

Economist.com Research Tools
Backgrounders
sponsored by **Microsoft** pe
Business
Finance & Eco
Science & Tech

Economist.com **FINANCE & ECONOMICS**
PRINTABLE PAGE VIEW SPONSORED BY

[About sponsorship](#)

Financing water projects

Pay dirt

Aug 31st 2006

From The Economist print edition

Buckets, not big irrigation systems, can prevent the world running dry

AFP



WILL the world run short of water to grow crops? Not if it invests in the right projects, according to a group of scientists and economists that has been studying the question for the past five years. The "Comprehensive Assessment", co-ordinated by the Consultative Group on International Agricultural Research, an international network of research institutes, will not be released until November. But at a recent conference in Sweden, they revealed some preliminary findings. The good news is that small investments in infrastructure for water can yield big returns. Unfortunately, governments and donors have concentrated on more grandiose but less helpful schemes, leaving a third of the world's population—some 2 billion people—short of water.

Agriculture sucks up perhaps 95% of the water humans use. It takes roughly 3,000 litres to grow enough food for one person for one day, or about one litre for each calorie. Moreover, the world's population is growing, and people are eating more than they used to. So the assessment's projections suggest that if nothing changes, agriculture will consume twice as much water by 2050 as it does today.

That is a tall order: as it is, some 900m people, the assessment finds, live in river basins where

humans consume more than 75% of the water, leaving barely enough to keep rivers flowing and lakes filled. Another 700m live in basins rapidly approaching this "closed" state; 1 billion more live within reach of adequate water supplies, but cannot afford to gain access to them. The water table is falling fast in densely populated and poor regions of China, Mexico and India.

In theory, the world should still have more than enough water to feed everyone under most circumstances, thanks to sodden places like Canada and Russia. But exploiting the surplus would require much more trade in food from damp spots to the parched ones. A few poor, dry and teeming countries, such as Egypt, along with the odd rich one, like Japan, already depend on imports of food. But most governments are loth to put their citizens at the mercy of the world's imperfect markets.

Instead, governments have tended to try to increase agricultural output through expensive irrigation projects. But smaller investments in simple devices, such as pumps to tap groundwater, are faster to deploy, yield greater returns on capital and bring fewer environmental and social problems. A recent study of vegetable farmers in Ghana, for example, found that those irrigating their fields with wastewater carried by buckets earned a 230% return on their investment, versus 30% for big state-sponsored schemes.

The assessment argues that modest outlays on rain-fed agriculture, in particular, could drastically improve the productivity of farming in poor countries and so help both to raise farmers' incomes and also to cut the need for an expansion of agriculture elsewhere. More than half of the world's food comes from rain-fed farms, as opposed to irrigated ones. If the rains fail, so do the crops. Channels to harvest and direct rainfall and small, sealed reservoirs or tanks to store it, would not only see farmers through dry spells, but also allow them to entice bigger or more valuable harvests out of the same fields. More reliable income, in turn, allows farmers to invest more in seeds, fertiliser and machinery.

In Tanzania rainwater harvesting allows farmers to grow rice or vegetables instead of staples like sorghum and maize. These dearer crops bring in at least twice the revenue and up to seven times as much in good years. If adopted on a grand scale, the assessment argues, such techniques could double crop yields. In that case, the area under cultivation globally would have to rise by only 10% to satisfy growing demand for food by 2050—and there would be plenty of water to go round.