

Rethinking agriculture

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The serious food price crisis that hit the world from the latter part of 2007 to most of 2008 has pushed agriculture onto the centrestage of the development debate. The crisis – added to the existing crises on energy, climate change and the environment – threatened social stability in many countries where food riots erupted and further cast doubts on the overall attainment of the Millennium Development Goals (MDGs).

The recent food crisis, which still lurks in the shadows with the projected reduction in global cereal output in 2009, exposed the long-term problems confronting agriculture and the long-running neglect that the sector has suffered in development priorities. The urgency of the need to respond to the crisis and its consequences presents a significant opportunity for the world to seriously rethink agriculture and its future direction beyond business-as-usual.

Agriculture in the spotlight

The *World Development Report 2008* called for greater investment in agriculture in developing countries

(World Bank, 2008). It warned that the sector must be placed at the centre of the development agenda if the MDGs of halving extreme poverty and hunger by 2015 are to be realised.

Yet, while 75% of the world's poor live in rural areas, a mere 4% of official development assistance (ODA) goes to agriculture in developing countries. The share of agriculture in ODA has declined sharply in the last two decades, and this neglect of agriculture is all the more striking because it was in the face of rising rural poverty.

At the same time, the challenges facing agriculture today are immense. Global food supplies are under pressure from expanding demand for food, feed and biofuels; the rising price of energy; increasing land and water scarcity; and the effects of climate change. According to the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD, 2008)¹, climate change, coincident with increasing demand for food, feed, fibre and fuel, has the potential to irreversibly damage the natural resource base on which agriculture

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depends, with significant consequences for food insecurity. Increased frequency of droughts and floods will affect crop production negatively, especially in subsistence sectors; smallholder and subsistence farmers, pastoralists and artisanal fisherfolk will suffer complex, localised effects of climate change (IPCC, 2007).

Such impacts will further aggravate the stresses faced by developing countries, already facing unprecedented hikes in food prices. Although prices of major cereals have since fallen from their 2008 peaks, they remain high compared to previous years. It is predicted that the century-old trend of downward food prices is coming to an end. Taking into account the effects of climate change, land use conversion and biodiversity loss, the world price of food is estimated to become 30-50% higher in coming decades and have greater volatility (UNEP, 2009). The UN Food and Agriculture Organisation (FAO) estimates the number of hungry people at 923 million in 2007, an increase of more than 80 million since 1990-92 (FAO, 2008). In 2008, another 40 million were pushed into hunger, bringing the overall number of undernourished to 963 million. While several factors are responsible, the consensus is that high food prices are driving millions into food insecurity, worsening conditions for many who were already food-insecure, and threatening long-term global food security.

The various challenges facing agriculture have brought increased attention on the sector, and there now appears to be a resurgence of agriculture on the development agenda, culminating in broad agreement on the need to massively reinvest in agriculture. Nonetheless, this still leaves open the question of the nature of agricultural development required.

Learning from the past

The UN Special Rapporteur on the Right to Food has highlighted the need to support smallholder farmers and means of agricultural production that are sustainable, particularly in the context of climate change (De Schutter, 2008). This is because agricultural science and technology hitherto has mainly benefited large-scale enterprises and has not focused on the specific needs of the rural poor in developing countries.

Scientists and economists attending the Governing Council meeting of the International Fund for Agricultural Development (IFAD) in Rome in late February 2009 echoed that the best way to mitigate climate change and gain food security is to support small-scale, ecological farming, which is a turnaround from international agricultural strategies of the past two decades that heavily promote monocropping and the use of biotechnologies (Palitza, 2009). The strong call for supporting small-scale farmers by a global fund for micro-finance in developing diversified and resilient ecoagriculture and intercropping systems was reiterated in a report on the 'Environment's Role in Averting Future Food Crises' prepared by a group of experts for the UN Environment Programme (UNEP, 2009).

