

THE RURAL POOR

SURVIVAL OR A BETTER LIFE?

The choice between destruction of
resources and sustainable development



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Summary

This paper outlines the social and environmental reasons why the international development community should give higher priority to helping poor people, especially those in areas that are biophysically marginal or socio-economically marginalized. Sustainable rural development depends on successfully addressing the twin challenges of poverty and environmental degradation. There are 1.2 billion people living in extreme poverty, and of these, 900 million live in rural areas where they depend directly or indirectly on agriculture to survive. The paper gives a brief overview of rural development in the context of the Millennium Development Goals and *AGENDA 21*, which call for concerted action to address the problems of the rural poor and the limitations of their natural resource base.

Environmental degradation in rural areas in many developing countries has little to do with modern farming and intensive agricultural systems. Agriculture practised by poor people often depends on low-intensity systems in marginal areas. In many parts of the developing world, there is a vicious circle of falling farm incomes and resource depletion. Rates of land degradation and water depletion are an increasing threat to the future. Similarly, biodiversity is being lost at high rates. Appropriate agricultural intensification must be sought with the twin objectives of improved livelihoods and sustainable natural resource-management. This means greater productivity of land, labour, water and genetic resources – to raise incomes – with associated improvements in social, institutional and infrastructural support and market development.

IFAD's mandate is to enable the rural poor to overcome their poverty, and a durable rural poverty-reduction programme must include sustainable management of natural resources as an objective. This mandate depends on three strategic objectives: strengthening the capacity of the rural poor and their organizations, improving equitable access to

productive natural resources and technology, and increasing access to financial services and markets. Attention to the differing opportunities and constraints of women and men, and to sources of vulnerability and ways of increasing resilience, are overarching concerns.

IFAD's interventions support local communities in playing a key role in optimizing the use of natural resources and in increasing their access to assets, especially land and water. The challenge regarding access to technologies and knowledge is to develop approaches that boost both labour and land productivity. The focus on increasing access to markets and market linkages is even more critical for isolated, more risk-prone environments. The weakness of rural markets reflects problems of poor infrastructure and communications systems, quality standards, market information and reliable and timely supply. The aim of effective rural finance systems is to achieve institutional sustainability and outreach to the poor.

Such approaches may provide a way to enable the rural poor to overcome their poverty in an environmentally vulnerable world. This depends on effective solutions in partnership with rural people to the global challenges of poverty and the environment – by making sustainable resource management a critical element of their livelihood strategies.

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I. Introduction: the Rural Poor and Survival

Poor people preoccupied with surviving today do not have the liberty of providing for the future. Gaining food now is their major concern, not tomorrow's depletion of resources. There are 1.2 billion people living in extreme poverty, and of these, 900 million live in rural areas where they depend directly or indirectly on agriculture to survive. Thus rural poverty must be given priority if the Millennium Development Goals (MDGs) are to be met. Sustainable rural development requires resolution of the twin challenges of poverty and environmental degradation.

This poverty is a condition of low income and lack of assets. But it is also a condition of vulnerability, exclusion and powerlessness. Poverty reduction is about enabling rural poor women and men to transform their lives and livelihoods – and about supporting governments and civil society in creating the conditions that allow them to do so. IFAD's mandate is to enable the rural poor to overcome their poverty – via empowerment and towards sustainable management of resources. This is a route towards better prospects for both the people and their environment, and hence for future generations as well. This paper sketches out that route.

It begins with a brief overview putting rural development in the context of the MDGs and *Agenda 21*¹, followed by IFAD's strategy for sustainable poverty reduction and a review of commonalities and specificities across the regions of the developing world. The later sections consider the special challenges of rural development in marginal and risk-prone ecological zones, since many poor people have to struggle to make a living in these harsh environments. The common alternative is migration to join the growing number of urban poor.

¹ *Agenda 21* was adopted by the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992.

II. The Centrality of Sustainable Rural Development to Achieving the Millennium Development Goals

The World Bank has calculated that halving the proportion of people living on less than a dollar a day (from 29 to 14.5% of all people in low- and middle-income countries) requires a 3.6% annual growth in per capita income, nearly twice the rate of the past decade. Productive on and off-farm activities are critical to achieving such growth rates and to reducing poverty in rural communities. IFAD's *RURAL POVERTY REPORT 2001* states that increasing access to assets is crucial to broad-based growth and poverty reduction, that is, to **MDG 1: ERADICATE EXTREME POVERTY AND HUNGER.**

Poverty reduction requires empowering poor people to gain greater access to assets. Assets take many forms – human and social (education, knowledge, health, organizations), natural (land, water, forests, biodiversity), technological (information, farm production, processing and marketing methods), infrastructural (roads, communications, health and education facilities, housing) and financial (crop sales and off-farm revenue, investment and working capital, 'savings' in the form of livestock and stored commodities). There is strong complementarity and interaction among these asset categories, reflecting historical factors and cultural contexts.

Rural women are responsible for half of the world's food production and produce between 60 and 80% of the food in most developing countries. Despite this, in developing countries women own less than 2% of all land

and receive only 5% of agricultural extension services worldwide. A productive agricultural sector helps to promote economic opportunities for women, allowing them to build assets and improve family welfare – all essential to **MDG 3: Promote gender equality and empower women.** Conversely, gender equality is important to agriculture and rural development. This MDG and the eradication of poverty (**MDG 1**) provide the bases for achieving universal primary education (**MDG 2**), reducing child mortality and improving maternal health (**MDGs 4 and 5**). The HIV/AIDS pandemic and other diseases (**MDG 6**) extract a heavy toll on rural poor people.

Turning to the poverty/environment nexus – and to **MDG 7: Ensure environmental sustainability** – agriculture, forestry and fisheries are the primary interactions between people and the environment, especially regarding land, water and biodiversity use. There are, of course, two very different types of environmental problems: those pertaining to areas of the world that practise intensive agricultural systems and those associated with the low-intensity systems that are common in developing countries, especially those in marginal areas². The environmental issues that are linked to intensive agricultural systems – the swathes of intensively farmed land in industrialized countries and the areas of developing regions in which the 'green revolution' of the 1970s had its major impact – are generally quite different from those of the areas inhabited by poor people, which are often marginal with limited agricultural potential, and where a large proportion of IFAD's projects are focused.

