Climate change: building the resilience of poor rural communities

IFAD

Enabling poor rural people to overcome poverty

IFAD/A. Wade

"Climate change has a special significance for IFAD. 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.

"Dealing with the inevitable impact of climate change is now high on the development agenda. By listening to the voices of poor rural people while planning adaptation and mitigation efforts, we can reduce the risks of climate change while accelerating progress towards food security and a world without poverty."

IFAD President
Lennart Båge

Poor rural people, IFAD and climate change

More than 3 billion people live in the rural areas of developing countries. Most live on less than US$2-a-day and depend on agriculture for their livelihoods. Many live in remote, marginal areas such as mountains, drylands and deserts – areas with poor-quality natural resources, limited communication and transportation networks and weak institutions.

IFAD is an international financial institution and a specialized United Nations agency dedicated to reducing rural poverty and hunger. It provides low-interest loans and grants to developing countries to finance agricultural rural development programmes and projects.

IFAD was created in response to the droughts and food crises that affected millions of people in Africa and Asia in the early 1970s. Since beginning operations in 1978, IFAD has helped more than 300 million poor rural women and men take steps to build better lives for themselves and their families.

For 30 years, IFAD has worked to help poor rural people manage their natural resources more sustainably, increase their agricultural productivity and reduce their vulnerability to climatic shocks. Helping smallholder farmers adapt to change has always been part of IFAD's core business, but in recent years, as these shocks. have increased, our focus on climate change issues has become more explicit.

Today, much of IFAD's work has strong climate change component because agriculture is the human activity most directly affected by climate change. Poor rural people are the most vulnerable to the effects of climate change and all too often lack the capacity to withstand its impacts. This is why IFAD is taking action at the policy, operational and regional levels to make climate change mitigation and adaptation a priority.

Adaptation to climate variability has been a *de facto* part of IFAD's work for decades, through its efforts to build the resilience of poor rural people to difficult conditions. More recently, in response to the growing magnitude of climate change, IFAD is increasingly integrating adaptation into its projects and programmes and exploring innovative solutions, such as supporting crop research and index-based weather risk insurance.

Climate change considerations are beginning to be incorporated into every aspect of IFAD's work, from project design, to implementation and assessment to ensure that adequate attention is given to reducing the vulnerability of smallholder farmers to increased climatic uncertainty. Steps are also being taken to ensure that mitigation measures are credible and can be feasibly implemented.

IFAD's programmes and projects primarily support four types of adaptation activity: diversifying livelihoods to reduce risk; improving agricultural techniques and technologies; strengthening community-based natural resource management; and preparing for risk and coping with disaster. IFAD is also stepping up its work on mitigation efforts in the areas of reforestation and improving land-use management, including rewards for environmental services and promoting renewable energy sources.

Developing countries are critically short of resources for fighting climate change. The United Nations Framework Convention on Climate Change estimates that at least US$83 billion per year will be needed by 2030 to protect the livelihoods of poor rural people in developing countries. IFAD is committed to working with developing countries to gain access to the financial resources needed to mitigate climate change.

Our experience shows that the most effective way to reduce poverty and increase food security is to ensure that poor rural people are involved in development planning and policymaking, and in implementing change themselves.

Agriculture and climate change: working on adaptation and mitigation with poor rural people

Over the centuries, human societies have developed the capacity to adapt to environmental change. These adaptations include practicing shifting cultivation, adopting new crop varieties and modifying grazing patterns. But today the speed and intensity of climate change is outpacing the speed of autonomous adaptations and is threatening to overwhelm the ability of poor rural people to cope.

Context is critical for effective climate change adaptation. As the Intergovernmental Panel on Climate Change notes, adaptive capacity is influenced by changes in wealth, human capital, information and technology, material resources, infrastructure, institutions and entitlements.

