

*This brief series was developed in preparation for the Foresight Breakout Session of the Global Conference on Agricultural Research for Development (GCARD 2012) and the Global Foresight Hub<sup>1</sup>. The briefs were written to communicate to a wider audience, such as policy makers, civil society organizations, researchers, and funders. The briefs were classified into three categories: Future Studies, Regional Update, and Visioning.*

## **A table for seven billion: Six billion have enough to eat – (only) one billion to go**

Gine Zwart, Oxfam

Based on “Who will feed the world?” by Lucia Wegner and Gine Zwart, Oxfam research report, April 2011 and “Growing a better Future; Food justice in a resource constraint world”, Oxfam July 2011. [www.oxfam.org/grow](http://www.oxfam.org/grow)

### **Who and how to feed the world: a polarized debate**

Nourishing the world by 2030 requires efforts to increase food production and availability, as well as measures to ensure that the poorest and most marginalized sectors of society have the purchasing power to access the food that is available. Seventy-five percent of the world’s poor and undernourished are located in rural areas and depend directly or indirectly on agriculture for their livelihoods (A. de Janvry and E. Sadoulet, 2008<sup>2</sup>). The 2 billion smallholders who live in developing countries collectively produce some 60% of the world’s food. The vast majority of them live in poverty, depending on agriculture and forests for their livelihoods. (IFAD 2011<sup>3</sup>). Large commercial farmers account for a small percentage of farmers in developing countries.

At the same time, the evidence of several new ventures in Africa (World Bank, 2010<sup>4</sup>) suggests that many large investment projects, particularly recent ones, were socially, technically or financially not viable and in turn failed to provide benefits to the local populations. Many attempts to jump-start agricultural growth through large-scale farming, as in Cambodia, Sudan, Tanzania and Zambia, were largely unsuccessful.

The mounting pressure to increase food security, respond to climate change-related challenges and halt biodiversity decline have prompted a heated debate about the different approaches to (food) production. These debates are generally polarized between small-scale versus large-scale models, or, if we consider the systems of production, “Low External Input” (LEI) agriculture versus “High External Input” (HEI) agriculture.<sup>5</sup> This polarization has obscured the potential of building on complementarities between these systems, and the existence of multiple pathways to achieve agricultural growth and sustainability. Betting on one model only and adopting a one-size-fits-all approach is unlikely to be appropriate, given the heterogeneity of institutions, the strong social and cultural systems related to food and the agro-ecological, farming and demographic conditions across countries. Small and large farms operate across a variety of ecosystems and encompass very diverse production patterns. In Africa alone, there are numerous major farming systems combining a variety of LEI and HEI agricultural approaches.

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<sup>1</sup><http://www.egfar.org/our-work/shaping-future-together/global-foresight-hub>

<sup>2</sup>de Janvry, A. and Sadoulet, E. 2008. Agriculture for Development in Africa: Business-as-Usual or New Departures?, University of California at Berkeley; available at <http://are.berkeley.edu/~sadoulet/papers/Entebbe6-08.pdf>

<sup>3</sup>IFAD. 2011. Rural poverty report: The Challenge of Ending Rural Poverty. Rome: International Funds for Agriculture and Development (IFAD). <http://www.ifad.org/poverty/>

<sup>4</sup>World Bank. 2010. Rising Global Interest in Farmland: Can it Yield Sustainable Benefits?, Washington, DC: World Bank.

<sup>5</sup>In general terms, HEI agriculture refers to industrial agriculture, a system of production that is characterized by high inputs of capital and intensive use of modern technologies (e.g. modern machinery) and chemicals per land area, without taking into account environmental externalities. Conversely, LEI agriculture is associated with sustainable production methods (e.g. agroforestry, conservation agriculture, integrated pest management, organic). It involves a relatively low input of capital, is more labor-intensive relative to the area of land farmed and focuses on maintaining the long-term ecological health of farmland (Grosskurth, J. 2010. Futures of Technology in Africa, The Hague: STT (Study Centre for Technology Trends)).

The list of ideas to answer the question of who and how to feed the world is bafflingly long, often crude and nearly always polarized. Many solutions are self-serving, designed to blame the victims or defend the status quo and the special interests of those who profit from it.

To position itself well in this debate and propose future actions, Oxfam embarked on a four-year campaign in 2011 called GROW!. To start this campaign a global analysis was undertaken of the world food production systems, its impact on those living in poverty and a vision for a new prosperity.