Moreover, while intensive export-oriented agriculture has increased, this has been accompanied by both benefits and adverse consequences depending on circumstances, such as exportation of soil nutrients and water, unsustainable soil or water management, or exploitative labour conditions in some cases (IAASTD, 2008). There is little clear evidence that export-led poverty alleviation has worked as envisaged, with foreign exchange earnings from agricultural development achieved at very low prices and little value-added, and bypassing of in-country opportunities for agricultural development focused on local and regional markets (Pretty, 2006).

Additionally, the path that agriculture has been on has not been sustainable. For example, the widespread promotion of Green Revolution technologies in the 1960s, particularly in Asia and Latin America, which involved the massive introduction of agricultural inputs – inorganic fertilisers, chemical pesticides and modern seeds – radically transformed agriculture from traditional farming systems to input-dependent systems characteristic of industrial (commercial) agriculture. Yet, in an era of climate change, the sustainability of this model of input- and energy-intensive agriculture is questionable, and it is now increasingly acknowledged that the environmental and social costs of industrialised agriculture have been great.

Efforts are currently underway to transform African agriculture via an 'African Green Revolution' (e.g., the Alliance for a Green Revolution in Africa), an ambitious approach forged by philanthropic founda-

tions, the public and private sectors, and UN agencies. As was the case in Asia and Latin America in the 1960s, the Green Revolution in Africa is led by philanthropic institutions and international agricultural research centres, with active participation of the fertiliser industry, working together towards lifting poor farmers from poverty, primarily by linking them to the market. While recognising the pitfalls of the original Green Revolution, it remains to be seen if the solutions offered are more of the same, or if they truly constitute a pro-poor, pro-environment approach (Daño, 2007).

The IAASTD clearly concluded that a radical change is needed in agricultural policy and practice, in order to address hunger and poverty, social inequities and environmental sustainability (IAASTD, 2008). The 'business-as-usual' scenario of industrial farming, input- and energy-intensiveness, damage to the environment and marginalisation of small-scale farmers, was judged no longer tenable. This conclusion is echoed by IFAD and UNEP in a recent report on food security.

However, because the development choices made have in some cases excluded or marginalised key actors, such as small-scale farmers, with preference given to short-term over longer-term considerations, some judgments have been privileged over others in decision-making, pushing agriculture along certain pathways to the neglect of other well-evidenced options, such as sustainable agriculture practised by small farmers. Additionally, many of the technologies potentially of use in sustainable farming are not adopted because small-scale producers lack access to the means and supporting services necessary to employ the technologies profitably (IAASTD, 2008). As such, in most countries, sustainable agriculture policies remain at the margins, despite recognition of the need to support such interventions (Pretty, 2006). Most agricultural sustainability improvements in the last two decades have arisen despite existing national and institutional policies, rather than because of them.

The IAASTD therefore calls on the international community and national governments to systematically redirect agricultural knowledge, science and technology towards sustainable biodiversity-based agriculture and agroecological sciences, while addressing the needs of small-scale farmers (De Schutter, 2008;

IAASTD, 2008). Such a paradigm shift could better meet the challenges of increasing productivity and ensuring sustainability, particularly in the context of climate change. There is also a need to situate this new thinking for agriculture in a rights-based approach, in particular acknowledging and implementing the right to food (De Schutter, 2008).

Addressing new challenges

While agriculture is still reeling from the mistakes of the past, new challenges are emerging, as discussed below.

Climate change. The most serious challenges facing agriculture are brought by the impacts of climate change. The Intergovernmental Panel on Climate Change (IPCC) found that there is abundant evidence that freshwater resources, on which the viability of agriculture depends, are vulnerable and have the potential to be strongly impacted by climate change, and that current water management practices may not be sufficient to cope with these impacts (IPCC, 2007). More frequent extreme weather conditions, stresses on water availability, droughts and overall changing environmental conditions all pose serious threats to agricultural production. The FAO projects a reduction in global cereal output in 2009 due to smaller plantings and/or adverse weather in most of the world's major producers (FAO, 2009).