Climate change poses a considerable threat to poor farmers and rural communities in developing countries. Even a small increase in local temperatures could lead to reduced crop yields for those living at lower latitudes, especially in seasonally dry and tropical regions. More frequent and extreme weather events, such as droughts and floods, are expected to make local crop production even more difficult. Climate change is expected to put an estimated 49 million more people at risk of hunger by 2020.

While there is no single way to mitigate or adapt to the impact of climate change, experience shows that measures are most effective when local communities are involved from the start in planning and implementing changes. IFAD has been steadily increasing its collaboration with farmers' organizations, as partners in development programmes and in policy dialogue. Only by working with poor rural people themselves can we hope to reduce the risks associated with climate change and make a dent in world poverty and hunger.

IFAD/L. Slezic

FACTS

- Between 15 and 37 per cent of land plants and animal species could become extinct by 2050 as a result of climate change
- Emissions of greenhouse gases have increased, on average, by 1.6 per cent per year over the past 30 years
- Agriculture and deforestation together contribute up to 30 per cent of all greenhouse gas emissions: forests act as carbon sinks, so deforestation results in higher carbon dioxide in the atmosphere
- Recent climate changes and variations are beginning to have effects on many natural and human systems, including earlier spring crop planting at the higher latitudes in the northern hemisphere
- In the Sahelian region of Africa, warmer and drier conditions have led to a reduced growing season with detrimental effects on crops
- Yields from rainfed agriculture could be reduced by up to 50 per cent by 2020 in some countries
- About 95 per cent of African agriculture depends on rainfall
- In East and Southeast Asia, crop yields could increase by up to 20 per cent by 2050
- In Central and South Asia, yields could decrease by 30 per cent by 2050

China biogas project turns waste into energy

Biogas is a fuel produced during the anaerobic digestion of agricultural and animal waste. With biogas technology, waste is stored in specially constructed containers. Methane, which is released from animal manure, is a major greenhouse gas. It is second to carbon dioxide in the amount generated but its global warming potential is 22 times more damaging. Burning bio-methane reduces methane's more damaging global warming effect.

China has successfully promoted the use of biogas as a source of household energy since the 1980s. In the 1990s China's biogas strategy was extended to remote communities in west Guangxi, where wood for fuel was in short supply and rural electricity was not available. In 2002 the strategy was a key component of a six-year IFAD-funded project to improve and sustain the livelihoods of poor rural people while rebuilding and conserving natural resources.

Most of the farmers who live in Guangxi province don't earn enough to pay for fuel or electricity, and few are connected to the power grid. Before the project, women, who generally have the responsibility of collecting fuelwood, spent hours every day collecting wood and then spent more time cooking in their smoke-filled homes.

"We used to cook with wood," says Liu Chun Xian, a farmer involved in the project. "The smoke made my eyes tear and burn and I always coughed. The children too were often sick and had to go to the clinic, which was expensive. Now that we're cooking with biogas, things are much better."

Each household involved in the project builds its own plant to channel waste from the domestic toilet and nearby shelters for animals, usually pigs, into a sealed tank. The waste ferments and is naturally converted into gas and compost. In addition to producing energy, the project has resulted in better sanitary conditions in the home.

The poorest households, which had only one pig, built small units that could produce enough gas to provide lighting in the evening. Households with two or more pigs built larger units that could produce gas for cooking as well as for lighting.

The double bonus of energy and compost motivated poor people to adopt this technology in significant numbers. By 2006, the project had exceeded its target by providing more than 22,600 biogas tanks and helping almost 30,000 households in more than 3,100 villages. As a result, 56,600 tons of firewood can be saved in the project area every year, which is equivalent to the recovery of 7,470 hectares of forest.

By turning human and animal waste into a mixture of methane and carbon dioxide that can be used for lighting and cooking, the project is directly contributing to climate change mitigation and poverty reduction. Living conditions and the environment have improved and the labour force has more time for agricultural production. Forests are protected, reducing greenhouse gas emissions through deforestation. A large amount of straw, which was previously burned, is now put into biogas tanks to ferment. This further reduces air pollution from smoke and helps produce high-quality organic fertilizer.

