

## **Water, water everywhere?**

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Some two billion people are short of water. But, with a little ingenuity, there should be more than enough to go round

IS THE world running out of water? A group of scientists, economists and development experts who have been studying the question for the past five years think they have the answer. Their "Comprehensive Assessment", backed by the UN's Food and Agricultural Organisation and various research institutes, governments and aid groups, will be released in November. But at the World Water Week, a conference now underway in Sweden, they have revealed some early findings. The bad news is that a third of the world's population, some two billion people, are already short of water. But things do not have to be this way.

Roughly 900m people, the assessment finds, live in river basins where there is barely enough to keep rivers flowing and lakes filled. Another 700m live in basins rapidly approaching this "closed" state, and a billion more live within reach of adequate water supplies but cannot afford to make use of them. The water table is falling fast in densely populated and poor regions of China, Mexico and India. If current trends in water consumption continue, these grim statistics will only worsen.

The main culprit is agriculture. It takes roughly 3000 litres of water to grow enough for one person for one day, or about a litre for each calorie. Demand for water will grow as the world's population increases and as people eat more—and more meat in particular. Raising livestock requires more water, per calorie, than growing crops. So the assessment suggests that, by 2050, agriculture will consume twice as much water as it does today. Industry and domestic use, which now account for only a small fraction of water consumption, are also growing quickly. Global warming adds another layer of uncertainty and risk.

In theory, the world would still have more than enough water to feed everyone, under most scenarios. But it might require much more food to be traded from sodden parts of Europe, North America and Russia to parched bits of Africa and Asia. Needless to say, subsistence farmers in those continents are in no position to pay for imports of food—and will become even poorer, presumably, if their water runs short. A few poor, dry and teeming countries, such as Egypt, already depend on food imports, along with the odd rich one, like Japan. But most governments are loth to put their consumers at the mercy of the world's imperfect markets.

Instead, governments have traditionally tried to increase agricultural output through huge and 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. Modest outlays on rain-fed agriculture, in particular, could sharply raise farmers' productivity in poor countries, and so help both to lift their incomes and to reduce the need for an expansion of agriculture elsewhere.

Over half of world's food comes from rain-fed farms, as opposed to irrigated ones. Most of the world's poorest farmers, including the vast majority in Africa, rely on rain for their livelihoods. 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 them through dry spells, but also allow them to eke bigger harvests out of the same fields. If adopted on a grand scale, the assessment argues, such techniques could double crop yields. In that case, the area under cultivation globally would only have to rise 10% to meet rising demand for food—and there would be plenty of water to go round.