



A long row to hoe

family farming and rural poverty in
developing countries

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This report aims to add a new dimension to ongoing debates and policy prescriptions around livelihoods and poverty reduction in rural areas of the developing world. It examines current interest in the proposition that enhancing the productivity of family farms is the most effective way to reduce rural poverty in the developing world. It concludes that while this can play an important role, poverty reduction on a mass scale, particularly in Africa, will require a more comprehensive and integrated approach.

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Summary

This report examines the current interest in the proposition that enhancing the productivity of family farms is the most effective way to reduce rural poverty in the developing world.

This proposition – that we term the prod-pov consensus – is examined from a number of angles including agro-ecological and socio-economic diversity, the re-structuring of the agri-food system, agricultural research, rising fertiliser prices, climate change, and the assumption that young people will be content to live in rural areas and construct their livelihoods around agriculture.

Our conclusion is that while increasing the productivity of family farms in Africa can play an important role, poverty reduction on a mass scale, particularly in Africa, will require a more comprehensive and integrated approach.

The final section of this report explores five likely strategies for rural people, depending on the context within which they live, their situation, and their interests. These strategies are:

1. Agricultural intensification.
2. Agricultural intensification with support.
3. Continuing to farm primarily for own consumption.
4. Seeking income in other parts of the rural economy.
5. Migration.

Factors and points of potential intervention that will enable each strategy to contribute more effectively to poverty reduction are identified.

Introduction

Motivation, aims and objectives

This report aims to add a new dimension to ongoing debates and policy prescriptions around livelihoods and poverty reduction in rural areas of the developing world. Specifically it addresses the proposition that increased productivity of family farms is the critical pathway for widespread rural poverty. The ultimate objective of the analysis reported here is to strengthen the policy and implementation agenda addressing rural poverty reduction.

Scope and limitation of the report

This report focuses on the developing world (including sub-Saharan Africa, Latin America and the Caribbean, South and Southeast Asia). The breadth of the literature and experience relating to agriculture and poverty in the developing world necessitated a selective approach. As the report seeks to cast light on some areas and issues that have not so far been prominently debated, it does not engage with others, and specifically, with econometric methods and debates around the definition and measurement of productivity and poverty.

Report structure

The remainder of the report is in four main sections. The next section lays out the background to our interest in this area. The following section explores the elements of the emerging consensus on agricultural productivity and poverty reduction. In the third section, we develop our critique of the consensus, while the final section outlines a revised policy and action agenda.

Background and rationale

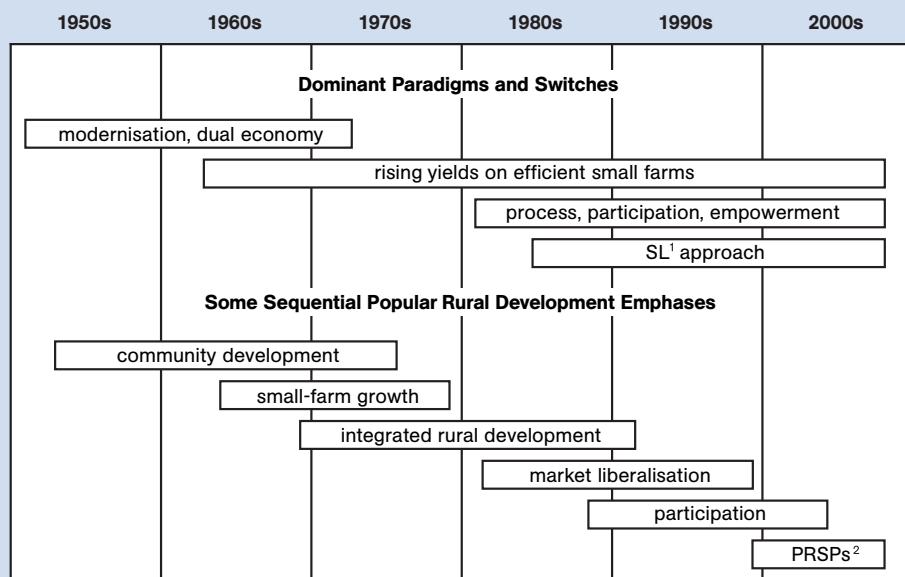
Agriculture and the development agenda

Since the 1950s, thinking about economic development has gone through several cycles, running hot and then cold on the role and importance of the agricultural sector. The family farming that continues to characterise rural economies in much of the developing world has been variously sidelined by a desire for rapid industrialisation; pushed toward modernisation; exploited to support urban initiatives and elites; and promoted as the motor of economic growth. Even within the more constrained field of rural development, the approach to and place of agriculture has shifted significantly over time,¹ reflecting broader ideas and trends about the state, the environment, the global economy and the dynamics of development (Figure 1).

The proposition that in most of the developing world, and perhaps particularly in sub-Saharan Africa (hereafter Africa), agriculture is the only realistic driver for mass poverty reduction and rural development is now accepted by many academics, international development organisations and national governments.² While different analysts highlight different facets of this basic proposition, and a number of important associated themes and caveats have been introduced, academic and policy discourse are coalescing into what can be seen as an emerging consensus. This emerging consensus includes broad agreement as to the rationale for a focus on the productivity of family farms as well as the policy agenda needed to enable and support increased productivity.

As is obvious from the historical analysis of rural development ideas by Ellis and Biggs, there is nothing new in the notion that increasing family farm productivity should be the cornerstone of rural economic development.³ Indeed the need to increase agricultural productivity has been central to rural development thinking since at least the 1960s. And, despite many shifts in higher level development policy, there is a hard core of policy prescription that has remained virtually unchanged, including the need for applied agricultural research, productivity-enhancing technology, functional extension services, production credit, and improved input provision systems.

Figure 1. Dominant and sequential themes in rural development



Source: Ellis & Biggs (2001).

1. SL – sustainable livelihoods; 2. PRSPPs – Poverty Reduction Strategy Papers.

Table 1: Poverty statistics - Oxfam focus countries compared to their respective regions.

Country Region	Total population (millions, yr = 2000)	Rural population (millions, yr = 2000)	Overall poverty headcount ratio (\$2PPP ¹ /day)	Overall poverty headcount ratio (\$1PPP/day)
Ethiopia	79	67	78*	23**
Sub-Saharan Africa	731	478	77**	46#
India	1,120	795	81*	35*
South Asia	1,636	1129	77**	31#
Honduras	7	4	44#	21+
Latin America and the Caribbean	569	127	25**	10**

Sources: World Development Indicators Database; + = 1998; # = 1999; * = 2000; ** = 2001.

PPP¹ - purchasing parity power

If the logic supporting productivity growth and the core policy prescriptions have remained unchanged, what has evolved dramatically is the context within which these policies are expected to deliver positive outcomes for rural people. Indeed, the economic, political, institutional, and global contexts could not be more different from what they were in the 1960s and 1970s. Of particular importance in this regard is the dominance since the late 1980s of the neo-liberal economic and political agendas.

Rural poverty and agricultural revolution

Lipton claims that 70 per cent of the world's dollar-poor live in rural areas, and that "rural shares of poverty intensity are substantially higher (than urban shares); and in Africa and Asia poverty is even more rurally concentrated."⁴ Some key poverty statistics are given in Table 1 (comparable rural poverty statistics are not available). Further, the livelihoods of the dollar-poor are inextricably linked to agriculture: as a global average they derive around 50 per cent of their income from agricultural employment (hired or self-employed).⁵

In recent years, much has been made of historically unprecedented rates of urbanisation in the developing world, and credible projections indicate that by the year 2030 nearly 60 per cent of the population of low- and middle-income countries will live in urban areas. Do these predictions weaken the case for a focus on the agricultural sector? Not necessarily. First, projections indicate that by 2035, 50 per cent of the poor will still live in rural areas.⁶ Second, the fact that most of the urban growth will occur in secondary cities and towns means that the dichotomy between urbanisation on the one hand and agriculture on the other is probably less stark than might at first appear.⁷ This is the argument of those who highlight the importance of rural-urban linkages and the positive upstream and downstream economic effects associated with agricultural growth. Finally, some suggest that because urbanisation in Africa is largely de-coupled from economic growth,⁸ agriculture has a critical role to play in creating rural opportunities that can help moderate the rate of rural to urban migration.

Since the 1970s, some countries have experienced significant if not dramatic success in reducing rural poverty. Most observers agree that the cornerstone of this success was the increase in agricultural productivity commonly associated with the so-called 'Green Revolution'.⁹ The revolution resulted from the use of productivity-enhancing technology (particularly new rice and wheat varieties combined with fertiliser) in (largely) irrigated environments. The widespread adoption of these technologies took place in the context of activist states investing in infrastructure development and input and credit supply, while supporting and stabilising the prices of cereal crops.¹⁰

The Green Revolution, however, did not eliminate rural poverty even in those countries and regions – for example, India and South Asia – where its effects were most pervasive. In addition, much has been made by some observers of ‘second generation’ problems with Green Revolution technologies: there is, for example, evidence that rice yields in Asia are levelling out¹¹ and serious questions are being asked about natural resource degradation and the long-term sustainability of some of these intensive systems.¹²

Nevertheless, when seen as a step in an ongoing process of agrarian transformation, the contributions of the Green Revolution in terms of rural poverty and food security are indisputable

If developments in rural Asia give some basis for optimism, rural poverty in Africa has so far proven to be much more intractable. The vast majority of the residents of Africa have yet to share in the benefits of global economic growth. This increasing global disparity is reflected in the fact that few countries in Africa are realistically expected to meet the Millennium Development Goals (MDGs) by the 2015 target date.¹³

The analysis of rural poverty and agriculture in Africa is often made via contrast – either implicit or explicit – with the Asian experience. Specifically, the deep and persistent rural poverty that characterises much of Africa is linked by many commentators with the disappointing performance of the agricultural sector and specifically with the idea that Africa has not yet experienced its Green Revolution. The usual explanations for Africa not replicating the Asian model include the dominance of rain-fed agriculture; high agro-ecological diversity;¹⁴ relatively low rural population densities; a lack of proven, productivity-enhancing technology; dysfunctional research, extension, input supply and credit systems; thin and segmented markets; poor policy environments; and generally dysfunctional (and in some cases predatory) states. The fact that there has been little supply response, even following more recent moves to liberalise agricultural markets in Africa, is explained by arguments around states continuing to intervene too much or too arbitrarily; the sharp decline in investment in key public goods that coincided with market liberalisation; and a lack of attention to market co-ordination problems.¹⁵ Continuing this focus on state investments and markets, Poulton et al., suggest that the difference in the Asia and Africa Green Revolution experience can be explained by the fact that in Asia, critical elements of supply chains were identified where investment would have wider stimulative effects; pump-priming was large enough over a sufficient time to cause major and permanent shifts in expectations and structural relations; and to a lesser extent public sector investment was made in a way that promoted complimentary private sector investment.¹⁶

Care needs to be taken, however, as it is certainly not appropriate to conclude that agriculture in Africa remained stagnant over the last five decades; nor that farmers have not adopted new crops,¹⁷ technologies and production systems, while exploiting new markets and institutional arrangements.¹⁸ There is, in fact, a growing literature that argues that those promoting a ‘doomsday’ view of agriculture in Africa ignore on-going, fundamental and positive change.¹⁹ There have even been claims that a small number of countries have experienced at least partial (i.e. location- or crop-specific) Green Revolutions. However, more recent developments in two prominent cases – Zimbabwe²⁰ and Malawi²¹ – demonstrate the very tenuous nature of some of these gains.