With more time to spend improving crops, farmers in Fada increased tea production from 400 kilograms to 2,500 kilograms a day over a five year period. Average income in the village quadrupled to just over US$1 per day. This is significant in a country where the poverty line is US$0.26 per day.

The lives of women, in particular, have been transformed by the project. Since Liu Chun Xian's family began producing biogas on their farm, she no longer spends three hours a day collecting wood for cooking. Instead, she has taken training that has helped her improve the family's tea farm, which now generates more money. Thousands of poor farmers across the province have done the same, contributing to a drop in rural poverty.

Adaptation and mitigation in Peru

The native people of the high Andes (altiplano) have always had to contend with an inhospitable environment. High winds, sparse ground cover, frozen water and extreme temperature variations are the norm. As a result of climate change, these temperatures variations have become even more pronounced, with oscillations of -8°C to 25°C in a single day, compared with -1°C to 21°C 50 years ago.

Water shortage as a result of climate change has also become a significant problem in the region. Rainfall is less frequent and less abundant. Some glaciers have melted completely, leaving large areas without water. As a result, the green cover has been disappearing, and there is less forage for animals.

The IFAD-supported Marketing Strengthening and Livelihood Diversification in the Southern Highlands (Sierra Sur) Project, is working directly with more than 21,000 families over an area of almost 78,000 km^2 to help them become more resilient to the impact of climate change and improve their management of natural resources.

Water from rain and melting ice is being trapped in pits so it can be used for irrigation. Project participants are diversifying their crops and are now cultivating maize, beans, cereals, potatoes and oregano in terraces, separated by stone walls, on the mountain slopes.

The stone walls break the wind and trap soil and water to prevent runoff. The stones also act as heat reservoirs,

soaking up warmth from the sun during the day and releasing it slowly, which helps control freezing during the cold mountain nights. Project participants are also involved in tree planting initiatives to help restore the area's green cover. The trees serve as wind breaks and help regulate the temperature. They are a source of fuelwood and their roots help stabilize the soil on the slopes.

Families taking part in the project have also been protecting themselves from lower temperatures by improving their homes. They are building double walls to help absorb solar heat and adopting fuel-efficient stoves instead of cooking over open fires. Because their homes are no longer filled with irritating smoke, people are able to remain comfortably indoors for longer periods.

As a result of the project, the local population is better fed, and livestock is thriving. The improvements in natural resource management have led to new business initiatives. With more cattle, for example, people are able to make yoghurt and cheese to sell to other communities. Thanks to the more efficient stoves, families participating in the programme are saving 2.6 tonnes of fuel per year – the equivalent of 32 hectares of forest saved per family each year. And with fewer trees being felled, greenhouse gas emissions from deforestation have been reduced. The project, which began in 2005, is due to run through 2011.

IFAD/P.C. Vega

RUPES: new ideas for improving livelihoods and the environment

Poor rural people have the potential to be important players in natural resource management and carbon sequestration. The IFAD-supported 'Programme for developing mechanisms to reward the upland poor of Asia for environmental services they provide' (RUPES) has developed ways to compensate poor farmers who protect ecosystems.

The initial RUPES project, which ran from 2002 to 2007, helped build momentum and public interest in rewards for environmental services at the national level in Indonesia, the Philippines, Nepal, China, Laos and Vietnam. The process of identifying environmental services, valuing them, and facilitating the development of local institutions has led to increased awareness of watershed conservation and better land management in all RUPES sites.

RUPES and other initiatives have encouraged poor rural people to adopt improved land and forest management practices. This is especially apparent in Sumberjaya, Indonesia, where the reward mechanism started with coffee agroforestry and has now been extended to include river care. Better environmental practices were shown to have a direct impact on agricultural production, such as improved and higher yields of coffee in Sumberjaya.

