

Water Footprint and the Nile Basin

Module 3: Water Footprint and Nile Basin Countries



PEGASYS
Strategy and Development





3: Water Footprint and the Nile Basin Countries

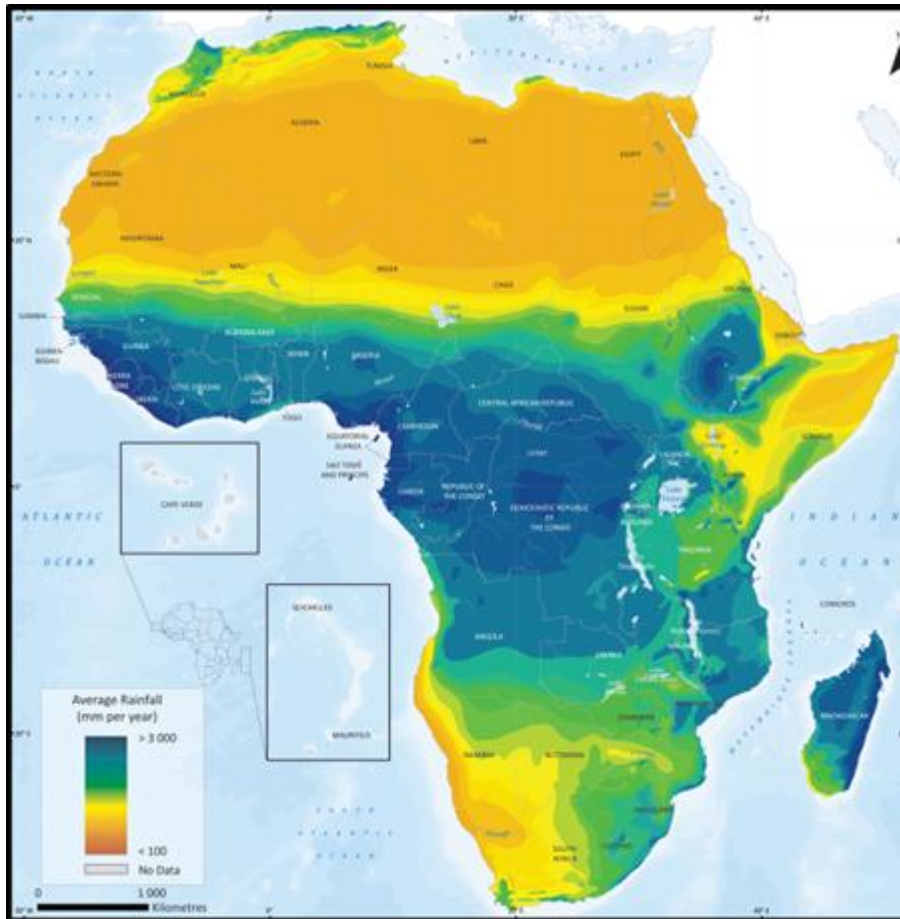




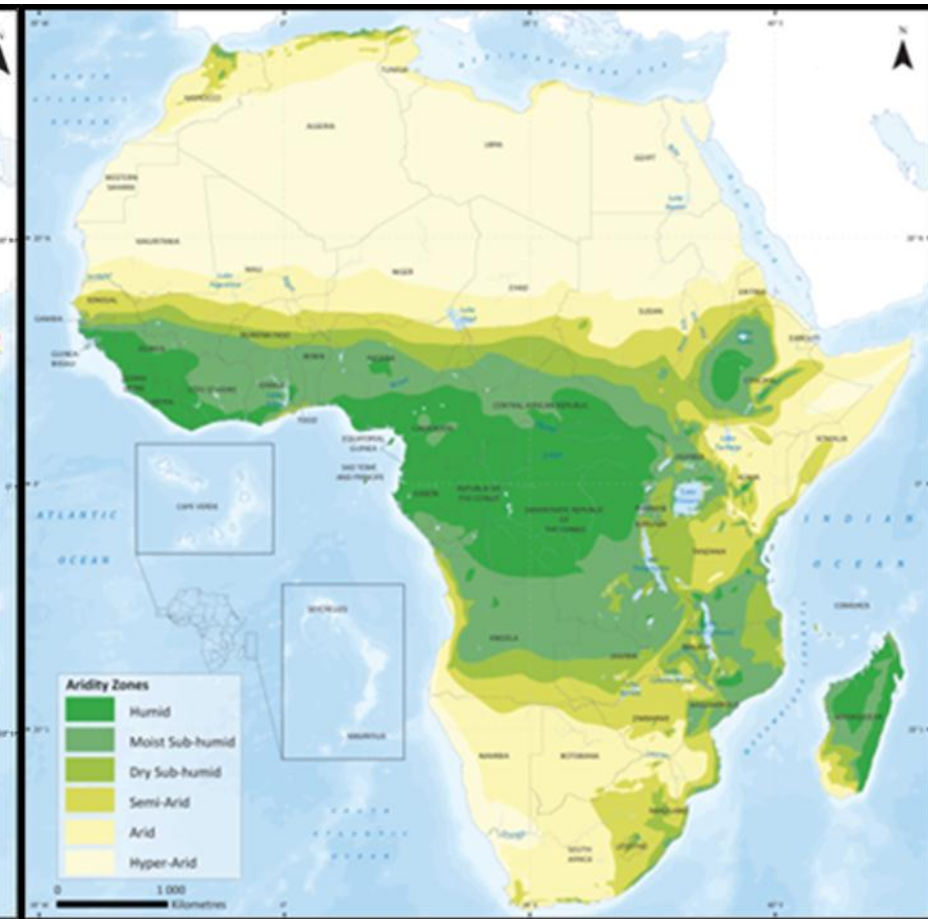
Purpose of this session

To link in the issue of water to a discussion around trade and agriculture through the concept of water footprint.