It is important to note the many limitations of the Asia–Africa comparison, and particularly the fact that the present macro-economic and policy climate is fundamentally different from that which prevailed during the heyday of the Asian Green Revolution.²² For example, today’s dominant neo-liberal economic model of limited state intervention essentially rules out the price support and stabilisation policies and other subsidies that were so central to the Asian experience. Further, one of the effects of structural adjustment has been to weaken agricultural support services that are supposed to develop and promote new technologies. In this light, and given the generally weak state of market systems in Africa and a lack of commercial orientation among family farmers, some authors have raised serious questions about the viability of a Green Revolution in Africa based on a market-based transformation.

Table 2: Many terms for farmers and farming.

Aspect or characteristic of farmer or farming activity	Term
Scale	<ul style="list-style-type: none"> ● Small-scale farmer ● Large-scale farmer
Objective	<ul style="list-style-type: none"> ● Subsistence farmer ● Semi-subsistence farmer ● Commercial
Level of engagement	<ul style="list-style-type: none"> ● Full-time farmer ● Part-time farmer ● Opportunistic farmer
Origin or level of inputs used	<ul style="list-style-type: none"> ● Family farmer ● Low-external-input farming ● Mechanised farming
Viability	<ul style="list-style-type: none"> ● Resource-poor farmers ● Marginal farmers
Political economy within which farming takes place	<ul style="list-style-type: none"> ● Peasant farmer ● Small-holder farmer

Family farming: a note about vocabulary

A number of terms are used more or less interchangeably to refer to poor rural people in the developing world who are engaged to some degree in agriculture. Each of these terms draws attention to one or more aspects or characteristics of the lives, production systems or economic and political relations of 'farmers' (Table 2).

Taken at face value, each term is partial and therefore problematic. For example, there is no absolute size (in land area) below which farms across the developing world can be considered 'small'. 'Small' farms in semi-arid rain-fed areas are often significantly larger than 'small' farms in irrigated or high rainfall areas. At the same time, the realities of diversified rural livelihoods, increasingly blurred boundaries between 'cash' and 'food' crops, and the plethora of channels through which land is accessed, diminish the value of most of the other terms in the table.

Therefore, as an imperfect compromise, in the remainder of this report we will use the terms 'family farmers', 'family farms' and 'family farming' to refer to the highly heterogeneous population of rural people whose livelihoods depend to some degree on farming and who pursue their farming primarily with their own and/or their family's labour. We recognise the limitation of this term, particularly in that it hides the complex gender relations that characterise agriculture production in many areas, such that, for example, a husband and wife may simultaneously pursue both independent and joint farming activities. In choosing this term we do not assume any innate superiority to the organisation of farming around family units,²⁴ but simply recognise that for many poor rural residents throughout the developing world this organisational model reflects an important aspect of the reality of their daily lives.

Before proceeding, it is important to note that in much of what follows relatively little emphasis is placed on gender as a central factor in the agriculture and poverty reduction story. Are we saying, therefore, that gender is not an important variable in the construction of and outcomes associated with rural livelihoods; that in many areas women are not heavily engaged in farming; or that in some cases, compared to men, they find themselves in relatively low reward farming activities? No, certainly not. We are suggesting, however, that the notion that the future for rural women, particularly in Africa, should be generally and necessarily tied to small-scale farming and the food-security needs of their families is no longer tenable. Rather, we must

begin to place at centre stage rural women's – and men's – interests in generating sufficient income to build an array of economic and social assets. For some this may be through family farming, for others it may be through independent farming, while for yet others it may involve non-farm employment or migration. The point is that we must avoid the trap that by focusing on and taking gender seriously we develop a vision of the world that consigns women's opportunities to a particular function and sector, and especially one that places them in low-reward activities. At the same time, we recognise that the promotion of change within the farming sector must take account of the specific needs and circumstances of social groups – including women – who may otherwise remain disadvantaged. We return to this in the last section of this report.

We are not suggesting that there is anything particularly new or radical in this consensus: as seen above, enhanced agricultural productivity has been part of the rural development agenda for some five decades. Rather, the prod-pov consensus reflects the fact that agriculture is (again) moving up the international development agenda, pushed in part by the fact that the MDG process, the HIV/AIDS crisis and the Commission for Africa have brought the breadth and depth of rural poverty back into stark relief.³¹

The emerging consensus on family farming

The starting point for this work is our contention that over the last few years there has been a significant consolidation of opinion around the proposition that increasing the productivity of family farms will be the most effective means of addressing rural poverty in the developing world (Box 1). Because of the very tight link between productivity enhancement and poverty reduction that is at the heart of the consensus, hereafter in this report we will refer to this as the prod-pov consensus.

Box 1. The rhetoric of an emerging consensus.

DFID: "...agriculture should be placed at the heart of efforts to reduce poverty ... there is a mass of evidence that increasing agricultural productivity has benefited millions through higher incomes, more plentiful and cheaper food, and by generating patterns of development that are employment intensive and benefit both rural and urban areas."²⁵

NEPAD: "Improvement in agricultural performance has potential to increase rural incomes and purchasing power for large numbers of people. Thus, more than any other sector, agriculture can uplift people on a mass scale. [...] a virtuous cycle can be started of reduced hunger, increased productivity, increased incomes and sustainable poverty reduction".²⁶

The World Bank: "Rural poverty is as diverse as are the rural poor in their livelihood strategies, but in most of the poorest developing countries agriculture is the main source of rural economic growth. That is why improved agricultural productivity and growth are central to the Bank's strategy."²⁷

USAID: "For many developing countries, overall economic growth, trade expansion, and increased income-earning opportunities depend on the performance of the agricultural sector. [...] In developing countries, increases in agricultural productivity must be accelerated to bringing down current levels of food insecurity and meet the food, job creation, and income needs of new populations."²⁸

CGIAR: "Agricultural growth is critical to achieving the MDGs. As the vast majority of potential beneficiaries of the MDGs depend on agriculture for a living, higher agricultural productivity is a precondition for achieving the goal of eradicating extreme poverty and hunger. [...] Smallholders' chances of rising out of poverty depend directly on their ability to increase the productivity of their crop and livestock husbandry activities."²⁹

FAO: "Agricultural production growth in developing countries has strong direct and indirect effects on non-agricultural growth. Perhaps more importantly, the positive impact of agricultural growth on poverty reduction is more than proportional to the relative importance of the sector to the economy."³⁰

Elements of the consensus

The prod-pov consensus, with its focus on increasing the productivity of family farms, is rooted in historical understandings of the drivers of economic growth, and the view that there are near universal (i.e. across time and space) links between rising agricultural productivity and economic transition. There is a vast body of literature in this area including classic work by Peter Timmer, John Mellor, Carl Eicher, Michael Lipton and others. In a recent paper Lipton argued that the links between productivity, farm size and economic transition can be summarised as follows: throughout history increases in agricultural productivity have fuelled economic transitions,³² and, in the early stages of economic transition family farms are at a distinct advantage.³³

A second touchstone on the prod-pov consensus is the spatial distribution of poverty and the make-up of rural livelihoods in much of the developing world. The logic goes as follows. First, there is the acknowledgement that poverty remains largely a rural phenomenon and that most poor people in rural areas derive at least some of their livelihoods from agriculture. Then, as argued by Lipton, there is the fact that in capital-constrained economies the greatest employment effects can be gained by investing where capital costs per extra workplace are relatively low – i.e. agriculture.³⁴ Further, Lipton argues that for the rural poor, farmland is their major asset type and “it is therefore credible that more poverty reduction is likely to be achieved by raising returns to farmland than to other assets.” Finally, the fact that the poor spend the bulk of their income of food, and especially staples, means that “local farming restrains and stabilises the price of the poor’s main consumables”. This logic leads to the conclusion that agriculture must necessarily be at the core of any poverty-reduction strategy. To put it another way, only agriculture has the potential to have the breadth of impact that is required to address rural poverty successfully.

The consensus is concerned fundamentally with the need to increase the productivity of agriculture. Irz et al., identify 12 positive consequences of agricultural growth, the effects of which can be seen at the level of the farm, the rural or the national economy (Table 3).³⁵ For each positive consequence, they also identify a number of qualifications and preconditions, which illustrate both the complexity and the context specificity of the potential relationship between productivity growth and poverty reduction. Most authors and agencies promoting the consensus view also highlight (either following from or as an adjunct to productivity gains) the importance of strengthening rural–urban linkages and the development of the rural non-farm sector.

A number of studies provide empirical evidence to support the relationship between productivity growth and poverty reduction. These are reviewed by Irz et al., who also report results from their own cross-country study that suggest to them that “agricultural productivity is an important determinant of poverty, and that increases in yield have the potential to lift a large number of individuals out of poverty.”³⁶ Thirtle et al.’s reading of the literature leads them to conclude that “growth appears to be pro-poor, except in the Latin American countries, where extreme inequality in the distribution of incomes, and especially land, prevents the poor from gaining.”³⁷

As well as general agreement concerning the importance of agricultural growth for poverty reduction, there is also much agreement around the policy agenda required to foster growth. Underlying this agenda is a now well-known analysis of the constraints to increased productivity, including a lack of technology and information; inappropriate land tenure arrangements; market failures for inputs and outputs; and poor infrastructure.