Agriculture itself contributes to climate change, with around 10-12% of global anthropogenic greenhouse gas emissions annually, mostly methane from livestock raising, biomass burning and wet cultivation practices, and nitrous oxides from the use of synthetic fertilisers. If emissions from the production of synthetic fertilisers and the total food chain from the farm to the consumer are considered, the greenhouse gas emissions from all sectors related to agriculture may potentially add up to 25-30% of all greenhouse gas emissions (International Trade Centre and Research Institute of Organic Agriculture, 2007).

The challenge is therefore to design an agriculture that adapts to climate change impacts as well as reduces greenhouse gas emissions. This challenge can be met through sustainable and integrated agriculture systems, and by putting in place supportive policies and programmes for such systems to be implemented.

Genetically engineered crops. To adapt to the impacts of climate change in agriculture, investments in research and development of climate-ready crops are being directed towards genetically engineering crop varieties to resist drought and tolerate flooding and salinity. Major agrochemical corporations have shifted their investments to the development of so-called 'climate-ready' genetically engineered crops and many have applied for patent claims on commercially viable traits that adapt to the impacts of climate change. Climate change is seen as an opportunity to push genetically engineered crops as a silver-bullet solution, but this will ultimately concentrate corporate power, drive up costs, inhibit independent research, and further undermine the rights of farmers to save and exchange seeds (ETC Group, 2008a). Moreover, genetically engineered crops could pose serious risks to the environment and human and animal health.

In this case, the Precautionary Principle and the lessons from the past should be seriously considered. The key is to prevent governments from implementing false solutions that might create further problems in agriculture.

Biofuels. As a response to the climate and energy crises, biofuels are presented as a solution, but their rapid promotion has resulted in unintended negative consequences. The competition for food uses and land for biofuel production was identified as a major cause for the recent food crisis. Even the World Bank indicted biofuels as directly responsible for the recent explosion in grain and food prices worldwide and as the factor that forced 'food prices up by 75%' (Chakraborty, 2008). While biofuels account for less than 5% of the total fuel consumption worldwide and only a small amount produced is currently traded globally, trade in biofuels is expected to expand rapidly, as many countries do not have the capacity to supply their internal markets (Duffey, 2006).

Large-scale cultivation of crops for biofuels increases competition for agricultural resources, mainly for land and water. Even with the strategy to focus more on non-grain oil crops such as jatropha, large-scale production would require agricultural lands to grow these crops in a world where 40% of land is already used up for agriculture. Increasing productivity in a large-scale farm context would require more water, fertilisers and other chemical inputs, and very likely the use of genetically engineered crops that are designed to have higher cellulose or oil content.

Some serious questions have also been raised on the mitigation potential of biofuels. The burning of sugarcane fields prior to harvest to reduce labour costs increases greenhouse gas emissions, pollution and health risks in surrounding communities. Thousands of hectares of forests and peatlands are burned every year in Indonesia to give way to the expansion of oil palm plantations. Greater use of fertilisers, particularly nitrogen, releases more nitrous oxide and carbon dioxide into the atmosphere from the manufacturing process of nitrogen fertilisers. In the final analysis, industrial-scale production of biofuels depends on fossil fuels to keep the feedstock production and processing plants working and to keep the trucks and tankers running to transport the end products to the market.

Land grabs. In the global scramble to ensure national food security and energy security, countries with financial resources have been buying up land in developing countries for offshore food and biofuels production. Food import-dependent governments are buying up land across the world to outsource their own food production and escape high market prices, while private investors are eyeing overseas farms as a new source of revenue. Hundreds of thousands of hectares of land have been bought up or leased by oil-producing Gulf countries and emerging economies like China and India in many developing countries to grow food and biofuels to supply the buyers' domestic consumption (GRAIN, 2008). This has serious implications for the food security and land tenure of local communities.

Corporate concentration. The commercial side of agriculture, namely inputs required in conventional farming, is heavily dominated by corporate interests. A handful of giant corporations control the seed, agrochemical and animal pharmaceutical markets globally. The world's top 10 corporations in these three sectors have a combined market share of 67%, 89% and 63% respectively (ETC Group, 2008b). Monopoly control makes commercial agriculture largely dependent on inputs produced by giant corporate interests which control the supply and prices of such products.

