The right to food in a changing world

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Tonight, around 870 million people will go to bed hungry: one in eight of us. More than half will be in Asia, many will be in Africa. A majority will be women and girls. Most will go to bed hungry not because there is not enough food in the world, or even a local food shortage, but simply because they are too poor to buy the food that is available. Feeding the 870 million hungry in 2013 is therefore not principally a technical challenge for agriculture, but rather a political challenge to governments to end hunger by addressing poverty and vulnerability. This is possible. Under President Lula, the number of hungry people in Brazil dropped by 40 per cent in just ten years through a modest redistribution of wealth. Vietnam halved poverty in nine years through focusing agricultural investment where poor and hungry people are.

There is more than enough food for everyone on the planet: one-third of the world's food supply is lost post-harvest. However, as the UK government's Chief

Scientific Adviser, Sir John Beddington has pointed out, we are now entering a new era of global food insecurity, unless radical action is taken. After 30 years of declining relative food prices we appear to be entering a long period of rising food prices and price volatility. A 'Perfect Storm'[1] of interlocking factors is threatening food production and tightening food markets in the long term, including: climate change impacts, absurd biofuel policies, rising oil prices, dietary upgrading in Asia, land grabs, speculation in commodity markets, and population growth to around 9 billion by 2050. These factors are not only driving food price increases but also creating price volatility. We are now in a third food price spike in just four years. Poor people are trapped by their income poverty, but also by the increasing numbers of shocks, caused by food price hikes and extreme weather, that lead to a catastrophic loss of their assets that can take a decade to recover.

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One key solution to this threat of worsening hunger in Africa and other continents is to increase investment in poor farmers, especially women. This makes sense both morally and economically. It is the 500 million smallholder farms that provide livelihoods for the poorest 2 billion people on this planet; the same 2 billion that are generally ignored by commercial farming and food companies as too poor to bring a return on investment. It is also the same 500 million smallholder farms where some of the greatest productivity gains can be achieved in terms of yield per unit area and per unit input.[2] Investing in them would create enormous potential gains in food production and food security for poorer countries and also translate directly into a more equitable and effective economic growth. A 1 per cent increase in per capita GDP in agriculture

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reduces the depth of poverty at least five times more than a similar increase outside agriculture.[3]

Bioscience has a role to play as we face up to the challenge of global food insecurity. But it is no magic bullet. Most productivity gains in African smallholdings will come from enhanced extension services, investment for irrigation, low-input crop husbandry such as inter-cropping, fairer markets, market information through mobile phones, and hard and soft infrastructure from roads to marketing boards. This is where the bulk of the investment must go to enhance food security. But increased productivity also depends on improved seed and better varieties of staple and Africa-specific crops (cassava, banana, sweet potato, etc.) produced by marker-assisted conventional breeding, vegetative propagation and, where appropriate, GM technologies.

Dr Mohamed 'Mo' Ibrahim, UK's mobile communications entrepreneur and billionaire,[4] has pointed out repeatedly that we need African governments to set national agricultural policies based on delivering food security through directing public and private investment to where it can bring the greatest economic and social benefit for the poor. An example of this is the current strategic plan of West and Central African Countries (CORAF/WECARD),[5] which identifies food security as the priority and sets out a research agenda for staple food crops such as sorghum, maize, rice and cassava alongside export crops like cotton and cocoa.

We also need international support to help achieve the promise of large productivity gains in smallholder agriculture: from the Brazilian research institute, Embrapa's support to Ghana for smallholder cowpea yield increase through

rhizobium inoculants, to the UK's research institute at Rothamsted 'push–pull' low-input cropping system in Kenya that doubles maize yields. None of these involve GM crops.

Nevertheless, there is real potential in accelerated genome improvement of poor people's crops. However, there are two major questions to answer: Where will the investment in plant breeding come from? And if it does come, who will control it and for whose benefit?

Investment in plant breeding (non-GM and GM) for the orphan crops of the poor demands public investment. Agribusiness companies will invest in enhancing the attributes of the crops needed by commercial agriculture in Africa where a return on investment is guaranteed, but there is little or no commercial incentive for breeding poor people's crops. Up to now, the default of agricultural biotechnologies has been to support large-scale export crops rather than address food insecurity.[6] This is the principal reason there are such paltry advances in genome-based yield increases in millet, cowpea and other crops of the poor. Rising economic growth in Africa, and government commitments to investment in agriculture, like the Maputo Declaration, should allow greater investment by the public sector, potentially greater public–private partnerships for accelerated crop breeding (including GM), capacity-building and retention of African scientists, coupled with long-term sustainable business investment.

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However, the greatest controversy for GM technologies in Africa rages around the control of agricultural biotechnologies. The domination of whole agricultural systems by

agribusiness driven partially through the control of patents on crops is clearly not going to enhance productivity gains and income for smallholders in Africa. This concern, and the perceived threat of indentured servitude of smallholders to agribusiness, is what drives most of the opposition to GM both within and outside the continent. This agribusiness model may have brought benefits to large-scale commercial agriculture in the USA (though benefits to the wider society are increasingly questioned and the model is now evolving[7]), and might increase export growth from Africa, but there is no convincing evidence that it holds promise for the food security of the poorest 2 billion on our planet.

The inappropriate agribusiness model must be distinguished from the potential of biotechnologies to help accelerate the breeding of enhanced crop varieties for the poor. But this will require the removal of the stranglehold of counter-productive global intellectual property rules for poor people's crops. That is why we need a renewed democratic debate on biotechnology and intellectual property in the next decade. The debate could be usefully informed by the battle over the last 20 years in the pharmaceutical sector regarding poor people's access to life-saving medicines, orphan diseases of the poor, and the role of technology transfer and generic medicine companies. The appalling mis-calculations of big pharma in defending universal patents at the expense of the lives of poor HIV-AIDS sufferers for a decade, and the rise to power of Brazil, China, India and South Africa have fundamentally changed the industry, and similar forces are already changing agricultural research and markets. Similar lessons, alongside bold public–private investment in agricultural research, will be necessary for biosciences to play its full role in dealing with the challenges of the 'Perfect Storm' and upholding poor people's right to food.

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References

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