

**Comment: Bridging gulfs to feed the world**[Click to Print](#)

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FARMING, the world's biggest industry, uses some 40 per cent of the Earth's ice-free land surface. In recent decades it has delivered phenomenal increases in yields of food, fodder, fibre and fuel. Most people now have access to cheap food, and more children are obese than underfed. Yet millions of farmers remain poor and lack access to modern science and technology, and more than 850 million people remain hungry.

Environmentally, the successes of agriculture have come at a price. It uses unsustainable amounts of water, has driven steep losses in biodiversity, is responsible for about 14 per cent of the emissions implicated in climate change, and produces nutrient run-off that has degraded all the world's major estuaries. Factor in growing demand and increasing competition for land and water, and "business as usual" is not an option.

The International Assessment of Agricultural Science and Technology for Development (IAASTD) was set up to take stock of our knowledge, technology and policy, and help find a way to feed the world without destroying it (see "How to kickstart an agricultural revolution"). With \$12 million funding from the World Bank, UN Environment Programme, UN Food and Agriculture Organization and others, it has been a staggering enterprise, involving dialogue between farmers, industry, governments, non-governmental organisations and other civil society groups. More than 400 authors were involved in drafting its report, drawing on the evidence and assessments of thousands of other experts worldwide.

The drafts have been subjected to two independent peer reviews by assessors from industry, government, civil society and specialist research institutes. A single paragraph could call on evidence from over 3000 journal articles, book chapters and reports of experiences in the field, as well as discussions with consultants.

Sadly, one of the main players ducked the challenge of maintaining the dialogue. In the closing weeks, participants from the biotech multinational Syngenta repeatedly failed to deliver key text, even though deadlines were extended for them. The company eventually walked out of the governing bureau (see "Comment: Why I had to walk out of farming talks"). Nonetheless, many of us see the final drafts, due to be debated next week in Johannesburg, South Africa, as the most comprehensive, rigorous assessment of knowledge, science and technology in the world's largest industry.

The IAASTD process has explicitly value-laden goals: to reduce hunger and poverty; to improve rural livelihoods; and to facilitate equitable, environmentally, socially and economically sustainable development. These demand a unique attempt at joined-up thinking, synthesising knowledge and experience from domains that are normally kept firmly separate. This in turn was almost certain to make dialogue exceptionally difficult - and so it proved.

The process exposed in passing many intriguing and important differences about the role of science. Scientists driven by the intellectual excitement of their work had difficulty grasping how a technology could be benign or harmful in different contexts. Those helping farmers adapt generic technology to local conditions were frustrated that the many technologies with proven pay-offs in yield, farm income, and public and environmental health do not attract interest from companies

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because they do not consider them profitable.

Elsewhere, members of farmers' organisations and civil society took deep offence at hearing technologies developed by farmers or communities working with NGOs and building on centuries-old traditions dismissed as "anecdotal" and of no value. In other sessions, those supporting the role of science and technology in helping poor women feed their families were upset to hear phrases such as "feminist claptrap" thrown at their evidence.

These differences were brought into sharpest conflict by the issue of genetically modified crops. How do we weigh the benefits of GM seeds - and of agrichemicals or trade in agricultural commodities - against evidence that the concentration of control in these areas has left millions poor, increasing numbers malnourished, and farming systems increasingly vulnerable to financial shocks and climate change?

The first generation of GM products set a wrong tone. They offered poor consumers nothing that could not be delivered conventionally, and their environmental impacts have been equivocal. There has been widespread flouting of intellectual property rights laws in some countries, sales of seeds wrongly labelled GM in others, and everywhere the capacity to monitor and regulate GM has failed to keep up.

One early stumbling block to dialogue was a failure to understand distinctions between lab science and what happens when it is applied in the real, messy world. And no sooner is this distinction accepted than another difficulty arises: there is no typical "real world context" or "small farmer" against which to measure the contribution and impact of a particular technology. This is not to deny that there have been some successes. Placing powerful communication tools in the hands of small farmers is one recent project - digital devices to record pest pressures and outbreaks are being released to Indian farmers to help them withstand climate change.

In general, however, there is a mismatch between the generalising nature of scientific and technological solutions that have to exploit market opportunities, and the obstinate specifics of farming. The assumption that external solutions can be effectively transferred to small farmers has often proved false. This has left too many farmers without access to science and technology, and a lot of technology irrelevant to farmers' real problems. Transferred technologies can even cause environmental or social harm. Conversely, knowledge and technologies originating from farmers themselves, or through civil society organisations working closely with them, are often so closely tailored to a particular context they cannot be applied generally.

The message of the IAASTD draft is that agriculture badly needs partnerships that bring together diverse interests, experience and disciplines. No task could be more urgent than helping farmers, especially the poorest among them, link their knowledge and expertise to science.

Read an opposing point of view from researcher **Deborah Keith**

Read our report on the IAASTD report

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