Geophysical Research Abstracts
Vol. 19, EGU2017-6891, 2017
EGU General Assembly 2017

Water for wood products versus nature, food or feed

Joep Schyns (1), Martijn Booij (2), Arjen Hoekstra (2,3)

(1) Twente Water Centre, University of Twente, Enschede, Netherlands (j.f.schyns@utwente.nl), (2) Twente Water Centre, University of Twente, Enschede, Netherlands, (3) Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore

Forests play a central interlinked role in the 2030 Agenda on Sustainable Development. The Agenda aims at an increased share of renewable energy in the global energy mix (target 7.2) and restoration and sustainable management of forests (targets 6.6, 15.1 & 15.2). Forests also play a key role in the hydrological cycle accounting for the largest water flux from land to atmosphere. However, we do not know which part of this is used for the production of wood products such as lumber, pulp and paper, firewood or biofuel. SDG target 6.4 calls for increased water-use efficiency across all sectors and requires understanding the competing demands for water and the potential conflicts between wood production and other purposes like food (SDG 2). To reach the SDGs we need to understand the interlinkages between the SDGs and know how much water is used in the forestry sector.

We provide the first estimate of global water use in the forestry sector, using the water footprint (WF) as indicator and distinguishing between consumption of green water (precipitation) and blue water (groundwater through capillary rise). We estimate forest evaporation at a high spatial resolution level and attribute total water consumption to the various forest products, including ecosystem services.

Global water consumption for wood production increased by 34% over 50 years to 290x109 m3/y in 2001-2010. Wood has a higher economic water productivity (EWP, US$/m3) than common food or feed crops like wheat, maize and sugar beet, and bio-ethanol from wood has a small WF per unit of energy compared to first-generation bio-ethanol from these three crops. Counterintuitively, extensive wood production has a smaller WF and hence a higher EWP than intensive wood production. The reason is that extensively exploited forests host relatively more value next to wood production in the form of other ecosystem services. Recycling of wood products could effectively reduce the WF of the forestry sector, thereby leaving more water available for the generation of other ecosystem services.

Our findings contribute to a more complete picture of the human appropriation of water and the understanding of the interlinkages between the SDGs, thus feeding the debate on water for wood products versus nature, food or feed.