

MONDAY, 17 MARCH 2003, 15:45 - 18:30  
Venue : Kyoto International Conference Hall Room C1

Session on  
**VIRTUAL** WATER TRADE  
AND  
GEOPOLITICS



Picture : Joachim Affelt

**IHE**  
DELFT

Part of the theme  
'Water, Food and Environment'

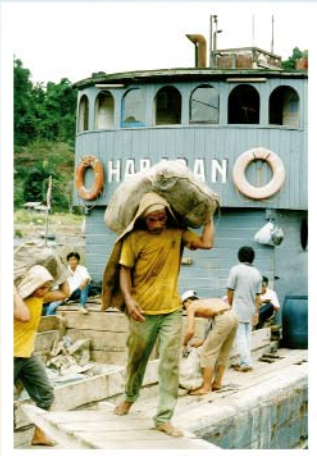
3<sup>RD</sup> WORLD WATER FORUM • 16-23 MARCH 2003 • JAPAN

  
World Water Council  
3<sup>rd</sup> World Water Forum

# FROM

## UNCONSCIOUS BEHAVIOUR TO CONSCIOUS DECISIONS

We use much water for the production of food such as cereals, vegetables, meat and dairy products. This water is consumed unconsciously and therefore called 'virtual water' which is contained in the food. To produce one kilogram of wheat we need about 1000 litres of water. For meat we need about five to ten times as much ! If every human being adopted a Western-style meat-based diet, some 75 percent more water would be needed ! This explains why food production uses about 70 percent of the fresh water withdrawals. Diets and their evolution do have a great impact on water resources : adopting a moderate diet and saving on water use for agriculture, thus being more efficient, would make much more water available for other sectors !



Picture : Joachim Aflérot

### How many litres of water does a person consume per day ?

drinking water	2 - 3
domestic needs	30 (Ethiopia) - 400 (USA)
food	1 500 (vegetarian diet) 4 000 (meat diet)

But virtual water is not only about diets. A water-scarce country can choose to import products that require a lot of water for their production rather than producing them domestically. By doing so, the country imports 'virtual water' and allows real water savings relieving the pressure on the water resources. Policy makers should consider 'virtual water' trade as a serious option in any water, food and environmental policy and ask themselves the following questions :

- How to generate sufficient foreign exchange to pay for the import ?
- What are the impacts of replacing domestic production with imports ?
- What is necessary to ensure food security at local level ?
- How to ensure that the market is reliable to supply the food at a reasonable price ?
- What will be the new geopolitical situation in the case of a substantial increase in virtual water trade ?

# WATER

## FOOTPRINTS :

### A RELEVANT INDICATOR OF WATER USE ?

The total water use within a country is not the right measure of a nation's actual appropriation of the global water resources. If there is 'virtual water' import into a country, this 'virtual water' volume should be added to the total domestic water use in order to get a picture of a nation's real call on the global water resources. Similarly, export of 'virtual water' should be subtracted from the volume of domestic water use. The sum of domestic water use and net 'virtual water' import can be seen as the 'water footprint' of a country.

### Some facts

- Trade in 'virtual water' is done unconsciously for a very long time and has steadily increased over the last 40 years. At present the global 'virtual water' trade between nations is in the order of 1000 km<sup>3</sup> per year. This is about 15 percent of the total water use on earth, including use of rainwater in agriculture.
- Trade in cereals (wheat, rice, maize, barley) accounts for a large fraction of the global 'virtual water' trade. First approximations vary between 25 and 40 percent. The trade of beef, soybean, oil and sugar is also important to global 'virtual water' trade.



### Two examples

- 80-90 percent of Jordan's domestic water demands comes from the import of virtual water.
- Net export of 'virtual water' from the USA amounts to one third of the total water withdrawal in the country. This coincides with severe mining of groundwater in several places.



The water footprint of an individual is an indicator of his total water use. It is equal to the summed virtual water content of all products consumed by the individual. Some consumption patterns, for instance a meat diet, imply much larger water footprints than others. Awareness of one's individual water footprint would stimulate a more careful use of water.

