OPINIONS

Invest in water for farming, or the world will go hungry

Colin Chartres
10 July 2008 | EN | 中文

Super crops won't be enough — the planet will run short of food by 2030 unless we invest to avoid an imminent world water crisis, says *Colin Chartres.*

With population growth shortages of water for crops will grow
Flickr/3arabawy

A long list of factors have been blamed for the global food crisis which along with the energy crisis has hit developing countries, and the poor in particular, hardest. Prices of staple foods have risen by up to 100 per cent.

A growing population, changes in trade patterns, urbanisation, dietary changes, biofuel production, climate change and regional droughts are all responsible, and commentators point to a classic pattern of price increases caused by high demand and low supply.

But few mention the declining supply of water that is needed to grow irrigated and rain-fed crops.

An often-mooted solution to the food crisis is to breed plants that produce the ultimate high-yielding, low water-consuming crops. While this is important, it will fail unless we also pay attention to where the water for all our food, fibre and energy crops is going to come from.

Essentially, every calorie of food requires a litre of water to produce it. So those of us on Western diets use about 2,500-3,000 litres per day. The expected addition of a further 2.5 billion people to the world by 2030 will mean that we have to find over 2,000 more cubic kilometres of fresh water per year to feed them. This is not any easy task, given that current water usage for food production is 7,500 cubic kilometres per year and supplies are already scarce.

Facing severe water scarcity

A few years ago, my organisation, the International Water Management Institute (IWMI), demonstrated that many countries are facing severe water scarcity, either because insufficient fresh water is available or because they lack investment in water infrastructure, such as dams and reservoirs. What makes matters worse is that this scarcity predominantly affects developing countries where the majority of the world's 840 million under-nourished people live.

Serious and extremely worrying evidence indicates that water supplies are steadily being used up. And the causes of water scarcity are much the same as those of the food crisis: demand exceeds a finite supply.

The world's population is projected to grow from 6 billion to 8.5 billion by 2030 and unless we change the way we use water and increase water productivity — ie. produce more 'crop per drop' — we will not be able to feed them. That is the conclusion of the IWMI's recent Comprehensive Assessment of Water Management in Agriculture and its book, *Water for Food, Water for Life*, which drew on the work of 700 scientists.

Declining investment

Compared with the long-term threat of climate change, this problem is coming fast upon us. The latest estimates indicate that in 25 years' time we will not have enough water to feed ourselves and the current food shortage could become a perpetual food crisis. Yet, although the effects of water scarcity will be profound, very little is being done about it in most countries. Indeed, just as in other areas of agricultural research and development, investment in providing and managing water resources has declined steadily since the Green Revolution. This must now change.

Since the UN Millennium Goals were formulated in 2000, much of the water agenda has focused on providing drinking water and sanitation. This water comes from the same sources as agricultural water. As we urbanise and improve living standards, there will be increasing competition for drinking-quality water, putting agriculture under further pressure. While improving drinking water and sanitation is vital for raising health and living standards, we cannot afford to neglect provision and improved productivity of water for agriculture.

There are potential solutions. Better water storage has to be considered. Ethiopia, which is typical of many sub-Saharan African countries, has a water-storage capacity of 38 cubic metres per person. By comparison, Australia has almost 5,000 cubic metres per person, yet, in the face of current climate change, even that may be inadequate. We will certainly need to build new large- and medium-sized dams to deal with the critical lack of storage in Africa.

Other simpler actions are also part of the solution. These include constructing small reservoirs and using groundwater systems sustainably, including artificial groundwater recharge and rainwater harvesting for smallholder vegetable gardens.

Improved year-round access to water will help farmers maintain their own food security using simple supplementary irrigation techniques. Redesigning both the physical and institutional arrangements for some large, and often dysfunctional, irrigation schemes will bring productivity increases. Safe, risk-free re-use of wastewater from growing cities will also be needed. Of course, drought-tolerant crops and the infrastructure to get fresh food to markets must be developed in parallel.

I and my water science colleagues are raising a warning flag. Significant investment in both R&D and water infrastructure development are needed if dire consequences are to be avoided.

Dr Colin Chartres is director general of the Sri Lanka-based International Water Management Institute, a non-profit research organisation focusing on the sustainable management of water resources for food, livelihoods and the environment.

COMMENTS

Douglas Merrey (South Africa)
14 July 2008

Dr Chartres' observations should be taken seriously by all, though the same warnings have unfortunatey been ignored repeatedly in the past. One correction: according to a Ministry official at Africa Week, Ethiopia has increased its storage to over 160 m3/person, ie, 4 times the figure quoted. So some countries are progressing. Doug Merrey

Mara Hendrix (International Ocean Institute | United States of America)
18 July 2008

There are organizations working on these problems! We at International Ocean Institute have been focused on these issues since the 70s. The International Ocean Institute-USA and the city of St. Petersburg, FL, USA, are hosting a Coastal Cities Summit on November 17-20, 2008, to address the complex challenges that coastal city leaders face as populations increase, resources are depleted, and the impacts of climate change are felt. The Coastal Cities Summit intends to bring together 600-700 coastal city leaders, managers and academics to

discuss environmental, social, economic, and public policy challenges and viable solutions. Full details are available at www.coastalcities.org We need to show people that it is not too late and we can do something about this crisis!

Shwetha Shetty (India)
20 July 2008

Dr Chartres,
Your article is surely an eye-opening one. I hope it's not too late to actively indulge in water harvesting solutions. Please tell me some simple and affordable rain harvesting methods which I can do in my surroundings.

David Zetland (United States of America)
11 August 2008

Dr. Chartres is clearly knowledgeable about this topic, and his organization has the capability to address it -- assuming this op/ed is not a plea for more funding. However, he fails to consider how the current regime for pricing both water and food results in perverse incentives and thus lower production of food per unit of water.

First, water is too cheap. (It is often sold at the cost of delivery -- or lower, as in India, where farmers pay nothing to run their pumps.) Because of this, much water is wasted. Second, food prices are often controlled. This results in lower productivity from farmers. Third, trade is often constrained -- again, in an attempt to feed the hungry via autarky.

With reform to pricing of water and food, every country can have more food from less water. With the addition of trade in food, countries can benefit from their comparative advantages -- and increase the supply of food even further.

There's no need for more investment -- farmers with money can invest -- there's need to free farmers to do what they do best -- grow food.

Victoire Ngounoue (United Kingdom)
22 January 2009

It was interesting to read about Dr. Chartres and colleagues' description of the reality surrounding water scacity and food security. However, i am curious to know about farmers' perception of these issues,coping strategies they use and how these strategies are exploited in water related projects.

Clifford Gikunda (Farming Innovations ltd | Kenya)
28 January 2009

It has been interesting for me to read this article. I am glad to learn that indeed this organisation has up-to-date information regarding availability, utilization and the probable management practices. However, in most parts of the developing world and a country like Kenya where i live there is no willingness by the political elites to invest in this resource.

My country is water restricted whereas biillions m3 go to waste as run off. Most of these countries that are faced with food insecurity ironically, have abundant rain that's not harnessed at all. I think the campaign influencing policy makers and the masses in the developing countries should be emphasized.

We should make all these information from such research bodies available to every person. If anything information is power.