Financial crisis. The financial contagion that erupted in highly industrialised countries and threatens to spread to the rest of the world has prompted many governments the world over to shift their priorities to reviving their respective economies through financial stimulus packages aimed at saving

ailing businesses and generating employment. It is unfortunate that despite the recognition of the critical role of agriculture in economic and social development, very little of the current financial stimulus packages being offered by governments is actually directed at reviving the ailing agricultural sector. The European Union (EU), for example, has established a €1 billion food facility for 2008-2010 to aid poor farmers in coping with the impacts of the food and financial crises, but this pales in comparison to the €2 trillion that it had allotted to save ailing banks (Oxfam International, 2008).

It is thus clear that there is a need to rethink the way we conduct and govern agriculture and food security at the national and international levels. As the IAASTD report indicates, a shift in paradigm and investments is needed, one that supports small-scale, biodiversity-based ecological agriculture. Such a shift requires strong political will and collective efforts among the different actors in agriculture to address the new challenges looming ahead.

Conclusion

In view of the multiple challenges that agriculture is facing, organic farming, ecological agriculture and sustainable agriculture are seen as the most economically viable and environmentally sustainable options for the future of agriculture. These systems drastically reduce dependence on agricultural inputs, particularly chemical pesticides and fertilisers, improve nutrient recycling, use nitrogen-fixing plants, improve cropping systems and landscapes, promote crop diversification and integrate animals in the farm production – which all contribute to climate mitigation and adaptation (International Trade Centre and Research Institute of Organic Agriculture, 2007; Niggli and Fließbach, 2008; Palitza, 2009; UNEP, 2009). More importantly, ecological approaches in agriculture are accessible to small-scale and poor farmers who depend on biodiversity, soil health and locally available resources in agricultural production. Thus these approaches are also rights-based, while ensuring food security and addressing greenhouse gas emissions from the agriculture sector.

Shifting policy and programme interventions to support the ecological agricultural practices of farmers will help ensure food security and self-sufficiency at the local level. Focus on local food production and marketing will reduce food miles, thus contributing

to climate change mitigation. Improving farmers' access to markets and strengthening rural-urban linkages will help generate rural on-farm and off-farm employment, especially for rural women and youth, and thus stimulate rural development.

More than ever, the political will of governments and global institutions is imperative in order to make agriculture a critical engine to address poverty, hunger and social inequities in an environmentally sustainable manner. Such interventions have the potential to reorient the economic system and institutions towards supporting rural development, bridging the income gap between urban and rural areas, between the rich and the poor, between developed and developing countries. For this to happen, development actors must place organic farming, ecological agriculture and sustainable agriculture as a development priority.

Side by side with the rethinking of agriculture is the need to rethink the capacity of global and national institutions in effectively managing food and agriculture systems beyond the business-as-usual mode. This should begin with a review of the governance over the food and agriculture systems to ensure an institutional and systemic shift in paradigms.

The multiple crises that the world is currently facing, with the food crisis right at its heart and threats to global social stability, have clearly shown that top-down approaches have failed miserably and that the focus on large-scale commercial agriculture to deliver food to every person's table has been grossly inadequate. Shifting the focus to small-scale agriculture and the so-called marginal areas through agroecological approaches requires a bottom-up approach. Agriculture must be governed by farmers, rather than institutions that are profit-oriented, in order for food security to be ensured.

The time to rethink agriculture has come. The time to act is now.

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Endnote

1. The IAASTD is the most recent and comprehensive assessment of agriculture, co-sponsored by the World Bank, UN Food and Agriculture Organisation (FAO), UN Environment Programme (UNEP), UN Development Programme (UNDP), World Health Organisation (WHO), UN Educational, Scientific and Cultural Organisation (UNESCO) and Global Environment Facility (GEF).

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