The global analysis drew on many resources: a large number of case studies; years of experience working with smallholder farmers in developing contexts; uncovered tacit knowledge among organization staff; a review of current research (including foresights and forecasts); and UN (particularly FAO, IFAD, IAASTD) and World Bank publications. The resulting OXFAM research paper (“Who will feed the world; the production challenge”) details the pros and cons of different small and large systems and models of production (e.g. LEI, HEI) and brings a vision of how these different systems/models could work together.

A public debate, focused on scientists and private-sector actors, was organized to test the ideas of complementarity among the various farming systems as well as modes of production for the future. The research was led and paid for by Oxfam.

### In search of an alternative path

The analysis concludes that the agricultural system will not be ready to nourish the world in 2030 if we continue to work on a “business as usual” mode; see also IAASTD report<sup>6</sup> and UNEP Green Economy report<sup>7</sup>. The number of undernourished people remains unacceptably high and is growing. Land acquisition is on a steep rise, leaving millions of people without the main base of their livelihood.

Nevertheless, a future that takes care of the planet, diminishes the ecological impact of global resource use and increases the resource share of the worst-off 20 percent of the people is believed to be possible (see Figure 1). In order to achieve this, three things must be built at a global level:

- a new global governance to avert food crises;
- a new agricultural future based on complementarity among local knowledge, agricultural biodiverse-intensive smallholder production systems and input- and research-intensive large-scale production systems; and
- an architecture of a new ecological future, including a fair global climate deal

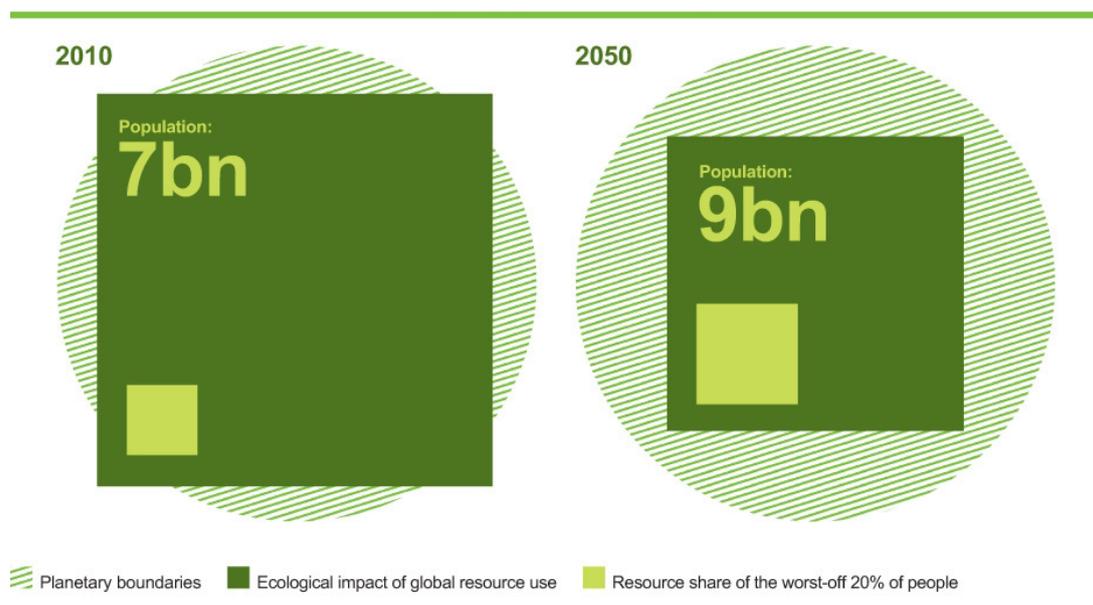


Figure 1. A vision for the future

<sup>6</sup>International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 2009. Agriculture at the crossroads: Global Report. Washington: Island Press. 106p [http://www.agassessment.org/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads\\_Global%20Report%20%28English%29.pdf](http://www.agassessment.org/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads_Global%20Report%20%28English%29.pdf)

<sup>7</sup>UNEP Towards a Green Economy: pathways to Sustainable Development and Poverty Eradication, 2011 [www.unep.org/greeneconomy](http://www.unep.org/greeneconomy)

Studies show that increasing productivity on existing farmland would have a much greater impact on the output and welfare of the poorest groups than simply expanding the land area at current yields. It also has a potential positive effect on biodiversity. Notwithstanding such general conclusions, it is clear that different strategies are needed for different categories of people, depending on their access to assets and on the production environment (Berdegúe, J. A. and G. Escobar, 2002<sup>8</sup>) in which they operate (see Figure 2). A one-size-fits-all will not lead to the envisioned future. The categories are:

