

# Introduction: Why markets matter

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Kendra, the editor of this book, lives on the outskirts of London. After water privatisation in England and Wales in 1989, water and sewerage services have been provided to households by private companies operating essentially as regulated local monopolies. One of these private companies supplies her water.

Despite its reputation for an extremely wet climate, Southeast England has been unusually dry in recent years. This has presented the possibility that people might need to use water more efficiently.

For households fully to understand – and hence manage – their water consumption, their water use must be metered and each drop subject to a charge. In the summer of 2005, a water company representative visited her residence, determined the need for a meter, and marked an area outside for its installation. Amidst the possibility of a more intense drought in the summer of 2006, she is still waiting for the meter seven months later.

If this situation is multiplied across millions of households in London and Southeast England, then individual contributions to averting a potential drought may not be forthcoming. Some estimates suggest that London's water system loses 40 percent of its water (a problem resulting from relatively older infrastructure). As such, it could make sense for water companies to invest in updates and improvements to ensure that less water is lost.

However, if water companies do not possess a means to measure water consumption by individual households, then they lack sufficient information about how prices should reflect the

relative scarcity of water. Thus, they will not know how much to invest in improving and repairing infrastructure.

An equally important issue presented by the potential drought is the economic implications of excessive water being used for subsidised agriculture in the region. If prices accurately reflected relative scarcity, it is unclear that this economic activity would be a viable use of water.

Issues raised in the context of a potential drought in Southeast England may seem petty compared to water issues in other regions around the world. Indeed, these problems pale in comparison to grave issues pertaining to water in poorer countries considered extensively by contributors to this book.

However, the greater wealth of people in the UK and other rich countries enables us to be concerned about the individual and aggregate implications of our water use. Indeed, we might call this a consequence of the ‘environmental transition’, an idea discussed by Indur Goklany (Chapter 1). Since we have already addressed a more urgent and fundamental problem – having access to a clean, reliable supply of water – we can invest scarce resources in ensuring that we have an ever-more sustainable supply of water.

With that in mind, contributors to this book address a wide range of geographical areas and topics. They consider urban water and sanitation, and also examine the use of water in agriculture and industry more generally. They offer both theoretical explanations and wisdom derived from practical examples. The chapters are not intended as a technical manual, and they are intended to provide a representative rather than exhaustive perspective.

### **A ‘common good’?**

It is often claimed that water is a “common good.” This observation is true to some extent: water is, indeed, all around us. It falls from the sky into oceans, lakes, rivers, and streams, in different proportions around the planet. The hydrological cycle is itself an amazing process by which water constantly is recycled in the earth’s atmos-

phere. As a result, some regions are blessed naturally with sufficient water (and sometimes too much), while other areas receive relatively less.

However, the claim that water is a ‘common good’ is often a ruse for justifying all manner of inappropriate policies for its use and management. These include – but are not limited to – government subsidies both to companies and users (for which taxpayers ultimately foot the bill); allocation by politicians and government agencies; and collective ownership. Ownership of water is truly a complex issue relating to the presence or absence of institutional arrangements in any society at a given time, discussed in more detail below.

Referring to water as a “common good” is also used to justify opposition to any form of valuation by commercial or individual means, through prices (but more importantly, through markets which generate prices). Usually without any more discussion, such solutions automatically are castigated as being greedy, selfish, profiteering, a symptom of our “ever-more-commercialised culture”, and a derision of our “common heritage.”

Those who repeat the notion that water is a “common good” seem not to understand that water in its natural form is usually not appropriate for human uses. For instance, humans are ill-advised to drink water directly obtained from streams, lakes and rivers because it is likely to contain bacteria which would make us sick. In fact, somewhere in the range of two to four million people (including at least 1.7 million children) die every year around the world because they contract diarrhoea and other diseases from water which has not been sufficiently treated and processed (WHO 2005).

At the same time, the scientific and industrial procedures entailed in the production of medicines to treat many kinds of diseases (including new vaccines to prevent diarrhoea) require water of nearly 100 percent purity. In its natural state, water is not clean or pure enough for such uses.

Water is both a vital and instrumental good. It is vital because all life requires water. It is instrumental because humans use water in

a variety of products and processes, at different times, in different places and with different quality requirements.

Humans in both urban and rural areas need to use water, but many of these uses are quite different. Dense urban areas yield many benefits – but delivery of clean water and removal of dirty water (the inevitable by-product of human settlement) becomes especially complex when people live in concentrated settings.

