Natural Resources and the Environment



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Climate change: a growing challenge for development and poverty reduction

In 2007 the world focused on climate change as never before, following the release of a report by the Intergovernmental Panel on Climate Change (IPCC) that put to rest any reasonable doubt about human contribution to global warming. The panel found that warming is unequivocal, and added that it was at least 90 per cent certain that human activity, rather than natural climate variation, was responsible for the higher average temperatures we have seen in the past 50 years.

For IFAD, climate change has a special significance because our mission is to enable poor rural people to overcome poverty and hunger. Agriculture is the main source of livelihood for most poor rural people, and it is also the human activity most directly affected by climate change.

In the months following the report, there have been many millions of words dedicated to climate change and its impact. Attention has focused on *mitigation*, slowing the pace of climate change, and *adaptation*, helping people cope with its effects. Remarkably little has been said or written about the people who will feel the impact most – the poor rural people of developing countries – and even less attention has been given to how they can contribute to slowing its advance.

The poorest will suffer most

Three out of four of the world's one billion poorest people live in rural areas and depend on agriculture and related activities for their livelihoods. More rapid agricultural and rural development is essential to the achievement of the Millennium Development Goals (MDGs). The world's poorest people are subsistence farmers, nomadic herders, day labourers and fishers. Many live on ecologically fragile land: mountains, coastal areas and deserts. They depend on vulnerable sectors – agriculture, livestock, fisheries and forestry – for their livelihoods. Women in rural areas, particularly those responsible for fetching water and keeping livestock, are expected to pay a particularly high price as the climate changes.

The IPCC has said very clearly that climate change will hit the poorest and most vulnerable people hardest.

Fishermen carry nets back to their village in Mucoroge, Mozambique. Rising sea levels will threaten low-lying coastal areas and cause the salinisation of surface water and groundwater aquifers in some coastal communities. Credit: IFAD/Alex Webb



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Fishermen sell their catch at a market in Jessore, Bangladesh. Poor rural people need better access to markets and the opportunities for enterprise that can help them diversify and increase their income. Credit: IFAD/ Alexandra Boulat

There is clearly an economic, social and moral imperative to help poor rural people adapt to climate change in a sustainable way.

A multitude of problems

Climate change makes it more difficult to predict weather patterns and to plant crops at the appropriate time. Rising sea levels will threaten low-lying coastal areas and cause the salinisation of surface water and groundwater aquifers in some coastal communities. More frequent flooding will arise from heavy and erratic precipitation and ice melts. At the same time, more erratic weather patterns will affect the reliability of water sources for irrigation and livestock. In some regions, climate change will also lead to a higher incidence of vector-borne diseases, such as malaria, schistosomiasis and dengue fever, as well as pests affecting livestock and crops.

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The seriousness of the situation must not be underestimated. Climate change is expected to put almost 50 million extra people at risk of hunger by 2020. In some high-latitude regions food production may increase with higher temperatures. But in others, yields may drop significantly.

In Africa, about 50 per cent of farmland suffers to some extent from soil erosion; as much as 80 per

cent of pasture and rangelands exhibit some form of degradation. Over 95 per cent of African agriculture depends on rainfall. Models indicate that about 80,000 square kilometres of agricultural land in sub-Saharan Africa currently deemed constrained will improve as a result of climate change. However, this will be more than offset by the estimated 600,000 square kilometres currently classified as moderately constrained that will become even more severely affected. This threatens to further affect food security and exacerbate malnutrition on the continent.

Rising sea levels will threaten low-lying coastal areas and cause the salinisation of surface water and groundwater aquifers.

Cereal production in North Africa could drop by over 18 per cent. In the temperate regions of Latin America, soya bean yields are expected to rise. But in drier areas, climate change is expected to lead to salinisation and desertification of agricultural land. Productivity of livestock and some important crops are expected to decline. Higher sea surface temperatures are expected to cause shifts in the location of southeast Pacific fish stocks. Coastal areas, especially in heavily populated delta regions, will be at risk of flooding.

