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A drought in China's northeast, the country's main soy producing region, has been very serious. A Dutch hydro-engineer says there should be no more agriculture in dry regions. *Photo Reuters*

Measuring the damage of our 'water footprint'

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A Dutch hydro engineer has come up with a "water footprint". At a conference in Sweden, he and other participants discussed water waste, supermarkets filled with fruits and vegetables produced in some of the world's most arid regions and ways we can stop wasting our most precious resource.

By Samiha Shafy

Arjen Hoekstra didn't really stand out in the crowd of 2,000 scientists, activists, politicians and representatives of industry who attended the World Water Week in Stockholm last week. The 42-year-old Dutch hydro engineer preferred to keep a low profile at the annual global conference that focuses on water-related issues, but his creation of the water footprint. served as a magnet for debate.

His equation is actually just a couple of numbers used to describe the amount of water that is used - or polluted - during the manufacture of various products. Anyone can calculate their water footprint by looking at the amount of water they use directly and then by looking at the amount

of "virtual water" they use - that is, how much water is used in the production of any goods they consume. The global average for an individual's water footprint is 1,243 cubic meters of water per year. In the US, this goes up to 2,483 cubic meters per year; in Germany it's 1,545 and in China, 702.

Hoekstra's water footprint formula has already made headlines around the world with its estimates of the amount of water that is used or abused in the simple products that are a part of our everyday lives:

- 140 liters of water for one cup of coffee
- 2,400 liters for a hamburger
- 10,000 liters for one pair of jeans

In the discussions and workshops in Stockholm, participants debated what sort of action should be taken as a result of the water footprint figures. The WWF environmental group first recognised the validity of the water footprint, and further conservation and environmental protection groups as well as the United Nations and the World Bank soon followed suit. Finally, even multinational companies like Nestlé, Unilever and Pepsi got on board.

Water flowing in the wrong direction

And they all seem to agree that Hoekstra's numbers could be potentially explosive - mainly because they make it clear how thoughtlessly water, the most precious of resources, is handled in so many areas. "Because of the international trade in water-intensive products, there are floods of virtual water flowing around the world," Hoekstra said. "And many of them are flowing in the wrong direction, going from water-poor regions to the water-rich."

Mostly these flows involve food, biofuels and cotton. Between 70 and 80 percent of all the water consumption in the world is used for agricultural purposes. The European Union, for example, contributes indirectly to the drying out of the ever-shrinking Aral Sea in Kazakhstan and Uzbekistan through its cotton imports from the region. And when the Germans, for example, buy ham from Spain or oranges from Israel, they are also contributing to water scarcity in those areas.

Today, around 1.4 billion people live in areas where water is scarce. Climate change, population growth and the flows of virtual water only serve to exacerbate the problem. "By 2050, we will be confronted with the paradoxical situation of having to feed another 2.5 billion people, but with significantly less water," said Colin Chartres, director general of the International Water Management Institute, an internationally funded, non-profit organisation looking into ways to improve land and water management.

Will countries abandon agriculture?

Against that backdrop, delegates in Stockholm argued about how realistic Hoekstra's more radical ideas are. "In dry areas there should be no more agriculture," the Dutchman has suggested. His idea involves using the trade in virtual water to rebalance the earth's water budget. Instead of watering desert fields, Egypt would be better off importing beans or millet

from Ethiopia, for example. And Australia, where the outback is one of the world's most arid regions, should also cease to export virtual water in the form of meat, fruit and wine production.

The same arguments could be applied to all of earth's dry zones - from the Middle East to northern China and northwestern India to Southern California. Hoekstra says all of these regions could mitigate their water paucity by letting their fields dry up and importing more virtual water. "These water-poor regions need to come up with a new vision for the future," Hoekstra argued. "Just as the oil producing countries, where oil is starting to run out, have had to do."

But what would make any country abandon agriculture, altogether or partially? British environmental researcher Tony Allan (72) first coined the phrase "virtual water" in the 1990s and he agrees with Hoekstra. "Singapore is an interesting example," he said. "They don't have water sources or agriculture. Ninety percent of their water needs are covered by the import of virtual water. The rest comes from recycling and desalination."

Of course, Allan knows that Singaporean model isn't necessarily appropriate for the rest of the world. Even he admitted that no country would voluntarily give up its agricultural practices in the foreseeable future. "But it is no longer taboo to talk about these things," he noted.

Companies' image

During the Stockholm workshops, experts quickly agreed that new pricing structures could steer the water trade in the right directions. Today, water prices are often distorted through government subsidies to farmers - mainly because if the subsidies were not there, then agriculture and animal husbandry would very quickly become prohibitively expensive in those dry regions and no longer worthwhile.

Meanwhile, countries like China and Saudi Arabia are buying up large, fertile pieces of land in places like Africa, Asia and Latin America. By buying land instead of food, they are ensuring access to water in the future. The land-grabbing countries aren't alone, either - they're competing directly with food production giants like Nestle and Coca-Cola, which have been buying up rights to water reservoirs around the world for years.

Many companies are welcoming the increasing debate about water footprints in Stockholm. It's a great opportunity for them to do something to improve their image. Indeed, several large corporations sent whole delegations to Stockholm. At the workshops, the delegates continually repeated the same message: Their employers are trying their very best to leave a smaller water footprint.

Background

Privacy

Fingerprints of all Dutch citizens will be stored in

Glasses

Self-adjustable glasses can change the lives of

GHB

Party drug GHB (or 'alcohol without the

their passports and a database.

people who have no access to an optician.

hangover') is easy to make at home.