

Session:	SESSION TOPIC SYNTHESIS
Topic:	ECONOMIC DIMENSIONS OF WATER RESOURCES MANAGEMENT ⁱ
Questions / Issues to Discuss	<ol style="list-style-type: none"> 1. Is the concept of water as an economic good accepted in your country or the countries in which you work? Is it practiced in any way? How could/should it be practiced? 2. How does water resources management impact economic growth and patterns of development in your country(ies)? 3. Do you believe there is, or could be, an important role for economics in the management of water resources in your country(ies)? If so, where do you think the contribution of economic analysis or tools would be greatest? 4. What are the advantages and disadvantages to using economic (market-based) tools for water resources management?
<p>Background</p> <p>As competition for water grows among users, water resources management decisions will involve increasingly complex trade-offs with significant implications for economies, growth and the distribution of benefits. The economy-wide impacts and equity implications of water resources management policies will therefore demand increasing attention. This note focuses on these broad economic dimensions of water resource management, rather than the longstanding concerns of cost-effectiveness and financial sustainability faced by individual water-using sectors. The issues addressed here fall into three categories; (i) the value of water, (ii) water resources and the economy, and (iii) water resources management across borders.</p> <p>The Value of Water</p> <p>Water as an economic good. The Dublin Principlesⁱⁱ state that “water has an economic value in all its competing uses and should be recognized as an economic good.” This reflects the growing recognition of water as a scarce and productive resource, which therefore should be allocated with due regard to economic principles of efficiency and equity. Recognizing that water is an economic good highlights the need to assess the broader costs to the economy (e.g., opportunity costs and externalities,) in addition to the more traditional financial costs to individual users (e.g., investment, operations and management,) when weighing management options. Importantly, it does not necessarily mean that water must be sold at a market price. Market failures, divergences between social and private costs/values of water, and social or environmental imperatives may well justify setting water prices that focus on equity concerns (as a matter of policy) over efficiency concerns (as a consequence of market forces.) Even in such cases, however, it is important for policy makers to understand the economic costs and implications of their decisions – which is the essence of proposals to treat water as an economic good.</p> <p>Opportunity costs. Where water resources are inadequate to meet all demands the use of water by one party will preclude alternative uses, and water use decisions will carry opportunity costs. Opportunity costs are the forgone benefits that could have been generated if a resource were allocated to its next-best use. If water is not allocated to its highest value use, opportunity costs may outweigh the value generated by the use of water, and the economy will “pay” more for the water resources (in terms of forgone opportunities), than it “earns” (in terms of value generated by the use of the water.) From an economic perspective this is an inefficient allocation of resources, although it may be justified on other grounds.</p> <p>Externalities. Externalities occur when the actions of one water user affect another. Externalities can be positive (i.e., watershed management) or negative (i.e., pollution.) They can also run both downstream and upstream. The most commonly recognized negative externality occurs when an upstream riparian withdraws water which is then unavailable to downstream users. The use and development of water by a downstream riparian, however, can similarly reduce the water available to the upstream riparian by creating a downstream claim on that water. The distinction between opportunity costs and externalities is essentially one of scope. An individual user considers the impact of his water use on an immediate neighbor to be an externality. A river basin organization would consider the same impact to be an opportunity cost of the chosen water use pattern in the basin. Integrated water resources management effectively internalizes all externalities within a planning area, requiring managers to assess downstream impacts as opportunity costs, rather than dismiss them as externalities. This notion is central to integrated river basin management.</p>	

User values and system values. The scope of analysis, as discussed above, is germane to the valuation of water. In the context of a river basin, the value of water can be assessed either from the perspective of the user or the river basin system. The “user value” is the value that can be derived from a single, specific use of water. In contrast, the “system value” of water is the aggregate value generated by a unit of water as it moves through the river system. System values essentially aggregate the user values of a particular water use pattern within a basin, and in addition take account of the opportunity costs and externalities that result from the physical interdependencies of water use in the basin. Examining the changes in system values under different management scenarios can assist water resources managers in assessing their relative efficiency, while user values provide information on the distribution of costs and benefits in order to assess the equity outcomes of different scenarios.