Thus, according to Hazell, in order to foster growth in the productivity of family farms, governments, NGOs and the private sector must work to ensure:³⁹

- Targeted agricultural research and extension.
- Tenure security and efficient land markets.
- More effective marketing organisations.

Table 3. The consequences of agricultural growth.

Level	Effect of agricultural growth
Farm economy	<p>Higher incomes for farmers, including smallholders</p> <p>More on-farm employment as labour demand rises per hectare, the area cultivated expands, or frequency of cropping increases. Rise in farm wage rates.</p>
Rural economy	<p>More jobs in agriculture and food chain upstream and downstream of farm.</p> <p>Increased jobs and incomes in rural economy allow better nutrition, better health and increased investment in education amongst rural population. Lead directly to improved welfare, and indirectly to higher labour productivity.</p>
	<p>Generates more local tax revenues and demand for better infrastructure – roads, power supplies, communications. Leads to second-round effects promoting rural economy.</p>
	<p>Linkages in production chain generating trust and information, building social capital and facilitating non-farm investment.</p>
	<p>Reduced prices of food for rural residents who buy in food net</p>
National economy	<p>Reduced prices of food and raw materials raise real wages of urban poor, reduce wage costs of non-farm sectors.</p> <p>Generation of savings and taxes from farming allows investment in non-farm sector, creating jobs and incomes in other sectors.</p> <p>Earning of foreign exchange allows import of capital goods and essential inputs for non-farm production.</p> <p>Release of farm labour allows production in other sectors.</p>

Source: Irz et al.³⁸

- Revamped financial systems to meet family-farm credit needs.
- Improved risk management policies.
- And where all else fails, targeted safety net programmes.

While the public sector must:

- “Invest in provision of basic infrastructure, health, education and other human capital to improve market access and to improve the range of nonfarm opportunities available to small farm households, including permanent migration to urban areas.”⁴⁰

The details of this policy agenda are laid out by other authors: for example, Poulton et al., on improvement of agricultural markets and basic financial services in Africa;⁴¹ Lipton on crop research;⁴² and Deininger on land reform.⁴³

There is a growing literature that highlights the importance of functional institutions, and therefore institutional reform and institution strengthening, as a pre-requisite for agricultural productivity growth,⁴⁴ and as can be seen from the policy agenda above these institutional issues are central to the prod-pov consensus. Indeed the ability of productivity growth to deliver the desired pro-poor outcomes will depend to a significant degree on change in the institutional environment. Given the generally long-term nature of institutional change, however, this fact alone must certainly temper the short-term expectations associated with the prod-pov consensus.

Agricultural exports have long been a mainstay of many developing country economies and, over the last two decades, there has been much emphasis on the need for developing countries to stimulate non-traditional agricultural exports. While some examples of this strategy are very well known – for example, fresh vegetables and cut flowers from Kenya and coffee from Viet Nam – the prod-pov consensus is not fundamentally about agricultural exports (be they traditional or non-traditional). Rather, as argued by Hazell, the focus must be primarily on the supply of staple grains to domestic markets.⁴⁵ We will return to this point later.

Finally, it is important to note Hazell's acknowledgement above that not all rural people will have a future in farming, and associated with the prod-pov consensus is a discussion of the need for 'exit strategies' for them.

How much of a consensus?

In describing the consensus around the importance of agriculture productivity growth for rural poverty reduction, we have used the term 'emerging' because this consensus is neither universal nor monolithic. There are both academics and policy-makers who do not support this view of the development potential of the agricultural sector, and in some cases, they specifically highlight the limitations of small-scale family farming. It would certainly be a mistake to assume that the notion that the agriculture sector should modernise through large-scale, mechanised, input-intensive production systems is completely dead.

The work of Collier and O'Connell illustrates an approach that downplays the role of the agricultural sector in poverty reduction.⁴⁶ These authors use the notions of resource endowment and location to classify countries in Africa as Resource-Rich, Resource-Scarce Coastal, or Resource-Scarce Landlocked, accounting for 35 per cent, 35 per cent and 30 per cent of the African population respectively.⁴⁷ They then suggest that the best strategy for sustained growth of Resource-Rich countries is likely to be through exploitation of their primary resources (oil, minerals and the like), while the Resource-Scarce Coastal countries may have to focus on adding value to resource-based exports. As for the Resource-Scarce Landlocked countries, their ability to rise to middle-income status may be tied to the success of their more fortunate neighbours, the discovery of untapped natural resources, or the development of new service exports. It is noteworthy that family farming plays no prominent role in this analysis of opportunities for sustained income growth.

Other authors focus on the role of industrial exports in growth and poverty reduction. For example, Söderbom and Teal argue that, over the last 30 years, the long-term income growth of African countries was closely linked to export performance.⁴⁸ They also conclude that only international (not regional) markets will allow African countries to develop labour-intensive exports. Teal goes further: "...it is only in urban-based export industries that the growth of employment can be rapid enough to absorb the rapid growth in labour supply, and such employment creation is how income growth can be directly linked to poverty reduction."⁴⁹

It is also true that even amongst those who are primarily concerned with agriculture and rural development there is less than universal agreement on the future of family farming. For example, in recent years the process of 'rural livelihood diversification' has received considerable attention, in relation to Africa⁵⁰ and Asia.⁵¹ The basic observation is that non-farm income is increasing as a proportion of all income. This has prompted some to question whether agriculture is as powerful a lever for rural poverty reduction as has been suggested. On the other hand, there is evidence of non-farm income being used to invest in productivity-enhancing technology;⁵² while others have argued that diversification away from agriculture may reduce the willingness (of particularly poor people) to make the investments in new agricultural technology.⁵³

Finally, some observers intimate that the route of farm productivity enhancement – intensification – promoted via the prod-pov consensus is actually a danger to family farmers. Here the suggestion is that intensification can create dependency on external inputs and global markets; open the door to genetically modified crop varieties and increased indebtedness; reduce biodiversity; and impact negatively on food security. Some call for 'sustainable intensification' oriented towards self-

sufficiency and based on low-external-input systems, inter-cropping, traditional varieties and local seed systems.

The point here is not to evaluate these various propositions in detail, but rather to draw attention to the fact that the importance of the agricultural sector, and family farming in particular, for poverty reduction is still being debated, with the different perspectives reflecting, amongst other things, disciplinary, institutional, and geographical backgrounds. Nevertheless, it is fair to say that the proposition that increasing the productivity of family farming is essential for poverty reduction is now widely accepted amongst academics, policy-makers and development practitioners alike.

Limitations of the prod-pov consensus

Before exploring some specific elements of the prod-pov consensus, it is important to make three preliminary points.

First, we note that the prod-pov policy agenda appears to take for granted the proposition that family farmers can benefit from agricultural growth within the prevailing global economic and institutional contexts. The agenda shies away from any suggestion that family farmers in developing countries might not get a fair deal under World Trade Organisation (WTO) rules or more specifically in their dealings with the increasingly globalised agri-food system. Neither does it seriously question the current neo-liberal orthodoxy concerning the role of state subsidies (for example, for fertiliser) or the desirability of (even temporary) protection of domestic markets from cheap food imports.

Second, we note that increased agricultural productivity is only likely to come about where there is social, political and economic stability. It is sadly ironic that the establishment of these basic conditions has been most problematic in Africa where the need to impact on rural poverty is greatest. In the face of continuing conflict and civil strife – not to mention the ravages of the HIV/AIDS pandemic – it is clearly unrealistic to assume that the complex of policies, incentives, investments, markets, and supporting institutions which underpins the prod-pov consensus will easily develop and flourish.

Third, it is important to draw attention to the fact that the pro-poor outcomes envisaged in the consensus will depend on increasing demand for food and other agricultural products.⁵⁴ While some increase in demand will arise simply because of population growth, the real boost will come from a growing and dynamic urban sector. While Hazell makes an explicit link between the prod-pov analysis and domestic grain markets, without growing urban demand for locally produced food the assumption of a strong link between increased agricultural productivity and widespread rural poverty reduction is untenable.⁵⁵ Some authors have stressed the fact that with urban population growth and rising incomes, demand for livestock products in the developing world is set to increase dramatically.⁵⁶ The argument is that this so-called 'livestock revolution', and its requirement for vast quantities of concentrated livestock feeds (largely from cereal grains), will significantly increase demand for locally produced grain. The case for such a livestock revolution – and its potentially positive knock-on effects for family farmers – is certainly compelling for China, India and some other Asian countries. It is difficult in the short-term to see this particular dynamic establishing itself in much of Africa, however, where, in general, rapid urbanisation has been de-coupled from economic growth⁵⁷ and a basis for sustained economic growth in urban areas has yet to be established.

Diversity: one size does not fit all

There is now considerable academic literature on the challenges associated with agro-ecological diversity and relative merits of investment in areas with marginal or low agricultural potential.⁵⁸ Nevertheless, we suggest that the prod-pov analysis is being interpreted and promoted in a way that leads to the expectation that agricultural productivity growth is a general and broadly applicable strategy for rural poverty reduction.

In this section, we argue that agro-ecological and socio-economic diversity, particularly in non-irrigated areas will likely reduce significantly the poverty alleviation effects of agricultural intensification. In other words, the potential for successful productivity enhancement, and the associated poverty reduction effects, are likely to be significantly more site- and context-specific than often portrayed.

Wiggins and Proctor provide a simple but useful framework that brings together information on two important factors: 'location' relative to markets (peri-urban,

Table 4. Development implications of location and natural resource quality.

	Quality of natural resources	
Location	Good	Poor
Peri-urban	Emphasis will likely be on micro-scale, high-value farming and livestock activities	
Middle countryside	These areas will likely move toward specialised, market-oriented arable farming and livestock production.	These areas will likely remain in extensive farming and livestock, and will only develop a limited non-farm economy
Remote countryside	Few proven strategies for development of these areas; likely to remain in subsistence farming.	Few proven strategies for development in these areas; likely to remain in low-productivity subsistence farming, generating very small or no surpluses.

