapter by four professors of the University of Brasilia, involving a reconciliation of positive benefits from hydropower generation and navigation vs negative benefits from resettlement of native peoples and losses of tropical rainforest and of animal habitats.

A chapter by G. A. Schultz, a German hydrologist, describes the role of modern methods of gathering data for river basin planning including use of satellites and telemetering.

Four chapters describe water planning exercises in Asia. One, by a Japanese planner, gives the results of a preliminary examination of a long-discussed super-scale project for transfer of water from the Brahmaputra River to the Ganges River. From a table that presents merits and demerits of such a project, it appears highly doubtful whether it could proceed in the foreseeable future.

In a second chapter, exploitation of groundwater appears favourable in various parts of Asia as brought out by A. Das Gupta of the Asian Institute of Technology, Bangkok. Planning is, however, needed based on adequate exploration and on monitoring to safeguard water quality.

A third chapter by S. Y. Kulkarni describes the socio-economic impacts of irrigation for 150 villages in the Mula Project in the State of Maharashtra, India. The important role of local banks for rural development, especially for small-scale irrigation, is described in a fourth chapter, by R. L. Dewan, a director of the Oriental Bank of Commerce, Bihar, India. Another chapter, by M. Curley, proposes 'A World Water Resources Bank' with the aim of promoting small-scale irrigation and village water supplies. This is an idea that could be considered by the international financing agencies if they have not already done so, for example, through their loans for agricultural credit and for village water supply.

The deterioration of the Aral Sea and surrounding area has become world

famous as an illustration of water development without regard for environmental concerns. A chapter by Professor G. N. Golubev, of Moscow State University, describes remedial works being planned.

According to the table of contents, of the 24 chapters, 11 deal with water resources policy. However, this reviewer is inclined to place only six chapters in this category. One, entitled 'Biomass strategy for watershed development', makes an eloquent plea for increased consideration of tree and fodder crops, both suitable for many semi-arid or sub-humid parts of the tropics. The chapter, co-authored by J. Lundquist, K. R. Datye and M. Falkenmark, in referring to conditions in India, strongly recommends consideration of granting water rights to all members of a community—an idea expressed by King Hassan II in the Congress's opening statement when he said "all the countries in the world have to concede that water belongs to all and must be shared". It would be up to the community to work out how granting of water rights could be accomplished on an equitable basis including a determination of how land rights could be separated from water rights.

The other five chapters are: 'Water strategies for the twenty-first century' prepared by the IWRA Committee on Water Strategies; the chapter by Malin Falkenmark, already described; a chapter containing the Presidential Address by Asit K. Biswas, who is also one of the editors; a chapter entitled 'Policies for water resources management in arid and semi-arid regions', by M. T. El-Ashry, Director, Environment Dept, World Bank; and a chapter entitled 'Water policies for sustainable development' by M. M. Hufschmidt, Senior Consultant, Environment and Policy Institute, East-West Center, Honolulu. From these five chapters, key points, all concerning water-resource planning and implementation, are summarized as follows:

- Approaches to planning and implementation must be integral, multisectoral and multidisciplinary.
- Relatively speaking, technological problems are far less difficult to solve than political, institutional and social ones.
- Water planners need to understand better the differences between the situation and needs of water-resource development in western developed countries as opposed to tropical and subtropical undeveloped countries where (a) quantity rather than quality is presently of greater importance and (b) most of the population is engaged in agriculture but landholdings are very small.
- Serious environmental effects resulting from irrigated agriculture (especially salinization) and from urban pollution (especially contamination of ground-water) need more attention than heretofore.
- Environmental impact assessments often overstate negative effects of development and understate the positive effects, or they fail to consider modifications to development projects that can reduce the negative effects.
- Water pricing, especially for irrigation water, while politically sensitive, has to be introduced more widely. Privatization, best attainable with small-scale projects, can help to achieve adoption of water pricing. Basic infrastructure, as for road transport and perhaps electricity, is a prerequisite for which government support is essential.
- Water planning needs much more participation by local scientists and development experts, by the population of the local areas to be developed and by politicians, the latter at both local and national level.

- International water bodies have not carried out their roles adequately. For example, they have not been forceful enough in insisting on covenants regarding water pricing, operation and maintenance and institutional reforms. Another example is failure to take initiatives toward resolving water conflicts of an international nature.

Regarding the last point, the reviewer would like to make reference to a recent World Bank publication *Water Resources Management in Asia* by Harald Fredericksen, Jeremy Berkoff and William Barber, World Bank Technical Paper No. 212, November 1993. The final chapter, entitled 'Future bank strategies and programs', strongly recommends a more proactive role for the Bank which, in this reviewer's opinion, could be highly beneficial to all concerned, given that the Bank is the world institution with the most financial resources. To carry out such a role, the Bank would have not only to revise some of its current policies but also to increase the size of staff devoted to water-resource planning. This reviewer has learned that, unfortunately, as the Bank, like many corporations, is currently engaged in downsizing, the time is not presently auspicious. It is to be hoped that, with water-resource problems in the developing world becoming ever more pressing, this impasse will soon be overcome.

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