- **subsistence (family) farmers** (context- and asset-constrained): These are among the most disadvantaged and vulnerable rural groups.
- **small investor farmers** (market-oriented/asset-constrained): These are rural households and small agricultural firms holding cultivated land for both commercial and subsistence agriculture and produce for the market. To cope with price and climatic shocks, they diversify production and methods (e.g. maize, soya, vegetables, poultry, cattle, pigs, fish) and often depend on the biodiversity around them. Evidence shows that they contribute to food security, poverty reduction and climate-change adaptation. They exhibit high production efficiency with labor-intensive technologies and have good knowledge of the local context. Their assets are limited; constraints of capacity, legal status, marketing, infrastructure and capital hinder their growth and full participation in the market.
- **large-scale farmers** (market-driven): These are medium to large firms engaged in high-value, export-oriented agriculture. They account for a very small percentage of rural players in developing countries.

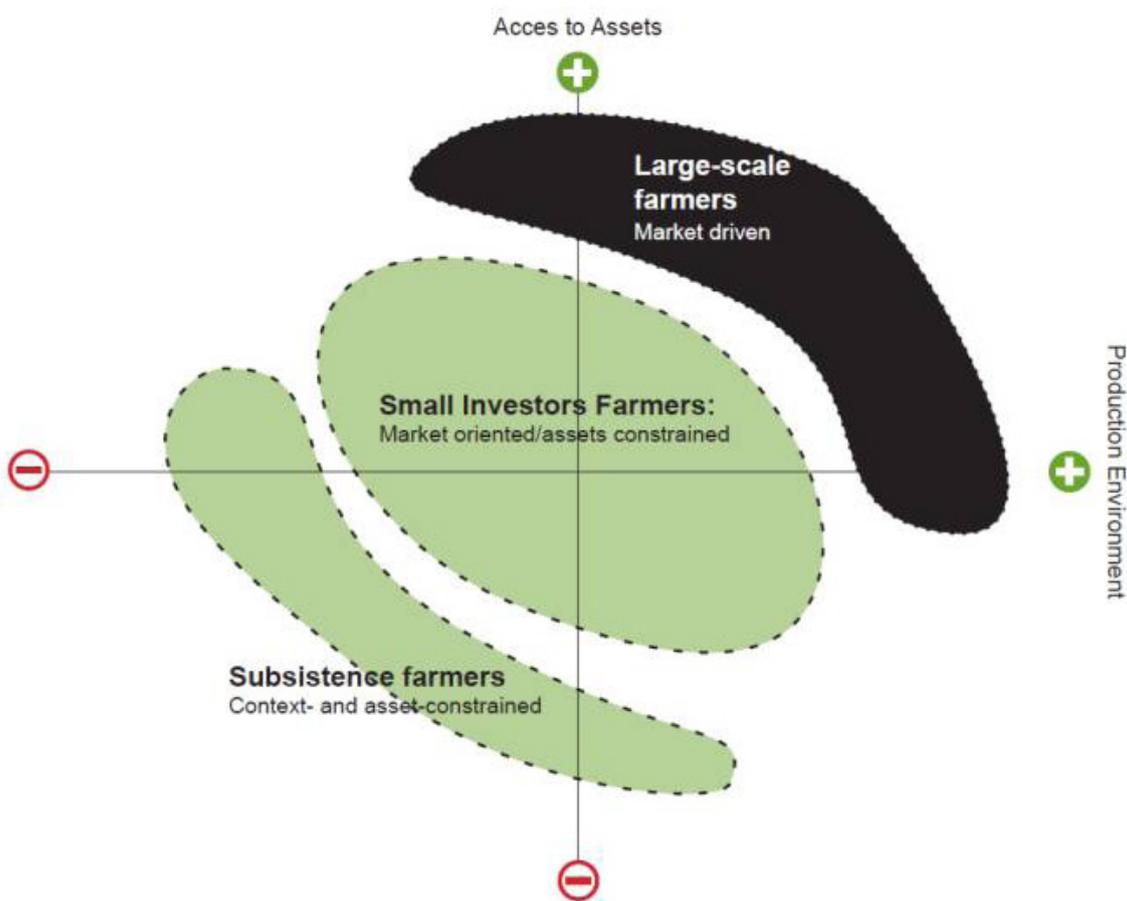


Figure 2. Models of farming systems<sup>9</sup>

There is extensive literature and persuasive evidence to suggest that measures to improve smallholder farmers’ capacity to increase food production and productivity, as well as to link them to markets and (inter) national value chains, will not only enhance their purchasing power but also increase wider food availability and so contribute to global food security.