Distribution of Rainfall in Africa



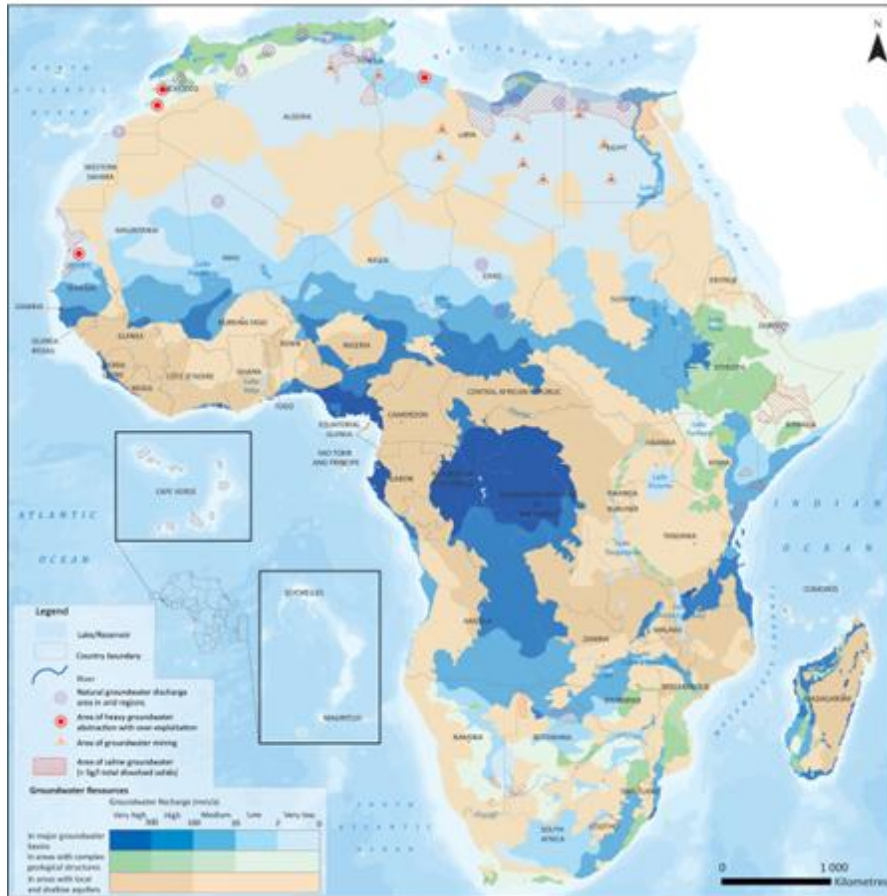
Average Annual Rainfall
(Source: African Water Atlas, UNEP),



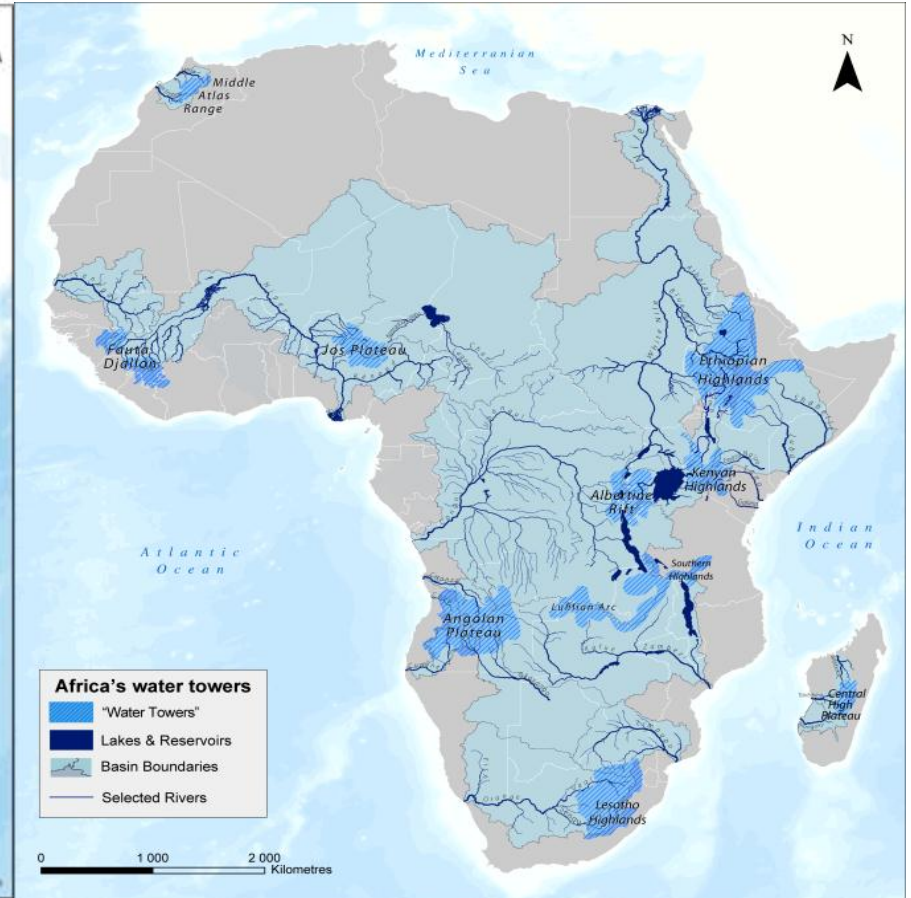
Aridity Zones
(Source: African Water Atlas, UNEP)