# POLITICAL STATEMENTS

- 'Virtual water' trade between nations can relieve the pressure on scarce water resources and contribute to the mitigation of water scarcity at both local and global levels.
- Trade in food and other water-containing products does not only concern 'virtual water' trade but also trade in virtual labour, virtual land trade, etc. Including 'virtual water' as a policy option requires thorough understanding of the impact of 'virtual water' trade on the local, social, economic and cultural situation.
- 'Virtual water' trade should be encouraged in order to promote water savings especially for arid countries. Food security should be enhanced by appropriate agreements and increasing reciprocity in agricultural products trade while respecting nation's right to food sovereignty.
- Showing people the 'virtual water' content of various consumption goods will increase the water awareness of people. The total 'water footprint' of a nation is a useful indicator of a nation's call on the global water resources. At consumers level it is useful to show people's individual footprint as a function of food diet and consumption patterns.

# RECOMMENDATIONS FOR ACTION

- Governments and international organisations should include 'virtual water' accounts as an instrument in any national or regional water and agricultural policy analysis. Common procedures and standards for virtual water accounting should be developed and disseminated.
- Research should focus on the natural, social, economic and political implications of using 'virtual water' trade as a strategic instrument in water policy. Tools are to be developed for analysing the impact of 'virtual water' on local socio-economic and cultural conditions.
- A joint effort by governments, international finance institutions and research institutes is needed to analyse the geo-political importance of 'virtual water'. This should include the opportunities and threats involved and the associated political processes underlying decision-making on application of this concept.

# PROGRAMME

Monday, 17 March 2003, 15:45-18:30

Venue : Kyoto, International Conference Hall (KICH) - Room C1

- |             |   |  |
|-------------|---|--|
| 15.45-16.00 | <b>Daniel Zimmer</b><br>World Water Council   | Virtual water: what is it about?   |
| 16.00-16.15 | <b>Arjen Hoekstra</b><br>UNESCO-IHE   | Worldwide trade in virtual water :<br>the facts  |
| 16.15-16.30 | <b>Daniel Renault</b><br>FAO  | Water footprints of people : Virtual<br>water content of consumption goods                 |
| 16.30-16.45 | <b>Simon Pazvakavambwa</b><br>Ministry of Rural Resources<br>and Water Development,<br>Zimbabwe | Opportunities for regional virtual<br>water trade to mitigate regional<br>water scarcity   |
| 16.45-17.00 | <b>Mohamed Ait Kadi</b><br>Ministry of Agriculture<br>Morocco                                   | Embedding 'virtual water trade' as<br>policy option in national water<br>management policy |
| 17.00-17.15 | <b>Taikan Oki</b><br>University of Tokyo  | Case study Japan   |
| 17.15-18.30 | Chair: <b>Frank Rijsberman</b><br>IWMI  | Panel discussion   |

## For more information

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Picture : M. Schwerberger / Das Fotoarchiv



# MENU

Prices are stated in litres of water required to produce one dish. Production of food services is not included.

## Continental breakfast



## Vegetarian menu



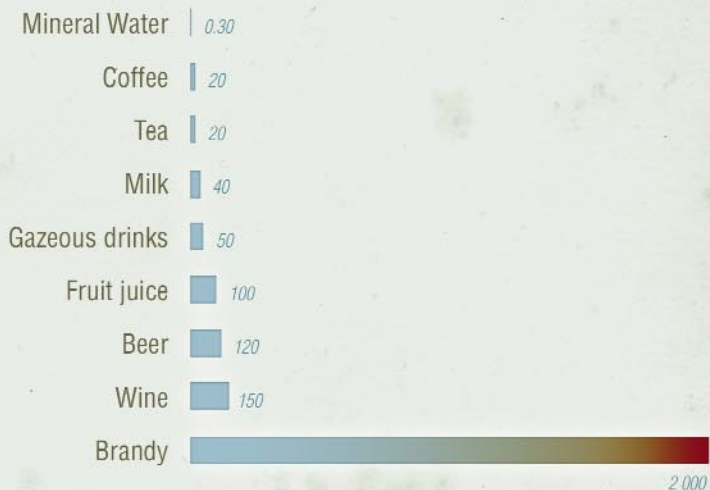
## Oriental menu



## Continental menu



## Beverages (per glass)



*This box uses a different scale than the other boxes*



World Water Council  
3rd World Water Forum

## World Water Council

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Picture : Joachim Alheidt

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