Intensive farming operations sometimes involve excessive and inappropriate use of pesticides and fertilizers that disturb ecosystems and pollute the soil, groundwater and waterways. Many intensively farmed areas are also irrigated, which may give rise to other environmental problems, such as waterlogging and salinization/sodification of soil, and encourage water-related diseases affecting humans and livestock. But the less intensively farmed areas are faced with a different range of environmental issues, many of which have arisen as a result of the poverty of the people who farm them. The environmental degradation in rural areas in many developing countries has little to do with high-input modern farming systems.

² **Marginal areas: marginal lands and marginalized people.** The term 'marginal areas' denotes areas frequently exposed to one or more types of environmental stress. Examples are areas of generally low agricultural potential exposed to extreme temperatures that do not sustain crop growth; endure low and/or unreliable rainfall; have poor, shallow and/or infertile soils; and are steeply sloping and thus prone to erosion, with poor moisture retention. Areas are 'marginalized' because of inadequate infrastructure and weak enabling policies and institutions. Infrastructural constraints include poor road links to markets and lack of irrigation. Remoteness, low population density (and thus lack of labour), inadequate social and other services (education, public health, finance, market information, knowledge of new technologies, etc.) also marginalize areas. Indigenous people and other excluded groups inhabit many marginalized areas.

A great deal of deforestation and land degradation has occurred (including soil erosion and soil-fertility loss). This degradation is not driven by excessive intensification; it is driven by marginalization and associated farming of often unsuitable land. As more and more people seek to eke out a living in these areas, they expand their cropped area into forest and steep hillsides, cultivate land in unsustainable and erosive ways, and fail to replenish the soil fertility they deplete. This latter situation is common in Africa, because farmers are too poor to purchase or do not have access to the fertilizers that are key to maintaining yields and sustaining soil fertility.

The rates of land degradation and water depletion are an increasing threat to the future. Similarly, biodiversity is being lost at a high rate. In many parts of the developing world, there is a vicious circle of falling farm incomes and resource depletion. Sustainable agricultural intensification must be sought through continued research and development, with the twin objectives of improving livelihoods and natural resource management. This means greater productivity of land, water and genetic resources – to raise incomes – with related improvements in institutional and infrastructural support and market development. For example, the development of high-yielding cereal varieties beginning in the late 1960s is estimated to have preserved the equivalent in forests and grasslands of more than the combined total farmland of Brazil, Canada and the United States.

MDG 8: Develop a global partnership for development is crucial in confronting the complexity of these challenges. Partnerships are essential to: strengthen national and international policies, mobilize appropriate science and technology, maximize the synergy between productive and social sectors and services, strengthen institutions, and bring about a more open and equitable trading system.

The importance of sustainable agriculture and rural development is clearly recognized in *Agenda 21*, and United Nations Secretary-General Kofi Annan has identified five priority areas – WEHAB, for water, energy, health, agriculture and biodiversity – as the critical global challenges of the 21st century. The links of agriculture to the WEHAB priorities of water and biodiversity are outlined below:

Agriculture and Water

Agriculture dominates water consumption. The high consumption of water by irrigated agriculture is caused in part by suboptimal technologies, poor water-management practices and the degraded

condition of irrigation infrastructure. One of the major water-related challenges for agriculture is that water is an increasingly crucial and scarce resource in many countries, raising the possibility of conflict. The demand for water by other sectors is growing – which will require diversion of water from agriculture. In addition, agriculture-induced environmental problems are increasing in many countries, particularly in Asia. It is imperative that countries facing water scarcity develop mechanisms for improving the productivity of irrigated agriculture and overall management of water resources.

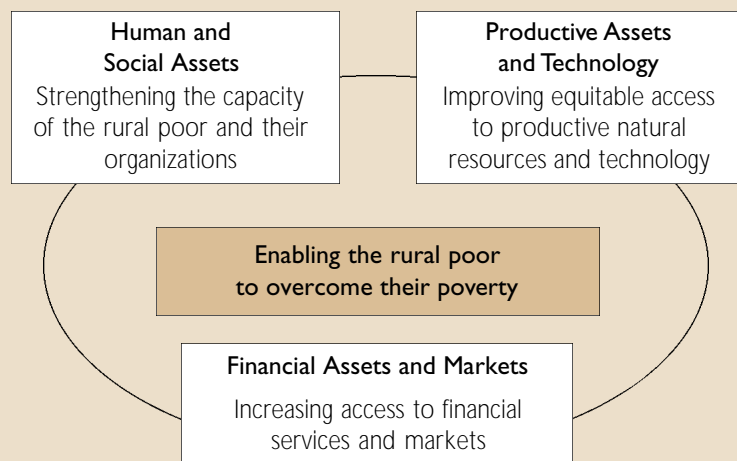
Agriculture and Biodiversity

Biodiversity and habitat destruction are the results of deforestation, loss of watersheds, over-fishing and poor management of ecosystems. These causes reflect political and social changes driven by a need for economic development to reduce poverty. Yet plant and animal species variation is essential in order to provide subsistence farmers with options for confronting their diverse and risky environments. And intra-species variation is critical to agriculture for conventional crop and livestock programmes.

In conclusion, to achieve the Millennium Development Goals, rural and agricultural development must be returned to the forefront of the global development agenda. Agriculture is central to stimulating durable rural growth, poverty reduction and sustainable natural resource management. Both WEHAB and the MDGs provide a unique opportunity to coordinate efforts and combine resources of a range of diverse development partners to achieve sustainable development and poverty reduction in the developing countries. Supporting and helping to accelerate progress in reaching these goals is the task of the entire United Nations system of which IFAD is a part.

