

## Book Review

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### Living with Water Scarcity

By David Zetland.

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Growing populations, rising income and new consumption patterns make water scarcity a critical issue for communities that previously were able to rely on abundant natural or engineered water supplies. *Living with Water Scarcity* by David Zetland simply and concisely provides lessons from economics for a broad range of sectors that must address water scarcity. In developed countries, almost all major uses of water are regulated by some governmental body, and these policies and regulations shape behavior and outcomes. Zetland describes the folly in many common policies that were designed during periods of perceived abundance. Demand, even in arid regions, could largely be satisfied with engineering solutions such as dams and canals. However, these approaches fail when faced with scarcity, and simple solutions are presented that require drastic changes to institutions. Zetland acknowledges that institutional change is difficult, and in order to forge a new water paradigm society must recognize that we live in a world of scarcity. This is particularly difficult in the presence of vested interests currently benefiting from artificially cheap water that wants to maintain the *status quo*. Zetland's central argument is that the mindset of plenty is outdated and must be abandoned in order to make progress in managing scarce water resources.

The book is divided into two sections with the first focusing on excludable water (private goods and club goods) and the second describes non-excludable forms of water (public goods and common pool resources). Section 1 covers water that is best categorized as a commodity, and Zetland explains why free market principles are the best way to manage water in these settings. Embracing markets will require an overhaul of many institutions that were established when the

primary goal was to utilize as much water as possible for commercial purposes and prevent “wasted” water from flowing into the ocean. Next, Zetland describes how well-intentioned municipal water regulations that typically subsidize tap water create additional problems. One compelling example poses the question: who pays for urban growth, which requires costly supply expansion? Under an “equitable” system where all users pay the same price for water, existing users will subsidize new growth. Therefore, property developers and consumers in new suburbs may not face the true marginal cost of water.

Zetland offers similar examples for commercial water use. Profiting from water is not problematic provided that industry pays the full cost of water, including the environmental impacts of extracting water from ecosystems and aquifers. As the agricultural sector is the largest water user in most countries, Zetland devotes an entire chapter to agricultural water. He argues that the agricultural sector does not deserve the privileged inheritance of cheap water derived from a legacy of subsidized infrastructure projects and an over-allocation of water rights. Zetland describes how markets for agricultural water can help cope with scarcity by allocating water to its highest-valued uses; and that these markets are thriving in places such as the Murray–Darling Basin in Australia. This is the key point in the section on private water use: Markets can efficiently distribute water to end users in the presence of scarcity provided that the price reflects the true cost of water. There is a paradox that regulators are concerned with water scarcity but often prohibit utilities from charging for the water itself. These zero-profit constraints only allow prices to reflect financial costs, and as Zetland states, “This pro-consumer regulation will leave consumers thirsty unless it is updated to reflect the interaction of supply and demand.”

Section 2 begins with the politics of operating and regulating a natural monopoly. Managers must have “skin in the game” in order to improve outcomes when water utilities enjoy a natural monopoly. Competition from private providers and benchmarking performance standards are two ways that managers can be held accountable. Additional problems of political economy exist in the provision of water infrastructure, where corruption and path dependence lead to expensive problems. National spending on water infrastructure generally benefits a select group, often farmers, while the general population bears the costs. This is exacerbated by the dominance of giant costly engineering projects (gray infrastructure) that are hard to change as opposed to natural solutions (green infrastructure) such as maintaining wetlands for flood protection that provide more flexibility. The transition from gray to green infrastructure and ending the practice of subsidizing water projects at the national level are two additional examples of the need to changed deep-rooted institutions and ideology of current water policy.

Additionally, engineering solutions often divert water from its natural course, which leads to water conflicts. Outdated laws result in legal water diversions creating clashes, as evidenced by rural Californians' outrage and the ensuing legal battle over Los Angeles draining Owens Lake. This has attracted attention in the media over looming water wars. However, Zetland maintains that most "conflict water" is relatively low in economic value, and that international water conflicts are best addressed by local or regional authorities as opposed to national governments.

In the vein of "social water", there has been much discussion of a human right to water as evidenced in the new United Nations Sustainable Development Goals and their precursor, the Millennium Development Goals. Zetland sees this as cheap talk. Reliable safe water will be available to rich individuals and those with honest governments, while the poor living with corrupt governments will not have adequate access to water. Strengthening property rights is Zetland's preferred mechanism to best provide water to poor people living in countries with corrupt governments. A water registry, where all citizens own the right to a nation's water and earn a share of revenue from all water sold as a commodity, is a way to establish property rights for water and provide income that poor households can use to pay for water services. Zetland mentions several times the importance of accounting for environmental flows before allocating water for commercial purposes. In the last chapter, Zetland acknowledges that differences in environmental preferences, free riding, and vested interests create challenges for determining how much water to leave instream. However, as water scarcity increases we will all need to make do with less.

The book covers an impressive amount of material in just over 100 pages. Due to this brevity, some sections leave the reader with questions. How can scarcity pricing work when short-run elasticity is small in magnitude, and what are the dynamics of temporary price increases? How can a water registry help the poor in corrupt countries with poorly-functioning institutions? What empirical evidence causes us to prefer green versus gray infrastructure? This book is not meant to answer all these questions, but applies basic tools from economics to water issues more generally. A summary of the academic literature on some of these issues is available in [Olmstead \(2010a,b\)](#). The simplicity of Zetland's book is appropriate for practitioners in the water industry without any economics background, though it is thought-provoking for experienced economists as well. For readers looking for a strong theoretical background of issues such as pricing in natural monopolies or efficient water quality regulation there are other books that can complement *Living with Water Scarcity* (see among others [Griffin 2006](#); [Rogers et al. 2006](#); [Young 2005](#)). Another option is Zetland's first book *The End of Abundance*, which offers a more detailed analysis.

In this book, Zetland succeeds in his concerted effort to keep the message and language both simple and straightforward, thereby making the book accessible to a wide audience.

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