In contrast, rural areas may or may not have access to groundwater for household use, and poor sanitation may present fewer hazards than in an urban setting. However, rural people in poor countries around the world largely are engaged in agricultural production. A majority of the world's water is used in irrigation, and the availability of water can make or break a poor farmer.

The process of delivering a specific quality of water to the right place, and at the right time, involves expenditure of resources. Potable water, sewerage and wastewater treatment systems require pipes, treatment facilities and proper management (in the form of skills that are in relatively short supply). When such systems do not exist, people must spend time and resources to acquire clean water and to dispose of dirty water. Irrigation water must be provided by someone and must come from somewhere – be it surface water in reservoirs, groundwater or other sources – and this involves delivery costs.

In short, there are economic costs entailed in processing, delivering and removing water in all of its embodiments, regardless of who performs these services. This is why water is an economic good which deserves to be included in, rather than excluded from markets. To encourage the best use of scarce water, it is imperative that humans be able to value water in its different uses: in a potable form piped to households, as a service used for environmental purposes, and used to produce goods and services.

The contributors to *The Water Revolution* present considerable evidence to support the view that markets, especially in the context of supporting institutions, and especially when compared to alternatives, produce the fairest and least discriminatory outcomes, the

most innovation, the most environmental benefits and the most efficient and dynamic uses of scarce water.

### The role of markets

Colin Robinson (Chapter 8) – observes that markets, like all human institutions, work “imperfectly.” Thus, it is not helpful to use “perfection” as the standard by which we evaluate water services (Segerfeldt 2005). It is useful, for our purposes, to consider degrees of “imperfection.” Judging from contributions to this book, government allocation of water wins hands-down.

Based on two paradigmatic examples of countries (Chile and Ecuador) which have followed two different paths for managing water, Douglas Southgate and Eugenio Figueroa argue that non-market allocation frequently “creates inefficiency, inequity and damage to the environment” (Chapter 3).

First, they show that in both urban and rural areas, poor people “derive little benefit from subsidies – including poor cost-recovery in potable-water systems.” During the 1980s, Quito's municipal water company recovered only 50 percent of its costs. Similar losses are experienced in urban water systems of many African countries (Chapter 7).

Why do economists refer to poor “cost-recovery”? Costs matter, because they reflect the relative scarcity of a resource. Infrastructure, such as treatment facilities and pipes, entails a cost – because the materials in those pipes could be used to produce other goods. Maintaining that infrastructure has a cost – because people expect to be compensated for the use of their skills (most people tend to be averse to working “for free”, all of the time). A water system may not cover its costs if it loses large or excessive amounts of water, if it subsidises consumption for industry and households, or if it does not bill its users and collect their payments. Fundamentally, poor cost-recovery means that a system does not generate sufficient revenue to invest in maintenance, innovation, or environmental improvements, such as watershed conservation.

The crucial difference between public and private sector systems is that private sector water providers possess a metric – in the form of market-driven prices – which enable them to measure and control their costs, in the interest of earning a profit.

Colin Robinson (Chapter 8) discusses the theoretical and practical aspects of public versus private sector provision of water. He contrasts privatised water and sewerage companies in England and Wales with Scotland's nationalised water company, which has millions of "captive customers." Nationalised industries in England and Wales before privatisation had poor standards of customer service – but customers had no other choice. Robinson concludes that "almost always and everywhere, politicians' bans on competition are an extremely bad idea."

Those who maintain that water is managed best when it is owned collectively should pay careful attention to the perilous situation of China (Chapter 6). The state has declared that it owns all of the country's water and until recently, the state allocated licenses to water users. In a country where water is already relatively scarce, this "top-down" management has led to hugely inefficient utilization, extensive water pollution and adverse human health impacts.

Wang Xinbo observes that China's shift towards private sector investment in water supply (particularly in urban areas) has been a difficult process because it lacks pre-existing market disciplines. The country's public utilities are overstuffed but have poor maintenance (both are characteristic of government provision of water). The utilities have accounting methods used by China's government agencies – and lack a basic tally of costs and assets. The utilities have also overestimated water supplies, and have thus over-invested in capacity, a primary cause of China's "pump race."

What all of this demonstrates is that subjecting water providers and users to the discipline of competitive market processes is the best way to ensure both that costs do not spiral out of control, and that customers receive quality service at competitive prices. A company which does not pay attention to those critical details is liable to go out of business (unless it receives a government subsidy).