III. IFAD's Strategic Objectives and Priorities

IFAD's aim is to work towards enabling the rural poor to overcome their poverty - as it is perceived by the poor themselves. This mandate is described in the *STRATEGIC FRAMEWORK FOR IFAD 2002-2006*. The Fund will concentrate its investments, research and knowledge-management efforts, policy dialogue and advocacy on the attainment of three strategic objectives: strengthening the capacity of the rural poor and their organizations; improving equitable access to productive natural resources and technology; and increasing access to financial services and markets. Attention to the differing opportunities and constraints of women and men, and to sources of vulnerability and ways of increasing resilience, will be overarching concerns. Helping the poor to make the best use of their limited assets and to develop unrealized opportunities is central to achieving these strategic objectives. Their attainment is also subject to equitable sharing of gains and environmental sustainability.



Strengthening the Capacity of the Rural Poor and their Organizations

This implies developing and strengthening organizations of the poor to confront the issues they define as critical; increasing access to knowledge so that poor people can grasp opportunities and overcome obstacles; expanding the influence the poor exert over public policy and institutions; and enhancing their bargaining power in the marketplace. IFAD works with many different types of poor people's organizations (e.g. traditional village and sub-village work groups, small self-help groups, water users' associations and farmer cooperatives). Building their capacities requires time. However, capacity-building is critical to effective poverty reduction: in its absence, investments in social and economic infrastructure will invariably fail to deliver sustainable benefits. IFAD will also work to strengthen the capacity of local and national governments, so they can be more effective in responding to the needs of the rural poor. This will involve developing and promoting processes that increase the accountability and transparency of rural service delivery within decentralized decision-making frameworks.

Improving Equitable Access to Productive Natural Resources and Technology

One of the most important factors leading to entrenched poverty is lack of access to natural resources such as land, water and forests. Their inequitable distribution is often derived from long-standing historical and cultural practices. The poor play a critical role in managing and conserving the world's natural resources, including its biodiversity. Where pressure on land and water is great, natural resource degradation has reached alarming levels. This is a major problem for the rural poor, who often live in environmentally fragile zones. Appropriate technologies and research to improve farm productivity by boosting returns to land, water and labour are essential. Across the developing world, rural poor women have a primary role in crop production and care of livestock. They engage in multiple economic activities that are critical to the livelihoods of rural poor households. They are responsible for providing for the food, water and fuel needs of their families. Efforts and resources to address gender inequalities by increasing the resilience of rural poor women are central to development objectives.

Increasing Access to Financial Services and Markets

Efforts to increase agricultural productivity can only be effective if they are linked to an appreciation of market potential and can draw on appropriate investment and working capital. Integrated approaches are needed along the full continuum of production, processing and marketing. Diversifying income sources is also necessary, either by producing and marketing non-traditional crops or by exploiting off-farm opportunities more fully. The agricultural support policies of the countries of the Organisation for Economic Co-operation and Development (OECD) are an important constraint on better market opportunities. Reducing tariffs for agricultural commodities and eliminating OECD agricultural subsidies and trade barriers against agricultural and textile products are important aims of the World Trade Organization negotiations. Assistance for rural financial services needs to focus on developing responsive rural finance institutions, with an emphasis not just on providing credit but also on encouraging savings. Rural finance is often essential in access to assets and technology adoption.

IV. IFAD's Programme

IFAD's country programmes are its main vehicle for improving the lives of the poor and learning lessons on what works and what does not work in fighting poverty. To build broad local ownership of the programmes it sponsors, IFAD works in partnership with others – borrowing-country governments, rural poor people and their organizations, and other donor agencies. Its focus on local development has given it a role in bridging the gap between multilateral and bilateral donors on the one hand, and civil society represented by non-governmental organizations (NGOs) and community-based organizations (CBOs) on the other. Increasingly, projects need to create effective links to the policy level, using the knowledge generated in a more catalytic manner. IFAD has a clear role to play in serving as an advocate for the rural poor in national policy forums until such time as their capacity is sufficient to be able to promote their own interests. Preparation and implementation of poverty-reduction strategy papers (PRSPs) and the United Nations Development Assistance Framework (UNDAF) are promising contexts within which IFAD can work with national and donor partners to promote pro-poor policies and investments.

IFAD and Poverty Reduction by Region

The IFAD strategic objectives described above were fashioned from an analysis of lessons learned from country programmes during IFAD's almost 25 years of experience in community-led rural poverty-reduction interventions. There are, of course, wide variations of critical constraints

among countries, but in the last year IFAD has synthesized lessons learned at the regional level in order to further operationalize its strategic framework. The table in Annex I summarizes the principal development themes by region, using the three strategic objectives as the framework for categorizing them.

The table in Annex I indicates that there is much commonality in delivering rural poverty reduction for the poorest sectors of the populations in different regions. That said, there is considerable diversity regarding the most effective approaches.

In Asia, where two thirds of the world's poor still live (despite impressive advances, especially in China and India), a considerable proportion of the chronically poor live in marginal agro-ecological zones. These include remote uplands and mountains, marginal coastal areas and erratically watered drylands. The rural poor include the landless, marginal farmers, indigenous peoples, pastoralists and coastal fishermen. Women are particularly subject to deprivation and lack of access to assets. The IFAD regional strategy emphasizes changing unequal gender relations in order to increase women's ownership and control of assets and their participation in community management affairs. A similar focus is given to tackling the political and economic marginalization of indigenous peoples, and indeed, to promoting development of diversified interventions such as rewarding groups for the provision of viable environmental services. Complex, risk-prone agro-ecologies call for close attention to sustainable agricultural technologies, based on decentralized participatory approaches to access to land and water, and to enhancing the productivity of staple foods in less favoured areas. Operationalizing this strategy will require more attention to: the role of the state in delivering services and promoting pro-poor growth; the importance of south-south cooperation and the need to learn from developed countries and other regions; and expanding the capabilities of the poor and the vulnerable through greater access to self-help and through local knowledge.

The experience in eastern and southern Africa is quite different. Up to 80% of the rural population lives in medium-to-high-potential areas, but yields and productivity are among the lowest in the world (for reasons given in the previous section). Since the majority of the rural poor are living in areas that are significantly underperforming relative to their possible productivity, the potential for poverty reduction is considerable.