Distribution of Ground Water and Rivers in Africa



Ground water availability
(Source: African Water Atlas, UNEP),



Africa's water towers
(Source: African Water Atlas, UNEP),



Distribution of Water Storage & Distribution of Irrigated areas in Africa



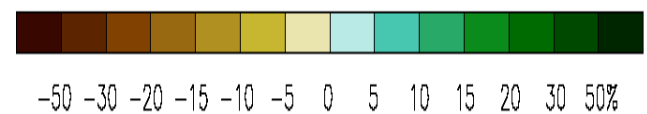
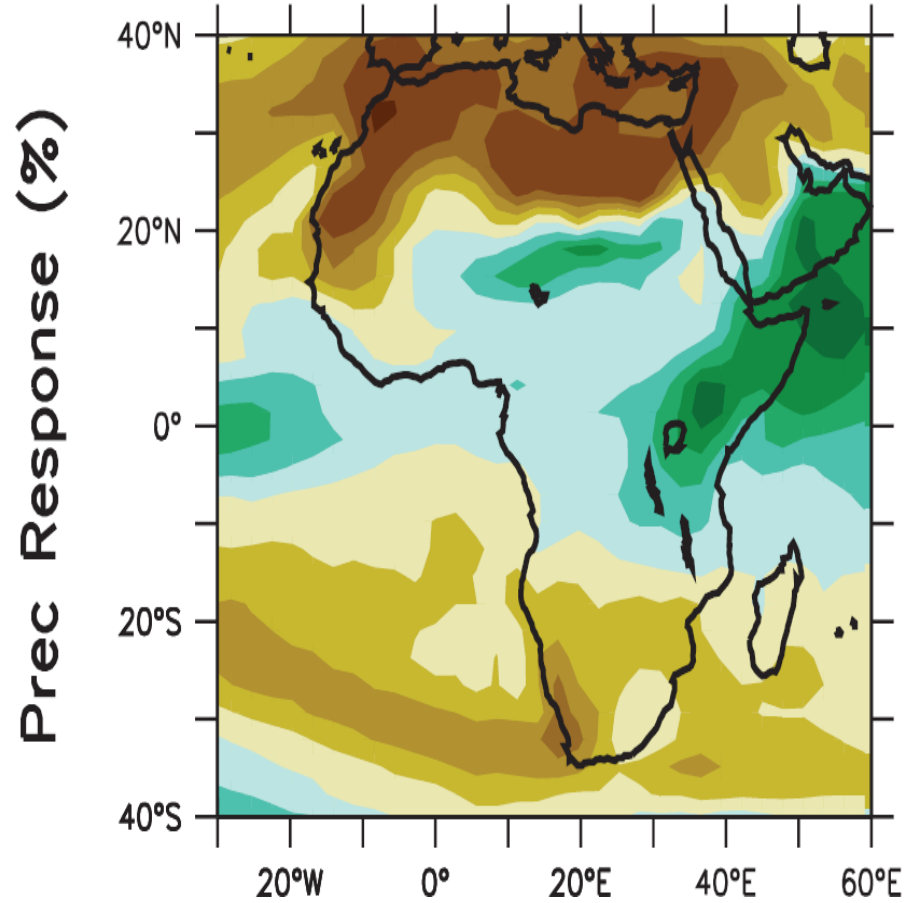
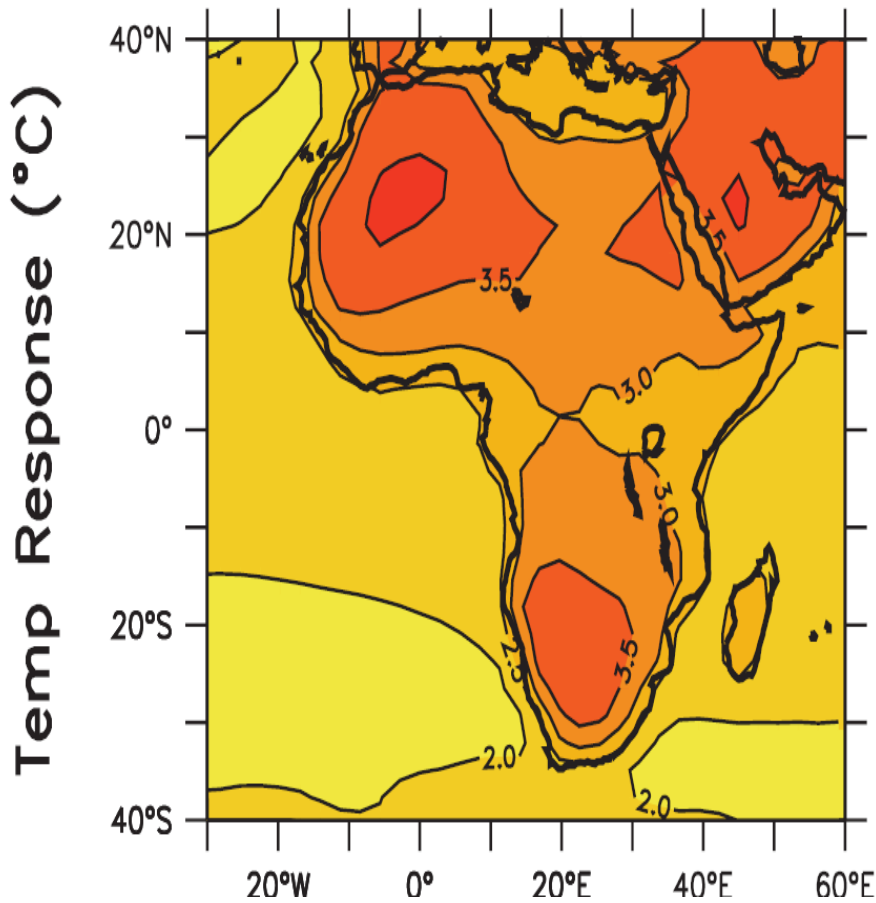
**Dam Capacity marked by dots
(Source: African Water Atlas, UNEP),**

