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## Feeding the future? Agri-food systems and the Millennium Development Goals

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### I. INTRODUCTION

Ridding the world of hunger is a complex goal involving many interrelated factors. No single economic, political or technological approach offers the solution. Yet, there is sufficient evidence to suggest that investments in and improvements to the agri-food system can make significant contributions to attaining several of the MDGs. It not only provides most food and many inputs into industry but is the sector from which most of the rural poor derive their incomes. Urban agriculture also provides a significant proportion of the urban poor with part of their income or food.<sup>(1)</sup> As Chapter 2 notes, prosperous agriculture can create many income-earning opportunities in urban centres, for both rural and urban households. As agriculture depends heavily on the natural resource base, it influences environmental sustainability. The performance of the

1. Smit, Jac, Annu Ratta and Joe Nasr (1996), *Urban Agriculture: Food, Jobs and Sustainable Cities*, Publication Series for Habitat II, Volume One, UNDP, New York, 302 pages.



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sector is also closely linked to human health, both through its contribution to food supplies and to livelihoods.

## II. REDUCING RURAL POVERTY AND FOOD INSECURITY

Hunger persists because food-insecure people are unable to obtain access to the food that is available or to the land and other natural resources that would allow them to grow it. Although the quality and accuracy of global statistics on poverty is in doubt, as discussed in Chapter 2, most of the poorest households live in rural areas.<sup>(2)</sup> Smallholder farmers dependent on rain-fed agriculture, pastoralists, artisanal fisherfolk, landless labourers, indigenous people, people in female-headed households, displaced people, and, in all categories, women are generally the rural people most affected by poverty.

Agreement was reached at the 1996 World Food Summit to take concerted action to reduce the number of food-insecure people by one-half, by no later than 2015, a goal reaffirmed at the 2000 Millennium Summit. At the current rate of progress, the number of food-insecure people will fall by only 24 per cent by that date.<sup>(3)</sup> If we are to attain the goal of reducing food insecurity by half, we will need a much better understanding of the key dynamics and driving forces affecting agri-food systems in different regions – particularly those in complex, diverse, risk-prone environments where large numbers of poor people reside.

### Key MDG Targets Aimed at Reducing Rural Poverty and Food Insecurity

- ◆ Halve, between 1990 and 2015, the proportion of people whose income is less than US\$ 1 per day
- ◆ Halve, between 1990 and 2015, the proportion of people who suffer from hunger

2. However, many will derive part of their incomes from seasonal work in urban areas or from remittances from one or more family members working in urban areas.

3. Von Braun, J (2003), “Action to Address World Hunger”, Statement by Dr Joachim von Braun, Director General, International Food Policy Research Institute (IFPRI), prepared for presentation to The Committee on Foreign Relations, United States Senate, 25 February 2003; <http://foreign.senate.gov/testimony/2003/VonBraunTestimony030225.pdf>



A substantial body of research shows that food insecurity and poverty are strongly correlated.<sup>(4)</sup> Poverty is the main cause of food insecurity, and hunger is a significant cause of poverty. Food insecurity and malnutrition reduce poor people's productivity and impair their ability to develop skills and capacities to solve their own problems. It inhibits children's learning. If progress is to be made towards achieving the MDGs, much effort is needed to address the long-run causes and dynamics of poverty, and to put in place the policies and practices that effectively reduce poverty, rather than more narrowly reducing undernourishment or boosting food production.

### III. AGRICULTURE AND PRO-POOR GROWTH – LOOKING FOR THE TRIPLE “WIN”

A prosperous agriculture that benefits smallholders brings many advantages to national economies. It brings benefits to large numbers of the poorest households – both the smallholders and the many livelihoods that depend on forward and backward linkages with agriculture (supplying inputs and machinery to farmers, transport and marketing, credit, industries that draw on agricultural produce, etc).<sup>(5)</sup> Nearly one-quarter of GDP in low-income countries is agriculturally related, and the figure would be higher if consideration were given to all the goods and services that depend on agriculture or on demand from farmers. The key issue is not only to increase food production and agricultural productivity but to do so in ways that are pro-poor.