Dominant characteristics of the region include a rising dependence of the poor on markets for goods and services, and increased competition in such markets. This points to the need for more market orientation or commercialization of the smallholder sector to achieve poverty reduction. The IFAD regional strategy is to work with rural poor people to enhance their productivity and competitiveness by: improving access to markets (rural transport and market organization and information) and relations with the private sector; organizing the financial services they need to save, invest and meet risks; strengthening access to and control over land and water (user-level organization for sustainable land use, tenure choices, access to appropriate irrigation, and water-use options for intensification); and developing the technology and information needed to produce and market outputs (diversification and intensification of production and marketing).

The western and central Africa region shows a more balanced agro-ecological setting for the rural poor than the previous two regions. In addition, a number of favourable political and economic developments are creating opportunities for reducing poverty. This has resulted in positive trends towards more open social and political climates, which enable civil society to increase its participation and allow greater decentralization of decision-making. Yet major constraints remain, including weak human and institutional capacity and poor infrastructure. The HIV/AIDS pandemic and armed conflicts are also major threats. Consequently, the strategy focuses on four thrusts: investing in human and social capital; raising agricultural and natural resource productivity and improving access to technology; increasing rural incomes through improved access to financial capital and markets; and reducing vulnerability to major threats to rural livelihoods. Examples are the roots and tubers programmes, in a number of countries, that promote production, processing and marketing to improve livelihoods, and other projects focusing on community development and decentralization or rural financial services development.

The main features of the Latin America and the Caribbean region are a high degree of inequality, rural areas that are vulnerable to external conditions with acute problems of access to land, and considerable policy and institutional weakness. Indigenous peoples represent the largest group of the rural poor, 32% of whom live in arid and semi-arid subtropical areas. Major elements in empowering the rural poor are support to native and minority ethnic communities and the reduction of

gender inequality. Increasing access to resources and technology involves property rights and appropriate technology for small farmers (e.g. seed varieties, stone or vegetable contour barriers, and small irrigation schemes – much of this building on traditional skills to limit environmental risks in different ecological zones).

In the very diverse subregions of the Near East and North Africa (NENA) region – the traditional NENA subregion and the central and eastern Europe and newly independent states³ (CE/NIS) subregion – there is very mixed economic performance, with a growing dependence on food imports. The main emphasis regarding human and social assets is on community development for the management of common resources (especially village development groups, water users' and rangelands associations in NENA, and marketing and rural financial service groups throughout the region). Regarding access to natural resources and technology, investments are needed to improve access of the poor to land and water and promote the development of sustainable technologies, especially for marginal and dryland areas (beneficiary-managed, small-scale irrigation and small-farmer access to inputs and institutional services). In the mountainous areas of CE/NIS, general neglect of the environment during the years of central planning necessitates incentives to encourage local communities to protect the local environment and undertake remedial action to arrest further environmental degradation. Close attention is being paid to the promotion of off-farm income generation in services, trade, processing and marketing. Throughout the region, development of rural infrastructure and rural financial services is an important ingredient in the overall enabling environment for successful poverty reduction.

³ Of the former Soviet Union.

V. Rural Poverty Reduction and the Marginalized: the poverty/environment focus in harsh environments

In its project activities, IFAD generally targets poor people inhabiting areas with limited agricultural productivity – limited because of low agricultural potential or because of limited access to markets or both. Estimates put approximately 40% of the global rural population in such areas. Of course rural poverty exists in areas of higher agricultural potential, especially in some regions of Africa. But in order to achieve maximum impact, several of the IFAD regional strategies summarized above give preference to the less productive or marginal areas.

Why Invest in Areas with Low Agro-Ecological Potential?⁴

To date, most of the public investment in rural infrastructure, agricultural services and human health and education essential to improving the livelihoods of the rural population have been biased towards areas with high agricultural potential. Indeed, conventional wisdom suggests that productivity returns to investment are likely to be highest in these areas. It is also assumed that the benefits of economic growth in these areas will 'trickle down' to the poor, even those residing in areas of lower agricultural potential. It is argued that although investing in

⁴ This section is based on an International Food Policy Research Institute study commissioned by IFAD.

marginal areas might have a greater direct impact on the poor inhabitants of those areas, investments in less marginal areas, with higher potential for intensive farming, give higher social returns for the nation as a whole.

The common perception behind this position is as follows. Investment in highly productive areas generates more agricultural output and higher economic growth at lower cost than in areas of lower potential. As economic growth leads to more employment and higher national wages, and greater agricultural output leads to lower food prices, the poor would benefit in both respects: the poor living in marginal areas would benefit from cheaper food and new employment opportunities, most of which would be in higher-potential areas. This would attract people away from the marginal areas, thereby helping to reduce environmental degradation. Remittances from migrants would further increase incomes in poor and marginal areas, especially for the poor.

Empirical research has confirmed many of the expected benefits arising from rapid agricultural growth in potentially highly productive areas. However, the rationale for neglecting investment in areas of lower agricultural potential is being increasingly challenged, because in many potentially highly productive areas:

- there is increasing evidence of stagnation in growth and worsening environmental problems; and
- growth in many highly productive areas has failed to resolve growing poverty, food insecurity and environmental problems outside these areas.

Indeed there is emerging evidence that the right kinds of investment in marginal areas can increase agricultural productivity to much higher levels than previously thought. It now seems plausible that increased investment in such areas may have the potential to generate competitive if not even greater agricultural growth on the margin than comparable investments in highly productive areas. And these investments could have a greater impact on poverty and environmental problems in these areas. Moreover, investments in marginal areas may result in higher aggregate social returns to a nation than further investments in higher potential areas. Recent studies in China and India support these arguments, and furthermore demonstrate a greater impact on poverty. Thus targeted investments in roads, agricultural services (especially research) and education offer good prospects for increasing productivity and reducing poverty in marginal areas.

