

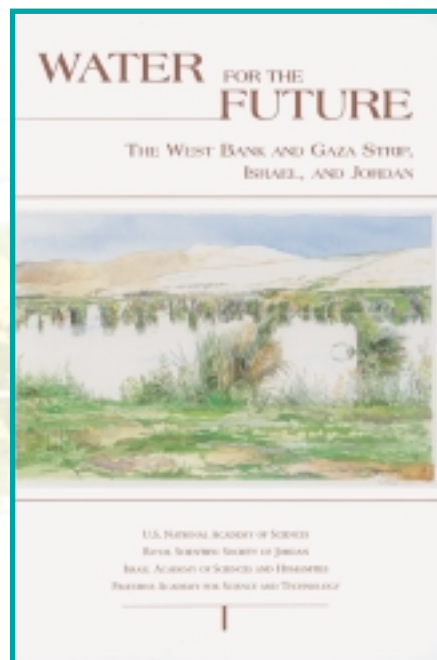
# WATER FOR THE FUTURE

As the populations, agriculture and industrial development of the countries of the Middle East increase, so does their need for water. Unfortunately, there just isn't enough of it. The Israel-Jordan region, for example, consists of a hot dry coast, rising to a dry upland forest, which descends to semi-desert and desert. What little rain there is, is concentrated in a few winter months, which increases wasteful runoff and complicates storage. Agricultural irrigation claims the lion's share of what remains: 57% in Israel and 72% in Jordan. Traditional farming is particularly inefficient in areas where evaporation rates are high. Finally, as recent headlines indicate, unilateral attempts to alter the status quo distribution of this limited and vital resource can quickly escalate into serious political confrontations. In short, a coordinated regional approach is essential.

This book, published by the U.S. National Academy of Sciences (NAS) in 1999, provides a science-based framework for such future efforts. Its sections cover regional water-usage and the factors affecting it, environmental impact, options for the future and other basic topics. The book's authors, a 15-person Committee on Sustainable Water Supplies for the Middle East, are no less impressive. They hail from the University of Colorado and the Technion (Israel), from the University of Jordan and the Palestinian Water Authority, and many points in between. They first met in Washington, D.C., Amman, Jordan, and Haifa, Israel, in 1996, and maintained close contact thereafter. The final report was reviewed by twelve additional, broadly based experts, making this truly a regional perspective.

Occasional brief case studies stud the book and provide useful, if poignant, reminders that we are all only human and face similar problems. For example, the Azraq Oasis, 80 km. east of Amman is an outstanding example of an arid region, spring-fed wetland. It is famous for its date palms, oryx and migratory bird species. Overpumping to provide water for Amman, Zarqa and Irbid threatened this unique ecosystem and a 1987 conference warned of increasing salinity if the 16 million cubic meters a year (MCM/yr.) pumping rate wasn't halved. However, in 1990, the government approved pumping up to 20 MCM/yr. Despite a subsequent \$3.3 million UNDP grant, the recoverability of the oasis is unclear. Israel's Lake Hula and its accompanying wetlands were another unique ecosystem. The latter were deliberately drained to prevent mosquito-borne malaria. However, once exposed, the highly organic soil quickly decomposed, desiccated and began to subside (7-10 cm. a year). Peat fires became common. Released nitrates were annually flushed from the soil into Lake Kinneret, leading to eutrophication. The once flourishing wetlands gradually became a flat dusty region. A variety of measures were taken to address specific problems and about 200 hectares have been reflooded to create an artificial lake with surrounding wetlands.

For once the appendices are as fascinating as the text. Water-related excerpts from recent peace treaties reveal the incredible detail and importance attached to such clauses as: "[From] 15<sup>th</sup> May to 15<sup>th</sup> October of each year, Israel pumps 12 MCM and Jordan gets the rest of the [Yarmouk River's] flow." This is a good introduction to a topic neither man nor nature will let us forget.



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