



Book Review

Water Resources Development in Ethiopia. An Evaluation of Present Experience and Future Planning Concepts

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This book aims to provide a source of information and a critical review of water resources development in Ethiopia. The book deals with estimates of Ethiopia's water resources, their current level of exploitation, their institutional basis, the potential for improving the current situation and its future development. The author, who sadly died in 1994, spent five years as head of the Ethiopian Valleys Development Studies Authority (EVDSA) before he became General Manager of the Ethiopian Environmental Protection Authority. There are 10 chapters in the book and these fall broadly into three sections: description of the physical resource base and its potential for development; the institutional aspects of water resource management; and issues relevant to future development policy and planning, including transboundary considerations.

The first three chapters set the scene with brief descriptions of Ethiopia's 14 main river basins, its climate and its general physical environment. The following two chapters provide much more detailed assessments of the current status of water resources development and its future potential. The existing allocation and utilization situation is described along with a discussion of some important development constraints such as topography, soil characteristics, land and water availability, soil erosion and high sediment yields, international issues of water-use rights and technological and organizational problems. Many of the data presented in these and following chapters are taken from an unpublished assessment of current and future availability and demand for water by the EVDSA in association with an international consultancy. Irrigation is shown to be a fairly minor part of the agricultural sector with 97 000 ha of large and medium-scale schemes in place, 64 000 ha of small-scale schemes in place and 38 000 ha under construction. Historically, water resources development in Ethiopia has been rather *ad hoc*, administered by a whole host of different organizations, and has suffered from a lack of legislation concerning the use of water. The current area under irrigation is estimated to be only 4% of the overall potential, the installed hydropower (1480 GWh/yr) only 1% of potential, and a very high proportion of the population still obtain water for consumption from unimproved sources. Chapter 5 ends with a fairly critical overview of the institutional framework in place at the time of writing. This is now out of date since the EVDSA was replaced by the Ministry of Water Resources in the early 1990s. Much of this section contains a discussion of the economic aspects of water allocation in agriculture and calls for a country-wide detailed agricultural

and water master plan. Issues of irrigation requirements, environmental protection (of particular importance is disease prevention), data management, training requirements, economic efficiency and limitations are also dealt with in this chapter.

Chapter 6 lists a set of objectives for the development of water resources in Ethiopia. These include domestic and industrial water supply, optimized agricultural production and hydropower generation. The means of achieving these goals are then discussed such as the introduction of a national water policy, integrated water resources development planning, improved institutional and organizational framework and the application of developments in science and technology.

Chapter 7 deals with future water resource development plans in detail. The topics addressed are wide-ranging, including water allocation criteria and priorities (domestic, hydropower and agriculture), the need for comprehensive development master plans for the major river basins, inter-basin transfers and agricultural development in arid regions, appropriate development policies, recommendations for changes in institutional management (particularly the importance of trained personnel) and economic considerations. Interspersed in the chapter are projections of future (up to 2040) availability and demand for water by sector in Ethiopia produced by the EVDSA study. To the reviewer's knowledge, these represent the only published detailed breakdown of future water budget in Ethiopia. Although this survey is slightly out of date (published in 1990) and overly ambitious and optimistic, particularly regarding the development of hydropower and irrigation schemes (for instance, irrigation water requirement is planned to increase from 0.04 to 40 km³ by 2040), these figures provide a very useful and interesting indication of what water resource developments are likely to occur in Ethiopia in the future and their potential magnitude.

Chapter 8 concerns transboundary water resources development considerations and, naturally enough, concentrates mainly on the three river basins draining into the Nile: the Abbay (Blue Nile), Tekeze (Atbara) and Baro-Akobo (Sobat). Water budgets are presented for each basin and total consumptive demand amounts to almost 18 km³ by 2040 which would have a very significant impact on downstream water availability. There are one or two inconsistencies between the numbers in different tables, probably due to typographical errors. The remainder of the chapter outlines a framework for cooperation between co-basin states, emphasizing a conciliatory approach to maximize mutual benefits (of which there are many) that will result from multilateral development projects in the Nile Basin. Ethiopia's national strategy at the time of writing was based on recognition that all riparian countries have equitable entitlement to Nile water.

The final two chapters summarize the main issues dealt with in the book and call for improvements in many aspects of water resource planning and management in Ethiopia. Also highlighted are the important linkages between the successful management of water resources and management of the river basin environment in general.

Overall, this is a useful and interesting case study of water resources in Ethiopia. My main reservation about the book is that there is a lack of references and specific examples of the Ethiopian situation given in the text. For instance, the author places a lot of emphasis on future irrigation potential without providing much quantitative information about the success of schemes already

in place. For this reason, the book is a little too general in places. The economic, political and institutional situation in Ethiopia is now very different from how it was at the time of writing this book. Eritrea is now independent and Ethiopia has benefited from a few years of postwar stability during which time feasibility studies have been undertaken and some projects initiated. Nevertheless, this book comes at an important time when water resources development in Ethiopia is just beginning to take off. It is vital that the problems encountered with water resources development in the past and in other African states are considered carefully so that mistakes are not repeated in the future. This book will be very useful for such a purpose, and is a welcome addition to the literature on water resources development in Africa.

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