It is often alleged that water is deserving of taxpayer subsidies, in one form or another – whether the subsidy accrues to poor household users, farmers or industry. In Ecuador, subsidised irrigation generally benefits the politically-connected and privileged elite and not the rural poor (Chapter 3). The same story is true in most countries. The elite accrue the benefits of subsidies through increased values of real estate – while the costs are dispersed among the tax-paying public.

Poor households in African cities are also unlikely to benefit from subsidised water (Chapter 7) for a variety of reasons. One is that municipal governments require proof of property ownership to grant access to subsidised connections; it is truly perverse that governments deny their poorest citizens the ability legally to own their dwellings. Another is that government-sanctioned vendors are liable to mark up the price of subsidised water provided by a utility: in the case of Nairobi, Kenya, the price was 18 times greater.

The belief that governments will allocate water efficiently and fairly is based on the flawed assumption that public authorities will "faithfully safeguard the public interest by turning a deaf ear" to rent-seekers (Chapter 5). In practice, this is not the case, whether in China, India, Ecuador, Kenya, Ghana, Tanzania or the UK.

The reason is not, as Colin Robinson points out (Chapter 8), that government officials are bad people. It is because politicians, government authorities and public officials *are* people: their incentives do not change in a political setting.

This is why politicians fall victim to 'rent-seeking': their political power enables them to allocate government's resources to themselves, their friends and lobbying interest groups. Across the world, political interest groups are concentrated and powerful, and they respond to incentives created by the political system. In the world's poor countries being a member of the wealthy elite is often synonymous with possessing political power – and vice-versa.

This helps to explain why across Africa, government officials are averse to recognising the existence of informal settlements where new urban populations live, such as shanty-towns and slums

(Chapter 7). By denying these people land tenure and refusing to extend public services such as water, the implication seems to be that if they are ignored, they will go away.

Both municipal and national governments have contributed to the water and sanitation gap in African countries. Because they have no metric (prices and costs deriving from markets) by which to decide whether or not to invest in extending their water and sewerage networks, they view extra people as a burden on systems which are already strapped for cash. But there is a way out of this mire, both literally and figuratively.

First, it is imperative that urban planning systems in African countries are reformed so that they formally recognise their growing populations. Currently, the definition of an urban area is the area which benefits from services ostensibly provided by governments – such as water and electricity. This is tautological and counterproductive.

Second, entrepreneurs – of all sizes, shapes and forms – view extra people as a business opportunity. In Africa's cities, they have found cost-effective ways to deliver water and provide sewerage services. Informal entrepreneurs supply those services to fellow residents of slums and shanty-towns (Chapter 7). Albeit an unenviable job, they supply a necessary service in exchange for payment. A similar situation exists in illegal squatter settlements in urban India (Chapter 4), where residents pay to have piped water delivered to their homes twice daily.

At the same time, governments in India and Africa perpetuate barriers to entrepreneurship which can be referred to as “transaction costs.” These transaction costs are especially harmful for the operations of informal sector entrepreneurs. It potentially could take months, if not years, and dozens of procedures to obtain legal recognition for a business, or to enforce a contract.

Though competition between informal entrepreneurs is relatively free, the fact that governments have not formally recognised their existence is extremely problematic.

Without formal sanction, these entrepreneurs are held back. It is

prohibitively expensive for them to expand their services, to innovate and address problems. While they can acquire capital from their families and friends, they cannot obtain larger loans from commercial lenders. Moreover, they are unlikely to accrue all of the benefits of their own innovation and investment.

In part these problems exist because the state may apply its blunt and heavy hand if given the opportunity – whether this entails extortion or confiscation of capital. High transaction costs mean that those entrepreneurs are unable to take advantage of potential economies of scale. Reforms are imperative both to achieve better allocation of water, and to enable economic development more generally.

As demonstrated so well in the case of Chile (Chapter 3), this strategy can yield huge benefits for the poor and for the environment. Douglas Southgate and Eugenio Figueroa doubt that “the competition over water resources inevitably created by economic expansion could have been resolved as effectively in the absence of policies that stress ownership and markets.”

A fundamental lesson of this volume is that the right kind of privatization entails the creation of an enabling environment for entrepreneurs. To harness the full power of human initiative and market competition requires the market process to be underpinned by supporting institutions. Andrew Morriss discusses the nature of these institutions (Chapter 2), noting that they must be flexible enough to accommodate the dynamic nature of water uses.