But one reason for these favourable results is that China and India have already invested heavily in their irrigated and highly productive rainfed areas, and productivity growth has slowed in many of these regions. With diminishing returns in favoured areas and relatively little public investment in many low-potential areas, it is not too surprising that the latter should now give higher returns to some investments on the margin. But care must be taken in extrapolating these results to countries that have invested much less in their more favoured areas, e.g. much of sub-Saharan Africa.

Causal Links between Poverty and Environmental Degradation in Fragile Environments

There is clear evidence that poverty is an important factor driving environmental degradation in marginal areas (although poverty is not the only cause), and that poor people tend to suffer more as a consequence than other social groups. Linkages between poverty and degradation arise because poor people are more likely to trade off future production against today's subsistence. Worsening environmental degradation contributes to lower incomes and deepening poverty, and over time, poor people can become trapped in a downward spiral, with ever-worsening poverty and resource degradation. Population growth can further aggravate the situation, as even more people become dependent on the deteriorating resource base. Poor people are more likely to have large families, lack investment capital, face insecure property rights, have limited access to suitable technologies, and be less informed about the consequences of their actions. Among the poor, women and woman-headed households suffer most from increasing workloads and discrimination in land and labour markets.

Poor people often define poverty in terms of insecurity, rather than low income, and generally have limited means of protecting their incomes against unexpected fluctuations in agricultural production or prices. They are also the most vulnerable – usually the worst affected by natural disasters and frequently victims of insurrection and warfare. Unclear or overlapping ownership and user-rights to land, forest and water resources are frequently a source of conflict, especially in situations of increasing population pressure and where indigenous people face competition from new settlers.

The problems described above are often compounded by lack of access to resources and appropriate technologies to improve productivity. Lack of access roads reduces options for diversifying farming activities or

developing non-farm activities and the availability of material inputs and services. Scarcity of social services (schools, clinics, potable water) affects health and constrains labour productivity. Low agricultural output prices and market distortions undervalue scarce resources and reduce farmer profits, rendering farmers unable to invest in fertilizer and soil-conservation works. Insecure property rights, particularly in combination with migration, further inhibit long-term investments in resource-conservation measures. Although there are examples in which "induced innovation" by communities (e.g. installing terraces and irrigation works to intensify agriculture) has reversed this trend (e.g. the Kenyan Machakos), the negative linkages between poverty and environmental degradation seem likely to worsen in the future. Furthermore, predicted changes to global and regional climates are likely to affect rainfall patterns and increase the frequency and severity of droughts, floods and storms.

In summary, there are important social and environmental reasons why the international development community should give much higher priority to helping poor people, and especially those in areas with low agricultural potential. But another reason for investing more in such areas is that many investments can actually yield favourable economic returns (as discussed above). The next section considers the special problems confronted in marginal areas.

Environmental Constraints on Farming in Marginal Areas

The areas of limited agricultural potential are faced with a wide range of environmental issues, many of which have arisen as a result of the poverty of the people who farm them. The major constraints are summarized below.

Soil-Fertility Depletion

Large tracts of marginal land have shallow and infertile soils. Traditional systems based on bush-fallow (shifting cultivation that allowed the natural restoration of soil fertility) once enabled fields to recover their fertility after a year or two of cropping. But now, in many areas, the former 20-30 year fallow periods are reduced to 2-3 year breaks because of population pressure on available land, leading to declining soil fertility.

In many marginal areas there is serious depletion of soil fertility as a result of the loss of organic matter and plant nutrients since lands were cleared for farming. Until a decade or so ago, governments were usually respon-

sible for the supply and distribution of chemical fertilizer and often subsidized its cost to farmers. But in many countries this is no longer possible. Farmers find it difficult to afford the cost of unsubsidized fertilizer, even if available, and the private sector has not filled the role of government as anticipated. The result is too little fertilizer, not too much (as is often the case for intensive agriculture). Pollution of groundwater is not the issue here. The issue is declining soil fertility, with soils unable to support reliable and sustainable yields of food crops. Modest applications of fertilizer would avoid the nutrient 'mining' that is going on today in many parts of Africa, in which an average of 8 kg of inorganic fertilizer are applied per hectare each year. In contrast, the soils of many areas are losing nutrients each year equivalent to 40-60 kg per hectare of inorganic fertilizer.

Hillsides and Erosion

Many areas of limited agricultural potential occur in hilly and mountainous areas, and in order to farm these, forests have been cleared. Indeed, many farmers who once cultivated the rich lowlands, were forced onto the slopes by political, social and economic forces beyond their control. Clearing forests in order to cultivate the land exposes soils to the combined effects of rainfall and gravity, and in the case of sloping hillsides, soil erosion is the inevitable result. Every year another 14-15 million hectares of forest are lost or degraded in developing countries, and more than 60% of the deforestation is the consequence of subsistence farming on hillsides.

Thin, often stony, hillside soils wash away easily when left unprotected. The construction of terraces can arrest soil erosion, but terracing hillsides is labour intensive and expensive. The results of soil erosion from hillsides impact on everyone within the watershed. The farmer loses both fertility (leached out of the soil) and topsoil (washed down the slope each time heavy rains fall). The silt that results from this process can be a mixed blessing for those further down the slope – a deposited layer of fertile soil for some, but mud, clogging up irrigation and drainage systems, for others. Large and deadly landslides are far too common, burying villages and carrying away rural roads and bridges. Thus in areas of limited agricultural potential, farming activities indeed impact negatively on the environment.

Forests and Biodiversity

Clearing the vegetation from hillsides, usually forest of one kind or another, has serious consequences not only for farmers and the rural population, but for biodiversity as well. Whole ecosystems are destroyed by hillside farmers in their efforts to clear fields for cultivation. Rural

dwellers in the vicinity of forests frequently exploit forest potential by extracting wood (for construction and burning) and collecting fruit, honey, herbs (also for medicines) and other forest products, often in sustainable ways – aware of the long-term value of the resources. Similarly, people protect plant and animal biodiversity, while at the same time growing crops and grazing livestock in forest clearings. Deforestation as a result of the need for more farm land and unsustainable exploitation is changing this balanced use of forests.

