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Running on empty

Growing crops takes water, and there's far less of it than we thought

IT IS a sobering thought. The water in the Olympic swimming pool making a splash in Athens this week would irrigate enough crops to feed only one person for a year. No wonder the world is running dry. Worse, we are confronted by a startling new revelation: hydrologists have completely miscalculated how much water will be available in future to irrigate crops. It is a mistake that threatens to wreck hundreds of irrigation systems across the globe, cause new famines and waste billions of dollars of precious investment capital.

Natural water systems are already in crisis. Some of the world's largest rivers, such as the Nile in Egypt and the Indus in Pakistan, often run almost dry. Underground water reserves are being overpumped by a massive 200 cubic kilometres a year. That's a lot of swimming pools.

But such numbers only tell part of the story. Hydrologists have till now comforted themselves with the belief that we are so inefficient in the way we use water, particularly for irrigation, that modest investment could transform the situation. "More crop for every drop" has been the buzz phrase.

On the face of it, this seems like common sense. More than two-thirds of the water we grab from nature is intended for irrigating the crops that feed the world, but nearly two-thirds of that never reaches the plants. Instead water leaks from distribution canals and percolates underground or it evaporates from flooded fields. Capture that wasted water and everything will be OK.

But that word "wasted" is a tricky one. The leaked water is wasted for one farmer, maybe, but often it is not lost to farming. Research presented to the Stockholm Water Symposium this week by the Comprehensive Assessment of Water Management in Agriculture (CAWMA), an international collaboration by scientists from some 90 institutes, reveals that most is reused by agriculture at some point, either being taken from recharged groundwater or from rivers downstream.

This is a hugely important revelation. It does not mean, of course, that saving water at the farm level is entirely useless. Anything that cuts evaporation really does save water. And not all water that seeps down from flooded fields and canals gets recycled. But it does mean there is far less scope for saving irrigation water than we thought. In many

places, the introduction of more "efficient" irrigation technologies upstream in river basins will leave parched fields downstream.

In Sri Lanka, for example, the lining of canals with cement has already reduced the amount of recharged groundwater. As a consequence, the CAWMA reports tells us, several shallow drinking holes, which provide

"The introduction of more efficient irrigation technologies will lead to more parched fields"

better quality drinking water than fluoride-laden deep wells in the area, have dried out.

So we need other solutions to the water shortage crisis. Right now in India, where virtually every drop of river water is consumed during the long dry season, farmers are being

encouraged to switch from growing rice to less thirsty crops like maize, with the promise they can double their yields without increasing irrigation. That is plain wrong. According to the CAWMA report, paddies consume no more water than maize, once the seepage has been discounted.

In northern Mexico, the government is lining irrigation canals in the belief that the resulting water savings will allow it to pay back a water debt owed to the US under an old agreement to share the waters of the Rio Grande catchment. Texas farmers will get their promised water, alright, but the price will be paid by Mexican farmers who use underground water fed by those leaking canals. They will see their pumps run dry.

Why has nobody thought of this before? Well some have, of course, but not many of the hydrologists, irrigation engineers and officials who decide how money is spent on water infrastructure.

Europeans in particular rarely think seriously about water. Taps stay running, and by and large rainfall waters much of Europe's crops. But in large parts of the world, water shortages are the number one cause of poverty. Permanent hydrological drought is close to becoming a global fact of life. The new revelations underline just how close we have come to running out of water, and how much harder it will be than we thought to engineer solutions. ●