Chapter 6
“Virtual Water” and Occam’s Razor: An Explanation From the Perspective of Economics of Water

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ABSTRACT

Virtual Water has been criticized as merely being a jargon camouflaging crop-water requirements. This chapter attempts to contest this argument. From the neoclassical production theory, it is argued that virtual water cannot simply be expressed in terms of crop-water requirements. Rather, the notion of virtual water imports has deep economics embedded in it, along with tremendous social implications. This chapter brings to surface the new economics of water management that is deeply rooted in the notion of virtual water imports.

INTRODUCTION

The publication of Professor Tony Allan’s tour de force titled The Middle East Water Question: Hydropolitics and the Global Economy in 2001 delineated the most complete statement of his views on virtual water. The concept of virtual water, virtually synonymous with Allan’s name, emerged from his various previous works that marked the various strides in his movement from geography to hydropolitics (e.g. Allan 1993, 1994, 1995, 1996, and 1997). Allan, in the various contexts, has defined virtual water as the water “embedded” in the agricultural commodities. In other words, virtual water is the volume of water needed to produce a commodity or service. This water is sourced from freshwater or from soil water. Virtual water imports, according to Allan, imply primarily the import of the agricultural commodities.
Allan (2001) argues that virtual water imports enable water scarce regions to meet their strategic food needs. The concept is particularly impressive in the way it ameliorates water scarcity over vast distances. Economies like Israel have tried to balance their water budget in that manner (Jobson, 1999; Allan, 2001). Japan is the world’s biggest importer of virtual water (Oki et al., 2003). Japan’s needs are provided by the US and the Australasia in the form of grain for consumption by humans and livestock.

Allan’s notion of virtual water has come under attack from an opposing school, led by Stephen Merrett. Merrett’s advocacy against this notion appeared in two of his papers in Water International (Merrett, 2003a and 2003b). Merrett (2003a) expressed the feeling that virtual water is merely a jargon camouflaging crop-water requirements, and virtual water import is merely “the import of food”. In other words, Merrett feels that the notion of virtual water has been blown beyond proportion in terms of its socio-economic importance and policy relevance in the existing literature. Hence, according to Merrett, in no way, the concept satisfies Occam’s razor, which states, “Entities are not to be multiplied without necessity”. Merrett concludes, “…water resource researchers and policy makers should apply Occam’s razor to the virtual water thesis” (Merrett, 2003a, p.105).

Merrett’s forceful conclusions create the premise to this essay. In the ensuing analysis, Merrett’s arguments are contested, in terms of the neoclassical economics framework. The following arguments are, therefore, put forward:

- Virtual water is not merely crop-water requirements;
- Virtual water import has deep economics embedded in it;
- Virtual water is a strong conceptual statement in the new emerging paradigm of Integrated Water Resource Management (IWRM).

Given the above, we argue that virtual water satisfies Occam’s razor. In this context, we use the concepts of Ricardian Comparative Advantage, Scarcity Value, and the notion of Ingenuity, as used by Homer-Dixon (1995).

The paper has been divided into six sections. Section 2 talks of the Ricardian notion of comparative advantage embedded in virtual water imports. Section 3 relates the reader with the notion of scarcity value, and talks of how virtual water affects scarcity value. In section 4, we argue in terms of the example of rice production in the various districts of the two states of the Cauvery Basin, that virtual water cannot be termed as crop-water requirements. Finally, in section 5, we present “virtual water” in light of the Ingenuity theory of Homer-Dixon. Section 6 consists of the concluding remarks.

VIRTUAL WATER IMPORTS AND RICARDIAN COMPARATIVE ADVANTAGE: AN INSTITUTIONAL MECHANISM

In many of his writings, Allan has acknowledged that virtual water imports in the form of international trade in agricultural commodities, incorporates the very fundamental notion of Comparative Advantage in trade. Ricardian Comparative Advantage has been the most elemental constituent of international trade. It can be interpreted in the following fashion in the case of water. First, it is assumed that the value of water emerges through its use in agriculture. Second, the existence of two economies can be assumed, say, economy A and economy B. It is further assumed that economy A is more water rich than economy B. Economy A can afford to produce rice, which is one of the most water-consuming crops, which, if
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