**Irrigated areas - increasing shades of green
(Source: African Water Atlas, UNEP),**



Climate variability and change

Year 2100 - IPCC

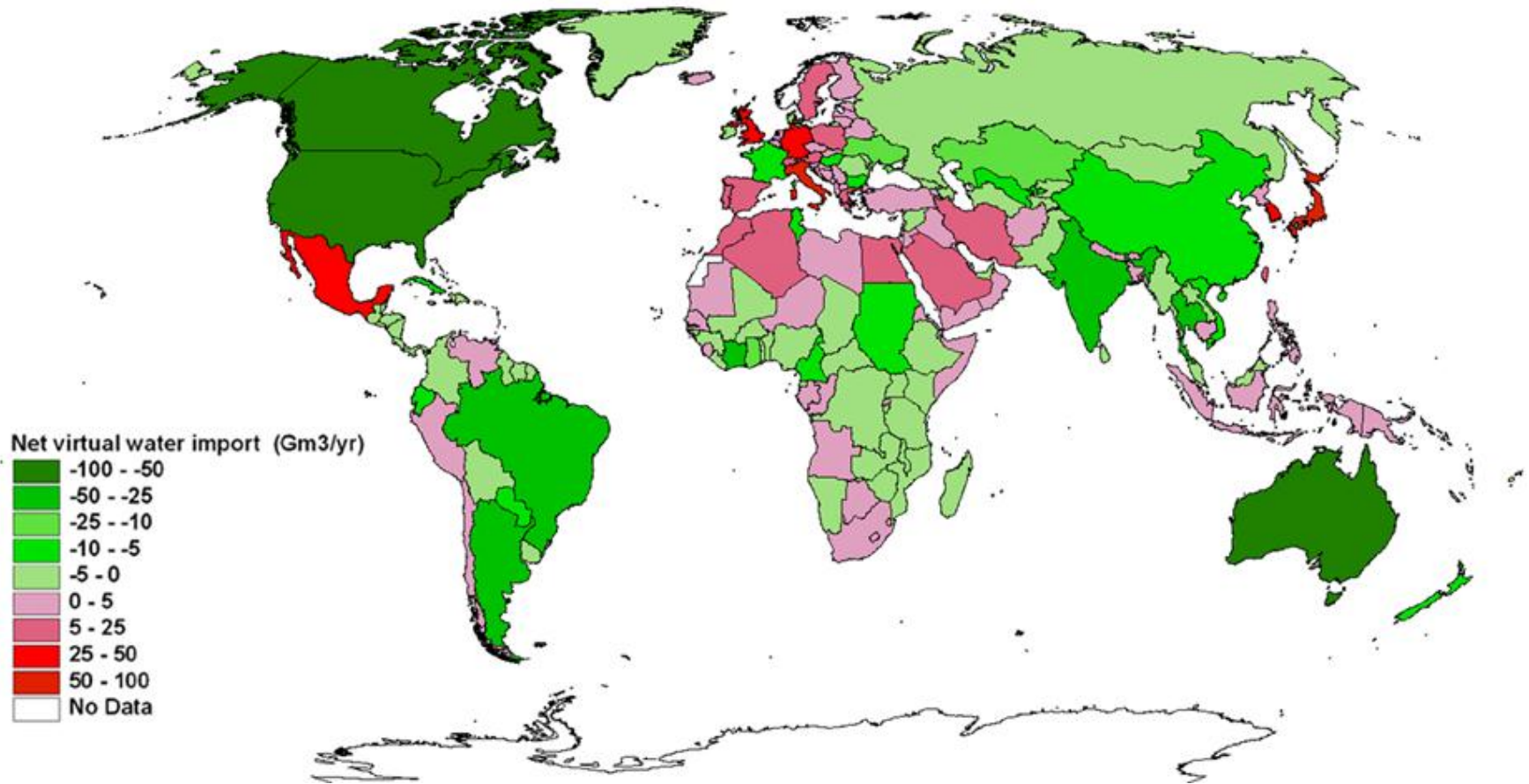




Comparative Advantage

According to the theory of **comparative advantage**, nations can **gain from trade** if they concentrate or specialize in the production of goods and services for which they have a comparative advantage, while importing goods and services for which they have a comparative disadvantage.

