



## **Assessing water consumption in extreme diet scenarios**

Mika Jalava, Joseph Guillaume, and Matti Kummu

Water and Development Research Group, Aalto University, Espoo, Finland (mika.jalava@aalto.fi)

Most of the food for humanity comes from agriculture. Producing it requires enormous resources, and the projected population growth will further increase the stress on the environment. A number of strategies have been suggested to make food production sustainable. One of them, changing the human diet, has been shown to have a considerable potential in reducing use of resources, including water. Using water footprint methodology, our results show that moving to a mostly plant-based diet or a more conservative diet change combined with halving food losses would reduce the number of people living under water scarcity by hundreds of millions. Alternatively, it would enable producing sufficient, healthy food supply for a much larger population. Questions are still remaining, though. While water footprints alone have been criticised for only concentrating on water volumes and not the impacts of consumption, with proper attention to existing resources and the ecological relevance of using them, the water footprints allow straightforward analysis of limited modifications to food systems. On the other hand, large changes to the demand of each of the crops as well as shifts in ratios between plant- and animal-based foodstuffs alter some of the underlying assumptions, which are based on the current production. We present concepts to try to tackle the dynamics involved with diet change. Specifically, we discuss and present results related to:

- 1) Effects of changes in the areas used for production of a crop on its marginal water footprint
- 2) Use of non-food grade crop production as feed
- 3) Use of feed from co-production systems