

Water Footprints: Why Business Is Shunning the Wet Look

Published : February 14, 2011 in [Knowledge@Australian School of Business](http://knowledge.asb.unsw.edu.au/article.cfm?articleid=1312)

Concerns over climate change – and arguments over the increasingly pressing need for populations to change living habits and switch energy sources – have brought the need for carbon footprints into sharp focus over the past decade. But as counting carbon and managing emissions became a global headline issue, an environmental issue of debatably equal urgency, the planet's scarcity of fresh water and its pollution overuse, has been trickling along in the background.

Essential for the survival of life on earth, water is commonly described as the world's most precious resource. In 2003, as developed and underdeveloped countries grappled with water shortages, with some forced to drink contaminated water, the United Nations' Food and Agriculture Organisation issued a dire warning of the need to take steps to avert a full-scale global water crisis in the future.

As fears of the effects of global warming put carbon counting at the forefront of political agendas, figuring out what to do about water shortages and finding ways to calculate water footprints has remained largely the preoccupation of scientists and academics and, more recently, big business.

The water footprint is an indicator of both the direct and indirect water use of a consumer or producer. "The water footprint of an individual, community or business is defined as the total volume of fresh water that's used to produce the goods and services consumed by the individual or community or produced by the business," according to the Netherlands-based non-profit organisation, the [Water Footprint Network](#) (WFN), an international collaboration of researchers, non-government and government organisations and the private sector. Since its launch in 2008, the network has become widely regarded as a global authority on water footprinting.

After years of debate, in 2009 a proposed water footprint protocol was circulated around the world by the International Organisation for Standardisation (ISO). The protocol scopes out a universal standard for requirements and guidelines to assess and report water footprints, including metrics for products, processes and organisations, definitions for different types of water sources and other issues, such as labelling and declarations. The discussion and feedback phase for the ISO standard is expected to be completed by the end of 2011.

Establishing an internationally consistent standard is complex, says [Matthias Schulz](#), program manager of sustainability assessment at the University of New South Wales Water Research Centre. Many organisations that were also involved in the development of carbon footprint methodology, such as the World Resources Institute and World Business Council for Sustainable Development, are also part of the process to develop a unified standard and measurement for water footprints. What's now being evaluated and debated are methods for accounting for water, weighting its impact and the final consequences. "And there are around 20 different methodologies for each level," notes Schulz.

How and What to Measure?

To date, argument has centred on how to measure water, the different kinds of water and the effect it has on local conditions. Organisations that are frontrunners in environmental awareness and risk management apply a multitude of definitions and criteria to report water consumption in environmental reports, or in product packaging or documentation. "It's very difficult to determine the amount of water that's used for



This is a single/personal use copy of Knowledge@Australian School of Business. For multiple copies, custom reprints, e-prints, posters or plaques, please contact PARS International: reprints@parsintl.com P. (212) 221-9595 x407.

business because there are different kinds of water and there is no universal agreement as to what kinds of water to include in a water footprint figure," Schulz says. "The other difficulty – and main difference to measuring carbon – is that water footprints involve very localised and regional effects. With carbon, no matter where you emit it, it contributes to global warming. But with water, it makes a huge difference whether you use water in Australia or Norway, for example."

A popular way to differentiate types of water is by colour. "Green" water refers to rainwater stored in soil – it may be transpired by plants or recharge ground or surface waters through drainage. "Blue" water comes from rivers, groundwater and dams, while "grey" water is defined as discharged polluted water (which may have been diluted to meet regulatory levels of pollution).

The Water Footprint Network's methodology is the most commonly used calculation method and it accounts for these three types of water. "But many in the scientific community distance themselves (from the WFN), because they see its method as water counting; simply measuring the amount of water per different type," Schulz points out. "It's not qualified in terms of the impact that the water has on the environment." A priority is measuring the impact of water that's been withdrawn in a specific region, Schulz believes. "Depending on how much water is available and how much water is extracted, you can determine the water stress index and that provides what we call a weighted water footprint figure. The goal is to discover the real consequences of water usage, how water use in a particular region affects human and ecosystem health."

Brent Clothier is the science group leader of systems modelling at the Plant & Food Research's climate laboratory, a New Zealand government-owned business. Clothier is also concerned about the processes and thinking behind the development of international protocols for water footprints. "It's important that we don't reinvent the wheel," he says. "Good science and good hydrology is what is needed. We have a world water crisis coming, and at least now we have consumer and government recognition of the problem on a world scale."

Three societal drivers will be crucial to helping Australia to avert a water crisis, argued Clothier and his co-authors, Steve Green and Markus Deurer, in a recent paper. Firstly, there are the regulators who need to allocate water equitably, and secondly, farmers and growers who need to minimise the use of water. Finally, it will depend on consumers who need to get actively involved in water footprinting and pressuring companies to label products on water usage, they insist.