Source: Wiggins and Proctor⁶³

middle countryside or remote areas) and the 'quality' of natural resources (good or poor).⁵⁹ They use this framework and their own reading of the last decades' development experience to suggest some likely agricultural development trajectories (Table 4). This is obviously a very simplified and schematic analysis but it highlights nevertheless two extremely important points. First, the rural world is heterogeneous, and this heterogeneity has direct and significant implications for agricultural development. Second, for three of the six location-resource combinations, Wiggins and Proctor conclude that the potential for agricultural intensification is, and is likely to remain, very limited. The implication of this is that the goal of reducing rural poverty by increasing the productivity of family farms is likely to be achieved in only some rural areas. This seems to be accepted in the recent DFID paper *Growth and Poverty Reduction: the Role of Agriculture* which highlights the need to "give priority to agricultural development in places where significant productivity gains are possible and the potential links to the wider economy are strongest".⁶⁰ It is also echoed by Poulton et al., who conclude that while smallholder agriculture in 'less favoured' areas of Africa performs vital food security and welfare functions, it is unlikely to function as a driver of growth.⁶¹ On the other hand, Omamo suggests that "in areas with low agricultural potential and low population density (in Eastern and Central Africa) ... improved animal health, breeding for disease resistance, and improved nutrition and pasture management would be good triggers for broad-based productivity growth."⁶²

However, socio-economic heterogeneity is an additional dimension that must be considered.⁶⁴ Here we are interested in differences in gender, age, marital status, education, ethnicity, caste, relationship to land, wealth, and so on. These factors can be associated with different opportunity structures and broadly different livelihood patterns. They are also associated with type and level of engagement in agriculture and different levels of interest in and ability to invest in productivity enhancing innovation. Clearly, the importance of these factors will depend on the context, the agricultural system and the requirements of the intensification technology. Wealth, for example, may or may not be a determinant of technology adoption.

Building on earlier work around 'recommendation domains', some authors have suggested that rather than focus on the individual socio-economic factors it is more important to understand how combinations of factors affect people's interest in and ability to implement a given agricultural innovation.⁶⁵ Those with neither the interest nor the resources are unlikely adopters, as are those who may have the resources but for whatever reason lack the interest. On the other hand, those with both interest and resources are the obvious potential adopters, while those who are interested but who lack the necessary resources may adopt if provided with some kind of assistance (for example, information, credit etc). The point here is simply that only a proportion of farming families will have both the interest and resources to increase their productivity, and thus to benefit directly from intensification. This leads

to consideration of the distribution of direct and indirect (for example, employment and linkage) effects of productivity growth, and recognition that the nature and magnitude of any indirect poverty effects will depend on the combination of agro-ecosystem, development trajectory, farming technology and the like.

In Table 5, we have integrated this view of socio-economic diversity into the Wiggins and Proctor framework. This table highlights the fact that even within those areas that are considered to have clear potential for agricultural development the links between productivity growth and poverty reduction are likely to be contingent, partial, and highly complex.

Now we are left with a difficult question: What are the implications of this more realistic approach for expectations about the ability of agricultural productivity to impact positively on mass rural poverty? While this question demands detailed and site-specific analysis, one conclusion seems certain: in many areas, increased agricultural productivity is unlikely to drive the kind of broad-based rural poverty reduction claimed by those promoting the prod-pov consensus.

Is agricultural research up to the job?

An essential element of the prod-pov consensus is that farmers must have access to productivity-enhancing technology. In whatever form – as new crop varieties, agronomic recommendations, pest control strategies, whole production systems or whatever – technology that is adapted, reliable and profitable is an absolute requirement. Over the last two decades, the accepted view of the process of agricultural technology development has grown to include farmers, NGOs and the private sector in addition to publicly funded research.⁶⁶ However, this new appreciation of farmers' research, participatory research, and 'innovation systems', does not reduce the importance of effective formal, public sector research, particularly when poor, family farmers are being targeted.

The two main sources of publicly funded agricultural research are the 'national systems' on the one hand and the 'international systems' on the other. As is to be expected there is tremendous variation among the national agricultural research systems in terms, for example, of size, organisational models, staff profiles, geographical and crop coverage, budgets, and so on. The 16 international research centres of the CGIAR system also have different geographical and research mandates, and as well varying in organisation, size, financial stability, and record of impact.⁶⁸

After a decade or more of expansion into areas such as participation, gender and natural resource management, there have recently been calls for the CGIAR to re-focus its efforts on basic crop improvement, where it has historically demonstrated its strong comparative advantage in developing 'global public goods'.⁶⁹ The logic here is that the national research systems, NGOs, and the private sector will then work with farmers to adapt the crop germplasm and strategic research outputs from the CGIAR centres to suit local conditions. However, the notion that such an integrated, 'global agricultural innovation system' can be made to work for poor family farmers in the developing world needs to be very carefully examined.

There are three key assumptions: that the national agricultural research systems have (or could quickly develop) the capacity to adapt strategic research outputs from CGIAR centres and elsewhere; that the private sector will carry at least some of the burden of this adaptive research; and that family farmers, and perhaps especially women, are in a position to participate in adaptive research at the level required to deliver significant benefits. Unfortunately, in parts of the developing world, and perhaps particularly in Africa, these assumptions are problematic.

In the first place, funding for public-sector agricultural research in much of the developing world is in long-term decline.⁷⁰ In addition, even after years of multi- and bi-lateral donor support, national agricultural research institutions in Africa continue to struggle with the agro-ecological heterogeneity and the range of crops and problems for which they are responsible. Nor is it sufficient to say that agricultural research must and will be strengthened: years of experience has clearly demonstrated that this is a very long-term project and even then, much easier said than done.⁷¹ While considerable attention is now being given to new partnerships

Table 5. Adding socio-economic diversity to the Wiggins and Proctor framework⁶⁷

		Quality of natural resources		
Distance from urban areas	Good			Poor
W&P: Emphasis will likely be on micro-scale, high-value farming and livestock activities				
Peri-urban			Families with interest and motivation	
		Families with resources	Yes	No
	Yes	✓✓	✗	
	No	✓	✗	
W&P: Likely move toward specialised, market-oriented arable farming and livestock.			W&P: Likely remain in extensive farming and livestock, and will only develop a limited non-farm economy.	
Middle Countryside			Families with interest and motivation	
		Families with resources	Yes	No
	Yes	✓✓	✗	
	No	✓	✗	
W&P: Few proven strategies for development; will likely remain in subsistence farming; may become attractive in future.			W&P: Few proven strategies for development; will likely remain in low-productivity subsistence farming, generating very small or no surpluses.	
Remote			Individuals with interest and motivation	
		Families with resources	Yes	No
	Yes	✗	✗	
	No	✗	✗	
			Families with interest and motivation	
		Families with resources	Yes	No
	Yes	✗	✗	
	No	✗	✗	

✓ = likely

✓✓ = more likely

✗ = unlikely

and collaborative arrangements, through, for example, the CGIAR's 'Challenge Programmes', these initiatives are unlikely to make-up for more fundamental institutional shortcomings.⁷² Without significant research capacity at the applied and adaptive end of the spectrum, where the challenge of agro-ecological and socio-economic heterogeneity is greatest, the global public goods produced by the international centres will be of little, if any, value to poor, family farmers.⁷³

Second, the assertion that the private sector will invest in agricultural research, particularly when the potential users are poor, family farmers in marginal areas growing primarily food crops for domestic markets, must be questioned.⁷⁴ Indeed, as noted by most observers, in Africa there is little sign of private sector investment in agricultural research outside a limited number of cash crops, such as cotton and tobacco. It seems likely that a similar situation will persist in other marginal, largely rain-fed areas, where much of the focus is and will likely remain on the production of food crops for own consumption. While some innovative models for harnessing the power of private sector research for the benefit of poor farmers have recently been suggested, to date these have not been tested in any substantive way.⁷⁵

Third, while the role of farmers in technology adaptation at farm level is now well appreciated, it is perhaps unrealistic to expect that poor people will be both motivated and able to devote time and other resources to the fine-tuning of technology. This may be particularly the case in situations where farming is only one amongst several sources of income.⁷⁶

In other words, the regions where rural poverty is deepest and most persistent –including Africa – are the least likely to be able to provide the agricultural technology whose availability is assumed by those promoting the prod-pov consensus. Without this technology, there can be little productivity enhancement. What, then, is the real basis for promises of productivity-driven poverty reduction in either the short or the medium terms?

Even if we grow it, will we have a market?

The last two decades have seen major restructuring of the global agri-food system. Some of the salient characteristics of this restructuring are an increasing concentration of power among a relatively small number of transnational firms; commodities and their components increasingly seen as globally substitutable inputs for food manufacturing; and a rapid expansion in South-to-North trade in fresh fruit and vegetables. Another important development has been the changing locus of regulation within the agri-food system, from national governments and interstate organisations to the private sector and other third party organisations.⁷⁷ This shift, driven in large part by the demands of food retailers in the developed world, represents another significant change in the exercise of power within the food system.

Finally, in recent years there has been much interest in what has been called the 'supermarket take-off' throughout the developing world, including Africa.⁷⁸ A growing body of research shows that supermarkets in the developing countries are no longer serving only urban and upper class customers but are rapidly penetrating all segments of food marketing.

All of these developments are likely to pose serious challenges to family farmers. Faced with such challenges, the classic response would be to seek to become more competitive by improving efficiency or quality. Alternatively, there is the option of developing and exploiting higher value niches within the market. The development of non-traditional export chains such as fresh vegetables from Africa to Europe are an example of this latter response, as are Fair Trade and other social/eco labelling schemes.

Can initiatives such as these benefit large numbers of family farmers? Evidence from Kenya indicates that while the export horticulture sector began with significant inputs from family farmers, much production is now centralised and under the control of integrated companies.⁷⁹ While jobs are being created, these are more likely to be for farm labourers and women working in pack houses than for family farmers.⁸⁰ On the other hand, while some producers and communities seem to gain from schemes such as Fair Trade, so far only a very small minority of family farmers,

Table 6. Examples of 'small-farmer' engagement with supermarkets.

Company	Country	Business	Mechanism for control and compliance	Numbers of smallholders involved	Support structures
Alice/South Africa		FFV producer group supplying supermarkets.	Out-grower scheme; EUREP-GAP certification within two years.	300-400	Public-private partnership.
TOPS / Thailand		Supermarket chain	Preferred suppliers with national public certification.	500-600	Affiliation with input supplier; public-private partnership.

Source: Boselie *et al.*⁸²

even in key Fair Trade commodities such as coffee, tea and cocoa, have been able to participate.

