

Book Review

Freshwater Resources in Arid Lands, UNU Global Environmental Forum V

Juha I. Uitto & Jutta Schneider (Eds)

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Unprecedented initiatives have been taken in recent years by the governments, national and international agencies, and NGOs to protect the environment. Numerous official and unofficial gatherings are taking place all over the world to discuss the current environmental problems and to develop solutions, even though the overall progress has been somewhat slow. Environmental conservation is no longer a fashionable word. The world is now facing serious environmental deteriorations which could slow down the rates of social and economic development in the future.

In order to continue the environmental momentum, the United Nations University (UNU), with the support of Obayashi Corporation, one of the biggest construction companies in Japan, has been organizing a series of forums on selective global environmental problems since 1991. Groups of international experts in specific fields are invited to share their knowledge and experiences with a large audience of senior decision makers, members of academic and research institutions, and NGOs. The event of 1996 was the fifth such forum.

The UNU has developed its own blueprint to promote environmentally-sound water management within the context of Agenda 21 that was agreed to at the Earth Summit in Rio de Janeiro in 1992. The Forum on "Freshwater Resources in Arid Lands" was convened within this overall framework with case studies from China, Israel, Japan, and the Arabian Peninsula, as well as the important issue of global warming and its possible impacts on groundwater.

The book resulting from this forum is a most interesting one since it analyses a mosaic of examples and experiences in which technological options are combined with demand management measures to achieve long-term sustainable solutions for the arid countries. While in some countries the most feasible solutions would include sophisticated technology, in others "the local, old principles are the ones to be adapted and applied for the best benefit".

Iwao Kobori discusses the various international efforts to preserve freshwater resources of the world. Many positive and negative experiences are outlined from different countries in terms of use and abuse of fresh water due to increasing human needs. He recommends strict water conservation and emphasizes the fundamental importance of not limiting any decision to purely technical factors. Political issues also should be considered. Iwao Kobori points out that the experience of Japan in this field is mainly in terms of international cooperation to arid countries, and he analyses this issue. Even though the arid regions need governmental and non-governmental aid, he points out that in the final analysis these countries need to become self-sufficient.

Daniel Hillel analyses land, water and civilization in a desert environment,

Negev in Israel. He reviews how the ancient civilization in the Negev desert could develop successfully by adapting local technology to their needs primarily in terms of food production. His message is that there might be "new solutions to old problems" but there could equally be "old solutions to new problems" which are often not considered, and where the old principles could be adapted and applied for the benefit of the humans and ecosystems.

Mohamed Abdulrazzak analyses the future of freshwater resources in the Arabian Peninsula. Continually increasing water demands are contributing to the emergence of an entirely new set of environmental concerns, including associated high development costs. Water demands in all sectors are increasing and the deficit is being met through the mining of groundwater, which is already insufficient to meet the current demands, and through seawater desalination. The high investments needed to develop new water sources and to treat wastewaters may result in considerable economic stress, especially in those countries having limited financial resources. Even though the countries concerned have most of the technical solutions, social, environmental, and economic aspects of such programmes need more serious consideration. Demand management measures are needed, as well as water conservation programmes, incentives for efficient management, and institutional strengthening.

Wang Tao and Wu Wei discuss arid regions of China in terms of potential living areas to accommodate the population expected in the eastern part of that country in the 21st century. They feel that "it is unacceptable to allow environmental degradation to continue, because there is no place for the people from arid lands to move to when the land becomes uninhabitable". For example, 67% of the woodland in the region has already been degraded, the vegetation cover has decreased to only 15%, and more than 300 000 ha of abandoned land have been desertified in the southern part of Xinjiang.

Kimio Osuga discusses the construction of two underground dams and intake facilities in the Miyakojima Island by the Japan Agricultural Land Development Agency (JALDA) in order to modernize agricultural management. One of the two dams was completed in November 1993, and the other is now under construction. The area benefiting from the project covers 8400 ha (half of the surface area of the island and about 90% of the arable land), and the total cost was estimated at ¥89 billion in 1986. According to the author, it is already possible to irrigate 914 ha using the water stored in Sunagawa dam. The construction of similar underground dams has started in the main islands in Okinawa and on Kikajima Island in Kagoshima Prefecture.

The complex issue of global warming and groundwater resources in arid lands is analysed by Isamu Kayane. He points out how global warming may already be influencing groundwater resources.

In his closing remarks, Juha I. Uitto of the UNU, stresses the fact that land degradation is not an abstract scientific concern but a very real one for those whose livelihoods depend on its proper management. Thus, it is essential to develop a most suitable overall process, and not just the technology. He correctly recommends the UNU approach to find technically, economically and socially feasible options which could form the basis of political decision making.

There are many fundamental issues that are discussed throughout the text, which often appear to be forgotten by the decision makers. Examples include water management practices which should vary according to the specific conditions of the locations concerned, increasing emphasis on demand management

in contrast to exclusive reliance to supply management, and appropriated considerations of cultural and ancient traditions to find appropriate solutions. A solution that might be the best in one area might not be the best in another due to different social and cultural conditions. Water management seems to have become more of an art than a combination of technical solutions only.

There is already a growing consensus that purely engineering solutions are not enough to achieve sustainable water management, and that water is not "only the most precious natural resource in arid regions but also the most important environmental factor of the ecosystem". Traditionally important aspects are often ignored, as are social and environmental factors. All these must be carefully considered for environmentally-sound water management. Also needed are more education and training and better public awareness of the issues concerned. The main task then is to determine the best ways to consider the above issues, which seem to be the missing-link for efficient water planning and management.

The book should be of considerable interest to all water professionals since it provides case studies from different arid countries of the world. It is indeed most remarkable the way in which humankind has managed to survive and develop in arid countries in spite of numerous complex and severe conditions. The book is easy to read and well produced. It provides a good example of how humanity and nature can and must coexist together, both in arid lands as well as elsewhere.

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