ECONOMIC ISSUES AND IWRM IN DEVELOPING COUNTRIES: SYNERGIES OR HURDLES?

Introductory note to the parallel session "IWRM and the Economy" of the Conference: IWRM, Lessons from Implementation in Developing Countries
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The International Conference on Water and the Environment (Dublin, 1992) ratified the four "Dublin Principles" considered since then the pillars of Integrated Water Resources Management (IWRM). These principles consider water a finite and vulnerable resource and an economic good. The latter characteristic means that water scarcity induces users to treat the resource as an item that has an economic value and can be traded on the basis of a market price.

Considering water as an economic good was a major departure from the 1977 UN Water Conference in Mar del Plata, where clean water was considered as an implicit, fundamental human right (Conca, 2005).

In fact, the Dublin Principles affirmed water as both a right and a commodity, stressing its life-sustaining role but also its economic value in competing uses. The position of local, national and international institutions with respect to this double nature of water, and therefore to the required degree of public sector's involvement in water management, varies substantially, as demonstrated by the two radically different approaches of the World Bank (WB) and the Food and Agricultural Organization (FAO) of the UN. According to Conca (2005), for the WB "IWRM means getting the prices right within a stable, efficiency maximizing institutional framework at the national level", while the FAO "stresses the special attributes of water that make a high degree of government involvement in the sector inevitable".

Besides the position about the nature of water, what determines humans' perception of water as an economic good is its progressively lower availability. This is due to two parallel forces that economists put into the "demand side" of the economic system: 1) the global demographic grow, particularly high in developing countries; and 2) an increase of the consumption per capita consequent to the economic development.

To feed a world population passed from less than 3 billions in 1950 to 6.6 billions currently (U.S. Census Bureau, 2007), agricultural surfaces doubled in the last forty years, particularly in Asia and in the U.S. The agricultural sector is today the largest water consumer in the world (70% of global water consumption, 95% in developing countries). On the domestic uses side, a European consumes today eight times more fresh water than his grandfather used to. Economic development and physical/infrastructural access to water play a major role on domestic water consumption patterns, provoking huge differences and inequities around the world: A resident in Sydney consumed in

2007 1000 liters of water/day, compared with the 350 liters by an American and 150 liters by a European. In most rural areas of Africa, households live with less than 25l/capita/day, considered by the WHO as the minimum water requirement to satisfy basic human needs (Banda et al., 2007).

Faced by this quick and unequal increase of water demand, the first response by policy-makers around the world was to enhance water supply through construction of dams and weirs or digging of wells. But traditional forms of supply enhancement have run much of their course, because fresh water supplies are physically limited (Griffin, 2006). This limitation leads to two negative consequences of water supply enhancement strategies: 1) environmental impacts, and 2) progressively high costs of extraction.

As a consequence, along with alternative supply enhancement strategies such as desalinization, a new paradigm focusing on water demand was adopted by water managers. Water demand management is based on the analysis of competing users' demand and preferences, in order to adopt policy measures (mostly economic, such as charges and subsidies) aimed at modifying consumers' behavior in the direction of a more efficient use of the resource.

Economic analyses play a major role in supporting both water supply enhancement and water demand management strategies. In the first approach, Cost-Benefit Analyses (CBA) and more recently Multi-Criteria Analyses (MCA) must be implemented in order to justify the investments required to improve water availability and supply in specific zones. The second paradigm calls for a refined analysis of individual and sectoral water demand functions, to estimate welfare measures and efficient allocations of water among competing uses. Figure 1 illustrates the concept of "efficient allocation" of surface water between two sectors having different marginal water values.