Rangelands

Rangelands occur extensively in Africa, central Asia and South America, and represent a major renewable resource exploited by mainly poor nomadic, semi-nomadic and sedentary pastoralists and agro-pastoralists. When properly managed, they are a valuable, sustainable low-cost source of grazing for livestock, which in turn are an important source of animal protein and micronutrients. Rangelands can support the sustainable livelihoods of millions of people when so managed. Unfortunately, they are becoming increasingly degraded by overuse, conversion to cropland and urban encroachment – frequently the result of inadequate and inappropriate policies.

Pesticide Use

Pest⁵ problems are common to both high- and limited-potential areas, but they most seriously impact on the poor people that farm the latter areas. Whereas intensive agriculture is generally able to resolve pest problems by planting resistant crop varieties, applying a panoply of agro-chemicals and using drugs and vaccines for livestock, the generally small returns obtained by farmers in marginal areas are often insufficient for them to afford such expensive inputs. There is thus little pesticide pollution in these areas. In fact, many farmers in marginal areas are claiming to be 'organic' as a result of not using pesticides and fertilizers. They are often not organic by choice, but by default, and the worry is that many could become 'organic by neglect' and adopt practices that are unsustainable in the medium-to-long term.

Water – Quality and Quantity

As noted earlier, water quality through salinization and/or pollution by agro-chemicals is a major environmental issue for intensively farmed areas, especially irrigated ones. However, water *quantity* is an issue increasingly

affecting both intensively farmed areas and marginal areas of limited agricultural potential. Where irrigation water is extracted from wells in quantities faster than the natural recharge, groundwater reserves are threatened, and in coastal areas, saline intrusions can affect water quality, crop performance and farmers' livelihoods. As a result of receding water tables, important wetland ecologies for plant and animal biodiversity are affected.

For rural people in hilly areas, even though rainfall may be abundant, water supply can be a serious issue. Thin soils are unable to store much moisture after rainfall, and roots are unable to penetrate to underground reserves as they can on the valley floor. In spite of high annual rainfall, crops and livestock are frequently affected by drought, often short-term. But if the drought comes at a critical time in the crop cycle (e.g. tasselling in maize), it can spell disaster and little or no harvest. Water scarcity is becoming an issue for both intensively farmed and marginal areas of limited agricultural potential, but poor farmers of the latter areas are least able to respond to the issue. And in addition to agriculture, domestic water supplies are affected.

⁵ The term 'pest' includes insects, nematodes, weeds, diseases, etc.

VI. IFAD Priorities for Effective Poverty/ Environment Interventions in Marginal and Low-Potential Agro-Ecological Zones

The following section interprets IFAD's three
strategic objectives (section III) in the specific
context of low-potential areas.

Strengthening the Capacity of the Rural Poor and their Organizations

These low-potential areas are very diverse in their agro-climatic and socio-economic conditions. Thus rural development strategies need to be tailored to the specific options and constraints facing local communities. IFAD's interventions support local communities in playing a key role in optimizing the use of natural resources. Community-based organizations facilitate access to credit, inputs and markets, and play an especially important role in local input delivery networks in isolated areas. NGOs are often important in introducing new technologies, credit and information to communities. The public sector provides public infrastructure, sometimes research and extension, and key agricultural services, and manages state-owned resources such as forests and rangelands. Participatory approaches that confirm the rights of local people to manage resources are essential. This requires political will and different incentive structures and skills within public institutions, with greater emphasis on strengthening the abilities of local people. The public sector's role in building and maintaining roads and communications systems is important, since these areas are often poorly placed to compete in liberalized markets because of their restricted access and high transport and marketing costs.

Improving Equitable Access to Productive Natural Resources and Technology

A principal aim of IFAD interventions is to increase access to assets for the rural poor, particularly land, and hence improve their prospects for better health and education. IFAD supports a wide range of interventions to improve assets, both directly through its projects and through its support of the Popular Coalition to Eradicate Hunger and Poverty.

Because of heightened risks in these fragile environments, the need for assured long-term access to land and water to pursue sustainable farming practices and to make long-term investments in improving and conserving resources is further emphasized. Conserving natural resources often requires collective action by users, even when the resources are not commonly owned. IFAD's experience has demonstrated that the most successful institutional basis for managing common properties is likely to be local organizations run by the resource users themselves. This underlines IFAD's basic approach of local solutions to wider environmental problems.

Regarding access to technologies, some types of crop genetic research are vital (for example, yield response to scarce plant nutrients, pest and disease resistance, drought tolerance, etc.), but this is more applicable to the longer term. In the shorter term, major productivity improvements in many low-potential zones will depend on improved natural-resource management practices. The high climatic risks, uncertain markets and poor infrastructure that characterize many of these low-potential and isolated zones also bring into question the economic wisdom of high levels of external inputs. This puts a premium on relatively low-external-input technologies. But the challenge is to develop such technologies – ones that boost both labour and land productivity. Some of these have been mentioned in section IV on the regional strategies (vegetative barriers, conservation tillage, agroforestry, etc.).

While improved technologies for food crops are often of high priority, increases in incomes depend critically on diversification into higher-value agricultural products and into non-farm activities. For example, unlike many food crops, livestock, agroforestry and some horticulture can often be profitable in areas with poor soils and climate. Similarly, some less favoured and harsh environments can be appropriate for ecotourism development.

Many of these sustainable agricultural practices are under development in IFAD loan and grant projects. They also benefit from knowledge-sharing with other resource organizations and partners. Many are highly location-specific and depend on the availability of labour, rainfall and market orientation. Examples include integrated nutrient management (e.g. conservation tillage, crop mulching, use of rock phosphate, intercropping, etc.), water management (watershed development, smaller-scale farmer-controlled irrigation systems), livestock and pasture management and integrated crop and livestock activities to diversify income, create assets, manage soil fertility and reduce feed costs. Different approaches to agroforestry are commonly applied to generate income from foods, fuel wood and fodder, building materials and non-timber forest products, and to improve soil fertility, increase soil water-storage capacity and reduce erosion.