There will be greater competition over water resources available for human consumption, agriculture and industry, as a result of changing rain patterns and the disappearance of glaciers.

Agricultural commodity prices are rising, partly due to changing weather patterns, and it is believed they

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In Essong-Mintsang, Cameroon, a woman measures the growth of seedlings at a nursery. The IFAD-supported tree domestication programme has helped thousands of farmers benefit from the domestication, cultivation and sale of fruit and medicinal trees. Credit: IFAD/

Pascal Maitre



will continue to rise in the foreseeable future. This will have enormous consequences for poor rural people. For some, it will mean new opportunities – particularly poor rural producers with access to markets. But, for households that are net buyers of food commodities, rising prices will cause serious problems.

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Biofuels are seen as an important response to climate change, but risk increasing the competition for agricultural land – and could contribute to food price increases. At the same time, second generation biofuel crops such as sweet sorghum and *jatropha curcas*, which can grow on marginal lands, could become a new source of income for small farmers. International efforts must focus on minimising these risks and expanding the opportunities associated with biofuels.

Poor rural people can be part of the solution

It is clear that climate change will make reaching the MDGs much more difficult unless donors and governments in developing countries sharply increase investments in agricultural development and sustainable land management practices.

Poor rural people can be part of the solution. But, they need secure access to land and water, as well as to financial resources and agricultural technologies and services. They need access to markets and the opportunities for enterprise that can help them diversify and increase their income. They also need effective institutions and the organisational power and influence required to advocate for their own needs and take advantage of emerging opportunities.

The IPCC notes that sustainable development can reduce vulnerability to climate change by enhancing adaptive capacity and increasing resilience.

Adaptation includes all activities that help people and ecosystems reduce their vulnerability to the impact of climate change and that minimise the costs of natural disasters.

Helping farmers adapt and diversify

IFAD has 30 years of experience helping poor farmers tackle desertification and environmental degradation and building resilience to weather shocks. Most of the projects and programmes supported are in marginal, rainfed areas that are at risk from water shortage, land degradation and desertification. Through loans and grants, IFAD is addressing such issues as desertification and changes in cropping patterns due to climate variability. IFAD works closely with poor rural people, most of whom are smallholder farmers, landless people, herders and small entrepreneurs who depend on agriculture to survive, IFAD draws on this experience in helping them adapt to climate change.



A woman uses zerograzing techniques for her cows after attending agricultural demonstrations for farmers in Bulindi, Uganda. Improved livestock management and crop practices, coupled with adaptive management of forests, can contribute to climate change mitigation. *Credit: IFAD/ Radhika Chalasani*

Adaptation includes all activities that help people and ecosystems reduce their vulnerability to the impact of climate change and that minimise the costs of natural disasters. There is no universal way to adapt; specific measures need to be tailored to specific contexts.

For example, in Malawi, an IFAD-supported project is helping reduce the risks associated with rainfed farming by rehabilitating and developing irrigation systems, reservoirs and rainwater harvesting structures.

Adaptation includes all activities that help people and ecosystems reduce their vulnerability to the impact of climate change and that minimise the costs of natural disasters.

In Cameroon, IFAD supports the World Agroforestry Centre's tree domestication programme, which has helped thousands of farmers benefit from the domestication, cultivation and sale of fruit and medicinal trees. Tree planting also has important environmental implications. Trees can help stabilise fragile ecosystems, such as hillsides. The roots penetrate deep into the soil, reducing the risk of landslides. Besides that, tree root systems absorb leached nutrients from deep in the soil and make them available to the growing trees. As the older leaves drop and decompose around the tree, they reconstitute the soil structure and enhance its fertility. On the islands of Mauritius and Rodrigues, an IFAD-funded programme is training members of communities on fishing methods that do not damage coral reefs or deplete fish stock. The programme has also helped participants diversify their activities, so that they are not solely dependent on fishing for their livelihoods. Today they are engaged not only in fisheries, but also in agriculture, micro-enterprise and self-help community initiatives.

