Book Reviews

Allan, Tony. 2011. *Virtual Water.* London: I.B. Tauris.

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In his opening remarks to the Sixth World Water Forum in 2012, French Prime Minister François Fillon declared the dominant development model a failure and called on the audience to join him in forging a new industrial revolution. "What is at stake here," Fillon said, "is the historic change of our societies from a development that is economically efficient but environmentally destructive to a model that combines economic development, the fair sharing of resources among the regions of the globe, and the preservation of ecosystems."[1] Among the several necessary steps to achieve this transition, Fillon attached special importance to the need for a new World Environment Organization and a new "compass" of economic development, one capable of fully integrating ecological and social costs into political and economic decision-making.

At present, many of our best efforts to assess the costs of water governance decisions fall well short of Fillon's revolutionary vision. Too often these decisions are based on calculations of water withdrawals rather than water consumption. The former measures the water that is extracted from a river, aquifer, or lake (blue water) to advance a proposed development scheme, whereas the latter measurement also includes the water extracted from soil and the environment (green water). Until recently, the costs of green water use were hidden from view, partly because they are difficult to measure and also because they are difficult to value. Our failure to overcome this measurement problem means that our present "compass" of economic development is pointing us toward a dangerous path of intensifying water scarcity.

Tony Allan's *Virtual Water* is the culmination of a lifelong effort to bring these hidden water costs into the light of day. A geographer by training, Allan developed the virtual water concept in an effort to describe the geospatial relationship between food production and water. Put simply, virtual water is the total quantity of water required to grow, produce, package, and ship food or any other commodity. The problem is that we are "willfully blind" (p. 8) to the role that water plays in our economy. It is this failure that allows us to degrade the complex biophysical systems that supply, regulate, and treat our freshwater resources. Allan's solution is to convince water managers to take virtual water seriously by encouraging them to fully integrate all the input costs into commodity prices.

1. Fillon 2012.

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This book is written for a general audience, not a technocratic one. By now, most water managers are familiar with the virtual water concept, which is evident in the integration of this concept into key water resource studies, like the *World Water Development Report.*[2] It is also evident in the ease with which key decision-makers reference the concept at major international water conferences, such as the World Water Forum. The problem is convincing decision-makers to do more than talk about virtual water; the challenge now is getting them to act. Thus, by making the virtual water concept accessible to the general public, Allan hopes to instill a healthy dose of "calculated fear" (p. 259) in the minds of politicians. The goal of this book, therefore, is to convince the voting public of the need to hold its elected representatives accountable for the exhaustion and degradation of water resources.

In this respect, the book is a resounding success. Allan uses plain language to convey the severity of environmental, social, and economic challenges as they relate to the virtual water concept. Brief case studies of the United States, Spain, China, and Brazil are effective in exposing the severity and complexity of the problem. Allan's thesis is a liberal one: trade in food and commodities ensures water security, stimulates economic growth, and prevents water wars. Allan nevertheless makes a compelling case for market intervention on two fronts. First, he calls for the full integration of inputs, including natural infrastructure, into commodity pricing. Second, he argues against market-distorting agricultural subsidies in the United States and European Union. By thus improving our signifiers of relative scarcity, Allan hopes to stimulate investment, reduce consumption, and guard against wasteful or destructive policies.

This book is not without its flaws. Terms are often introduced in passing, only to be fully defined and developed several pages later. Additionally, the effort to avoid excessive jargon occasionally breaks down, giving way to a sudden and confusing deluge of juxtaposed terms like water footprint, virtual water, and water security. Undergraduate readers will likely find such passages confusing. These flaws aside, *Virtual Water* offers a strong empirical case for forging a new development model for water governance and would make a strong contribution to undergraduate courses in global environmental politics or water resources management.

References

Fillon, François. 2012. Opening Remarks to the World Water Forum. March 12, 2012. Marseille, France. http://www.worldwaterforum6.org/fileadmin/user_upload/pdf/12-03-2012/03.12_Discours_du_Premier_ministre_%C3%A0_Marseille__Bouches-du-Rh%C3%B4ne_.pdf (in French), accessed April 15, 2012.

World Water Assessment Programme. 2012. *The United Nations World Water Development Report 4: Managing Water Under Uncertainty and Risk.* Paris, UNESCO.

2. World Water Assessment Programme 2012.