Increasing Access to Financial Services and Markets

The weakness of rural markets is partly a problem of poor infrastructure and communications systems, but problems with quality standards, timing of harvests, market information and reliable supply also penalize local products in both national, regional and international markets. Many countries are implementing market reforms intended in part to improve the overall performance of their agricultural sectors. But these reforms have had a mixed impact on less favoured and more isolated areas because of their weaker infrastructure and high transport costs. For example, market reforms have reduced the availability of inorganic fertilizers and increased their costs in many poorer regions of Africa. In the NENA region, farmers have had to adjust livestock feeding systems to become less reliant on inputs that were previously subsidized. Consequently, the IFAD focus on increasing access to markets and market linkages is crucial for these more isolated, risky environments. Similarly, the need for effective post-harvest handling and support for the development of new market products is an even higher priority. Innovative information technologies (e.g. rural radio linked to modern information and communications systems) are also essential future needs. The requirement for effective rural finance systems was described earlier, but the difficulty of achieving institutional sustainability and outreach to the poor is further magnified. The risks raise the priority of credit and insurance arrangements that provide money in times of need.

Many of the project activities described above have improved natural resource management in sustainable ways by also improving income

opportunities for rural poor people. Annex II gives some illustrative case studies of IFAD projects; more are available from IFAD publications.

Nevertheless, in some harsh, fragile environments these will be inadequate to prevent environmental deterioration. The historical solution to this problem was for governments to regulate certain resource management practices (e.g. banning of tree-cutting in hillside areas). The difficulty with this approach based on state authority and coercion is that it works against the interests of local people, frequently worsening the situation of the poor, creating incentives for illegal activities and increasing the costs of regulation. An alternative solution is explored below.

The potential market for environmental services

There are significant positive externalities arising from sustainable natural-resource management practices and environmentally friendly activities in which a considerable number of resource-poor farmers are engaged, particularly in uplands and hillsides. These activities include maintaining forest resources. This contributes to carbon sequestration, soil conservation resulting in lower run-off and less siltation in dams, and the sustainable utilization of a diversity of flora and fauna – sometimes termed underutilized or neglected species. These are considerable contributions to society that are not adequately recognized, not least because they are difficult to quantify.

Another approach to reducing unsustainable practices could be based on the potential market for such environmental services. This market could benefit the poor; part of the challenge would be integrating such incentives into existing livelihood systems. The frequently cited example is carbon sequestration, for which a pilot programme has been launched in Costa Rica. But high transaction costs and the difficulty of monitoring contracts are likely to limit the benefits to poor people in isolated areas unless they can be effectively organized for this purpose. These types of innovation are also constrained by the uncertain market demand for environmental services. IFAD is conducting action research on this issue with the International Centre for Research in Agroforestry (ICRAF). A related novel approach is the use of green labelling and fair-trade arrangements to capture higher prices to pay poor producers, in part, for the environmental benefits they generate. IFAD has already initiated interventions involving non-timber tree products and beverage crops.

Advocacy and Political Commitment

To achieve this sustainable development in developing countries requires coordination of the efforts and combined resources of a range of diverse development partners. IFAD can contribute to this goal through its engagement in strategic partnerships and coalitions with governments, development agencies, the private sector and civil society. For this reason, IFAD projects are intended to link with and influence national and international policy by using the knowledge they have generated as a catalyst. Some related areas of common action are IFAD's collaboration in global initiatives such as the United Nations Convention to Combat Desertification (CCD), IFAD's housing of the Global Mechanism, its role as an executive agency of the Global Environment Facility (GEF) and as a co-sponsor – with the World Bank and the Food and Agriculture Organization of the United Nations (FAO) – of the Consultative Group on International Agricultural Research (CGIAR). African governments, for their part, have identified agriculture as one of the priority sectors in the New Partnership for Africa's Development (NEPAD). IFAD continues to engage in a range of regional dialogues to advance the cause of the rural poor. New initiatives can also enhance coordination on sustainable research and development in highland areas, taking advantage of the experiences of CGIAR (e.g. East African Highlands Programme, Central American Hillside Programme, the Alternatives for Slash and Burn Initiative, etc.).

Conclusion

The IFAD mission outlined above indicates a way to enable the rural poor to overcome their poverty in an environmentally vulnerable world. Success depends on local solutions to the challenges of poverty and the environment – by making the livelihood and income strategies of the poor the basis for sustainable resource management. In this way, rural men, women and children can chart an environmentally and socially sustainable path out of poverty towards a better life.

ANNEXES

ANNEX I

IFAD's Regional Priorities by Development Theme -
Categorized According to IFAD's Strategic Objectives

	Capacity of the Rural Poor and their Organizations	Equitable Access to Natural Resources and Technology	Access to Financial Services and Markets
Western and central Africa	Decentralization, participation, rural service delivery, accountability, capacity-building, farmers' groups, reduced vulnerability (post-crisis; HIV/AIDS prevention, coping)	Community-based natural resource management (NRM), water use, pro-poor technologies, access to land and water	Rural finance, infrastructure, markets for food and inputs
Eastern and southern Africa	Empowerment, gender, accountability, post-crisis, HIV/AIDS prevention	Access to and management of land and water, knowledge empowerment, improved technology and information systems	Rural finance, markets, market linkages
Asia and the Pacific	Decentralization and participation, empowerment, gender, indigenous peoples, social justice	Marginal uplands, water management, forests, biodiversity, incentives for environmental services	Rural finance, microenterprises, non-farm economy, rural infrastructure
Latin America and the Caribbean	Empowerment, gender, ethnic communities, social capital, labour markets, decentralization	Sustainable NRM technology/ services for farmers, access to land/property rights	Rural finance, microenterprises, competitiveness and markets, regional/global markets
Near East, North Africa, and CE/NIS subregions	Community development, water users' associations, rangelands, gender	NRM and fragile environments, droughts, poor soils, rangelands, highlands, fisheries	Rural finance, microenterprises, infrastructure, market links, diversification, non-farm economy

ANNEX II

Case Studies of IFAD Projects

BOX 1

Returns to Investment in Dryland Areas in South Asia

Empirical studies have estimated the impact of different types of investments on agricultural growth and poverty reduction in predominantly irrigated or rainfed agriculture in southern Asia. *The highest marginal returns to investment in technology and infrastructure, on agricultural production and poverty alleviation, were found to occur in the rainfed drylands (in 13 agro-ecological zones), while irrigated areas often ranked quite low.* In fact, several types of investments also gave favourable returns in the poorer rainfed lands and have had some of the most favourable impacts on poverty. Rural roads and education scored particularly well on both growth and poverty outcomes, as did irrigation in areas where untapped ground-water and other water resources were available and accessible.

