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Paul F. Scodari, Wetlands Protection: The Role of Economics

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Paul F. Scodari, Wetlands Protection: The Role of Economics

have the responsibility to ensure that every citizen has access to clean water. Rothfeder gives examples of current situations where tension exists between countries over water. The examples illustrate a growing concern that without a universal right, people will go to war over water.

Chapter Four describes the growing trend of private companies taking over water supplies in developing nations. Privatization of water carries both supporters and dissenters. Rothfeder develops both sides of the argument, and shows the struggles that each side has in the face of a diminishing water supply.

In Chapter Five, Rothfeder introduces a new trend of shipping water by bag to areas of the world in need. Shipping water allows desperate areas to be supplied with water, however conflicts are now arising regarding the sources of the shipped water.

Chapter Six touches upon some of the environmental concerns surrounding the water dilemma. Specifically, Rothfeder focuses on the detrimental impact development and growth has had on Florida's water supply, and the damage done to Florida's Everglades. Efforts are now being made to correct the problems caused by past development, however new projects will continue to present difficulties. To illustrate, Rothfeder describes impending problems caused by the Three Gorges Dam in China, which is currently under construction. This chapter stresses the importance of correcting old problems and ensuring that mistakes are not repeated.

In Chapter Seven, Rothfeder goes deeper into the water conflict, and stresses that many of these conflicts involve actors on a local level. Rothfeder examines a local example of the effect dams have on salmon populations throughout the United States.

Chapter Eight reinforces the importance of water for all life on earth, and the need to research and work on the growing water problem. Rothfeder emphasizes that funds need to be used more efficiently on water projects in order to deal with the impending crisis.

Every Drop For Sale provides excellent insight and establishes an understandable guide to water issues involving the entire world. Rothfeder not only explains the problems, but also poses possible solutions, leaving the reader feeling as though corrections can be made to avoid a worldwide crisis.

Colleen M. Cooley

PAUL F. SCODARI, WETLANDS PROTECTION: THE ROLE OF ECONOMICS,
Environmental Law Institute, Washington, D.C. (1990); 89pp.;
\$28.00; ISBN 0-911937-32-3, soft cover.

One problem environmental policy makers routinely face is how to protect wetlands from being exploited by unwise development. Even though their value is widely recognized, wetlands continue to be lost at alarming rates to agriculture, urban development and other

development projects. In his report, *Wetlands Protection: The Role of Economics*, Paul F. Scodari looks at the science of wetland valuation and the principles and methods for valuing wetlands, and then makes conclusions and recommendations for the future.

Chapter One begins by giving the reader a background of the federal government's role in wetlands regulation, focusing on the role of the United States Army Corps of Engineers ("Corps"), which is responsible for evaluating and constructing projects such as dams, levees and canals. The author then discusses the Corps' current cost/benefit framework, and its flaws. He briefly identifies problems with the current framework related to economic, scientific and political issues. Scodari concludes the chapter with a discussion about the theme of his report, which is, "[to explore] the use of modern economics to improve wetland development decision making, focusing on the barriers to adequate economic valuation of wetlands."

Chapter Two deals with the science of valuing wetlands. It begins by giving the definition of wetlands, and then moves on to discuss the major causes and trends concerning the loss of wetlands. The author points out that the major reason for wetland loss is the expansion of agricultural activities, and that the recent trends show the rate of wetland loss is decreasing. Next, the author discusses the major goods wetlands provide that benefit human beings, specifically: (1) intermediate goods, such as water supply and storage; (2) final wetland goods, such as fishing, hunting, or scenic values; and (3) future wetland goods, which might include flora and fauna that could provide new medical cures. The chapter also discusses the ecological factors that produce those goods, such as groundwater recharge and discharge, nutrient retention and removal, and wildlife habitat support. Scodari ends the chapter with a brief discussion of the scientific barriers that prevent accurate valuation of wetlands.