Making agricultural growth “pro-poor” requires:

- ◆ a more equitable distribution of land ownership or the right to use land, and of the right to access water;
- ◆ policies and public investments that do not discriminate against small and medium farms and rural enterprises;
- ◆ cost-reducing and resource-conserving technologies;

“Poverty is the main cause of food insecurity, and hunger is a significant cause of poverty. Food insecurity and malnutrition reduce poor people's productivity and impair their ability to develop skills and capacities to solve their own problems”

4. FAO (Food and Agriculture Organization of the United Nations) (2002), *The State of Food Insecurity in the World 2002*, FAO, Rome; <http://www.fao.org/docrep/005/y7352e/y7352e00.htm>

5. DFID (UK Department for International Development) (2002), *Better Livelihoods for Poor People: The Role of Agriculture*, DFID, London.



- ◆ agricultural services and markets that work for all;
- ◆ reasonable infrastructure and education; and
- ◆ for many crops, the removal of trade barriers around the markets of high-income nations and of the large subsidies to rich-income nation farmers (as discussed in Chapter 8).

Government has a crucial role to play in promoting pro-poor agricultural growth. It can:

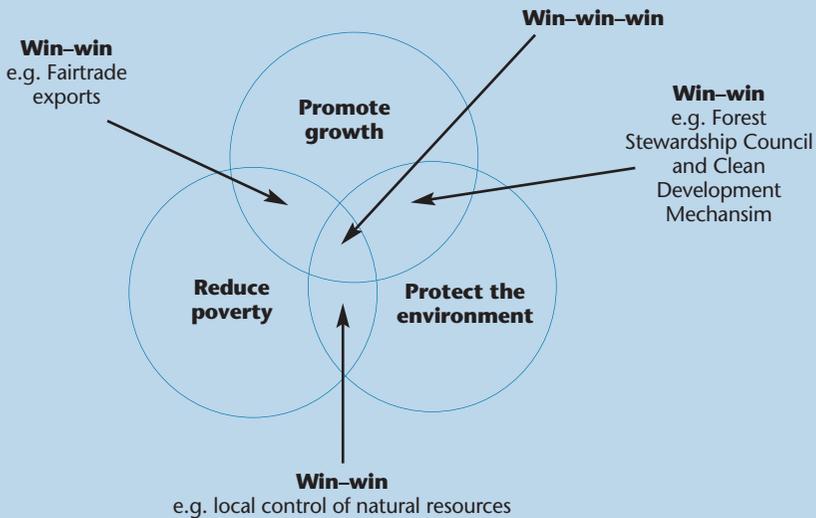
- ◆ promote more pro-poor land distribution, property rights and land markets;
- ◆ ensure small farmers have access to key inputs and markets;
- ◆ invest in agricultural research and development that responds to the needs and priorities of small farmers; and
- ◆ provide targeted input subsidies to boost productivity.

Assisting the poor to find agriculturally based pathways out of poverty depends on increasing their access to key assets, improving the productivity of those assets, and reducing risk and uncertainty and increasing their ability to cope with shocks and stresses. One particularly important determinant for improving the well-being of the rural poor and improving the performance of agri-food systems is investing in women.

#### **IV. PROMOTING GENDER EQUALITY AND EMPOWERMENT OF WOMEN**

Women are responsible for half of the world's food production and between 60 and 80 per cent of the food produced in most low- and middle-income nations.<sup>(6)</sup> Not only are women the mainstay of agricultural production, they are also largely responsible for post-harvest activities. Their specialized knowledge about natural resources also makes them essential custodians of agricultural biodiversity.

