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**Water Markets, Commodity Chains and the Value of Water \***

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*\* Editor's Note: The following document is an excerpt from a draft chapter (of the same title) authored by Marcus Moench and S. Janakarajan.*

Notes for a panel presentation  
at the conference on

“Allocating and Managing Water for a Sustainable Future:  
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Natural Resources Law Center Conference  
University of Colorado School of Law

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# Water Markets, Commodity Chains and the Value of Water

Marcus Moench & S. Janakarajan

## Core Argument

The objective of this paper is to situate debates over the functioning and role of water markets within concepts of management and adaptation. This paper will argue that existing water markets in South Asia are fundamentally different from the formalized, legal rights-based, water markets of the western U.S. Existing “informal” water markets are neither inherently equitable nor inherently inequitable. Much depends on how equity is defined. In most situations, only one dimension of equity: whether or not users have access to similar volumes of supply, is considered. Other dimensions may, however, be equally important and lead to different perceptions of whether or not water markets contribute to the larger degree of equity within society. Key dimensions of equity that need to be considered in any evaluation of the impact of water markets include:

1. Access equity: the standard question of whether or not current populations have relatively equivalent access to the common heritage resource of water;
2. Intergenerational equity: a more complex question of whether or not water markets encourage uses which contribute to the sustainability of the resource base and, therefore, maintenance of a common heritage for future generations. This question is more complicated than it may seem because equity between generations is not just a question of the sustainable use of water but also involves questions of capital formation and transformation – i.e. social equity in future generations could be increased if unsustainable uses of water are used to create other (larger and better distributed) forms of social, economic or other capital.
3. Intersectoral equity: This is a question of whether or not widely held views on how water *should* be allocated are actually present when water is used. This may involve, for example, a question of whether or not all people have access to good quality water for fundamental survival and domestic needs or whether uses that have a lower social priority (such as industrial uses) are able to capture available supplies. This issue is also present, for example, between urban and rural users and between agricultural livelihoods and industrial expansion.
4. Broader social equity: This is a question of whether or not differential access to water over time allows better endowed sections of society to increase their rate of capital accumulation while less endowed sections remain at roughly the same level or decline. In either case, the degree of differentiation within society between the “haves” and “have-nots” will increase over time. Even in situations where *everyone* is better off in an absolute sense, the degree of differentiation may have increased and the social tensions with it.

Most discussions of equity in relation to water resources address the first, or at most, the first two dimensions. Water markets may, in some situations, increase access equity (the first dimension). How they perform on other dimensions is open to question and has not been investigated in a rigorous way. It is clear that water markets do not capture *in situ* values (environmental values, sustainability, etc.) associated with water resources. They do, however, play a valuable role by increasing access to water and the reliability of water supplies in rural areas. While clearly imperfect, in urban and peri-urban areas water markets are also an effective mechanism for shifting water from relatively lower value to higher value domestic uses while also forcing consumers to pay relatively high rates. Water markets do create strong incentives for efficiency and water conservation at the level of individual users. Furthermore, unlike most urban water supply systems, where subsidies are captured by wealthy consumers with access to both storage and the piped system, water supplied through urban markets is unsubsidized. If existing urban water supply systems can be reformed so that they deliver sufficient supplies to meet the basic needs of all sections of society, then existing water markets may be an effective mechanism for meeting the demand for more water services by the wealthy.

Overall, existing water markets represent a partial, but highly adaptive, set of institutional arrangements for meeting the water needs of urban and rural residents. This is occurring without establishment of a quantitative or other formalized water rights system that goes beyond basic rights of capture. Approaches to addressing regional water needs and problems that recognize the role being played by existing water markets may be able to identify key points of leverage for meeting urban water needs *without either fundamental institutional reforms or large-scale interbasin transfers*.

## **Water Markets and the Value of Water**

Globally, the last two decades have seen an increasing focus on the role of markets as a mechanism for allocating water and communicating its value to users. Water markets are, in many water management circles, seen as an important if not essential tool for reallocating water away from agriculture, the largest user, to meet growing urban and industrial demands. More fundamentally, markets are increasingly seen as an important mechanism for communicating the economic value of water and, thus, for encouraging conservation and efficient use both within and between applications.

Debates over water markets are often clouded by confusion over what is really being discussed. The primary model for water markets has been that developing in the Western U.S. This model involves a well established, though far from perfect, set of quantitative water rights systems and substantial government involvement in regulating transfers to avoid the above mentioned externalities and third-party impacts. Although transfers between individual end users are possible under the model, much of the water

market activity involves the transfer of substantial quantities of water between institutional users – such as agricultural water districts and municipal water supply authorities. The Western U.S. model is fundamentally different from the indigenous local water markets found throughout South Asia and many other parts of the world. Although often discussed using the same terminology, local water markets in South Asia are based on informal rights of capture (if you can physically pump or divert water, you can sell it), not on quantitatively defined rights systems. They generally involve very local and volumetrically small, transfers of water between individual users (adjacent farmers or farmer-industrialist, farmer-tanker owner) rather than institutional users. Finally, because the markets are “extra-legal” governmental regulation of their functioning is minimal to non-existent. (Moench 1994)