The RUPES project has demonstrated some new ideas to improve the livelihoods of the upland poor. At Sumberjaya, where land tenure rights have been a longstanding issue, the project helped to resolve conflicts over land and to provide tenure security in return for a commitment from the upland poor to maintain or restore environmental services. Indeed, land tenure has been the main reward mechanism for watershed protection and carbon sequestration projects. With IFAD's financial support, the World Agroforestry Centre and local NGOs have helped farmers develop community forestry schemes that envision land tenure for 25 years, after a five-year trial period.

In Indonesia, what initially started out as a small RUPES national technical advisory committee has now evolved into an independent, self-supporting national institution that focuses on lobbying the government to revise forest regulations so they include rewards for environmental services. RUPES also helped lobby in favour of the ratification of the Kyoto protocol in Indonesia.

Carbon sequestration is a global environmental service. Kalahan, the Philippines and Singkarak, Indonesia were identified as potential sites for carbon markets. Research supported by national partners resulted in carbon Project Identification Notes to assist in negotiations with buyers under voluntary and CDM mechanisms.

RUPES has developed the Rapid Carbon Assessment (RaCSA) which, like other rapid appraisal tools, substantially reduces the cost of estimating the carbon sequestering capacity of forests and agroforests. Combining the water and carbon services (effective community agroforestry would simultaneously provide both) could also reduce transaction costs. RUPES has carried out RaCSA to quantify the carbon sequestered in the forests and agroforests of Singkarak and Kalahan. In the final year of RUPES, two potential private buyers approached the Singkarak and Kalahan sites to discuss developing voluntary carbon market schemes.

The results of the first phase of the RUPES programme were so encouraging that a second phase was approved in April 2008. It will run for four years, building on the lessons learned in the first phase.

Contributing to adaptation on Mount Kenya

Mount Kenya is the second highest mountain in Africa. Its massive forest is home to a wide range of animals and plants. The mountain's vast underground lakes and network of rivers supply water to millions of people in surrounding rural areas and in the city of Nairobi.

Glacier retreat is already causing problems for the local environment. Melting snow once fed the rivers and kept the catchment humid, while moderating the dry season. But now, as a result of earlier and shorter snow-melts, there is less water for the rivers and springs and the land is becoming drier and less productive. In the forest, there are more fires and a lower rate of vegetation regeneration. Wild animals are migrating downstream in search of water and food, worsening the human-wildlife conflict. Farmers in the region are finding that the decline in water availability, poor crops and less forage is having a consistently negative impact on their food security, income, employment and health.

With climate change already having an impact in the region, and projected to have an even greater impact in coming years, the IFAD-supported Mount Kenya East Pilot Project for Natural Resources Management is working on improving adaptation while ensuring that the impact of climate change will not be exacerbated by ecosystem degradation, unsustainable use of natural resources and population pressure.

The project, which started in 2004, is strengthening the resilience of natural and farming systems to short-term climate variability and reducing vulnerability to current climatic risks. It supports adaptation through a range of activities including reforestation, improved water resources management and appropriate agricultural practices. The most effective results came from projects that introduced better water-supply infrastructure, rehabilitated degraded lands and hilltops, and protected river banks through planting and agroforestry.

Thanks to these efforts, vegetation and tree cover have been increasing. In the upper catchment, forest rehabilitation and protection have led to stable water levels in a number of rivers and reduced siltation in some areas. In the middle catchment, springs and streams are dry for a shorter period. In the lower catchment, where there are no perennial rivers, improved infrastructure – such as water harvesting tanks – have enabled farmers to cope more easily with rainfall shortages.

The government of Kenya and IFAD are supporting communities by helping them form water users' associations along the main rivers flowing from the mountain. Members of the associations plant trees and vegetative ground cover to protect riverbeds and natural springs, and monitor the pollution levels of the rivers.

In the long run, the aim is to have community institutions that are fully aware of their responsibility to preserve their natural resources while generating enough income to sustain themselves.