Environment and agriculture go hand in hand in mitigating climate change

The IPCC and the recently published 2008 World Development Report, *Agriculture for Development*, both underscore the fact that the environmental agenda is inseparable from the broader agenda of agriculture for development. The report recognises that agriculture can play an important role in mitigation through better stewardship of the natural resource base on which it depends.

Implementing sustainable agricultural practices is more important now than ever. Agriculture and forestry are major sources of greenhouse gas emissions. But, through sustainable practices and management, both also have great potential to mitigate the impact of climate change. This means that as managers of land, water and forests, poor rural people could have an important role to play in mitigation measures.

While the main contribution to mitigation must come from reducing emissions in rich countries, poor rural people can contribute by using better agricultural practices and by nurturing and protecting forests to absorb carbon dioxide – so called carbon sinks. Improved livestock management and crop practices, coupled with adaptive management of forests, could have a very significant impact. Adopting better land use practices, such as conservation agriculture, conservation tillage, agroforestry, and rehabilitation of degraded crop and pasture land, would also help to maintain significant amounts of carbon in the soil.

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Soil is the largest reservoir of carbon in the terrestrial carbon cycle. The emerging markets for trading carbon emissions also offer new possibilities for small farmers to benefit from land uses that sequester carbon.

Afforestation, reforestation, better land management and sustainable agricultural practices can all contribute enormously to reducing carbon emissions. For example, the restoration of two billion hectares of degraded land could compensate for three per cent of global annual carbon emissions. Avoiding deforestation is even more important. In Latin America alone, deforestation and changing land use are responsible for 48 per cent of the region's green house gas emissions. Globally, deforestation is responsible for about 18 per cent of carbon dioxide emissions.

Poor rural people can play a key role in activities that collectively result in significant emissions savings. But governments and public policies must put the right incentives in place for this to happen.

IFAD currently has reforestation projects in the Himalayas and Yemen. An IFAD-supported programme in China is setting up solar power systems to help poor households get energy from the abundant sunlight in the area, and a biogas project in China is turning human and animal waste into a mixture of methane and carbon dioxide gases that can be used for lighting and cooking.

Listening to the voices of poor rural people

Poor rural people can play a key role in activities that collectively result in significant emissions savings. But governments and public policies must put the right incentives in place for this to happen, particularly compensation and payment for the environmental services poor world people provide. With appropriate and innovative incentives, poor farmers, forest dwellers and indigenous peoples can make an important contribution to emissions reduction and carbon sequestration.

Climate change will affect us all, but it poses a particular risk to development and poverty reduction, and to the achievement of the MDGs. Our efforts will be more effective if we recognise poor rural people as effective custodians of the natural resource base, and ensure they have access to the technology and financing they need to cope with climate change and be part of the solution. By listening to the voices of poor rural people when planning adaptation and mitigation processes, we can reduce the risks of climate change, while accelerating progress towards a world without poverty.

Lennart Båge was elected President of the International Fund for Agricultural Development (IFAD) in 2001, and for a second four-year term in 2005, having previously served as Chairman of the Governing Council. Throughout his career, Mr Båge has focused on a variety of issues central to IFAD's mission for poverty reduction, rural development, economic and social reform, capacity building, environmental management, and gender. He has nearly 25 years of experience in international development, and served as Head of the Department for International Development Co-operation in Sweden's Ministry for Foreign Affairs, and also as Sweden's Deputy for the International Development Association (IDA). In 2006, Mr Båge was appointed by the United Nations Secretary-General as a member of the High-level Panel on System-wide Coherence.

IFAD is both a UN specialised agency and an international financial institution. For 30 years, IFAD has provided low interest loans and grants for initiatives that enable poor rural people to lift themselves out of poverty. IFAD works with poor rural people and their organisations to develop locally specific opportunities that enable them to thrive economically in their own communities. Its initiatives respond to the needs, priorities, opportunities and constraints identified by poor rural people.

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