6. FAO (2003), *FAO Gender and Development Plan of Action (2002–2007)*, FAO, Rome; [http://www.fao.org/sd/2002/PE0103\\_en.htm](http://www.fao.org/sd/2002/PE0103_en.htm)

**Figure 6.1: The win-win-win in agriculture**

But women's contribution is continually under-appreciated and under-supported, and is often adversely affected by prevailing economic policies and other development conditions. Sustainable rural development through agriculture cannot be achieved without the full participation of women.

## V. ACHIEVING ENVIRONMENTAL SUSTAINABILITY

The natural resource base of suitable land, water, forests and biodiversity largely determines the potential of agriculture. These resource endowments have a major influence on human activity in agriculture and, in turn, are affected by them. Historically, agricultural development policies responded only to the need for food. Much later, they sought to respond to poverty-reduction mandates as well. **Now agricultural policies must seek to simultaneously help meet the triple objectives of poverty reduction, food security and environmental sustainability, to create a "win-win-win" situation** (see Figure 6.1).

Most of the land suitable for agriculture is already in



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production, so meeting current and future food requirements will require rapid increases in productivity to avoid an undesirable expansion onto fragile and marginal lands. There is widespread concern that deforestation and land degradation are severely diminishing the potential of ecosystems. The main causes of these conditions go well beyond agriculture, although agriculture does have a central role: when policies are inappropriate, such as when property rights are insecure or when perverse subsidies distort the production system, unsustainable agricultural practices are often used.

Biodiversity supports the production of an ecosystem’s goods and services essential for life as well as for many cultural values. Improving crops, livestock and feeds, increasing soil fertility, and controlling pests and diseases often depend on these resources. However, increasing population pressure, deforestation and unsustainable agricultural practices are contributing to degradation of these key assets.

To avoid achieving food security at the expense of the environment, farmers must intensify agricultural production in a sustainable way. That is, they must achieve a higher yield per unit of land and water over time. This needs concomitant improvements in institutional support, infrastructure, incentives and inputs. Secure property rights and other policies offering poor farmers incentives for investing in resource management, as well as access to yield-increasing and resource-conserving technologies, are critical. Policies should also serve to raise the value of forests and pastures and offer incentives for sound management. The productivity and sustainability of alternative farming practices, including organic agriculture, require additional investments to enhance their viability.

**Land management.** Soil degradation reduces agricultural productivity and affects about 25 per cent of the world’s agricultural land. Between 5 and 12 million hectares of arable land are lost each year as a result of salinization, flood-induced erosion or nutrient mining.<sup>(7)</sup> These factors



also reduce productivity on an estimated additional 20 million hectares annually.<sup>(8)</sup> Water and wind account for 80 per cent of all erosion.<sup>(9)</sup> Slow-onset disasters caused by soil fertility decline are real possibilities in the fragile lands of some regions. Research is needed on policies for landscapes and land use that protect soil fertility, promote integrated nutrient management, ensure that poor farmers have information about plant nutrient use in various production systems, and foster efficient and effective plant nutrient markets.

**Water management.** Water is obviously indispensable for agriculture and its availability is central to agricultural development. But freshwater supplies are unevenly distributed both regionally and among certain marginalized populations, and many regions are water stressed. Agriculture is the largest user of water, accounting for more than 70 per cent of total freshwater withdrawals globally and between 87 and 95 per cent in low- and middle-income countries.<sup>(10)</sup> Current water use by agriculture may not be sustainable because of both scarcity and competition for use from other sectors such as human consumption, health, sanitation and industry.