Peter Hazell et al (2000). *Food Policy* 25: 411-428.

BOX 2

Challenges for Soil and Water Conservation in Fragile Areas – Technological Success and Lessons from Lesotho

IFAD helped design and financed the Soil and Water Conservation and Agroforestry Programme (SWaCAP) (1988-1995) in Lesotho as part of its broader initiative, the Special Programme for Sub-Saharan African Countries Affected by Drought and Desertification. The cornerstone of this project was natural resource management, combined with appropriate agricultural technologies that would allow environmentally sustainable livelihood improvement for the poor residing on degrading hillsides. The greatest success of SWaCAP was the reintroduction of an indigenous farming technique known as the Machobane Farming System (MFS), a low-external-input farming system that relies on relay and intercropping a series of cash and subsistence crops on plots of land generally not larger than one hectare. The project also promoted soil ripping to break up subsurface compaction and *Bana* grass to reduce sheet erosion between bunds and provide fodder. MFS was begun in the 1991-1992 cropping season, with 22 participating farmers producing potato, maize, sorghum, wheat, bean, pumpkin and watermelon seed, with a small amount of fertilizer. The number of new farmers continued to increase rapidly, reaching about 1600 farmers by mid-1996. Significantly, high adoption rates were linked to farmer-driven extension initiatives, and a high proportion of women farmers adopted MFS.

Its appeal is related to the incentives for pursuit of conservation-based agriculture through a combination of cash cropping and traditional ecologically sustainable practices. Many of the households that adopted MFS had not regularly participated in the cash economy prior to adopting this system. Conservation benefits included significant year-round plant cover and fine root growth to stabilize soil and slow sheet erosion from wind and water. Inter-bund stabilization of sheet erosion may be more economically significant than gully erosion to smallholder farmers in Lesotho. The SWaCAP project had an overall economic rate of return of 15%, with an estimated 46% of farmers in the target area benefiting from the project, of whom 23% had adopted the Machobane system. The project highlights the value of indigenous technologies, grass-roots dissemination of information, high cash-crop potential and clear environmental benefits.

BOX 3

Living Fences for Cutting Costs and Raising Farmer's Incomes in the Sahel

The use of fences in African farming systems is essential to: minimize productivity losses due to livestock grazing in cropping fields and vegetable gardens; delineate plot boundaries; and corral livestock. Conventional fencing is a labour-intensive activity, undertaken with high labour opportunity costs, and requiring purchase, transportation, annual repairs and regular replacement of fencing materials with significant costs in both inputs and labour.

IFAD-financed research through ICRAF and partners has led to the development and diffusion of live fences, which, in addition to fulfilling the same function as dead or synthetic fences, also promote positive tree-crop interactions that can enhance whole-farm productivity. Farmer-participatory research has identified the most appropriate species for smallholders in a variety of agro-ecological zones in the Sahel. Live fences have provided opportunities to reduce the costs of fencing while simultaneously producing timber and non-timber forest products that can be used for household consumption or sold in local markets. Protection of market gardens with living fences of appropriate species allowed farmers to earn up to USD 245 more over a six-year period compared to dead fences. In addition, live fences allowed households to benefit from by-products such as firewood, fodder and fruits. On-farm trials, and use of innovative mechanisms such as village workshops with farmers and development partners in the Sahel, have led to over 2 200 farmer-adopters in Burkina Faso, Mali, Niger and Senegal.

ICRAF: 2000

BOX 4

Tribal Communities Drive Research and Development for their Collective Benefit

Some of the most disadvantaged ethnic groups in southern India have overcome agricultural technology constraints in marginal lands to successfully meet their basic food requirements and reduce nutritional deficiencies. Over a seven-year period, the IFAD-financed Andhra Pradesh Tribal Development Project assisted 30 756 tribal households, with less than one hectare per average household, in addressing problems of considerable land pressure and declining soil fertility. Faced with legislation prohibiting use of reserve forest areas, tribal people participated in validating and diffusing soil-conservation technologies (building on indigenous knowledge and practices) and engaging in remunerative development activities without undermining their values, priorities and culture. Horticulture and perennial tree crops were adopted to replace unsustainable shifting-cultivation practices on sloping hillsides, reversing gradual erosion and depletion of soils. Community-based mechanisms ensured sustainable adoption of technologies and associated development of village tree nurseries and farmer-operated seed-production units.

Participatory training and extension methods helped target technological packages to appropriate households based on socio-economic status, risk-aversion strategies and typology of landholdings. A high degree of participation by households with contiguous plots helped achieve an ecologically positive alteration of the landscape through tree cover, while permitting higher crop yields through a variety of agroforestry technologies. The success of the project is attributed to: emphasis on beneficiary participation and empowerment, in part stimulated by a history of collective political advocacy of the tribal people in the region, with women playing a major part; incorporation of their indigenous knowledge and incentive structure; and innovative research and extension approaches. IFAD played a major role, beyond loan financing, by engaging with progressive local authorities and leadership and by consistent encouragement of a critical attitudinal shift achieved over time. This enabled project implementing institutions to gradually become more responsive to local values and aspirations. The project overcame a number of institutional constraints in adopting a holistic approach and in recognizing the importance of the coping strategies of tribal communities in the improvement of their livelihoods.

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