<sup>8</sup>Berdegúe, J. A. and Escobar, G. 2002 Rural Diversity, Agricultural Innovation Policies and Poverty Reduction, AgREN Network Paper 122, London: Overseas Development Institute, available at <http://www.odi.org.uk/resources/details.asp?id=4275&title=agricultural-knowledge-information-systems-akis-rural-livelihood-diversity>

<sup>9</sup>Assets include land distribution, access to credit, training, education and health programmes and strong community organizations. The production environment includes roads, irrigation, good local-government capacity and efficient markets. Source: Berdegúe, J.A. and G. Escobar (2002)

The key question is whether large and small farms can build on complementarities, instead of the first displacing the other and potentially moving more people into poverty. Those who stimulate the move to large-scale agricultural operations are not usually concerned with which sectors will absorb the people who are constrained to leave their agricultural livelihoods. The challenge will be to overcome vested interests and ensure those experimenting and practicing sustainable alternatives have enough room to continue doing so. The need for investment in technology, infrastructure, market access and institutions suggests that private investment could contribute in many ways which do not involve large-scale land acquisitions.

A variety of institutional arrangements can be used to combine the assets of investors (e.g. capital, technology and markets) with those of local communities and small-scale farmers (e.g. land, labor and local knowledge). Greater opportunities and important economies of scale for private domestic or foreign investors can be achieved in terms of input provision, output processing, packaging and marketing, rather than in production. These forms of support include a wide range of more collaborative arrangements between large-scale investors and local small-scale farmers and communities, such as diverse types of contract farming schemes (e.g. outgrower schemes), joint ventures and management contracts (S. Vermeulen and L. Cotula, 2010<sup>10</sup>). There are pros and cons in all these different approaches, and the conditions for success or failure are very context-specific and contingent on a country's institutions and factors including land tenure policy, culture and demography.

Achieving the objectives of increased food production and food accessibility, and at the same time protecting the environment, requires adopting a different blend of policies at local and national levels, a four-pronged approach that aims to:

- support subsistence (family) farmers to cope with risks and vulnerability;
- empower small investor farmers with the necessary capacity, finance and regulation to increase their productivity, production and competitiveness and, in turn, contribute to food security;
- make large investments pro-poor, by setting the right framework; and
- build on complementarities between large and small farms, when possible.

## **From reports to action**

The research reports and the ensuing Oxfam GROW! campaign focuses on actions to ensure all people have enough to eat, always and everywhere. Popular campaigns have been run in over 45 countries to raise awareness about the issues around a just food system and the role of smallholder farmers in this. Lobby and advocacy activities are taking place around the world and in major policy fora (e.g. Rio +20; Committee on Food Security, EU, World Bank, private-sector actors, CGIAR).

There are reasons to believe that some of the messages of Oxfam's work are being heard, especially the increased acknowledgement worldwide about the role of smallholders in nourishing the planet and as users and guardians of agricultural biodiversity<sup>11</sup> as well as the growing awareness among consumers about the effects of their consumption behavior on the planet as a whole.

The process of this visioning exercise has led Oxfam to start a "Future of Agriculture" research project to elaborate further on the analysis' findings and recommendations. This research project will build on, and work together with other existing anticipatory forward looking work. It will add value to current futures work as it will include the perspectives of producers in resource-constrained areas and will aim to build on local realities and foresight.

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<sup>10</sup>Vermeulen, S. and Cotula. L. 2010. Making the Most of Agricultural Investment: A Survey of Business Models that Provide Opportunities for Smallholders, FAO and IIED; available at [http://www.ifad.org/pub/land/agri\\_investment.pdf](http://www.ifad.org/pub/land/agri_investment.pdf)

<sup>11</sup>Most multinational agri-food companies have a policy to include smallholders in their value chain, in UN as well as World Bank papers and conferences smallholders and biodiversity are often given special attention. The practice, however still lags behind many of the good intentions.

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### **Contact information:**

Author of the brief Gine Zwart (Gine.Zwart@oxfamnovib.nl). The Brief series coordinator Robin Bourgeois (Robin.Bourgeois@fao.org).

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