Water Resources and the Economy

Water allocation, growth and development patterns. It is well accepted that water is a prerequisite for growth and poverty alleviation. What is less often considered is the affect that inter-sectoral water resources allocation has on economic structures, growth and patterns of development. The agriculture, industry and services sectors, for example, often pose competing demands for water use. The allocation of water among them will enable or constrain their relative growth, and give rise to very different economies over the medium term, with differing welfare impacts both in terms of overall growth and the distribution of this growing wealth. Similarly, the incentives for water use within sectors will have welfare, growth and equity implications. In agriculture, for example, the balance between traditional subsistence agriculture (which generally targets the very poor and provides greater employment opportunities) and high-tech production (which generates higher value-added to a smaller immediate beneficiary group) will significantly affect the value of agricultural production and the distribution of these gains.

Water resources management and development goals. National development goals can be supported, or subverted, by the management of water resources. The legal, institutional and economic incentives that guide the allocation of water thus have a profound effect on the structure of the economy, particularly where water is scarce. Pricing, licensing and permitting policies can all be designed to encourage or discourage conservation; to expand or constrain specific water uses; or to promote or suppress the adoption of water-saving and/or high technology modes of production for specific uses or user groups. It is therefore important that the broader development goals of water resources management be clear, and that the management of water resources is designed to achieve these goals as effectively and efficiently as possible.

Economic tools for implementing water resources management. Water and wastewater pricing, groundwater license fees and permits, subsidies and cost-sharing arrangement, and pollution charges and fines are all examples of market mechanisms for implementing water resource policies that send clear, strong signals to water users. They are flexible and can be designed to both encourage and discourage behavior, making them particularly effective for demand management. They can also be more cost-effective and less burdensome than the more traditional command and control systems because they generally require less administration, management and monitoring. Again, it is important to recognize that economic tools can be used to implement policies designed to achieve equity, as well as efficiency, goals.

Water Resources Management Across Borders

Riparian dynamics. The management of international waters presents a formidable challenge for policy makers, adding regional economic cooperation and integration, as well as international conflict, to the list of potential benefits and risks arising from water resource management policies. In this context, economics can provide an objective framework to help identify potential benefits, clarify trade-offs and facilitate the discussion of options for the development and management of shared waters.

Water versus benefits. Focusing on the benefits derived from the use of water in a river system, rather than the water itself, may facilitate transboundary cooperation. While the allocation of water, particularly in international systems, is often contentious, the real interests of riparians tend to be in the benefits of water use. A focus on the benefits derived from water use may provide greater scope, and hence greater flexibility, in defining cooperative management arrangements that are acceptable to all parties. Transboundary integrated water resources management and planning can optimize the benefits derived from shared water resources and increase the overall productivity of a river system, providing strong incentives for cooperation.

Benefit sharing. If the physical distribution of benefits under a specific river management scheme is not

acceptable to all riparians, however, some sort of redistribution or compensation will likely be needed to foster agreement. The range of benefits under consideration for redistribution is a critical issue. The broader the range, the more likely it is that a mutually acceptable configuration of benefits will be found. In addition to water use-related benefits, issues of mutual interest such as trade and infrastructure interconnections could be incorporated in international river negotiations. Geopolitical relationships, public image, and international support might also influence states engaged in discussions of the cooperative river management. Mechanisms for redistributing the benefits of cooperative international river management schemes between states have included payments for water use; payments for loss of benefits such as inundated lands; power purchase agreements; financing arrangements; and even investment partnerships. The terms of these agreements, for example, whether rates and conditions are more or less favorable than pure market terms, may leverage or lessen the transfer of benefits from one partner to another.

REFERENCES (see them footnoted at the end of the text)

ⁱ This note draws heavily on “Africa’s International Rivers: An Economic Perspective” by Claudia W. Sadoff, Dale Whittington and David Grey.

ⁱⁱ From the Statement of the 1992 International Conference on Water and the Environment held in Dublin