Net Water Importers and Exporters

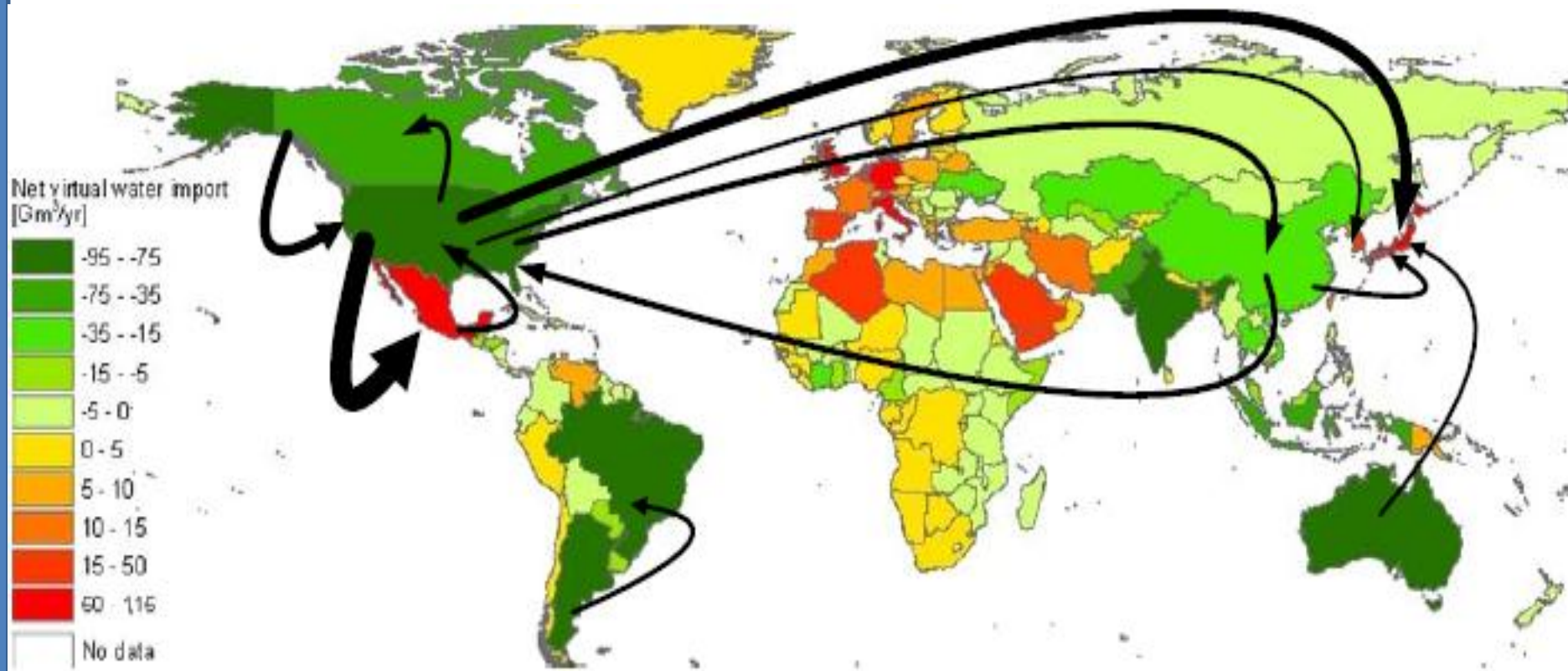


National virtual water balances related to the international trade of products. Period 1997-2001. Net exporters are shown in green and net importers in red



National Virtual Water Balances

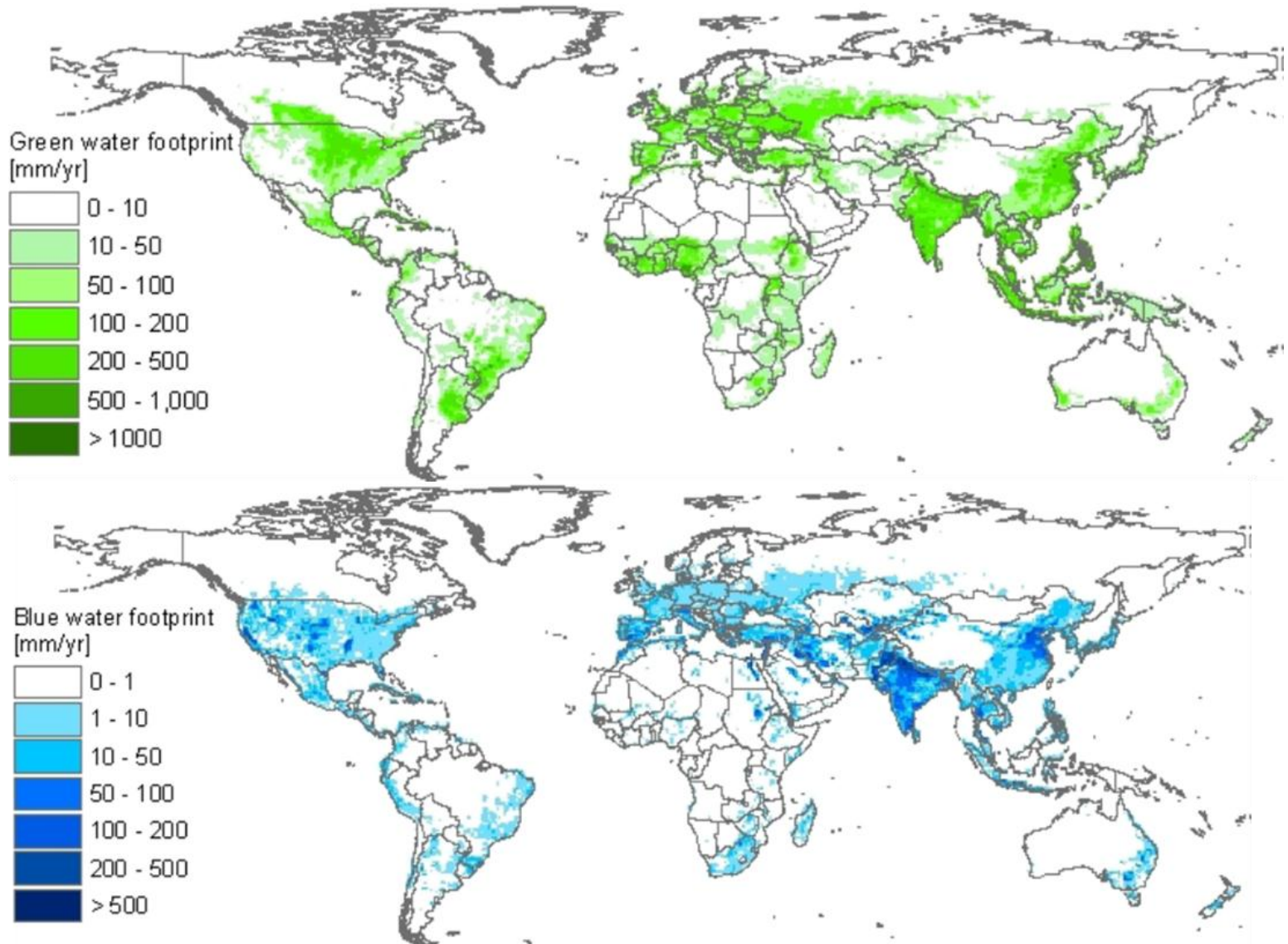
Hoekstra and Chapagain (2005)