"Agriculture now uses 80% of the world's water and we are going to be in very short supply soon," says Clothier. "We are trying to make the business of standardising practices relating to water around the world very serious to ensure there is no 'greenwash', which is equivalent to a whitewash." According to the Australian federal government's National Water Commission 2004-05 figures, agriculture uses 65% of water, followed by households and the water supply industry, each at 11%, manufacturing (3%), mining (2%) and other industries, including electricity and gas (7.4%).

Questioning Quantities

A breakdown of the amounts of water used in the production of commodities, as calculated by the Water Footprint Network, shows it takes 16,000 litres of water to produce 1 kg of beef; 3000 litres of water for 1 kg of rice; 1350 litres of water for 1 kg of wheat; 1000 litres of water for 1 litre of milk; 900 litres for 1 kg of maize and 140 litres for one cup of coffee.

But the network's measurement of water usage for beef is disputed by Schultz, who was recently involved in a full lifecycle assessment for the Australian beef industry. "They were interested in how much water was used to produce a kilogram of beef or lamb because there was a controversial debate over the figures quoted," he explains. "Some went as high as 70,000 litres per kilogram of meat. That was a matter of concern to them and this prompted a discussion of the types of water that should be used in the methodology. If we want to assess the environmental impact water use has, we didn't think it fair to include the water that falls as rain on the areas where the beef cattle feed on grass. Our reasoning was that rain would fall anyway, regardless of whether the cattle were grazing, so it was not relevant.

"We only calculated the water that was used and extracted and we took into account water that was polluted and discharged. Our figures were between 200 to 500 litres of water per kilogram of beef." One

of the difficulties, Schulz suggests, is that there is little knowledge of how much water is used in different products, which makes it hard to benchmark.

Big business, in particular, is also demonstrating an awareness of the significance of water use. In its recent report, *Disclosures on Water*, the Association of Chartered Certified Accountants (ACCA) found that the majority of the top 50 companies listed on the Australian Securities Exchange chose to report on water usage, but used their own ad hoc criteria. The report's resounding message was that the majority of Australian companies believed that business would benefit from improved and standardised disclosure on water usage and practices. Subsequently, the ACCA has called for a national standard to be established to promote accountability and to put pay to potential mistrust over water-use reporting.

There are signs that businesses are starting to drive change. Take OneSteel, Australia's largest manufacturer and distributor of structural steel products. Water plays an important part in the steelmaking process. The company, which draws its water from regional and metropolitan town-water suppliers and the environmentally threatened Murray River system, recorded about 8230 million litres of water used in the 2010 financial year. However, OneSteel has been able to reduce its water consumption from South Australia's Whyalla area, which is derived from the Murray River via pipeline, by 700 million litres since 2008. "Our aim is to optimise the efficiency of our products through their lifecycle, including increased resource and energy efficiency in the production and distribution," states managing director Geoff Plummer.

Clearly, awareness of water use and its conservation is pressing in Australia, the driest inhabited continent on earth, where a homegrown method for water footprinting has been developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Its methodology, which measures the environmental impact of the type of water used, rather than just counting the volume of water, has been applied to two products from snackfood manufacturer Mars Australia and to a pilot study on cereals in NSW for the Sustainable Agriculture Initiative (SAI) Platform. Work is also underway on lamb, beef, dairy, rice and horticultural systems.

"The problem with total water calculations is that they don't help businesses or consumers understand the impact from water used on local water resources and the calculations don't consider that there is huge variation in production systems," says Brad Ridoutt, principal research scientist at the CSIRO Sustainable Agriculture Flagship. "Water footprinting helps businesses to investigate how water is used through the supply chain to produce their products and where the water comes from. It asks questions, such as: 'Is it from regions with abundant water or is the use of the water from that region adding to local water scarcity?' This means that companies can be informed about risks to their supply chain and also provide this information to consumers."

CSIRO's water footprinting method enables comparisons between different products and between different stages of a particular product's lifecycle. Water consumption in a region of water abundance does not have the same potential to cause harm as water consumption in locations of water scarcity. "For Australian food producers, it is important that standardised approaches to water footprinting emerge and that they are scientifically based, allow meaningful comparison between alternative products, production systems and supply chains, and that they do not discriminate against Australian agricultural practices," Ridoutt concludes.

This is a single/personal use copy of Knowledge@Australian School of Business. For multiple copies, custom reprints, e-prints, posters or plaques, please contact PARS International: reprints@parsintl.com P. (212) 221-9595 x407.