

# Virtual Water – Real Challenges Remain

The concept of virtual water – developed by the author of the following article and 2008 Stockholm Water Prize Laureate Prof. John Anthony Allan – will continue to be relevant for a long time. Looking forward, Prof. Allan envisions two main directions where the improved application of the virtual water concept can head. First, a number of key communities, including the water users and policy-makers in developing economies, are yet to adopt the concept. Second, the concept has been foundational in the development of a number of rapidly evolving ideas and tools. The continuing evolution and impact of related concepts, such as the water footprint and the complex linkages between water and energy, will strongly affect the future.

## Invisibility is the Issue

Adoption of the concept of virtual water in policy-making is a process that is clearly not yet complete. The insights provided by the concept have been shown to be powerful. They have been especially helpful when used to highlight the economically *invisible and politically silent* underlying elements of the nexus of water, food and trade. Soil water is also *invisible* despite being the majority water in this nexus. Its role in ensuring global and local water security is still ignored. Also *invisible* is the economic diversification and socio-economic development of virtual water importing economies. When in place, an economy can pay for the flows of virtual water which it needs. All these *invisible* elements underpin the water and the food security of the importing economies. As does the invisible virtual water trade.

Because these powerful processes are not evident, it is difficult for policy-makers responsible for the security of their economies to engage with the consequences of the water, food and trade nexus. Achieving water and food security by importing food may seem obvious for those managing a diverse, highly industrialised and globalised economy, such as Singapore. Those running weak and non-diverse economies in the Middle East or Africa cannot make the case to their rural water users who have no alternative livelihood options. Telling truth to power is always very difficult. Conveying invisible truth is especially fraught.

## Addressing Insecurity Honestly

The science community and policy-makers in industrialised economies understand and are comfortable with the concept. In non-industrialised countries their science communities are aware and comfortable with discreet discussion of the idea. Policy-makers are also becoming aware but they cannot



The concept of the water footprint has considerable potential to shift the ways that water is used. It estimates how much water is used to produce agricultural and industrial products. From hamburgers to cotton shirts, the water resource impact of what you buy can be quantified.

Photo: Corbis

## Moving People, Shifting Water

Migration shifts burdens of water demand from one economy to another. The presence of twenty million recent Mexican immigrants in the United States has significantly reduced the demand for water resources in Mexico. At the rate of per capita Mexican water use, the demand for water of twenty million people is equivalent to the flow of the Colorado. At US levels of food and water consumption, the water demand of this immigrant population could be twice this level.



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adopt the ideas publicly as virtual water imports imply insecurity. As a consequence, water users and their political leaderships in water scarce economies can and do remain in understandable denial for decades about their underlying water insecurity. Worse, they delay engaging with the essential policy reforms that would reduce the pressure on the environmental services of water.

For those for whom the explanatory power of the virtual water concept is politically stressful, the next steps can only be to promote socio-economic development as vigorously as possible. A strong and diverse economy has the adaptive capacity to cope with progressively higher demands for water.

### Footprints on Water

The concept of the water footprint has considerable potential to shift the ways that water is used. The water footprint estimates the water used in the production of agricultural and industrial commodities. From hamburgers to cotton shirts, the amount of water required to produce goods can be quantified (Hoekstra and Chapagain 2008). Individual families, global corporations and public sector organisations can estimate the impact of their consumption on water resources. Corporations, such as Coca-cola, have been amongst the first to recognise how to measure their footprint to improve their water management and their reputation. Governments, especially in Europe, are able to see the extent of their dependence on virtual water imports in manufactured com-

modities. Meanwhile, international NGOs use, to great effect, the water footprint data to highlight the role, for example, of meat eating on water consumption. Vegetarians in the most advanced economies consume only half the water of non-vegetarians.

### Tools for the Trade

Finally, the globalised economies face a range of uncertainties in which water resources and the way we use them play a significant role. Water and energy are intimately linked in this web of uncertainties. We shall need to manufacture water with clean energy. And manufacture clean energy with water. The continuing use of dirty energy will have to be weighed against the costs of cleaning up after and adapting to the impacts of such practices.

We need to know which approaches to natural resource use will provide what society needs so that we can stop deploying the wrong resource using practices. The potential

of technologies, water re-allocation and management and the reciprocal benefits of trade will be researchable with new analytical tools. The calculation of the virtual water content of the use of water by society and its economies will also be helpful to quantify impacts of climate change and help to monitor the progressive improvement water and energy use efficiency enabled by evolving technologies and trade.

### Solutions: From the Outside-In

Focusing on water alone will not be enough. The solutions to the most serious and the most strategically important water problems are all solved outside the water sector. Research and development agendas that look beyond water must be increased.

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### For further reading

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