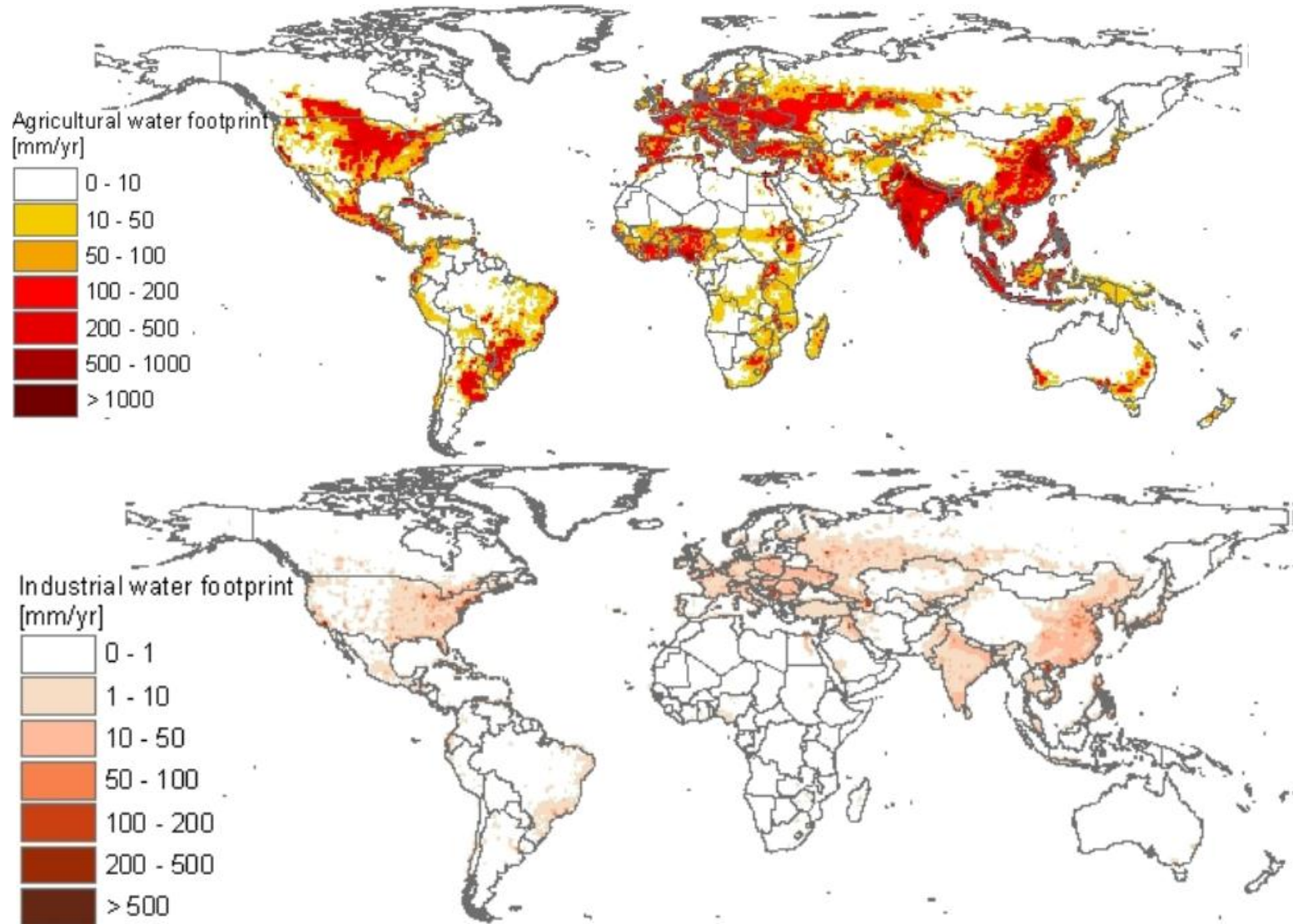
National virtual water balances related to the international trade of products.