### **Markets, innovation and the environment**

Indur Goklany (Chapter 1) demonstrates that during the 20th Century, the benefits of technological innovation accrued to land, but largely not to water. Land use became more efficient because of investments that enabled better crop yields, and more efficient use of agricultural inputs such as pesticides and fertilizers. This process yielded many tangible benefits to humanity and the environment. Goklany argues convincingly that it is the existence of property

rights and markets which explains relative gains in efficiency in land, compared to parallel inefficiencies in water.

It is here that the true benefits of markets are apparent. In the absence of markets, argues Andrew Morriss (Chapter 2), users of water have no way to determine the value of their scarce resources. This prevents beneficial trades from occurring.

Chile is one example where reforms enabling the use of markets to allocate water have simultaneously created economic and environmental benefits (Chapter 3). The Limari Valley, an arid area north of the capital city, Santiago, has a spot market for water which has reduced the costs of transactions between farmers. Farmers can fully understand its relative value in different uses. Because they pay the full cost of their water, they have an incentive not to waste it. As a result, they produce crops with a higher economic value, such as grapes for wine production and fruit for export.

The same phenomenon has occurred in Gujarat, India, with groundwater, which is managed by users and riparian owners (Chapter 5). More and more, farmers here are investing in devices such as drips and sprinklers to enable them to squeeze the most out of every drop of water. As a result, they have invested in producing higher-valued orchard crops.

All of this provides solid evidence to corroborate the insights of both Indur Goklany (Chapter 1) and Andrew Morriss (Chapter 2). Morriss explains that using markets to allocate water creates superior outcomes in light of alternatives, because they enable people to transact with each other. By enabling more transactions to occur, markets reduce the costs of transacting. Markets generate a great deal more information compared to alternative arrangements, which in turn feeds innovation. One consequence of innovation is that more may be achieved with fewer resources; in the case of water, this means developing technologies that enable conservation, re-use or recycling. Such innovation could apply across the board in household and industrial uses of water.

Those who oppose market allocation of water have suggested that environmental resources should be owned collectively. Simi-

larly, they portend that extending market institutions to the environment will result in certain gloom and doom. Practical experience shows us why this is not true. Insofar as resources are owned collectively or even by governments, in practice they are owned by no one. Andrew Morriss points to the tragedy of the Aral Sea, “perhaps the largest environmental disaster relating to water in modern times.” He notes that “only a government can create a disaster of such a magnitude, for only a government can seize property rights on such a scale without paying compensation.”

### **Allowing institutional arrangements to evolve**

Ambrish Mehta (Chapter 5) provides a case study which explains how farmers in one region of India used decentralized initiatives to address water scarcity. Outside “experts” claim that their methods are chaotic, on the basis that they have not been subjected to top-down government planning.

He demonstrates clearly and eloquently why local people – not the collective mass of humanity as represented by the government of Gujarat, the government of India or the United Nations – are better at protecting the environment. Local people are more likely to be intimately involved with a resource. They develop institutional arrangements that enable their resources to be utilised and managed in a specific time and place, but those complexities may not be apparent to the naked eye. Farmers in Saurashtra have identified and innovated a solution to manage local water. This solution has “expanded the pie” (in terms of water availability) rather than creating conflict over an “existing pie.”

Saurashtra’s farmers have re-asserted their riparian rights in the face of government intervention. Their institutional arrangement has evolved in their specific context, but it might not work elsewhere. Other parts of India have evolved similar solutions to encompass local knowledge (Shah 2005). Importing particular “solutions” from elsewhere or imposing them with top-down governance is unlikely to create long-term, peaceful solutions to water (and resource) scarcity.

A parallel example, which is more formalized, involves protection of water courses in England and Wales. As documented by Roger Bate (2003), the Anglers Conservation Association (ACA) uses common law to defend and protect water courses from polluters. This not only improves water quality for fish and anglers, but also creates environmental amenities for additional users. Because the ACA relies on formal property rights, it has even been successful at challenging pollution caused by the state.

## Conclusions

A degree, or even a large dose, of pragmatism is needed in the debate about water. Solving water scarcity in the 21st Century means extending – not narrowing – the role of markets and their underlying institutions. The poor, the rest of humanity and the environment will benefit from practical solutions entailed by market solutions to water scarcity. Water is vital and deserves to receive the full benefits of being subjected to competitive market processes.

Markets and their supporting institutions are one of the best means we humans have for dealing with one another in utilizing and managing our scarce resources. This is not to say that such arrangements are the “end all, be all” of human existence. Instead, we should view markets as an instrumental good which enable humans to fulfil our myriad needs and pursue our myriad goals. In an era where the people in the world are becoming ever more connected to each other, markets and their underlying institutions must be strengthened.

## References

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