Worldwide, about 250 million hectares of land are under irrigation. Irrigation helps to boost yields and stabilize food production and prices. Over the next few decades, however, water withdrawals for domestic and industrial uses will increase, especially in growing economies, and this may be at the expense of agriculture and of water quality. A scenario of worsening trends in water availability and investment could lead to problems of scarcity in several risk-prone regions, with a 10 per cent decline in cereal production from projected levels.<sup>(11)</sup> This decline would be

“Current water use by agriculture may not be sustainable because of both scarcity and competition for use from other sectors such as human consumption, health, sanitation and industry”

7. Wiebe, K (2003), “Linking land quality, agricultural productivity and food security”, *Agricultural Economic Report No (AER823)*, Economic Research Service, US Department of Agriculture, Washington, DC; <http://www.ers.usda.gov/publications/aer823/>

8. WRI (World Resources Institute) (2003), *Disappearing Land, Soil Degradation, Sustainable Development Information Service – Global Trends*, WRI, Washington DC; <http://www.wri.org/trends/soilloss.html>.

9. Wood, S, K Sebastian and S J Scherr (2001), *Pilot Analysis of Global Agro-Ecosystems*, a joint study by International Food Policy Research Institute and World Resources Institute”, IFPRI and WRI, Washington DC. <http://www.ifpri.org/pubs/books/page/agroeco.pdf>

10. Rosegrant, M W, X Cai and S A Cline (2002), *World Water and Food to 2025: Dealing with Scarcity*, International Food Policy Research Institute, Washington, DC.



“Water availability and access to water are global public goods. However, making the best policy choices is often dependent on the particular context of the location, the river basin and the institutions already in place”

the equivalent to the annual loss of the entire Indian cereal crop. The resulting price increases would hurt poor consumers disproportionately.

New institutional and policy changes are needed to improve water-use efficiency and allocation among competing users. Required policy reforms may include establishing secure and tradable water rights; decentralizing water management functions and increasing user involvement; and setting incentives for conservation, such as pricing reform, reduction and targeting of subsidies and pollution charges. Water availability and access to water are global public goods. However, making the best policy choices is often dependent on the particular context of the location, the river basin and the institutions already in place.

Obviously, good forest management and marine management are central to food production and to prosperous pro-poor economies – as discussed in Chapter 4. Marine management has particular importance for livelihoods and for high quality food supplies. Since staple foods are often protein-deficient, poor people can improve their diet by adding fish, which are rich in protein. Approximately 50 million women are employed in this sector.<sup>(12)</sup> Access to resources within the 200-mile exclusion zones of coastal states has brought new opportunities and valuable social and economic assets under their control. But problems with depletion of fish stocks due to over-fishing and pollution of marine environments will have to be addressed if this important resource is to be sustained.

**Coping with climate change.** Scientists now generally agree that increased atmospheric concentration of carbon dioxide and other greenhouse gases is causing significant warming of the earth’s atmosphere. Climate change will have many important implications for agriculture. Some research suggests that growing conditions will deteriorate in tropical areas, and perhaps even in some temperate

11. Rosegrant et al. (2002), op. cit.

12. White, S (1999), “Women’s employment in the agro and food-processing sector: South Asia and East Africa”, draft report submitted to the Aga Khan Foundation Canada; <http://www.wiego.org/papers/white.pdf>



zones.<sup>(13)</sup> Adaptation in agricultural systems can help mitigate global warming through, for example, improved nitrogen-use efficiency, reduced nitrous oxide emissions, improved water-use efficiency, and sequestration of carbon through cropland, forest and pasture management strategies. The challenge for agri-food policy is to design effective insurance schemes and offer practicable options to ensure poor farmers have access to climate forecasting and other tools that help manage risks. Research is needed to better understand how technology, trade, and formal and informal insurance can help facilitate global and local adaptation to climate change.

## VI. CONTRIBUTING TO HUMAN HEALTH

By improving incomes and nutrition, gains in agricultural productivity can contribute much to reducing infant and child mortality, hunger and the proportion of below-poverty-line incomes. They also contribute much to learning (malnourishment severely impedes children's learning) and it is often the savings from agriculture that provide the means to meet expenses relating to educating children.