Water Footprint of Production – Green & Blue Water Use



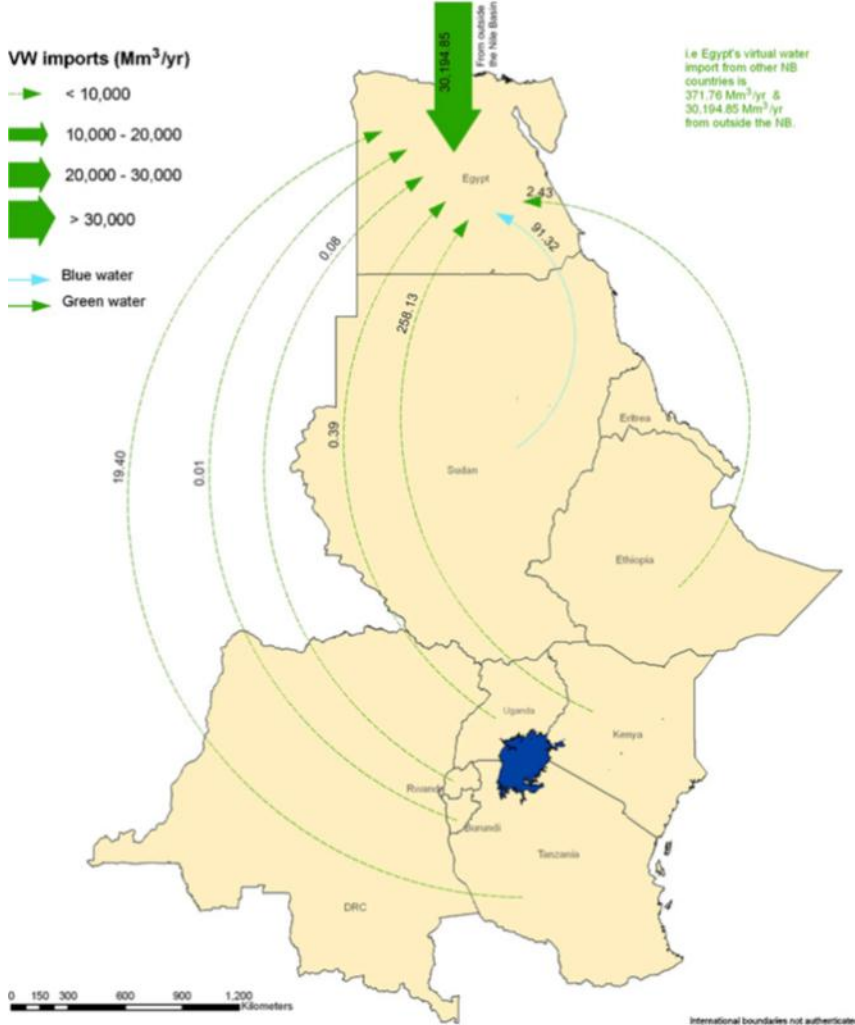
Water Footprint of Production – Water Use in Agriculture & Industry





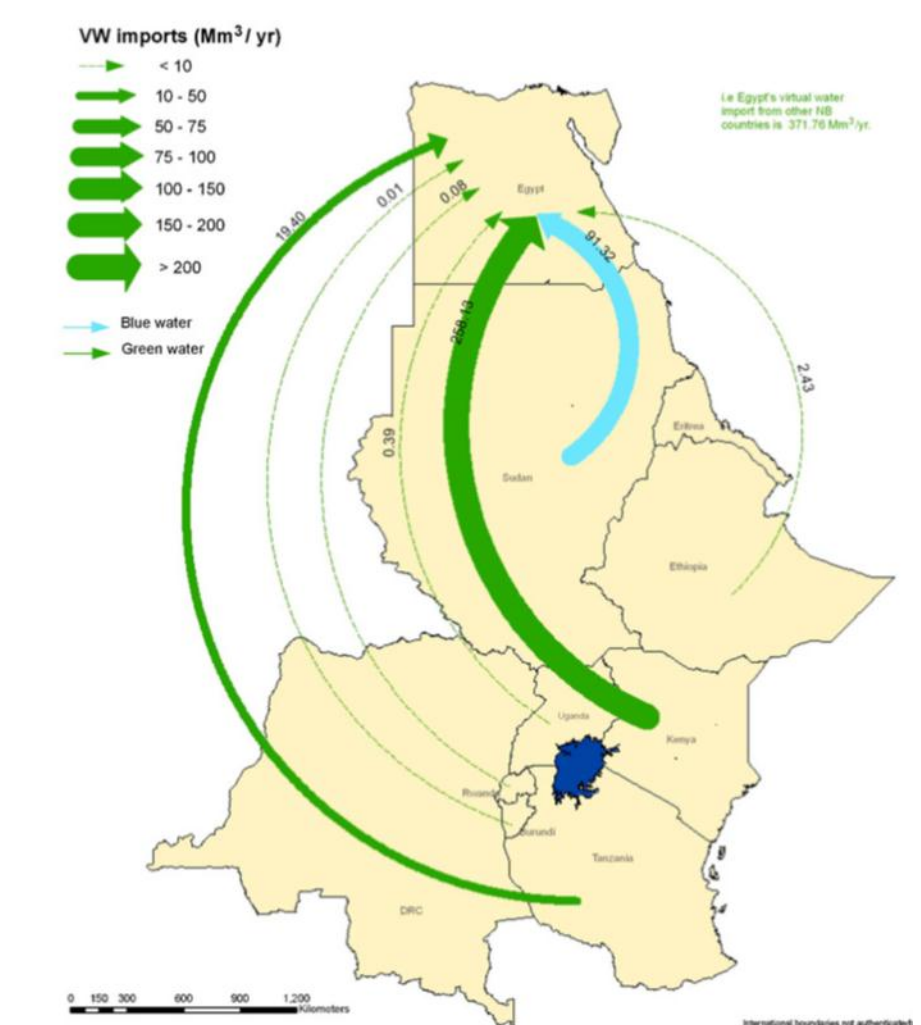
Egypt: the largest importer in virtual water

(a) Egypt: virtual water imports in crops (1998-2004)



Trade with the rest of the world

(b) Egypt: virtual water imports in crops from other NB countries (1998-2004)