Attempts are being made to replicate the Western U.S. model in locations such as Chile, Mexico and South Africa where legislation has been passed to reform water rights and, in some locations, to register wells. The success of such approaches is widely debated. As Carl Bauer (Bauer 1998) discusses in his well researched and documented book on the Chilean case, “Chile’s experience with free market water policies has been uneven.” (p. 119) According to him, the new water code has worked relatively well within the agricultural sector – separating water from land ownership has enabling flexibility and encouraged consolidation of water user associations as separate entities from the state. Major problems have, however, emerged with other aspects. Equity is a concern since “Peasants generally lost out in the transition to the new Water Code” and there have been “serious problems” with “intersectoral relations at the regional or river basin scale” where the new legal framework has “done a poor job of coordinating different water uses and resolving conflicts between them.” (Bauer 1998) On a more fundamental level, Bauer argues against the, often touted, proposition that “markets – as opposed to governments – are neutral, objective, and apolitical.” Instead he makes the point that:

“To exist and operate over time, markets depend not only on economic factors of supply and demand, but also on many extra-economic factors and prior definitions: such as political decisions, legal rules, cultural attitudes and geographic and environmental conditions. These factors and definitions are affected by relations of social and political power and by the distribution of wealth. Markets can be no more neutral than their surrounding social contexts and underlying institutional arrangements.” (Bauer 1998)

Finally, Bauer makes a point of great relevance to the South Asian situation when he points out that water rights and market based approaches are critically dependent on the capacity of the judicial system. Because water transfers often affect basic livelihood and economic development questions and because water rights are extremely difficult to fully define, conflicts are an inherent part of any reallocation process. As a result, “the capacity to resolve conflicts effectively and with legitimacy is especially critical in a neoliberal legal and economic model, a model built around broad private

rights and liberties and a minimal state. This capacity depends on the judicial system which must control state regulation and balance different private rights. The courts must be fairly independent from other branches of government, and willing and able to rule on disputes with substantive policy implications.” (Bauer 1998)

Bauer’s analysis highlights the importance of understanding basic market assumptions before entering any debate over the positive and negative aspects of water markets. As Frederick indicates:

“Two conditions must be satisfied for the development of efficient markets. There must be well-defined and transferable property rights in the resource being transferred, and the buyers and sellers must bear the full benefits and costs of the transfer. Both conditions are now commonly violated for water resources. The fugitive nature of the resource makes it difficult to establish clear property rights, and the interdependence among users might cause externalities or third-party impacts when the use or location of water is changed.” (Frederick 1996)

The above issues are, perhaps, particularly problematic in the case of groundwater resources. With groundwater, benefits perceived by users are generally limited to *extractive* values. *In situ* values – the maintenance of aquifer levels, the insurance value of water held in stock, and environmental values such as groundwater contributions to stream base-flows – tend to be public goods. As a result, the value of these goods is generally not reflected in groundwater use patterns or prices (National Research Council Committee on Valuing Groundwater 1997). In addition to the *extractive – in situ* distinction, definition of groundwater rights in a manner that is transparent and reflects third party considerations is particularly difficult due to technical limitations in the ability to quantify water balances and aquifer characteristics. Groundwater is an “invisible resource,” and key aquifer characteristics including the amount of water available on a sustainable basis are often technically impossible to determine within the parameters of available data (Moench 1995; Burke and Moench 2000).

Due to the above types of market failures, the effectiveness and equity of water markets as a mechanism for efficient, equitable and environmentally sustainable water allocation, is widely debated even in the Western U.S, the “type locality.” Water markets in the Western U.S. have generally been thin – involving limited volumes of water and a relatively small number of transactions (National Research Council 1992). There have also been major debates over impacts on the ability to protect instream flows, third parties including other right holders and areas of origin, and impacts on vulnerable sections of society including minorities, Native Americans and the poor (Nunn and Ingram 1988; Moench 1991; National Research Council 1992; Moench 1995). Conceptual concerns over the use for market frameworks in natural resource management have been expressed since such approaches were proposed. In the early 1970s, for example, Schwab indicated that : “Profit-motivated behavior in a free market framework cannot be expected to exhibit much concern for conservation. It will tend to sacrifice the

uncertain future for the more predictable present. To protect society against the risk of future shortages and crises, there will have to be active government involvement...” (Schwab 1972). Finally, there are ethical concerns about the basic premise from which water markets start, e.g. individual private ownership over what has historically been a common heritage and public resource (Moench 1995).

In many cases, debates over water markets have become polarized along ideological lines. Those who believe in neoliberal economic perspectives advocate them on principle with little recognition of the complexities Carl Bauer highlights in his analysis of Chile (Bauer 1998). Many others criticize markets without providing any insights on alternative mechanisms that can provide the allocation flexibility and efficient use incentives markets enable. Markets can be seen as filling a vacuum left by states, which are unwilling or unable to provide basic resources for their citizens. They can also be seen as a framework for allocation that decentralizes decision making to the level of individuals and reduces the intrusion of bureaucracy into everyday life.

The above debates, while important to recognize, will not be resolved in this chapter. What we believe is important to recognize is the near universal agreement that changing economic and demographic patterns over coming decades combined with increased recognition of environmental needs will necessitate the development of balanced and flexible mechanisms for water allocation. As a result, probably the most critical issues are not ideological but practical. They include the following questions:

1. Do water markets, as they currently exist “on the ground” in developing countries provide some of the flexibility and incentives for water conservation that will be essential to meet needs over coming decades?
2. Are relationships across water transactions equitable or are they embedded in social relationships that create conditions for forced sales or other forms of inequity?
3. Are major third party impacts evident in the functioning of water markets? and
4. What should the role of governments and international institutions be in relation to existing, imperfect, water markets? In specific, how much reliance should be placed on attempts to create the types of private rights systems and government regulatory frameworks that represent the essential foundation for formalized markets of the type found in the Western U.S.?



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