



## Small farmers have a critical role

They produce the lion's share of supply in many places. Helping them improve their productivity is ever more important, writes Sarah Murray

As another World Food Day nears, the task of feeding every one on the planet looks daunting – and many have yet to grasp the scale of the challenge.

While the famine in the Horn of Africa has reminded us of the horrors of extreme hunger, financial woes in the US and Europe continue to dominate political and economic discussions.

Yet feeding the world could become one of the biggest concerns for the 21st century.

"We are at a unique moment in history, as diverse factors converge to affect the demand, production and distribution of food over the next 20 to 40 years," is how Sir John Beddington, the UK government's chief scientific officer, put it this year in the Foresight report  *Foresight, The Future of Food and Farming 2011, The Government Office for Science, London*.

First, there are a lot more people to feed, with the global population predicted to grow to more than 9bn by 2050. And as emerging markets become more affluent, their citizens want more better-quality, resource-intensive food.

This will put unprecedented pressure on land and water.

"We need to do more with fewer resources," says Shenggen Fan, director-general of the International Food Policy Research Institute. "Land and water are limited so increasing productivity is critical."

Mr Fan also highlights the human factor. "Because of industrialisation, labour will also become subject to shortages," he says.



Separation anxiety: farmers thresh. Small producers are often hampered by volatile commodity prices and climate or pest-related crop failures

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"It's already happening in transition economies such as China and India, where people are moving to the cities because they can earn more money there."

As this pressure on natural and human resources grows, food production will also need to increase by an estimated 70 per cent or more to avoid scarcity leading to widespread hunger, more frequent famines, civil unrest, economic migration and increased international tensions as nations act to safeguard domestic food supplies.

But while all agree that stepping up productivity is essential, this must be

achieved through "sustainable intensification", that is, in ways that do not lead to loss of biodiversity, the degradation of soil quality, depletion of fish stocks and water stress – factors that will limit our ability to produce sufficient food.

"When we increase production, we have to be careful to reduce the environmental consequences and increase contributions to natural capital," says Mark Driscoll, head of the One Planet Food programme at WWF UK, the conservation body.

The effects of over-intensive farming have already been felt, says Ruth Kelly, Oxfam's

economic policy adviser and food expert.

She cites the green revolution in south-east Asia, which led to big increases in production.

"But with those increases you also had homogenisation of crops, land degradation and pest infestation," she says, "which, in the long term – along with climate change – are arresting the increase in yields."

Climate change could add to the difficulty of increasing production. Developing countries are likely to be hardest hit by temperature changes and the increasing frequency of severe weather events.

Climate-related declines in

global maize, rice and wheat yields could push up already rising prices.

While our ability to grow more in a resource-constrained environment is one thing, other obstacles need to be tackled.

"You can have surplus food in one corner [of a country] but access and market restrictions may be such that you can't get the food to where it is needed," explains Kofi Annan, the former UN secretary-general and chair of the Alliance for a Green Revolution in Africa (Agra).

When it comes to productivity, most accept that technology must be part of the solution.

A 20-year period of declining investment in agricultural research and development has set back progress in this area.

However, with prices rising and some countries' policy agendas more keenly focused on the need for research, investment in agricultural areas is on the increase.

Research areas cover a range of fields, from enhancing the efficiency of fertiliser and developing seeds that produce higher-yielding crops to creating strains of plants that are resistant to disease, floods or droughts.

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While genetic engineering remains controversial, conventional hybridisation is also producing new, robust varieties of crops. However, agricultural technology can only be effective in combination with improved farming techniques.

Here, small-scale farming is seen as critical. "You need the governments to come up with the right policies to help the farmers all along the value chain," says Mr Annan.

He adds that agri-business plays an important role, too.

"If large commercial farms are properly organised and structured, they can be of great help in terms of reaching markets and sharing technology."

In fact, when it comes to the "agricultural extension services" that help smallholders to improve productivity, the private sector is becoming more active.

As they seek to safeguard their supplies of agricultural commodities, contract farmers – who source products from large numbers of small-scale farmers – and agro-dealers are increasingly supplying farmers with advice and support that was once delivered solely by government or development agencies.

Mobile networks could also help transform agriculture in

developing countries.

Smallholders – who in many places generate the lion's share of production – are often hampered by volatile commodity prices and climate or pest related crop failures.

But a report from Vodafone and Accenture says that mobile technology could help raise efficiency and boost these farmers' incomes. The report identifies a potential \$138bn increase in agricultural incomes in developing countries by 2020 from use of mobile communications.

It says that 80 per cent of this will result from mobile money transfer systems, mobile services providing local information on weather, farm commodities prices and resource management and helplines giving real-time advice on issues such as pest control and adapting to climate change.

Consumption patterns in rich economies may also need to change, particularly when it comes to waste. Globally, up to 40 per cent of food grown is wasted.

The other critical factor is national responses to shortages. When they do not act collaboratively, governments can undermine food security.

This was seen during the 2007-2008 food crisis, when some countries introduced export bans to protect domestic supplies. Many said this exacerbated price rises.

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However, governments can also create regulatory environments and support systems that foster good farming practices, address climate change and prevent abuses of the system.

They can also form partnerships with the corporate sector to enhance food security.

Mr Driscoll says that if all sectors play their part, feeding the world is possible.

"We do have the answers – it just needs prioritisation from governments and business," he says.

"It's not going to be easy, but the consequences of doing nothing don't bear thinking about."

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