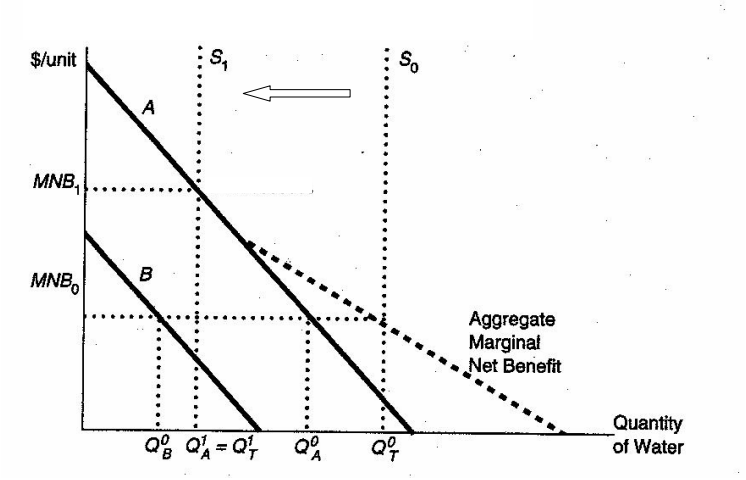

Figure 1 – The efficient allocation of surface water (adapted from Tietemberg, 2000)

When water supply is S_0, it clears the aggregated water demand function (marginal net benefit) at MNB_0, corresponding to an allocation of Q_A^0 and Q_B^0 respectively for the sectors *A* and *B*. When water supply shifts to S_1 (reduced availability), no more water is

allocated to sector *B*, as the aggregated water demand clears S_1 at MNB_1, which is higher than any marginal water net benefit of sector *B*.

According to the presented framework, when water availability is reduced, efficient resource allocation prioritizes sectors with higher water *MNB*. In other terms, water is allocated to those sectors for which the cost (the forgone benefits) of "doing without water" is higher. Hassan and Farolfi (2005) adopted a similar framework to quantify the difference between "real" and "paid" price for water by the different competing sectors of a South African catchment, and to estimate welfare measures deriving from alternative water allocation strategies

Economic methods to elicit water *MNB* for various sectors have been adopted in South Africa, particularly for domestic uses (Banda et al., 2007; Farolfi et al., 2007). These methods include the Contingent Valuation Method, the Travel Cost Method, and more recently the Choice Modelling.

Analytical methods and tools derived from the economic approaches are instrumental in the design and modulation of measures aimed at implementing water demand management policies.

But economic efficiency is only one aspect of IWRM. The difficult task for policy-makers is to be able to manage the resource so that less advantaged communities are not hit by the implementation of market-oriented tools, and that the environmental equilibriums are preserved. Farolfi and Perret (2002) warned about the dangers of introducing a pure water market in the South African rural context, as this would result in the total transfer of water rights allocated to the smallholding irrigation sector towards the mining sector. A similar process was observed by Romano (2001) in Chile after the implementation of a liberal water legislation that established a free water-rights market (public authorities just recorded the transactions but did not intervene in any manner whatsoever in their contents). Smallholders progressively sold their rights to other users, resulting into decreasing agricultural production, then further rural poverty.

A sound water management policy, which by the way goes beyond surface water allocation and considers groundwater management, water quality, pollution control issues and water services provision, should be based on the combined use of economic instruments and command-and-control tools like standards and quotas. Such a policy would increase efficiency in the water use, preserving at the same social and environmental criteria not necessarily considered when adopting a market-oriented approach.

Furthermore, in line with another IWRM principle, stakeholders' involvement is required in order to reach better awareness about water issues and a social consensus around the design and implementation of water policies. Participatory approaches for water management and governance are progressively adopted in western countries and more recently also in developing countries. These approaches are often implemented by multi-disciplinary teams including economists, and consider economic issues related to water management as part of IWRM (Farolfi-Rowntree, 2007).

The road towards addressing economic issues as part of IWRM is traced and possible synergies among different approaches, disciplines and strategies exist. Still there are hurdles coming mainly from the lack of dialogue among specialists from different disciplines and between policy-makers at various levels of governance and water experts. More information concerning the available tools and approaches, as well as an improved communication among the multiple actors in the sector seem to be the only option to follow if more efficient, equitable and sustainable water management is our common goal.

A Conference that fosters this dialogue by discussing recent experiences and lessons of IWRM implementation around the world, and particularly in developing countries, is an exceptional opportunity for economists and social scientists, but also for all specialists, decision-makers and local water users willing to contribute to the design and implementation of sound and sustainable water policies.

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