

UNDERSTANDING THE WATER FOOTPRINT OF FACTORY FARMING

Water scarcity is one of the key crises facing the world today. Professor Arjen Y. Hoekstra, explains the connection with factory farming.

The desirability of reducing our carbon footprints is generally recognised – if not necessarily acted upon – by governments, corporations and individual consumers. Yet the related and equally urgent need to address our water footprint is often overlooked.

Campaigns aimed at getting the public to save water usually focus on reducing domestic or industrial consumption of water. But only 10% of our water consumption is related to industrial products and only 5% to household use. About 85% of humanity's water footprint is in fact related to the consumption of agricultural products, particularly animal products, as they generally use much more water per caloric value than crops. This means that if people are considering reducing their water footprint, they need to look at their diet rather than at their water use in the kitchen, bathroom or garden.

The biggest contribution to the total water footprint of all animal products comes from growing feed, rather than the water the animals drink. Many grain crops are grown specifically for animal consumption. In the United States, for example, 68% of the grains produced are used for animal feed. But this step is the farthest removed from the consumer, which explains why people generally have little notion that animal products require a lot of water.



THE WATER FOOTPRINT

A water footprint generally breaks down into three components:

The **BLUE WATER** footprint is the volume of fresh water that is consumed from surface and groundwater.

The **GREEN WATER** footprint is the volume of water consumed from rainwater stored in the soil.

The **GREY WATER** footprint is the volume of water that is required to dilute polluted water to such an extent that the quality of the ambient water remains above agreed water quality standards.

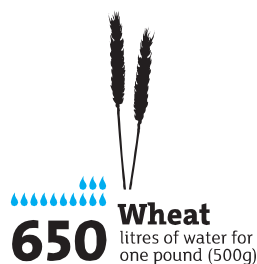
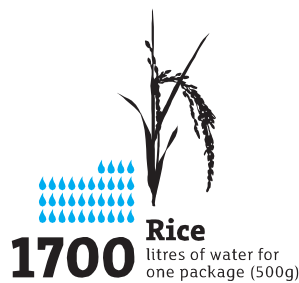
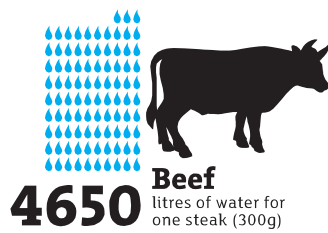
Purely from a water-saving point of view, it is more efficient to eat the crops directly rather than having them processed into meat. Moreover, the water footprints of two seemingly similar pieces of meat can largely differ. Even though taste and other measurable characteristics may be the same, water footprints may be completely different depending on how the animal has been reared and fed.

The water footprint of beef from an industrial system may partly refer to irrigation water (blue water) to grow feed in an area remote from where the cow is raised. This can be an area where water is abundantly available, but it may be an area where water is scarce and where minimum environmental flow requirements are not met due to over exploitation. In contrast, the water footprint of beef from a grazing system will mostly refer to green water used in pastures. If the pastures used are either dry- or wetlands that cannot be used for crop cultivation, the green water flow turned into meat could not have been used to produce food crops instead. If, however, the pastures can be substituted by cropland, the green water allocated to crop production ceases to be available for meat production. So the social and ecological impacts of water use at a certain location depend on the scarcity and alternative uses of water at that location.

Protecting freshwater resources can no longer be regarded as an issue for individual countries or river basins. Take Europe as an example. The water footprint of Europe – the total volume of water used for producing all commodities consumed by European citizens – has been significantly externalized to other parts of the world. Europe is a large importer of crops like sugar and cotton, two of the thirstiest crops. Europe also imports large volumes of animal feed, like soybean from Brazil. So European meat consumption relies heavily on water resources from outside Europe. How Europe is going to secure its future water supply may thus become a vital economic and political issue.

Water problems are in fact an intrinsic part of a global economic structure in which water scarcity is not translated into costs to either producers or consumers. As a result there are many places where water resources are depleted or polluted, with producers and consumers along the supply chain benefiting at the cost of local communities and ecosystems. Animals are often fed with a variety of feed ingredients and feed supply chains are difficult to trace. So unless we have milk, cheese, eggs or meat from an animal that was raised and grazed locally, it is hard to say how any individual product has affected the world's scarce freshwater resources. The increasing complexity of our food system in general and animal products in particular hides the existing links between the foods we buy and their resource implications.

It is only by understanding the relation between animal products and water resources that effective policy decisions can be made. Yet there is no national



One water droplet represents 50 litres

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water plan in the world that even addresses the issue that meat and dairy products are among the most water-intensive consumer products, let alone that water policies somehow involve consumers or the food industry in this respect. The latest 2009 World Water Assessment Programme report by the United Nations is nearly 350 pages long but mentions the word 'meat' just 15 times. The analysis does not go deeper than stating that global meat demand will increase and thus water demand as well. The same bias can be seen in scientific literature, which generally addresses the issue of water-use efficiency within agriculture (more crop per drop), but hardly ever the issue of water-use efficiency in the food system as a whole (more calories per drop).

THE SITUATION HAS TO CHANGE

Consumer and environmental organisations need to demand more product transparency of animal products by business and governments, so that they are better informed about associated water resources use and impacts. Governments can put regulations in place that urge businesses along the supply chain of animal products to cooperate in creating product transparency, and can tune their trade and development cooperation policies towards their wish to promote consumption of and trade in sustainable products. Businesses can cooperate in water labelling, certification and benchmarking schemes and produce annual water accounts that include a report of the supply-chain water footprints and associated impacts of their products. For more information about the Water Footprint concept, please visit www.waterfootprint.org

Wise water governance must become a shared responsibility of consumers, governments and businesses.

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