VIRTUAL WATER

Crop exports desiccate deserts

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Assessments of water use attempt to incorporate all types of usage to establish a full account of the direct and indirect consumption of economic production and human demands; a ‘virtual’ water footprint. Viewed in this way, exports of goods, including crops and produce, carry with them embedded water, putting arid areas under even more stress.

Jinwon Bae, at the University of Arizona, and Sandy Dall’erba, at the University of Illinois, analysed water inputs in crop production in Arizona to calculate virtual water flows as those crops are exported out of the state. They found that every dollar’s worth of crops grown in Arizona requires 2.32 times more total water than the national average in the United States. The fraction of Arizona’s water use devoted to agriculture (73%) is more than twice that of the country as a whole, yet these crops represent only half a percentage point of Arizona’s economic production. Nevertheless with nearly 80% of the crops grown in Arizona being exported, this minor component of the state’s economy is exporting 58% of its scarce water resources to the rest of the country or abroad.

As Arizona, like many other arid regions around the world, is reliant on complex reclamation projects, reducing virtual water footprints is not just about using resources more efficiently, for example through better irrigation methods, but also more effectively through pricing schemes and choice of crops.

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