The growth of supermarkets in the developing world poses another potential problem for family farmers. Whether they are wholly owned subsidiaries of firms based in the North, regional firms, joint ventures, or national companies, modern supermarkets work to the same basic logic of standardisation, cost reduction and logistic efficiency. The experience in the UK and elsewhere has amply demonstrated the difficulties that smaller-scale farmers have in successfully supplying supermarkets. Is there any reason to think that family farmers in the developing world will be any more successful? At risk, of course, is the access that family farmers have to their own domestic markets, without which the link between productivity enhancement and poverty reduction will be very tenuous indeed.

Boselie *et al.*, studied two successful examples from South Africa and Thailand of small-farmer engagement with supermarkets (Table 6).⁸¹ They concluded that in these cases six factors underpinned the successful outcomes:

1. The producers worked co-operatively and were tightly coordinated.
2. The supermarket or supplier played an active role in organising the producer groups, providing technical expertise or physical inputs.
3. Access to electronic communications technology.
4. Produce was chilled or rapidly delivered to a chilled facility.
5. Producers had to supply high-quality produce on a consistent basis.
6. Public-private partnerships.

On the other hand, Schwentesius and Gómez studied a lime growers' co-operative that tried and ultimately failed to supply supermarkets. They concluded that "it was ... relatively difficult to address the research question of whether small growers benefit from sales to super-markets, simply because it was difficult to find many small growers who were selling (fresh fruit and vegetables) to supermarkets – a research finding in itself."⁸³

In relation to Latin America, where supermarkets are already the dominant force in food retail, Reardon and Berdegué propose four elements of a basic policy position:⁸⁴

1. Accept that supermarkets are here to stay.
2. Recognise that supermarkets can be engines of market development.

3. Worry about the implications of supermarket dominance in terms of potential exclusion of small firms and farms.
4. Help these small firms and farms to meet the challenges of supplying supermarkets where possible; and help develop alternative markets where it is not.

Clearly, effective organisation will be absolutely essential if family farmers are to supply supermarkets successfully. We will return to this point, as well as the challenge of developing alternative markets, in the last section.

Intensification, fertiliser and energy prices: what happens when the price of oil skyrockets?

The prod-pov consensus assumes that productivity growth can be realised by family farmers without putting into further jeopardy the natural resource base on which they depend. In other words, the whole proposition rests on the assumption that profitable and sustainable intensification trajectories either already exist, or can be identified in the short term.

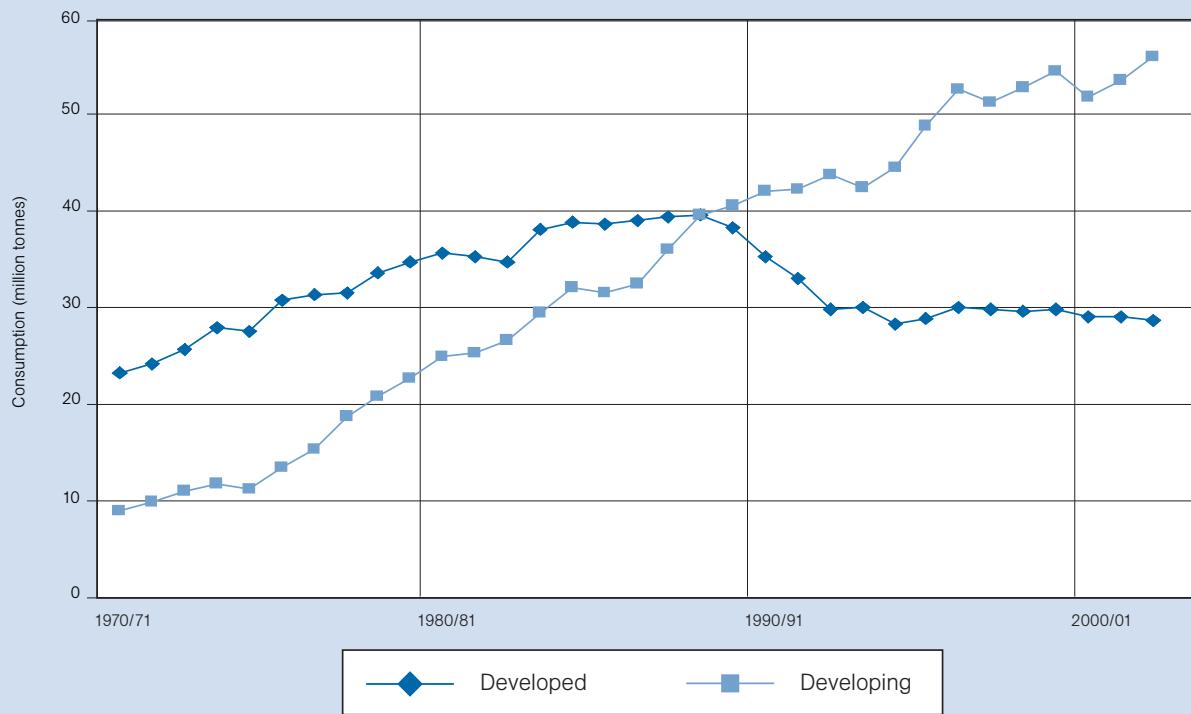
If we go back to the framework of Wiggins and Proctor referred to earlier, we might conclude that it is only in Peri-urban and Middle-countryside areas with good natural resources that such sustainable intensification trajectories will be needed. On the other hand, as people will clearly continue to live and farm in the other areas, some of which, by definition, have limited natural resource endowments and are prone to degradation, the need for sustainable production systems is clearly more general.

One key resource is soil, and the management of soil fertility is a fundamental part of sustainable crop production. Approaches to soil-fertility management on family farms in the developing world have evolved considerably over the last 50 years: from what was primarily a focus on the use of chemical fertiliser to boost crop production, researchers now highlight a broader range of approaches and nutrient sources. At least in the research community, the value of integrated nutrient management – “the judicious manipulation of nutrient stocks and flows”⁸⁵ – is now widely accepted. Nevertheless, chemical fertiliser is still the bedrock of soil-fertility management in many farming systems and most intensification trajectories. As a result, nitrogen fertiliser use in the developing world continues to increase rapidly (Figure 2).

In some situations, and particularly the Green Revolution areas of Asia, fertiliser use is well entrenched and fertiliser intensity (i.e. the rate of application in kg/ha) is already relatively high. In contrast, in much of Africa, overall intensity of fertiliser use is still very low (Table 7). Averages such as these hide considerable variation among countries, and as Crawford et al., demonstrate, some 15 countries in Africa “registered rapid growth in fertiliser intensity, albeit from small initial levels in the early 1990s”⁸⁷. In Africa, some 40 per cent of all fertiliser is applied to maize and an additional 20 per cent to other cereals and pulses; however, the intensity of application is generally higher on tobacco, sugar and cotton, and lower on cereals (including maize).⁸⁸

The common explanations for low fertiliser use in Africa include high costs, a low proportion of irrigated land, a predominance of traditional crop varieties that are not fertiliser responsive, and low population density (i.e. relative land abundance). A recent study by the Fertilizer Development Center (IFDC) showed that the retail price of urea in Nigeria, Malawi and Zambia was on average 46 per cent higher than in the USA.⁸⁹ Tellingly, the cost from arrival at the port to the point of sale was on average 5.5 times higher in the three African countries. It is also important to note that these figures do not take account of the cost of transportation from the point of sale to the farm, which can also be considerable. In part, based on these higher costs, Anderson hypothesised that in Africa many ‘improved’ agricultural technologies, including the use of inorganic fertilisers, are actually not more profitable than existing practice and entail enough low-grade risk to make them unattractive.⁹⁰ In addition, because much of the data are not representative or relevant, “there is a systematic overstatement of the extent of responsiveness of crops to applied fertilizer in Africa, relative to what is achievable under most farm conditions.”

Figure 2. Nitrogen fertiliser nutrient consumption.



Source: van Dam using data from the International Fertilizer Industry Association.⁸⁶

Table 7. Fertiliser use intensity (kg of fertiliser nutrients per ha of arable land).

Region	Fertiliser intensity (kg/ha)
Africa, south of Sahara	8
Latin America and the Caribbean	90
North America developed	100
South Asia	114
East and Southeast Asia	131
European Union	208

Source: FAO; YEAR 2001.

The need to increase crop productivity is central to the prod-pov consensus and it is assumed that in many situations increased fertiliser use will be essential to achieve this goal. The prod-pov policy prescriptions that are expected to promote fertiliser use are improved transportation infrastructure and better functioning input markets (to reduce the cost and improve timeliness of availability); improved credit provision and risk management strategies; and improved technology (fertiliser-responsive crop varieties and management strategies).

Petroleum products are the feedstock for nitrogen fertiliser production. This fact, combined with the relatively high cost of fertiliser, and generally low levels of fertiliser-use efficiency, means that in places like Africa the economics of fertiliser use will be particularly sensitive to rising energy prices. In other words, if the 'peak oil' scenarios that have been projected by some analysts come to pass,⁹¹ and oil prices increase significantly, then the very family farmers whom the prod-pov promoters seek to help may be the most seriously affected. Thus, in the face of rising energy prices, the applicability and sustainability of productivity enhancement based on increasing inorganic fertiliser intensity cannot be taken for granted.

It is certainly true that there are many alternatives to inorganic fertiliser. In some places the use of animal manure, agro-forestry, crop rotation, legumes, living mulch, compost, and other soil-fertility-enhancing technologies are part of traditional practice, in other situations they have been actively promoted for use by family farmers.⁹² Here it is important to note that one critique levelled at public-sector agricultural research is that it is generally resistant to innovations that challenge conventional wisdom or that did not originate from within the research establishment. Organic farming is a good example, as is the ongoing and quite heated debate around the System of Rice Intensification (SRI).⁹³ For this reason, some argue that we are not yet in a position to know the real potential of these alternatives to inorganic fertiliser.

Nevertheless, it has not yet been clearly demonstrated that, over a variety of agro-ecologies, these alternative technologies will support the high level of productivity enhancement that underpins the prod-pov consensus (for example, for organic coffee;⁹⁴ for SRI;⁹⁵ and for low-external-input farming in Kenya⁹⁶). Further, as these are predominately biological technologies, their use is often highly context specific, which means that they must be actively adapted to particular agro-ecological and socio-economic conditions. While much of the responsibility for local-level adaptation must ultimately be carried by the farmers themselves, these technologies clearly imply an even greater burden for national agricultural research.⁹⁷ As noted above, however, it is precisely at this level of local adaptation that the national agricultural research systems face their greatest challenge. Significant progress on this front is unlikely without radical change in the organisation, staffing, management and funding of agricultural research.