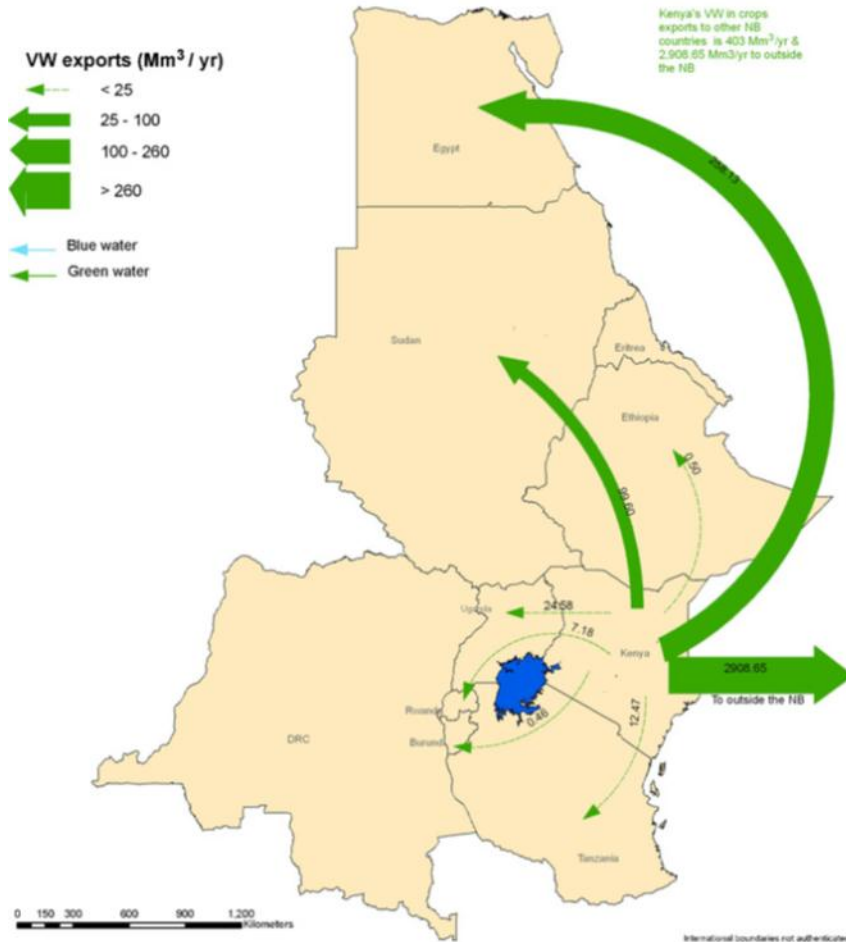


Trade with other Nile Basin states

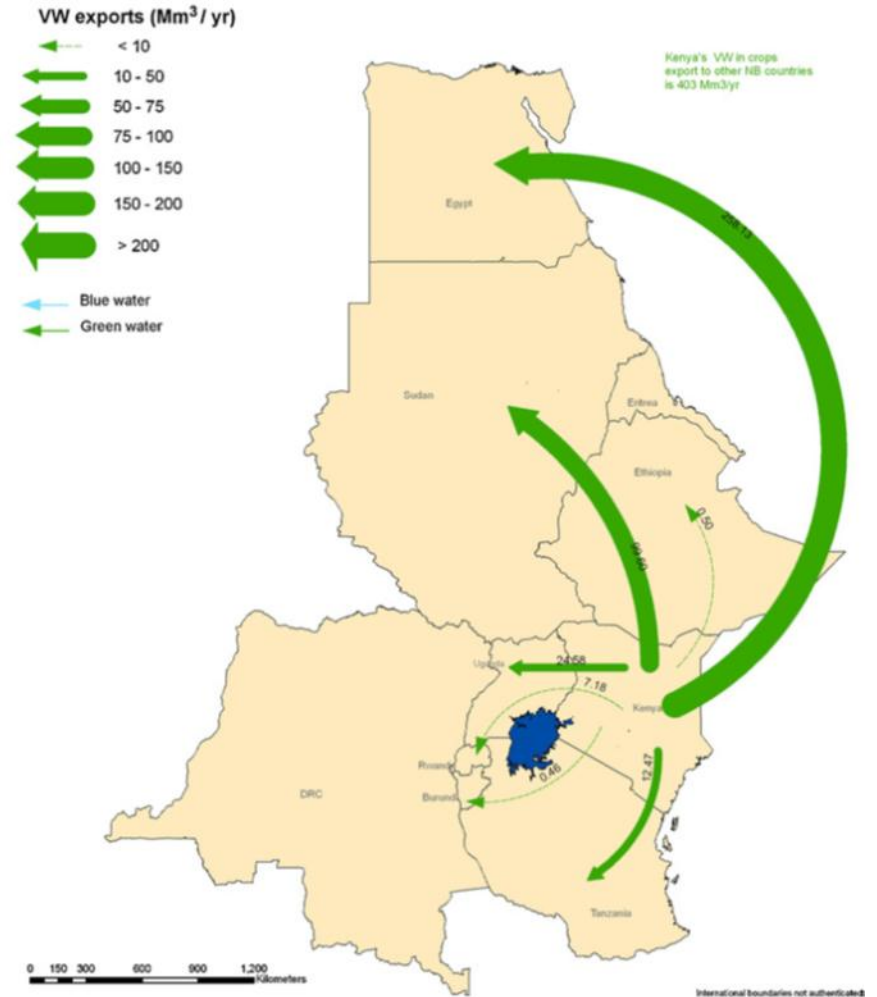


Kenya: the largest exporter of virtual water

(a) Kenya: virtual water exports in crops (1998-2004)



(b) Kenya: virtual water exports in crops to other NB countries (1998-2004)



Trade with the rest of the world

Trade with other Nile Basin states



Zeitoun et al. (2009)

Insights

- Total virtual water exported by Nile Basin states out of the basin is a significant portion of the water resources of the Nile Basin.
- However, over 90% of virtual water exports are green water exports. Over 90% of the exported crops are rain fed (use green water) rather than surface or river water (blue water) from the Nile.
- There is a variety in dependency on virtual water imports. Egypt imports greater than 40 times more water than Uganda. Sudan exports greater than 10 times more water than Rwanda.
- Intra-Basin trade does not represent a significant remedy to the freshwater deficits in Sudan and Egypt. Most of this trade is in the form of coffee and tea from Kenya and Tanzania to Sudan and Egypt. There is, therefore, a high degree of dependence on the part of Egypt and Sudan Nile Basin states on virtual water outside the Basin