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## Impact Category. Water

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**Brief summary** The environmental impact of water use can be measured via two approaches (the volumetric and the impact assessment approaches). As of mid-2011, no consensus has been reached as to which method should be used.

**Units.** Consensus yet to be reached

**Detailed summary.** Freshwater has become a critically scarce and overexploited natural resource in many parts of the world, threatening widespread irreversible environmental change and harmful impacts on human wellbeing (Rockström *et al.* 2009, Ridoutt and Pfister 2010). Presently, there are two approaches to assess the water use of a product – the volumetric approach and the impact assessment approach.

The volumetric approach popularised by the Water Footprinting Network (WFN 2011), takes into account total water use (in m<sup>3</sup>), and splits water into three categories: green, blue and grey water. Green water is described as the consumption of rainwater stored in the soil as moisture, blue water is consumption of surface, ground and fossil water, and grey water is water needed to dilute pollutants to ambient levels. A volumetric water footprint then adds these different water types together to produce what the WFN describe as a water footprint.

The impact assessment approach can also be used to account for total water withdrawn as well as just water consumed and uses a characterisation factor to find the impact of water use. There are several different approaches to produce characterisation factors (Pfister *et al.* 2009, Milà I Canals *et al.* 2009). In addition a new ISO work program (TC 207/ SC5/ WG8) has begun which seeks to develop an international water footprint standard (ISO 14046) coherent with the ISO 14040 series and environmental metrics such as carbon footprinting (Ridoutt 2011).

### References.

1. Rockström, J. *et al.* 2009. A safe operating space for humanity. *Nature* 461, 472-475.
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  3. WFN 2011. Water Footprinting Network. <http://www.waterfootprint.org>
  4. Pfister, S., Koehler, A., Hellweg, S. 2009. Assessing the environmental impacts of freshwater consumption in LCA. *Environmental Science and Technology*, 43 (11), pp. 4098-4104.
  5. Milà I Canals, L., Chenoweth, J., Chapagain, A., Orr, S., Antón, A., Clift, R. 2009. Assessing freshwater use impacts in LCA: Part I - Inventory modelling and characterisation factors for the main impact pathways *International Journal of Life Cycle Assessment*, 14 (1), pp. 28-42.
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