

9-1-2001

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David M. Jacob, Book Note, Terence Richard Lee, Water Management in the 21st Century: The Allocation Imperative, 5 U. Denv. Water L. Rev. 235 (2001).

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Terence Richard Lee, *Water Management in the 21st Century: The Allocation Imperative*

TERENCE RICHARD LEE, WATER MANAGEMENT IN THE 21ST CENTURY: THE ALLOCATION IMPERATIVE, Edward Elgar Publishing Ltd., Cheltenham, United Kingdom (1999); 206pp; \$80.00; ISBN 1-84064-080-4, hardcover.

Water is a necessary resource. As society develops and progresses through the 21st century, it is imperative that all people in the world have access to adequate supplies of water. In *Water Management in the 21st Century*, Terence Richard Lee takes a look at the current perception that there is a scarcity of usable water in the world, and explores how to adequately plan for the world's future water needs. Lee provides the hypothesis that water itself is not scarce, although it seems this is a result of mismanagement of water resources. Lee puts forth compelling arguments in support of his hypothesis, and offers various solutions that he believes will correct what he sees as the problem of misallocation.

Chapter One addresses the issue of whether or not the world's water supply is actually as scarce as many believe. In particular, the author discusses how economic forces have led to the belief that the world is running out of usable water. The chapter begins with a brief history of the development of water management systems, from Mesopotamia to the 20th Century. The chapter then looks at the effects that population growth has on the availability of water as a resource, and tries to anticipate future population growth. The author addresses the issue of forecasting future water demand. It is here that Lee presents what he feels is the core issue in the debate over water allocation—is the demand for water actually increasing? Lee argues that demand for water is currently so high because it is priced well below its market value. He states that the failure to use the free market to correctly price water leads to problems in its distribution, which in turn creates the perception that demand is increasing. Lee then discusses his belief that if the free market were used to price water, the efficiency of water distribution would increase, and the increased efficiency would act as a counterbalance to the effects of any future population growth on water scarcity.

Chapter Two discusses institutional approaches to water management. It begins by surveying “top-down” (centrally controlled) and “bottom-up” (user controlled) approaches. Lee looks at examples of management approaches in the Mekong River Basin, Elqui Valley, Chile, and the Ruhr Valley, in Germany. Lee notes that over the past hundred years, a top-down system has dominated water management, but that the current trend is towards the private sector becoming more involved. Chapter Two then discusses what considerations need to be taken into account when designing a water resource allocation institution. The author argues that governments should be wary of establishing complex systems, especially in environments that lack strong traditions of public service. Lee feels that due to bureaucratic and political considerations, governments are not always “disinterested

champions of the public interest.”

In the third chapter, Lee turns to the issue of allocating water among competing users. The author restates his belief that the failure to efficiently allocate water is responsible for the perception that the scarcity of water is reaching crisis levels. The author argues that markets are the most efficient way to allocate resources, and therefore if efficiency is desired with regards to water allocation, administrative allocation should be kept to a minimum. Lee gives examples of market systems used in the western United States and Chile. He then moves on to the issue of how to introduce water markets into regions where water was previously allocated administratively, and discusses Chile's 1981 implementation of a water code as an example. Lee looks at various ways to determine initial allocations, such as grandfathering, historic water use, auctions, and land ownership. Chapter Three then discusses the desired characteristics of water markets (fair, flexible, and predictable) and how to best go about regulating markets. The author concludes the chapter by reiterating that in his view, markets work.

Chapter Four addresses private participation in water management. The chapter begins by dealing with the issues governments must confront when dealing with natural monopolies such as water. The author argues that private managers are more efficient than government managers because private ownership provides protection against undue political influences. The chapter then takes an in-depth look at alternatives for private participation, such as divestiture, concessions, and contracting. Chapter Four ends with a brief look at factors to be considered in opening services to the private sector, and the limitations on private participation in the provision of water services.

The fifth chapter discusses regulation of water markets. Lee argues that the key to regulatory design is to minimize government intervention. The chapter begins by discussing the goals of regulatory systems, and then moves on to discuss the regulation of water monopolies. The author discusses various ways to restructure a monopoly, with in-depth assessments of horizontal and vertical restructuring. Chapter Five goes on to address the issue of how to regulate all aspects of a private firm's conduct, looking at the rate-of-return and price-cap systems of price regulation. The chapter ends with a discussion of the problem of regulatory commitment. The author argues that in order to attract investors to a water market, the investors must be confident that over the long run the government will respect their property rights and the rules and regulations that accompany the water markets.

The book concludes with Chapter Six. It looks ahead to the challenges of the 21st century, and how effective resource allocation can help deal with those challenges. The author begins this chapter by stating that because of our current misallocation and inefficient use of water, we are not in a position to know if our water resources are becoming scarcer. The author then goes on to recap some of his

points of contention. In particular, Lee reiterates the need to accurately price water through regulated markets, and the need to increase private participation in water resource management. Chapter Six discusses the contribution that water management might have on the problems facing society in the 21st century. Lee identifies and discusses solutions for several issues, such as the need to increase productivity, the need to eliminate poverty, and the need to minimize the impact of economic activities on the environment.

David M. Jacob

STEPHEN A. THOMPSON, WATER USE, MANAGEMENT, AND PLANNING IN THE UNITED STATES, Academic Press, San Diego, California (1998); 371pp; \$74.00; ISBN No. 0-12-689340-3, hardcover.

Written as a textbook for a one-semester course on water resources and targeted to upper division undergraduate and first-year graduate students, *Water Use, Management, and Planning in the United States* gives a broad overview of water related issues in the United States.

In Chapter One, Thompson examines "the physical system" that produces and controls water, such as weather, climate, water cycles, geology, and water balance. In Chapter Two, he delves into specific periods of history in the United States concerning water development and the societal changes it created and fostered.

Water issues associated with the legal system, both state and federal, are the focal point of Chapter Three. The state discussion rotates around doctrines associated with both surface water and groundwater, including the two major doctrines, riparian and prior appropriation, as well as absolute ownership versus reasonable use. The federal discussion addresses federal powers, reserved and expressed, including a discussion of Native American water rights.

Chapters Four through Six cover water use, economics, and water supply planning. The water use discussion centers around water supply and demand on an international, national, regional, and state level. At the close of Chapter Four, the author includes a brief summary on Geographic Information Systems ("GIS"), a computerized method of collecting raw data and producing information outputs such as maps and charts. Chapter Five, the economics chapter, discusses price theory, or supply and demand, and includes an extensive discussion of cost-benefit analysis. Chapter Six examines water supply planning, including a view of urban demand planning and process, and dams and reservoirs.

Thompson discusses off-stream and instream uses in Chapters Seven and Eight. The off-stream discussion includes urban related usage such as drinking and household water, and a thorough review of agricultural uses including irrigation. Instream uses, such as hydroelectric power and federally owned recreation water make up the remainder of the chapters.