Does the water footprint concept provide relevant information to address the water–food–energy–ecosystem nexus?

Abstract:
This paper is a perspective paper, which investigates whether the water footprint (WF) concept addresses the water–food–energy–ecosystem nexus. First, the nexus links between (1) the planetary boundary freshwater resources (green and blue water resources) and (2) food security, energy security, blue water supply security and water for environmental flows/water for other ecosystem services (ES) are analysed and graphically presented. Second, the WF concept is concisely discussed. Third, with respect to the nexus, global water resources (green and blue) availability and use are discussed and graphically presented with an indication of quantities obtained from the literature. It is shown which of these water uses are represented in WF accounting. This evaluation shows that general water management and WF studies only account for the water uses agriculture, industry and domestic water. Important water uses are however generally not identified as separate entities or even included, i.e. green and blue water resources for aquaculture, wild foods, biofuels, hydroelectric cooling, hydropower, recreation/tourism, forestry (for energy and other biomass uses) and navigation. Fourth, therefore a list of essential separate components to be included within WF accounting is presented. The latter would be more coherent with the water–food–energy–ecosystem nexus and provide valuable extra information and statistics.


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