

## Virtual water flows and food security

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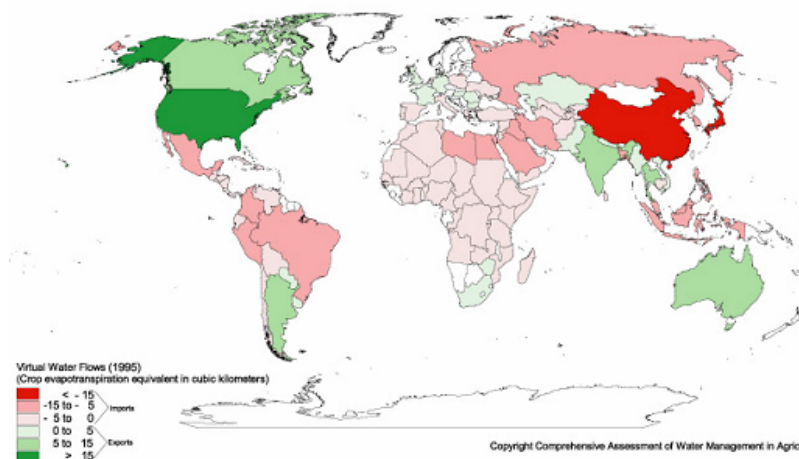
### *The fact*

Virtual water is defined as the amount of water embedded in food or other products needed for its production (Allan, 1998). Virtual water flows between countries and regions have relevance to water stress, water scarcity and food security since they can change considerably the need of water used in food production at national and regional level.

Notwithstanding methodological difficulties still existing, some attempts have been made to provide first estimates of the virtual water content of food trade. According the recent review made by Zimmer and Renault, in 1999 a total amount of 1300 Km<sup>3</sup>/year of virtual water (about 33% of water consumed by cropped products) was traded between countries.

Since cereals comprise the majority of the trade in agricultural products, tracking trade in cereals is used as an indicator of overall virtual water flows. The map indicates the corresponding virtual water flows in terms of cereals trade. It shows that large virtual water flows occur into water stressed countries of North Africa and Middle East.

**Virtual Water Flows**



It should be pointed out that at global scale the share of virtual water traded increases significantly with time, despite a decrease of values thanks to the increase of water productivity of 1%.

***What does it mean?***

With the trade of food crops or any other commodity, there is a virtual flow of water from producing and exporting countries to countries that consume and import those commodities. A water-scarce country can import products that require a lot of water for their production rather than producing them domestically. By doing so, it allows real water savings, relieving the pressure on their water resources or making water available for other purposes.

***Which could be the effects in the medium and long-term?***

Virtual water trade is likely that dramatically increase with the expected increase in food trade. At the global level, virtual water trade has geo-political implications since it can intensify the dependency between countries. Therefore, it can be regarded either as a stimulant for co-operation and peace or a reason for potential conflicts.

**References**

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