Virtual Water

In Sweden, a person uses on average 180 litres of water per day. Most of it is used for personal hygiene, laundry and toilet flushing as well as drinking and cooking purposes (Sydvatten, 2010). However, when talking about water usage, we tend to forget that this number represents only the domestic water withdrawal. Additionally to the daily use of 180 litres of tap water, fresh water is also required to produce many of the goods we consume. For example, 140 litres of water are needed to produce only 1 cup of coffee (Swedish Environmental Protection Agency and Swedish Chemicals Agency, 2011) and 10,850 litres to fabricate one pair of jeans from the cotton production through numerous processing steps, like spinning, knitting and weaving to the final product (Chapagain, Hoekstra, Savenije, & Gautam, 2006).

The water incorporated into the production of goods and services is called **Virtual Water**. The assessment of the amount of water used for the production of the goods and services consumed by the inhabitants of a country, e.g. Sweden, is called **Water Footprint** (Hoekstra & Chapagain, 2007).

The water footprint is calculated from the difference between internal and external water use. The *internal water footprint* is the volume of freshwater used from Swedish water resources; the *external water footprint* is the volume of water used in other countries to produce goods and services imported and consumed in Sweden (Hoekstra & Chapagain, 2007). On a global average, a person has a water footprint of around 1,300m^3 per year. The average Swede uses even 1,428m^3 per year – which is around 3,900 litres per person per day and sums up to roughly 26 bathtubs[1] per day – of which more than 50 % comes from sources outside of the country (Mekonnen & Hoekstra, 2011). Thereby, water from different sources is included, like surface and ground water (also known as **Blue Water**), rainwater which is stored in the soil (**Green Water**) as well as polluted water (**Grey Water**) (Hoekstra & Mekonnen, 2012). The water footprint is therefore a multidimensional indicator, combining the water volume embodied in the product, the sort of water as well as when and where the water is used (Water Footprint Network, 2014). Figure 1 illustrates the average water footprint of national consumption in m^3 per year per capita. Countries shown in green have a water footprint that is smaller than the global average; countries shown in yellow-red have a water footprint larger than the global average (Mekonnen & Hoekstra, 2011).

Especially when we take into consideration that our planet's water resources are not evenly distributed, the concept of the water footprint gains in importance and illustrates that “several countries heavily rely on foreign water resources and that many countries have significant impacts on water consumption and pollution elsewhere” (Hoekstra & Mekonnen 2012, p.3232). This in turn raises numerous questions about resource allocation and social justice.

[1] An average Swedish bath tub holds around 150 litres.

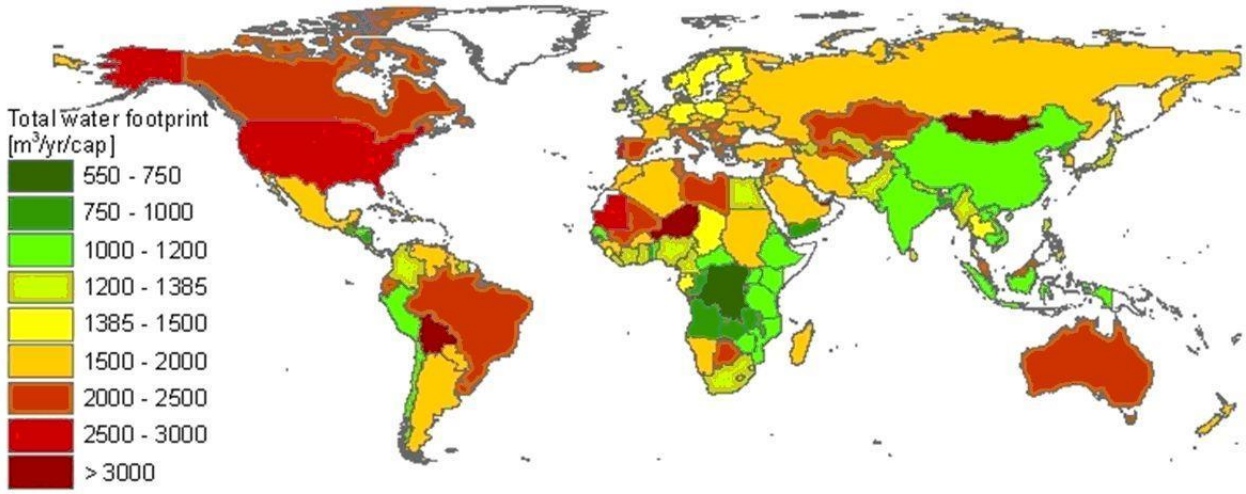

Figure 1: Average water footprint of national consumption in m³ per year per capita in the period 1996-2005.

We consume water abroad starting with our first cup of coffee in the morning. The clothes we wear as well as the devices we use on a daily basis all consume water in their production process. The table in Appendix A provides an overview of four popular products and the water consumed in producing its main component, as well as the water footprint of the country of production and the arising environmental impact. These goods include jeans (cotton production in Pakistan), hamburgers (beef patties in Brazil), coffee (coffee plantation in Vietnam) and mobile phones (mining of ores in South Africa).

Knowing all these impacts of a globalized supply chain, we see it as a necessity that each product should state the water footprint on its label. This helps customers to choose an environmental friendly product

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