Agricultural practices can also have negative effects on human health and education. For example, overexposing adults and children to toxic agro-chemicals, and harmful forms of child labour in both family and commercial settings are significant problems. In addition to exposure to dangerous chemicals, children may suffer long working hours, lack of access to education, very low or no pay, and injury due to heavy loads and dangerous machinery. If children must work to support themselves or their families, they should be assisted with programmes that reduce the physical risks they face and provide leisure time, flexible schooling, and fair pay.

**“By improving incomes and nutrition, gains in agricultural productivity can contribute much to reducing infant and child mortality, hunger and the proportion of below-poverty-line incomes”**

13. Fischer, G, M M Shah and H T van Velthuizen (2002), *Climate Change and Agricultural Vulnerability*, a joint report of the International Institute for Applied Systems Analysis and FAO, IIASA, Laxenburg, Vienna; <http://www.iiasa.ac.at/Research/LUC/JB-Report.pdf>; also CGIAR (Consultative Group on International Agricultural Research) (2000), *CGIAR Annual Report 2000: The Challenge of Climate Change: Poor Farmers at Risk*, CGIAR Secretariat, The World Bank, Washington DC; <http://www.worldbank.org/html/cgiar/publications/annreps/cgar00/cgar00txt.pdf>



**“The emphasis on a well-governed trading system and strong private sector involvement is vital if agriculture is going to make a significant contribution to pro-poor growth and economic development in the coming decades”**

Agriculture and health are also related to efforts to combat HIV/Aids, malaria and other diseases. Poor people and farming communities have been particularly hard hit by HIV/AIDS: about 60 per cent of HIV-positive sub-Saharan Africans are women. Given women’s pre-eminent role in food production and preparation, this fact is likely to exacerbate food insecurity in the region.

## **VII. GOVERNANCE, TRADE AND MARKETS**

Goal 8 of the MDGs calls for building “A global partnership for development”, and seeks to promote an open, rule-based trading and financial system, with more generous aid to countries committed to poverty reduction, and relief for debt repayment difficulties. It also calls for cooperation with the private sector to address youth unemployment, and make available the benefits of new technologies. The emphasis on a well-governed trading system and strong private sector involvement is vital if agriculture is going to make a significant contribution to pro-poor growth and economic development in the coming decades.

Yet, today, much of global agriculture is characterized by polarization and economic marginalization, paralleled by a decline in agriculture’s ability to serve its multiple roles in sustainable development. Addressing the causes of economic marginalization is key to making the multifunctional role of agriculture a reality, and to building the resilience of agriculture and the rural and urban households whose livelihoods depend on a prosperous agriculture.

Liberalization of trade in agriculture and the withdrawal of the state from intervention in domestic markets means that price and quality standards are set by international markets. Agriculture that is oriented towards both the export sector and internal markets must, increasingly, turn out products at a similar cost and quality to those that can be bought on the world market. Those markets are undergoing rapid change, with closed commodity chains rapidly replacing wholesale or spot markets.



Highly concentrated food-processing, retail and food service industries at the end of these chains are reducing their supply base and demanding increasingly stringent levels of quality, compliance with standards and codes of conduct, and post-production service from their suppliers. As buyer power increases, so barriers to entry for smallholders become more daunting. Only a small fraction of the rural world has the capitalization, infrastructure, technical expertise and market information to meet the requirements of shippers, processors and retailers. And even for this highly capitalized group, it is difficult to prevent bargaining power (and therefore profitability) from being eroded as downstream agribusiness becomes ever more concentrated.

Conventional thinking has been that the position of smallholders, processors and agribusinesses in their national markets is stable and that the key issue, therefore, is how to gain access to the more profitable niches, mainly for export. The structure and governance of chains supplying out-of-season horticulture crops to Northern supermarkets are now quite well understood; less so chains supplying tropical commodities (e.g. coffee, cocoa), which are controlled by a relatively small group of large processors, manufacturers and traders.

