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Meat-Eaters Soak Up the World's Water

A change in diets may be necessary to enable developing countries to feed their people, say scientists

by John Vidal

Governments may have to persuade people to eat less meat because of increasing demands on water supplies, according to agricultural scientists investigating how the world can best feed itself.

They say countries with little water may choose not to grow crops but trade in "virtual water", importing food from countries which have large amounts of water to save their supplies for domestic or high-value uses.

With about 840 million people in the world undernourished, and a further 2 billion expected to be born within 20 years, finding water to grow food will be one of the greatest challenges facing governments.

Currently up to 90% of all managed water is used to grow food.

"There will be enough food for everyone on average in 20 years' time, but unless we change the way that we grow it, there will be a lot more malnourished people," said Dr David Molden, principal scientist with the International Water Management Institute (IWMI), which is part-funded by the British government and is investigating global options for feeding growing populations.

"The bottom line is that groundwater levels are plummeting and our rivers are already overstressed, yet there is a lot of complacency about the future," the IWMI report says.

"Western diets, which depend largely on meat, are already putting great pressures on the environment. Meat-eaters consume the equivalent of about 5,000 liters [1,100 gallons] of water a day compared to the 1,000-2,000 liters used by people on vegetarian diets in developing countries. All that water has to come from somewhere."

The consensus emerging among scientists is that it will be almost impossible to feed future generations the typical diet eaten in western Europe and North America without destroying the environment.

A meat and vegetable diet, which most people move to when economically possible, requires more water than crops such as wheat and maize. On average, it takes 1,790 liters of water to grow 1kg of wheat compared with 9,680 liters of water for 1kg of beef.

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In its report, the IWMI says it is unlikely people will change their eating habits because of concerns about water supplies. "And in many sub-Saharan countries, where the pressure on water will increase most rapidly in the next 20 years, people actually need to be eating more, not less," the report says.

Anders Berntell, the director of the International Water Institute, based in Stockholm, said: "The world's future water supply is a problem that's ... greater than we've begun to realize.

"We've got to reduce the amount of water we devote to growing food. The world is simply running out of water."

Research suggests that up to 24% more water will be needed to grow the world's food in 20 years, but many of the fastest-growing countries are unable to devote more water to agriculture without sacrificing ecosystems which may be important for providing water or fish.

The option of increased world trade in virtual water seems logical, the scientists say, but they recognize that it depends on countries having the money to import their food. "The question remains whether the countries that will be hardest hit by water scarcity will be able to afford virtual water," the report says.

The best options for feeding the world, it says, are a combination of hi-tech and traditional water conservation methods. Improved crop varieties, better tillage methods and more precise irrigation could reduce water consumption and improve yields.

Drought-resistant seeds, water harvesting schemes and small-plot technologies such as treadle pumps [simple foot pumps] all have the potential to boost yields by 100%, the report says.

The scientists did not examine the use of GM foods which have been hailed by some companies as the way to avoid big food shortages.

"Even without GM foods, in many parts of the world there is the potential to increase water productivity. Even without them there is hope," one of the report's authors said.

Another option considered is that of farmers using more urban waste water for irrigation. It is estimated that up to 10% of the world's population now eat food produced using waste water from towns and cities.

Cities are predicted to use 150% more water within 20 years, which will be both a problem and an opportunity.

"This means more waste water but also less fresh water available for agriculture. In the future, using waste water may not be a choice but a necessity", the report says.

The authors say western governments need to change their policies: "Agricultural subsidies keep world commodity prices low in poor countries and discourage farmers from investing [in water-saving technologies] because they will not get a return on their investments.

"Land and water rights are also needed so people will invest in long-term improvements."

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