Next, Chapter Three, discusses the principles and values used to value non-market wetland goods. Scodari begins by asserting that because owners of wetlands cannot recoup the value of the benefits that wetlands provide to society, the market system is not able to allocate wetlands efficiently and therefore owners find it more profitable to develop their land. The author defines the term "economic value," and discusses the need to value wetlands in both their pre and post development stages. Scodari then takes an in-depth look at the different methodologies currently used to value wetlands, such as the Net Factor Income Method, the Travel Cost Method and the Contingent Valuation Method. The chapter concludes by identifying barriers to wetland valuation, such as the extensive data requirements, complexity and costs.

Chapter Four discusses the implementation of wetland valuation, focusing on federal laws and guidelines. The chapter begins by identifying the types of federal projects that can have negative effects on wetlands and describes some of their impacts. The author moves on to discuss how the government, and, in particular, how the Corps uses the guidelines promulgated by the Water Resource Council

("WRC") to conduct a cost/benefit analysis for individual projects. Scodari looks in detail at the four accounts the WRC guidelines suggest setting up to help with the cost/benefit analysis, which include the National Economic Development Account, the Environmental Quality Account, the Regional Economic Development Account, and the Other Social Effects Account. Scodari ends the chapter with a discussion of the political and institutional barriers to wetland valuation, which include the fact that the guidelines are structured to value market goods over non-market environmental goods, and the fact that there has been a longstanding, nationwide preference for economic growth at the expense of environmental protection.

Chapter Five deals with the federal system for assessing damage to public resources. The chapter begins with a discussion about how public natural resources are allocated. It then moves on to discuss the damage assessment provisions of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"). In analyzing the damage assessment provisions in CERCLA, the author engages in a detailed review of type A regulations, designed to calculate damages for wildlife mortality and closure of recreational areas, and type B regulations, which set out guidelines to be used when the type A model does not apply. The chapter ends with an assessment of the CERCLA framework, and a comparison between the WRC guidelines and the damage assessment provisions in CERCLA.

In the final chapter, Chapter Six, the author gives his recommendations for the future. Scodari contends that what is needed is better science and reform of the administrative framework for valuing wetland outputs, not radical new economics. Regarding methodological improvements, Scodari suggests improving biological and economic databases, and improving communication among wetland scientists, economists, and decision makers. As for administrative reforms, Scodari suggests that the WRC guidelines should be amended and made mandatory.

David M. Jacob

GREG SHAPLAND, RIVERS OF DISCORD, St. Martin's Press, N.Y. (1997); 183pp; \$59.95; ISBN 0-312-16522-6, hardcover.

The Middle East and North Africa comprise one of the driest regions in the world. In a region already inundated with ethnic and religious conflicts, the issue of water is yet one more factor that has the potential to plunge the region into wide-scale conflict. In *Rivers of Discord*, Greg Shapland provides his readers with an in-depth view of the region's water resources and potential for conflicts, while also exploring ways to resolve those conflicts.

Chapter One is an introduction to the region's water sources and politics. The author begins by pointing out that the Middle East is the most arid of the world's major regions, and because of that, when it

out that ten countries share the Nile basin, and although the Nile is one of the world's longest rivers, it carries seven times less water than the Mississippi. The chapter discusses how the Nile has been regulated in the past, and goes through a chronology of major works on the Nile. Shapland then moves on to discuss the quality of the Nile's water, which at most points on the Nile is very high, excepting for the stretch that runs through Egypt. The next issue presented is that of treaties and disputes. The author begins in the late 1800s with Britain's agreements with Italy and Ethiopia, and progresses in time up to the agreements made in the early 1990s between Egypt, Ethiopia, Sudan and Uganda. Next, the chapter discusses the new demands facing the countries in the Nile basin that will lead to increased pressure on water resources, such as population growth, increased agriculture, an expansion of industry to create new jobs, and climate change. Shapland suggests several options to deal with the new demands, such as increased use of groundwater, lowering Lake Nasser, and re-using water.