For many, climate change will make successful family farming ever more difficult

It goes without saying that manifestations of climate – for example, rainfall patterns, drought and flooding – affect family farmers in the developing world on a daily basis. How the events observed today are linked to longer-term processes of climate change remains unclear. However, there can be no question about the fact that the medium- to long-term outlook for family farmers is clouded by the threats associated with climate change. While projections of the extent, timing and impacts of climate change are still imprecise, there is agreement that it is a matter of when not if, and that the poor in the developing world are likely to suffer disproportionately.⁹⁸ The strong link between poverty, rural areas and engagement in agriculture that was cited earlier partly explains this disproportionate burden.

In relation to crop production, the key impacts associated with climate change are likely to be through air temperature, rainfall patterns, atmospheric CO₂ levels, temporal and spatial distribution of extreme events, and sea level change. In some situations higher CO₂ levels, more rainfall and higher temperatures may have positive effects on the growth and productivity of some crops. Elsewhere, drought and higher temperatures will have negative effects. Given the continued uncertainties about climate change, and the potential for complex, interacting effects on crop production, projections of impacts on agriculture in the developing world can only be indicative.

The literature on the likely effects of climate change on agriculture is large and cannot be reviewed here in detail. Nevertheless, some recent papers illustrate the direction of the latest thinking. Zhao et al., reviewed projected impacts of climate change on agriculture in the humid and sub-humid tropics. They suggest that while the global economic impacts of climate change on agriculture are expected to be relatively minor (because of offsetting gains and losses), “the adaptive capacity of human settlements in Africa and Latin America is low and vulnerability is high”. More specifically, agricultural productivity in lower latitude and lower income countries is more likely to be negatively affected. This conclusion points again to the disproportionate effects on the poor referred to above. These authors also suggest that increasing climate variability is likely to be more important than change in average climate, and highlight the fact that all International Panel on Climate Change (IPCC) assessments suggest that climate variability and climate change (primarily droughts) will generally have significant impacts on almost all farming systems in Africa.⁹⁹

In a similar review of likely effects on the arid and semi-arid tropics, Sivakumar et al., suggest that overall climate change and attendant impacts on water resources will add “additional layers of risk and uncertainty to an agricultural system that is already impacted by land degradation due to growing population pressure”. They go on to note that while farmers in arid and semi-arid areas have, over many years, developed strategies to deal with ‘natural’ climate variability, the impacts of climate change have not been factored into these strategies.¹⁰⁰

Jones and Thornton undertook a very different type of study that nevertheless points in the same direction.¹⁰¹ Using a series of high-resolution methods and a process-based crop growth model they simulated maize yields in Africa and Latin America to 2055, and postulated three major types of response to climate change:

1. Maize yields increase.
2. Maize yields decrease, but to an extent that can be readily handled by breeding and agronomy.
3. Maize yields decline “so drastically that major changes may have to be made to the agricultural system, or even human population may be dispersed”.

By 2055, because of temperature increases and rainfall differences, in nearly three-quarters of the countries they studied maize yields were projected to decrease.

However, they go on to make two key points:

1. “The aggregate production impacts of possible future climate change to 2055 on smallholder rainfed maize production in Latin America and Africa are comparatively modest” – a decline of around 10 per cent – and, “it is reasonable to expect this level of decrease to be compensated for by plant breeding and technology interventions.”
2. “The aggregate results hide enormous variability. In some areas increased yields may allow intensification of agriculture and concomitant increase in rural wealth. However, in areas where a yield reduction of 1 ton or more is expected, considerable disruption to rural life may occur.”

Finally, they suggest that it is unlikely that other staple crops – including common beans that are a particularly important source of dietary protein in some areas – will behave as tolerantly (as maize) under climate change.

It is hard to escape the conclusion, even accepting all the uncertainty around the exact timing, location and magnitude of climate change effects, that the context for many family farmers, and particularly those in marginal areas, is likely to become ever more challenging. In the best of circumstances, technology developed through agricultural research may help to mitigate some of these negative effects. However, given the other not insignificant challenges facing family farmers, and the limitations of agricultural research highlighted above, it is probably fair to conclude that climate change will act to reinforce other dynamics already observable in rural areas, including migration and diversification. Greater climate variability may affect people’s willingness and ability to respond to market signals for agricultural products and their motivation to invest in intensification, particularly in areas without irrigation.

Voting with their feet: farming is just not cool

Implicit in the pro-pov consensus is the idea people in the developing world –particularly young people – will be content to continue to live in rural areas and build their livelihoods around agriculture. There is, however, good reason to be sceptical of this assumption. It is well recognised that in many parts of the developing world young men and women, and particularly those with some formal education, have been turning their backs on farming for many years. The basic economic argument is that migration results when the financial rewards from farming are less than those associated with other activities. But clearly the exit from farming is not just about low wages: indeed young people in Africa have

continued to join the flow of rural-to-urban migrants despite evidence that by the late 1980s urban-rural wage differentials had nearly disappeared,¹⁰² employment opportunities in urban areas are often limited and living conditions precarious. This again highlights Cohen's observation that in Africa (and contrary to most historical experience) urban migration and urbanisation more generally have been de-linked from urban economic growth, and points to the role of other factors such as differential access to social services in migration decisions.¹⁰³

Another factor that has long been underscored in the rural-urban migration is the attraction of the 'bright lights' of the cities. We can hypothesise that with the growing presence of the media in rural areas (TV, films, music, advertising), and the ever-extending reach of tourism, this attraction should be stronger today than ever. In the context of globalisation, the attraction will go beyond the nearest town of national capital, and extend to a global suite of products, brands, images, lives, lifestyles, and locations.

While clearly not realistic or attainable by most rural youth, these globalised aspirations provide a powerful point of focus that is clearly non-local. Specifically, this process of the globalisation of youth aspirations is likely to mean that familiar, local figures (mother/father; pastor/imam; uncle/aunt; teacher; master farmer etc) lose much of their previous power to guide, inspire and motivate. In other words, compared to Premier League football stars or pop music stars, these traditional 'local heroes' become increasingly irrelevant.

We are suggesting, as has Rigg that globalisation of aspirations will increasingly lead people to leave rural areas or at least to disengage from agriculture. In Rigg's words:

"Education, newspapers, radio and television, and consumerism more generally have profoundly altered the way that rural people think about work, farming and their – and more particularly, their children's – futures. Rural existences are becoming almost as monetized in countries like Thailand, Malaysia and Indonesia as are urban lives. Farming has become, often in little more than a decade, a low status occupation to be avoided. This view has a marked generational component: it is younger people who most urgently and fervently wish to build futures that avoid farming."¹⁰⁴

The central problem is that there is a major disconnect between aspirations of rural people and local enterprise ecologies: while the aspirations may be increasingly universal, it is impossible for rural people in the developing world to achieve them via their local (rural) economies, and via family farming in particular.

While the orthodox response is that agricultural wages must rise so that they are competitive with urban wages, it seems likely that the issue is not simply about wage differentials. Clearly, poor access to social services in most rural areas is a major problem. In addition, there are other intractable problems associated with agriculture (for example, it is hard, dirty, manual, low-status, and it is just not cool) that will over-ride an apparently rational analysis of income potential, food security and the like (just as is the case for many of today's migrants). At the extreme, we are hypothesising that, at least for educated rural young people, the opportunity cost of time is essentially their perception of their potential earnings in Lagos, Bangkok, London, Paris, or New York (the fact that their perceptions may be widely inaccurate is quite irrelevant).

Work with commercial tomato growers in Ghana illustrated a less extreme scenario, which is, however, equally problematic for the view that youth will remain engaged in agriculture. Here, young rural men temporarily engaged in small-scale, intensive tomato production in a highly instrumental way. For the majority, their goal was to disengage from farming¹⁰⁵ and they used their not-inconsiderable profits to build houses, get married and set themselves up in trading – but seldom to invested in agriculture.¹⁰⁶ While it can be argued that their investment in the rural economy will be beneficial to those remaining in farming, the picture that emerged from this work was of a short-term, 'quick-money'¹⁰⁷ approach to farming that raises important questions in relation to environmental management and sustainability.

In this light, we can return to the discussion of exit strategies that within the prod-pov consensus is usually seen in terms of providing viable alternatives for those who are unable to undertake or benefit from productivity-enhancing farm intensification. The general assumption is that it will be only poorer and otherwise disadvantaged rural residents who will need these strategies. What we are suggesting, however, is that some of the very people who ought to be the basis of a productivity-driven rural transformation – those who are young, educated and motivated – may be the least likely to remain in rural areas, with their own mass-exit strategy being the logical outcome of their rising aspirations. What would their exit mean for the dream of a dynamic agricultural sector based on family farms? How would their exit affect the expectations for rural poverty reduction that the prod-pov consensus places on the shoulders of the next generation of family farmers?

Perhaps all that can be said at this point is that if rooting a livelihood in family farming is already challenging, it can only become more so as the effects of higher energy prices, globalisation, and climate change take hold. In order to get ahead, those left farming the land will need to actively identify and probably adapt technology, organise, respond to national and global markets, innovate on the institutional front, and much, much more.

Without the full engagement of the next generation of young people, this seems like a very tall order indeed. This raises a question: what effects will significant progress toward MDG 2 ('Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling') have on the life aspirations and choices of rural youth? This question may be particularly important in relation to Africa, where a focus on improving girls' education has the potential to bring fundamental change to those agricultural systems that are currently so heavily dependent on women's labour. Studies from throughout the world have indicated a generally positive link between human capital (education) and migration.

We do not wish to imply that continued or even increased migration out of rural areas will mean the end of agriculture. Indeed, rural out-migration may result in real economic opportunities for those who remain. For example, depending of who migrates and in what circumstances, there may be opportunities for the enlargement and/or consolidation of farms, and for increased levels of specialisation. Depending on the rate of migration, rural wage rates may also increase. These possibilities point to a potential positive link between migration and the transformation of family farming. Thus, while out-migration may play a role in allowing productivity gains in some family farms, this suggests that such productivity gains may be associated with less broad-based poverty gains than has been suggested.

