Voices on Virtual Water

Clear signs of a water-deficit driven import of cereals – so called virtual water flow – and intensifying water stress in the semi-arid tropics suggest a major switch in global food trade. Food production in water rich regions may come to play an increasing role to alleviate hunger in water-short countries.

VIRTUAL WATER:

Conscious Choices

Virtual water trade is not new; it is as old as there is food trade. Also the amount of trade is steadily increasing. However, we can only speak of a shift towards virtual water trade if the decision [to import low value but high water consuming food like cereals] is made consciously relating to water policies. Some countries where these conscious choices are made are Morocco, Jordan, Israel and Egypt as importers. Exporters (like USA) are not (yet) thinking of virtual water trade but more respond to the food import requirements of water scarce countries.

Virtual water trade should be encouraged to promote water savings for arid countries and at a global level through enhancing food security through appropriate and fair trade agreements. However, countries cannot do this in isolation. They have to consider the strategies and policies of their neighbours. The consequences of change in food trade patterns for water reasons should be examined in terms of money (currencies), food security, food sovereignty, employment and of course water resources. On a local level, virtual water trade could deprive farmers and their families of their livelihoods unless alternatives are developed in terms of alternative crops (not necessarily saving water but maybe getting higher returns, which requires access to markets – local and international – and production or marketing may be subsidised like in USA and Europe) or alternative employment which saves water, but how does one create this employment? Here the question arises whether this would also develop to its local potential without having to think about virtual water. Unemployment is a problem most of the virtual water importing countries are facing.

Including virtual water as a policy option requires thorough understanding of the impact and interactions of virtual water trade on the local social, economic, environmental and cultural situation. Import of virtual water will relieve the pressure on the nation's own water resources and environment. Countries, especially those that are water abundant, can export virtual water, but this has also it's environmental consequences (overexploitation of local resources, including water). Further research should be carried out on the natural, social, economic, environmental and political implications of using virtual water trade as a strategic instrument in water policy. This includes an analysis of the geo-political importance of virtual water, the opportunities and threats involved and the associated political processes underlying decision making on application of this concept.

Common procedures of virtual water accounting and references should be developed and disseminated. To enable introduction of virtual water accounts, an instrument should be included in any national or regional water and agricultural policy analysis.

Reduction of virtual water in our diets may also contribute significantly to water savings. Showing people this virtual water content through water footprints will increase water awareness and may lead to water saving consumption patterns.

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Virtual Water in Stockholm

Virtual water will be one of the issues in focus during the Stockholm Water Symposium in August. A Symposium workshop is devoted to the subject, which will no doubt form a part of discussion in other workshops where, for example, food security will be addressed. To kick-start the discussion in advance of the Symposium, *Water Front* asked three leading experts for contributions on virtual water. Professor Tony Allan, Professor Arjen Hoekstra and Mr. Paul van Hofwegen framed their responses by exemplifying countries where there is a shift towards virtual water trade, indicating how countries could adjust their national strategies on food production, trade and subsidies, and identifying urgent questions to be addressed by the water expert community.

VIRTUAL WATER:

Achieving a Non-hydrocentric Understanding of Water Allocation and Management

Virtual water is an important concept. First, it is an "intensive concept" in that it links water resources with food production, emphasising that the water that produces food comes from rainfed soil profiles as well as from freshwater resources. Secondly, it is an "extensive concept," as it links food availability in water rich regions with the amelioration of water deficits in water short regions via trade.

The concept is an awkward one for the water resource scientist and the water resource manager because it requires a willingness to address and plan water resources that derive from soil profiles as well as from freshwater. Both engineers and economists, and even some hydrologists, prefer to relate to freshwater only because it can be pumped and valued. Soil water cannot.

The concept is also awkward because it requires that water resource scientists and managers shift their perspective from one that is hydrocentric – albeit ill focused – to a willingness to identify solutions to problems of water resource allocation and management outside the water sector.

Virtual water is a good example of a solution that lies outside the local watershed in what has been termed a "problemshed" without a hydrological identity. It is not just hydrological processes, nor even hydraulic ones, that ameliorate local water shortages, but economic and trading processes operating in facilitating political contexts. Virtual water is also a very flexible solution. International access to virtual water outmatches in flexibility and scale any other competing form of water resource reserve to meet occasional deficits.

Virtual water "trade" has a number of additional important qualities. It is economically invisible and politically silent. Though invisible and silent it enables a water-short region to avoid finding water to produce the tonnes of water-intensive and politically sensitive food commodities. The process is very effective and economically advantageous to the importer at this point in history.

The availability of invisible virtual water also enables governments and water professionals to avoid involvement in lethal debates on water resource insecurity. A negative impact, however, is the tendency to reduce the salience of the local water balance situation and as a consequence to reduce the pace of water policy reform which would be good for the economy in general.

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Editor's Note: Due to space limitations in the above article, Professor Allan could not address the different types of economies that can use the virtual water "solution." The author is aware that sub-Saharan Africa is different from the oil rich Middle East.

VIRTUAL WATER:

An Instrument in Relieving the Pressure on the World's Water Resources?

There are a number of arid countries – such as Jordan and Israel – that have intentionally formulated policies to reduce export of water-intensive products, notably crops. In fact they use virtual water as an increasingly important source of water. The import of water in virtual form in these countries goes already far beyond the export of virtual water. The remaining virtual water export is largely related to crops that yield relatively high income per cubic metre of water consumed. But the examples of conscious virtual water trade are still scarce. Countries haven't looked yet so much on the relation between their trade and the impacts on their water resources. I don't think that people in the USA are aware that 1/15 of their available water resources are used for producing crops for export. In Thailand, this is even one quarter!

Subsidising water supply to farmers is commonplace everywhere in the world. Sometimes there are good reasons for it, but one might seriously question whether this makes sense if the farmers use scarce water resources to produce crops for export. In order to relieve the pressure on the domestic water resources, arid countries can better limit the export of water-intensive crops and focus on the crops that have high benefit per cubic metre of water used (for instance dates or grapes). Reducing virtual water export is step one; consciously aiming at more virtual water import, thus leaving the idea of water self-sufficiency is step two. Many developing countries face here the problem, however, that they don't have water-extensive products to be exported in return. This is the area where investments have to be made.

One basic question is: can virtual water trade be an instrument in relieving the pressure on the world's water resources? What can, for instance, be the global water saving if we locate the water-intensive production processes in regions where water is abundant and where it requires less water per unit of product? What, on the other hand, are the economic, environmental, social, cultural and political implications of an increase in global virtual water trade? The second basic question is: how do consumption patterns and in particular diets influence the water footprint of an individual or a nation? And how can water footprints – the total virtual water content of the goods consumed – be effectively reduced?

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Should water-short countries export highly water-consumptive goods?