Yet, a growing body of evidence is showing that the regional, national and local markets are themselves experiencing large transformations from imports and a cascade effect of the products from the modern domestic markets.<sup>(14)</sup> Domestic markets in liberalized economies increasingly have more in common with the export markets in terms of grades, standards, business practices, prices and ownership, so they are less of a refuge for the small players. Very little analysis has been focused on domestic competitiveness of small farmers against globally sourced goods, such as Thai rice in West Africa. But these changes are destabilizing markets for agricultural products, even in remote rural areas.

**“Domestic markets in liberalized economies increasingly have more in common with the export markets in terms of grades, standards, business practices, prices and ownership, so they are less of a refuge for the small players”**

14. Thompson, J, B Vorley and J Berdegúé (2003), *Re-governing Markets: Securing Small Producer Participation in Restructured National and Regional Agri-food Systems*, Sustainable Agriculture and Rural Livelihoods Programme, IIED, London.



“The same trends that create problems for small-scale agriculture and processing can also generate sustainable livelihoods for the poor”

Clearly, the drawbacks of globalization and liberalization have fallen disproportionately on the more fragile elements of rural societies. The distribution of the costs and benefits in rural societies is a factor of the relative access of different agents to the restructured markets (local, national and export).

Markets in many products are evolving towards **chronic oversupply**, on the one hand, and an **international division of power**, on the other. Real prices of agricultural products, for example, have halved over the last 25 years, while input costs have generally kept up with inflation – the “cost–price squeeze”.

Control of commodity chains by clusters of powerful downstream industries has profound impacts on primary producers, especially in weakening the link between commodity prices and consumer prices.<sup>(15)</sup> Downstream processors and retailers in an increasing range of sectors are demanding stringent levels of quality, compliance with standards and codes of conduct, and post-production service from their suppliers. Marginalization of small producers can even be hastened by the use of instruments designed to improve sustainability, in which a “chain of custody” for certified “sustainable” produce must be preserved from primary producer to end consumer. In this way, “pro-environment” may unwittingly become “anti-poor”.

Yet, the same trends that create problems for small-scale agriculture and processing can also generate sustainable livelihoods for the poor. They have exposed farmers, processors and rural enterprises to new opportunities as well as new forces of marginalization. Some benefits have accrued from these changes, such as breaking the monopolies of the traditional middlemen, connecting small farmers with lucrative distant markets, linking producers with the changing demands of expanding urban populations, increasing consumer choice and improving

15. Vorley, B (2003), *Corporate Concentration from Farmer to Consumer*, IIED for the UK Food Group, London.



“Greater efforts must be made to find the ‘keys to inclusion’ for small and medium producers, processors and traders in the global market place”

quality and lowering costs through competition. In India, for example, new research shows that large companies frequently must deal with smaller producers, as the top layer is soon exhausted, and market restructuring – including contract farming – can work to the benefit of small farmers.<sup>(16)</sup> Recent work by IIED and partners reveals that land-poor rice farmers in northern Thailand have organized themselves to negotiate a production contract with a potato processor and to manage a marketing system for other varieties of potato, and thus have been able to develop a highly profitable rice-potato system.<sup>(17)</sup>

If the MDG targets relating to reducing poverty and improving food security are to be achieved, agricultural and rural development policy must begin to anticipate (rather than lag behind) change, and greater efforts must be made to find the “keys to inclusion” for small and medium producers, processors and traders in the global market place.

16. Narayanan, S and A Gulati (2002), “Globalization and the smallholders: a review of issues, approaches and implications”, MSSD Discussion Paper 50, Markets and Structural Studies Division, International Food Policy Research Institute and the Rural Development Department, The World Bank, Washington DC; <http://www.ifpri.org/divs/mtid/dp/mssdp50.htm>

17. Gypmantasiri, P, S Sriboonchitta and A Wiboonpongse (2001), “Policies for agricultural sustainability in northern Thailand”, Country Case Study, *Policies that Work for Sustainable Agriculture and Regenerating Rural Economies*, IIED, London.