- The implications of high levels of agro-ecological and socio-economic diversity.
- The ongoing restructuring of the global agri-food system, and the potential implications for family farmers' access to their own domestic markets.
- The ability of public-sector agricultural research to provide the agricultural technology required to support widespread productivity gains, particularly in rain-fed areas.
- The robustness, in the face of rising oil prices, of an agricultural-intensification strategy dependent on inorganic fertiliser.
- The medium- and long-term implications of climate change.
- The assumption that young people in the developing world will be content to live in rural areas and construct their livelihoods around agriculture.

Is this to imply that family farming will have no role to play in rural poverty reduction, or that raising the productivity of family farms will not be an important mechanism for poverty reduction for some people in some areas? No. Is it to say that the thinking behind and the agenda associated with the prod-pov consensus are without merit? No. However, it does seem likely that the prod-pov consensus, as it is being promoted in some quarters, is directly and immediately relevant only to some areas

and some people. While we might also expect important indirect poverty effects from agricultural intensification in these relevant areas, even taking these into account, vast areas and many millions of poor, rural residents will likely be left untouched by these policies. Thus our conclusion is that while increasing the productivity of family farms can play an important role, poverty reduction on a mass scale, particularly in Africa, will require a more comprehensive and integrated approach.¹⁰⁸

Towards a new policy and action agenda

The analysis presented in this report raises questions about the prod-pov consensus and its ability to deliver broad-based poverty reduction, and specifically about:

Implications for policy and action

The longer-term vision

Ultimately, the achievement of even the relatively modest goals for poverty reduction enshrined in the MDGs will require fundamental shifts in the way that economies are organised at local, national, regional, and global levels. Some of the most important of these shifts include:

- The establishment of peace, democratic accountability, and political and economic stability as a prerequisite for broad-based and sustainable poverty reduction.
- A recognition that global economic growth is a relatively inefficient means of delivering poverty reduction.¹⁰⁹
- An approach to debt relief that takes explicit account of impacts of debt repayment obligations on the ability of debtor countries to deliver the basic set of human rights to their citizens.¹¹⁰
- Reform of the WTO, and the world trading system more generally, so that developing countries are no longer systematically disadvantaged.
- Reform of the governance structures of the international financial institutions so that they better reflect the interests of the developing world.¹¹¹

In the nearer term

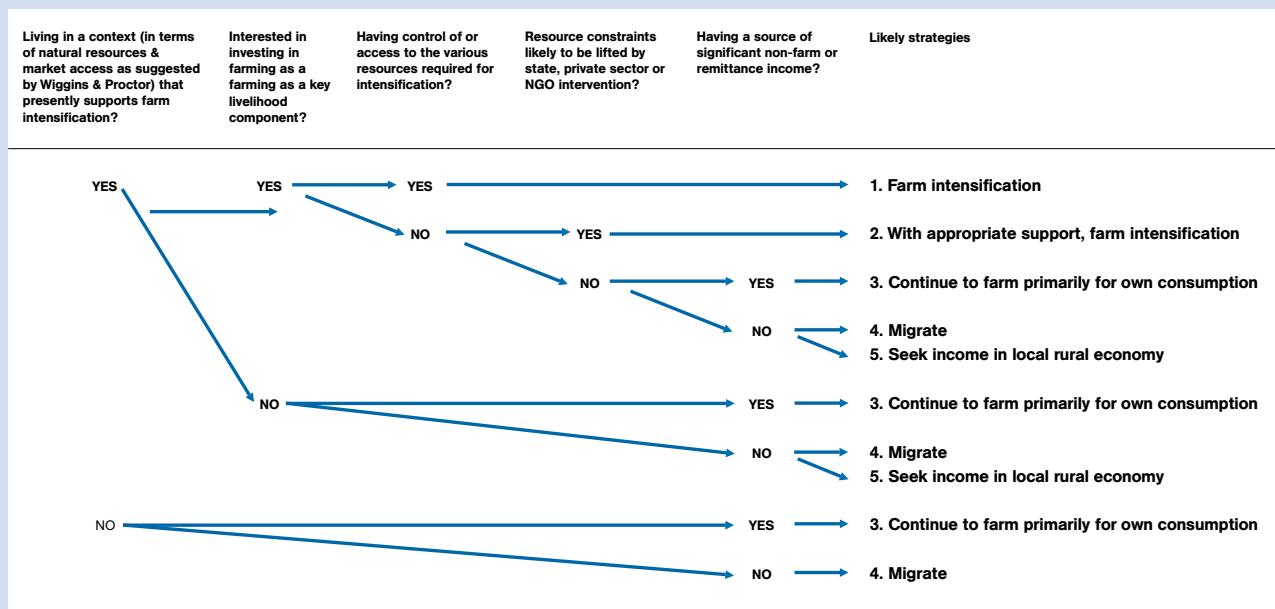
However, there is also much that can be done in the near-term. Incorporating some of the key factors that were highlighted in the earlier sections of this report, Figure 3 suggests some of the main strategies that we might expect rural people in different contexts to adopt. It highlights again the range of strategies relevant to rural people as they struggle against poverty and the fact that farm intensification is only one amongst these. This figure should be seen as a heuristic, illustrating general relationships between key factors and likely strategies. It is not meant to guide decision-making or strategy vis-à-vis particular areas or programmes.

First, to support Strategies 1 and 2, we consider those family farmers who may be in a position to increase the productivity of their farming activities.

In order for Strategies 1 and 2 to yield the desired outcomes, depending on the particular context, some or all of the elements associated with the prod-pov policy agenda – including investment in infrastructure, strengthening of agricultural research and extension, reform of input and output markets – will be required. This is already a very broad agenda, and as previously indicated, it will require long-term, concerted and co-ordinated action by governments, donors, the private sector, NGOs, and rural people. In addition, economic policies that support sustainable growth in the urban and industrial sectors will be required in order to boost demand for locally produced agricultural products.

We have already expressed doubt about the ability of agricultural research to deliver the innovations that family farmers will require to enhance their productivity. There are two sides to this. The first relates to the way that agricultural research is conceptualised, organised and pursued. Specifically, public-sector agricultural research that aims to serve poor, family farmers needs to move from a research

Figure 3. Likely strategies of rural people vis-à-vis farm intensification.



stance to something more akin to the private sector understanding of 'new product development'.¹¹² Such a shift would have fundamental implications for how research is prioritised, organised, managed, monitored and evaluated (Box 2).

The second concern in relation to agricultural research is the need for a significantly stronger focus on what can be called the 'sustainable agriculture agenda'. Earlier in this report, we highlighted the link between productivity enhancement and the use of inorganic fertiliser, and the challenges posed by increasing petroleum prices. It is true that both the national and international research systems have done and continue to do some research on productivity enhancement that is not dependent on fertiliser. The knowledge generated from these disparate activities, however, remains poorly integrated and largely inaccessible.

To begin to rectify this situation, a concerted effort is now required to address the following questions:

- What is extent of the knowledge base supporting sustainable production systems and particularly those not dependent on inorganic fertiliser and pesticides?
- Where is relevant research being carried out, and by whom?
- What are the factors constraining a greater focus on these alternatives by the agricultural innovation system?
- In the light of the above, how best can the useful knowledge and technology that farmers will need to increase their productivity in the face of rising energy prices be generated and extended?

In effect, what is required is a detailed, co-ordinated, long-term action agenda to support research and extension focused on the enhancement of family farm productivity that is not dependent on inorganic fertilisers. More broadly, agricultural research must begin to take greater account of how limits on key resources, such as water, and in the longer term, climate change, will impact on the productivity agenda. For example, how viable is a development vision based on a significant increase in the area of irrigated land? And, if expansion of irrigation is not possible, what are the implications for those who are expected to farm their way out of poverty?

Box 2. Agricultural research to support family farmers: key areas for change.

1. Redefining the organisational mission, strategy, objectives, and outputs explicitly in terms of innovation or new product development.
2. Distinguishing between and clarifying the respective roles of the research and product development functions, with research being defined as 'in the service of' product development. This would require fundamental change in the culture and ethos of most existing public-sector agricultural research organisations.
3. Introducing, at a senior level, personnel with experience in successful new product development, particularly in relation to the pre-development phase and the management of the innovation process. At its most radical, this might mean that the 'director of research' reports to a 'director of new product development'.
4. Thinking more systematically about potential users, using methods and approaches for market segmentation, and from market research more generally.
5. Working within a more flexible and dynamic organisational structure, where competencies are regrouped in time-bound, new product development teams, that are tasked, for example, with delivering a particular design specification.
6. Making the design function much more explicit, with particular emphasis on the use of the design specification to more effectively target, manage and evaluate the innovation development process. In addition, much greater attention would be given to information design to improve the quality of the user-technology interface.
7. Modifying the indicators of organisational, team and individual achievement to reflect the primary goal of providing useful products and technologies to specified groups of users.

Source: Sumberg and Reece (2004)¹¹³

Now we shift to those family farmers who are positioned to engage with supermarket supply chains serving their domestic markets. Here strong farmers' organisations are likely to be critical for their ability to deliver the quantities and quality of goods required and to bargain effectively with other agents in the supply chain. There is some evidence that such organisations, supported and strengthened by public-private partnerships, can provide the logistics, co-ordination and quality control that the supermarkets require.¹¹⁴ However, whether family farmers will be able to engage successfully with supermarket supply chains over the long-term will depend on a number of other factors. For example, the development of the export horticulture sector in Kenya over the last decade demonstrates how the logic of supermarket supply chains can result in the marginalisation of smaller-scale producers.¹¹⁵

Finally, we turn to those family farmers who either cannot or choose not to engage with formal, food supply chains such as supermarkets. Here productivity enhancement may rest on opportunities to create new, or strengthen existing, direct links with local consumers, and in this context the growing literature on short food supply chains (SFSCs) should be of considerable interest. The essence of an SFSC is that the 'distance' (in terms, for example, of spatial distance, the number of steps or intermediaries in the chain and/or the information transmitted with the product) between the producer and the consumer is reduced. Marsden et al., refer to three types of SFSCs:¹¹⁶

1. Face-to-face (for example, farm shops and farmers markets).
2. Spatial proximity (for example, shops selling locally produced food)
3. Spatially extended (for example, 'locality' food, certified Fair Trade or organic food) where products are 'information laden' and can thus create bonds between producer and consumer.