The GEF is funding a complementary project in Mount Kenya that is working to enhance the equitable use of natural resources in the project area, with special emphasis on two protected areas – Mt. Kenya National Park and Mt. Kenya National Reserve – and their buffer zones. The project intends to contribute to climate change mitigation by conserving carbon stocks in forests and enhancing carbon sequestration, while also maintaining biodiversity.

IFAD/A. Manikowska

IFAD/P. Wiggers

Compensation for environmental services: local initiatives, global benefits

Agriculture and forestry management can play a key role in mitigating the impacts of climate change and in promoting adaptation at the local level. Carbon sequestration and reduced carbon emissions can be achieved in a variety of ways, including afforestation and reforestation, improved livestock management, rehabilitation of degraded crop and pasture lands, and better land management practices such as agroforestry.

Poor rural people – many of whom are indigenous peoples – depend on natural resources for their livelihoods. They are often the custodians of the natural resource base and can play a key role in protecting ecosystems that benefit everyone. However, people who are struggling to feed themselves and their families are often forced to resort to short-term solutions, such as cutting down trees for firewood instead of preserving forests.

In order for poor rural people to play an active role in climate change mitigation, it is essential that they are compensated for their activities that contribute to mitigation. It's a win-win situation for their families and for the planet as a whole.

There are various schemes – such as Payment for Environmental Services (PES) and Rewards for Environmental Services (RES) – designed to compensate communities for sustainable management of natural resources and can help implement reduced emissions from deforestation and degradation in developing countries (REDD) activities. To effectively involve smallholders and poor communities, it is important to help them overcome barriers such as very high transaction costs, insecure property rights, inability to afford investments, lack of information and risk aversion.

Incentives for environmental services are not necessarily monetary. They could also be strengthened property rights, better information, marketing opportunities, more inputs and improved credit services.

Poor rural people, with their traditional knowledge, can significantly contribute to mitigation. International agencies, working together, should redouble their efforts to support initiatives that reward rural communities and smallholder farmers for environmental services.

Building alliances

Climate change is a global environmental challenge. Helping poor rural people adapt to the impacts of climate change and enabling them to contribute to mitigation is not a task that can be performed by a single agency alone; it requires cooperation and a coordinated approach from the international community.

Partnerships are a critical way for IFAD to learn more about climate change, share its knowledge, strengthen the operations it supports, leverage additional funding and influence the global policy agenda. IFAD works with developing country governments, poor rural people's organizations, non-governmental organizations and the private sector to design innovative projects and programmes that fit within national priorities for agriculture and rural development. IFAD also works closely with other United Nations agencies and multilateral financial institutions.

IFAD supports efforts to strengthen the impact of the UN system's work and participates in pilot initiatives to better coordinate the efforts of UN agencies at the country level to deliver as one. IFAD also works closely with the other Rome-based UN agencies: the Food and Agriculture Organization of the United Nations and the World Food Programme.

The Global Environment Facility (GEF), as one of the main financial mechanisms for climate change, represents a key partner for IFAD. IFAD is a GEF executing agency. IFAD/GEF cooperation currently focuses on nurturing the links between poverty reduction, sustainable land management and climate change issues. Through the Global Environment and Climate Change (GECC) unit, IFAD helps countries access funding within the GEF adaptation programme. This includes the GEF-managed resources under the United Nations Framework Convention on Climate Change (the Least Developed Country Fund, the Special Climate Change Fund and the Adaptation Fund), and the GEF Trust Fund.

The Global Mechanism (GM) of the UN Convention to Combat Desertification (UNCCD) works with countries to mobilize financial resources in support of UNCCD implementation. IFAD has worked with the GM on many occasions to link new IFAD-supported projects to GM initiatives and UNCCD objectives.

IFAD is also party to the UNFCCC Nairobi Work Programme on impacts, vulnerability and adaptation to climate change.

In addition, the UN System Chief Executives Board for Coordination (CEB) is encouraging a coordinated, action-oriented approach to climate change, under the leadership of the Secretary-General. The objective is to support the development of a post-Kyoto regime, as well as coordinated efforts of Member States to fight climate change at national, regional and global levels.

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