The next chapter, Chapter Four, surveys the situation in the Tigris-Euphrates basin. This chapter begins, much like the others, with a brief geo-political background of the basin, which is shared by Turkey, Syria, Iran and Iraq. The author points out that the Tigris and Euphrates did not become international rivers until the breakup of the Ottoman Empire after World War I. Shapland then traces the history of agreements among the riparian states, beginning with a 1920 agreement between Britain and France, who were acting on behalf of Iraq and Syria. Next, the chapter deals with Syria and Iraq's fears that their plans to use the waters of the Tigris and Euphrates will be dashed by upstream Turkey's plans to make use of the waters to develop the economic infrastructure of south-eastern Anatolia (known as the "GAP project"). The chapter then moves on to discuss the impact of the GAP project, and evaluates the needs of Iraq and Syria. Shapland concludes that Iraq and Syria both probably have less to fear from the GAP project than they believe. The author ends the chapter by predicting that until a trilateral agreement is reached, Iraq and Syria will try to put financial, and in some rare instances military, pressure on Turkey to keep Turkey from developing the GAP project as planned.

Chapter Five is extremely short. It covers the Orontes River, also known as the Asi River. The author begins by stating that the Orontes is a small river in comparison to the Tigris and the Euphrates, but it is still very important. Turkey, Syria and Lebanon share the river. The chapter begins by surveying the situation with regard to Syria and Lebanon, who in 1994 signed an agreement to divide the waters of the Orontes between them. The author goes on to discuss the situation between Turkey and Syria, which is intriguing because it is the exact opposite of the situation on the Tigris and the Euphrates (there, Turkey is upstream, while on the Orontes, Syria is upstream).

Chapter Six deals with disputes that involve groundwater only. Shapland points out that because surface water resources are so scarce,

countries in the region are turning to groundwater to help alleviate the stress on water supplies. The chapter begins with a discussion about the Qa Disi aquifer, shared by Jordan and Saudi Arabia. The author discusses the pros and cons of transporting the water in this aquifer for use in Jordan, and concludes that the only hope for Jordan to make efficient use of this water would be to cooperate with the Saudis, who have been uncooperative up to this point. The chapter briefly discusses the situation surrounding the Azraq aquifer, located in Jordan and Syria, and the Nubian aquifer, located in Libya, Egypt and Sudan.

Chapter Seven seeks to identify common themes present throughout all the disputes in the region that could help those working on water disputes in other parts of the world predict where their situations might be headed. The chapter begins by looking at the position of states in relation to a water resource. In particular, Shapland identifies the likely position a country would take if it were an upstream country, downstream country, or if it was both upstream and downstream, such as in Syria and Sudan. The chapter then moves on to discuss other geographical and hydrologic factors common to all the disputes in the region, such as the degree of dependence a state has on a particular shared resource, the variability of flow, and the proportion of flow derived from each state. Next, the author addresses common economic factors in the region's disputes. Shapland explores factors such as the extent to which the source of water is already utilized, which will have a bearing on whether or not new projects will lead to disputes, and then discusses opportunities for obtaining new sources of water, which would make it easier for countries to deal with increased use of shared water resources. Next, Shapland considers common political and legal factors. He examines the International Law Commission Draft Articles on the Law of Non-Navigational Uses of International Watercourses, the political relationship between states, and the domestic political situations within states. The chapter closes with a brief consideration of the changing picture for the future, in which the author predicts that factors such as pollution, technological advances, and changes in political regimes will make it hard to predict the outcome of future disputes.

Finally, in Chapter Eight, the author provides his outlook for the future. Shapland states his opinion that although pressure is increasing on the region's water resources, the risk of armed conflicts breaking out over those resources is minimal. He points out that the experience of the last several decades has shown that armed conflict over water sources is very rare when compared to the use of economic and diplomatic means. Shapland writes that there is more slack in Middle Eastern water budgets than appears, and he believes states in the region will be able to make technological advancements that will enable them to deal with increased pressures on their water sources. Though he is optimistic that enough water exists for all countries to adequately fulfill their needs, Shapland does end on a positive note.

He states that particularly in regards to the Arab-Israeli dispute, the existence of political disputes in the region will continue to complicate attempts to solve the region's water disputes.

David M. Jacob