Historically in the developing world, interest in shortening food supply chains has primarily focused on either collective marketing to bypass middlemen in domestic markets or more recently, engagement in alternative, information-laden channels such as Fair Trade, primarily for export markets. It is now time to explore and exploit the full range of these SFSC models for use in the developing world, to help family farmers maintain access to markets, create new markets and capture a greater percentage of the final value of their produce.

Increasing urbanisation and a growing middle class are two factors driving the supermarket revolution across the developing world. These factors also open the way for family farmers to exploit SFSCs. Indeed, recent experience casts doubt on a longstanding assumption that in most of the developing world there is insufficient purchasing power and a lack of interest amongst consumers to support initiatives designed explicitly to support or provide fair prices to family farmers. For example, successful schemes based on the principles of Fair Trade have been established in urban areas in Mexico.¹¹⁷

Another closely related manifestation of the potential for new alliances between producers and consumers is the recent establishment of what have been termed 'Participatory Guarantee Systems' (PGS). These schemes bring groups of farmers and customers together to establish and implement systems that guarantee the origin and quality of sustainably produced products. As the name implies, PGSs involve an active verification component, carried out by the farmers themselves or by specially appointed staff or committees, and a label that allows local customers to identify more socially and environmentally responsible products within the market place. Having first developed in Brazil, variants of PGS have spread on a small scale to Africa and Asia. A preliminary evaluation of these schemes indicates that they help to secure access to markets for family farmers, strengthen relations between producers and local consumers, raise the status of farming, and stimulate local economic development.¹¹⁸

Thus, initiatives such as PGS appear to have real potential, not only for securing market access and thus supporting farm productivity enhancement, but also for strengthening the processes of locally driven development. However, before promoting PGS more widely, four questions must be addressed:

1. What are the conditions that are most likely to support successful development and implementation of PGSs?
2. How can the direct and indirect benefits of PGSs be maximised, for producers, consumers and their larger communities?
3. What does the experience to date say about the flexibility and adaptability of PGS?
4. How can the lessons learned so far be most effectively brought to the attention of producers and consumers in the developing world?

All interventions that aim to support productivity enhancement must take explicit account of gender. Some of the principle concerns are well known: as a matter of course, women farmers must have access to information, to credit and other inputs, and to the organisations through which markets are accessed and politics influenced. As shown by years of accumulated experience, these things are easier said than done. At the same time, as indicated earlier in this report, it is critical to avoid the trap that associated women's engagement in farming first and foremost with a food security agenda. Such a narrow view of women's future engagement with farming will do nothing to help them achieve their broader livelihood goals.

Second, to support Strategy 5, we consider what can be done to otherwise boost rural economies in those areas where agricultural intensification is viable.

Central to the prod-pov consensus is the proposition that, for many areas, significant investment in infrastructure, particularly for transportation and irrigation

infrastructure, will be required to support agricultural intensification. Such infrastructure development, if undertaken using labour-intensive methods, provides a potential opportunity to gain a triple benefit from the original investment. The first benefit is in directly supporting the intensification process. The second is in providing temporary cash transfers to poor rural residents who may be unable to participate directly in the intensification process. The third benefit is the stimulation that such an approach will give to the local economy, principally by increasing demand for locally produced goods.

There is a long history of labour-intensive infrastructure development and maintenance dating back to some of the earliest food-for-work programmes.¹¹⁹ Labour-intensive infrastructure development is no panacea as McCord has shown from recent experience in South Africa;¹²⁰ nevertheless, this experience should now be re-evaluated so that all lessons relevant to the strategic use of labour-intensive strategies to support local economic development can be identified and disseminated.

In situations where labour-intensive infrastructure is not appropriate, other direct-cash-transfer schemes may provide an efficient way to bring the poor into the rural growth dynamic. Experience with these kinds of schemes is growing,¹²¹ and Oxfam has recently embarked on one such initiative in the poorest district in Ha Tinh province, Viet Nam. The eight villages in which the project will operate have around 400 households (out of 800) that live below the poverty line equivalent to \$13.30 per person per month. The project plans to give a one-off cash grant, equivalent to \$400, to each poor household, with the money being placed in accounts with both the husband and wife as signatories. Each household can use the money as they wish; the only conditions being that they do not use the money for illegal activities and that they record and report on how they used it and what impact it had on their lives. The obvious appeal of this approach is the relatively low cost of project implementation. The outcome of this and other similar initiatives should be watched carefully. Of particular interest will be any impacts on intra-household dynamics, and specific implications for gender relations and empowerment.

The importance of stimulating local demand local for goods and services cannot be overemphasised. **nef**'s experience working with disadvantaged rural and urban communities in the UK demonstrates that in many of these communities, the problem is not so much an absolute lack of resources, but the fact that these resources tend to be quickly drained away from the community. In other words, the local community is not getting the full development benefit from the resources it already possesses. In order to make this situation evident and to identify ways by which it can be addressed, **nef** has developed a series of participatory approaches and tools around local money flows (Box 3). These provide communities with new insights into the working of their local economy, and help them to identify opportunities and leverage points for change. We are not suggesting that these tools can simply be used in their present form without local adaptation. Rather, the point is that approaches that help people visualise and understand the ways in which money flows in their local economy, are potentially very valuable in increasing local economic literacy and positioning individuals and communities for positive action.

All such efforts to engage with new markets and strengthen local rural economies must be mindful of the special interests of rural women. As they increasingly engage with different actors and processes in the economy, attention must be paid to the protection of their existing rights and safety as workers; the establishment of appropriate social protection mechanisms to ensure that they do not lose out in the process of change; and strengthening their ability to engage directly in change for their benefit, for example, in their negotiations with those in positions of power.

Third, in relation to Strategy 3, we consider what can and should be done to support those who will continue to farm primarily for their own consumption.

This is likely to be quite a mixed group that might include older people who farm because it provides a focus to their lives; women whose spouses work elsewhere and who farm to supplement whatever money they receive; and those who, for

Box 3. Participatory approaches for the analysis of local economies.

Plugging the leaks: is a flexible tool for understanding what is going on in a local economy. At the heart of *Plugging the leaks* is the image of a leaky bucket. Like water being poured in, money entering a local area soon escapes if only a small proportion of it is spent locally. The *Plugging the leaks* process explores with a community how money enters an area, how it leaks out, and what action will plug those leaks. The result is a simple analysis that shows people how to strengthen their local economy and how to take action for lasting change.¹²²

Local Multiplier 3 (LM3): provides a measure of how much an organisation or initiative impacts on the local economy. LM3 takes its name from the Keynesian multiplier, which has been used since the early twentieth century to measure how income entering an economy then circulates within it. The theory is that a change in income has a multiplied impact on that economy. **nef** adapted this idea for use at the local level; the tool measures three 'rounds' of spending which are reflected in the name *Local Multiplier 3*. LM3 has been used across the UK to determine how to make the most of the money that is in a community.¹²³

whatever reasons, are unable to make the shift either to more productive agriculture or to the non-farm economy.

The options here are somewhat problematic. Poulton et al., suggest:

"Sustaining and indeed enhancing the ability of poor households to meet their food needs through own production, and the maintenance and protection of the natural resources they manage, requires intensification supported by public investment, just as in higher potential areas. Of course, the nature of the intensification will be different (for example, with greater emphasis on soil and water conservation, less on purchased inputs), as will the role of public support services (for example, greater emphasis on supporting common property resource management and different emphasis within livestock support services)."¹²⁴

However, such a strategy of 'intensification for enhanced food security' would also require investment – of time and effort, if not money – on the part of those who are perhaps least motivated and/or able to invest. This raises important questions about the potential returns to public investment and the poverty impacts associated with what might be only marginal improvements in food security.

Breaking this group into those most at risk and those who are not may be a first step. For example, women who farm to supplement the earnings of absent spouses may neither be interested in investing in agriculture nor in need of a safety net. On the other hand, there will be others, both women and men, who are unable to invest more in farming but who would derive real benefits from a safety net or social protection approach. This latter group must be of primary concern.

Finally, we briefly consider what can be done to support those who will migrate from their own rural areas (Strategy 4).

Depending on the context and individual circumstances, there will be people who see no future in farming or in their local rural economy. These people will continue to use the well-established mechanism of migration, either on a temporary or on a permanent basis.

What can be done to increase the likelihood that migration will result in pro-poor outcomes? First, it goes without saying that economic growth in the rural, urban and industrial sectors will be a prerequisite for the successful absorption of new migrants. Second, while studies of migration consistently demonstrate how migrants actively use social and knowledge networks, it is clear that these do not always provide the required level of support.¹²⁵ Given the importance of migration as a strategy, and the vulnerability of those who migrate – including increasing numbers of women – the state and NGOs should consider their potential roles in providing, for example, pre-migration training, information and advice, and support

to newly arrived migrants. The latter may be particularly important for those who migrate with their families. The objective would be help them to find appropriate housing, jobs, schools, medical services and the like, as quickly as possible and to avoid the pitfalls associated with joblessness and homelessness that are highlighted in much of the literature on homelessness.

Finally, there is also additional work to be done establishing safe and cost-effective systems by which money can be transferred between migrants and their home areas and vice versa.

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109 Throughout this report, we have highlighted the particular difficulties of Africa. It is both ironic and telling that while the deep and persistent poverty that characterises much of rural Africa sits at the centre of the problem addressed by the PROD-POV consensus, much of the associated policy agenda is wide of the mark. Why is this so? The PROD-POV analysis draws most of its key precedents and lessons from other times and other places (Europe, Asia...), and these are then presented as universal. Yet, we can observe in Africa historically unprecedented developments, such as sustained and massive urbanisation that is effectively de-linked from urban economic growth. This raises an important question: how much credence should be given to the PROD-POV's historical precedents and universal lessons in a historically unprecedented context?

110 Further, many of the essential prerequisites for sustained agricultural growth are not yet in place in Africa—peace and stability; reasonable governance and institutional environments; functional agricultural research etc. The fact that these pre-requisites are unlikely to be in place in the foreseeable future means that the 'general' expectations that are so central to the PROD-POV consensus are just not realistic for Africa. So, while Africa is at the centre of the problem analysis, its family farmers may be the least likely to be able to farm their way out of poverty.

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