

Water Footprints: A New Way of Measuring Water Consumption

Sourav Choudhary

M.Sc. Scholar, Department of Agrometeorology, Punjab Agricultural University,
Ludhiana

ARTICLE ID: 99

Introduction:

Water is the greatest gift of nature. It is a transparent fluid which forms the world's streams, lakes, oceans and rain, and is the major constituent of the fluids of living things. Water is essential for sustaining life on the earth. 70% of the earth's surface is covered with water. Out of total water present, 97.5% water is saltwater and the remaining 2.5% water is freshwater. To fulfil the demand of water, the dependency on groundwater tremendously increased and per capita surface water availability may be fall to 1,191 m³ by the year 2050 The declining water levels in north Indian states is mainly attributed with the over consumption of the underground water for irrigation of agricultural crops and increased run-off as well as evapotranspiration losses, which is exacerbated with unfavourable climatic changes.

Water crisis in India

UNESCO has released a report that suggests that India would face an acute water shortage by 2050. Due to India's Groundwater Crisis, water scarcity will be a significant issue for 65% of the rice and 74% of the wheat growing areas by 2030 and Sixty percent (60%) of the irrigated land in India is supported primarily by groundwater supplies, and approximately 90 million rural households are directly dependent on groundwater irrigation

What are Water footprints?

Water footprint indicates the quantitative as well as the qualitative use of water. As the water footprint estimates the consumed and embedded water volume thus, it is quantitative besides, it also accesses the concentration of pollutants into water bodies hence, it is qualitative. Therefore, water footprint of any production system is the quantity of freshwater either used or polluted during the entire process. The water footprint is same as 'virtual water content' but includes a temporal and spatial dimension i.e., when and where was the water used.

Types of Agricultural Water Footprints: There are three types of water footprints:

- ✚ **Blue Water Footprint:** Water that has been sourced from surface or groundwater sources and is either evaporated, or incorporated into a product. Water present in sea, lakes, rivers and groundwater is called Blue Water. It is extensively used in agriculture.



- ✚ **Green Water Footprint:** Green water footprint is the water from precipitation that is stored in the rootzone of the soil and evaporated, transpired and incorporated by plants. It is particularly relevant for agricultural, horticultural and forestry products.



- ✚ **Grey Water Footprint:** It is the amount of fresh water required to assimilate pollutants to meet specific water quality standards.



Total Water Footprint = Blue Water Footprint + Green Water Footprint + Grey Water Footprint.

Virtual Water:

The water consumed in the production process of an agricultural or industrial process has been called the 'virtual water' contained in the product. The virtual water trade (also known as embedded or embodied water) is the hidden flow of water in food or other commodities that are traded from one place to another. The virtual water concept, also known as embodied water, was coined by John Anthony Allan (Tony Allan) in 1993. He received the Stockholm Water Prize for the concept in 2008.

Water Footprint of different Products:

- Do you know the fact that, for production of 1 T-Shirt that is made up of Cotton. It consumes 2500 litres of water.
- 700 litres of water consumed for production of 1kg of rice.
- 15,500 litres of water consumed for production of one kg beef.
- 120 litres of water consumed for making one glass of beer.
- 10 litres of water consumed for making single sheet of A4-paper.
- 180 litres of water for production of 1 kg Tomato.
- 140 litres of water for one cup of coffee.
- 8000 litres of water to make a pair of shoes.
- 34 litres of water consumed for making 1 cup of tea.



References



- Hoekstra A Y and Hung P Q (2002) Virtual water trade: A quantification of virtual water flows between nations in relation to international crop trade, Value of Water Research Report Series No. 11, UNESCO-IHE Institute for Water Education, Delft, the Netherlands.
- Hoekstra A Y, Chapagain A K, Aldaya M M and Mekonnen M M (2009) Water footprint manual: Pp 20- 25. Water Footprint Network, Enschede, the Netherlands. www.waterfootprint.org/downloads/WaterFootprintManual2009.pdf.
- Hoekstra A Y, Chapagain A K, Aldaya M M and Mekonnen M M (2011) The Water Footprint Assessment Manual: Setting the Global Standard (Earthscan, London). <http://www.waterfootprint.org/Reports/Report11.pdf>.
- Kampman D A (2007) A study on water use in relation to the consumption of agricultural goods in the Indian states. University of twente Enschede-The Netherland.
- Mekonnen M M and Hoekstra A Y (2010) A global and high-resolution assessment of the green, blue and grey water footprint of wheat. *Hydrol Earth Syst Sci* **14**:1259-76.