



# Climate Change





## How will a changing climate affect rural development?

Responding to climate change is one of the most urgent challenges facing humankind. The most severe impacts are likely to be suffered by the poorest and most vulnerable in society who live in more fragile environments and have the least resources to adapt and recover. The majority of the world's poor continue to live in rural areas and their livelihoods are heavily dependent upon agriculture and natural resources, which will be severely affected by climate change. Therefore, there are serious implications for the food security, health and well-being of the rural poor.

## How will climate change affect agriculture?

In the longer term, mean precipitation changes, mean temperature changes and increases in atmospheric CO<sub>2</sub> will have a profound effect on agriculture. The timescale for this is subject to debate, but even in the shorter term, climate change is affecting agriculture through increased frequency and severity of extreme events, such as droughts, floods and heatwaves.

## How can smallholders adapt to climate change?

There is great potential for smallholders in developing countries to adapt to climate change. Much of this will comprise an intensification of their current adaptations to climate variability through activities such as selection of appropriate crops and varieties, manipulation of planting times, micromanagement of soil and water, and livelihood diversification. However, adaptation will crucially depend on the availability of appropriate technologies, knowledge and institutions, and having the right supporting policies and advice in place. The scale of projected climate changes and the challenges posed by existing climate variability to disadvantaged smallholders in low-income countries are immense. Therefore, there is an urgent need to understand these challenges better, to build adaptive capacities for household communities, local agencies and governments to develop appropriate strategies for sustainable and equitable rural adaptation.

## How can the Natural Resources Institute (NRI) help?

NRI has been working to support rural development in developing countries for over 100 years, conducting interdisciplinary research, consultancy and capacity building. Our expertise in smallholder agriculture, natural resources management, economic development and rural livelihoods is highly relevant to the challenges posed by climate variability and change. Together with our partners, we will contribute to the search for effective mitigation and adaptation strategies.

Our key areas of intervention in climate change work are:

- Identifying and assessing potential climate change impacts, especially the consequences for poor people's livelihoods
- Developing appropriate technical and institutional strategies for adaptation in collaboration with partners
- Analysing existing mitigation strategies and assisting in the development of equitable and sustainable future mitigation pathways
- Supporting southern voices in responses to climate change, particularly at the grass-roots level.

## Some examples of recent NRI work on climate change

### **Climate Learning for African Agriculture**

This two-year research project is studying the extent to which principles of climate-compatible development have been incorporated into the strategies and practices of African agricultural research and extension services. NRI is collaborating with the Forum for Agricultural Research in Africa, and the African Forum for Agricultural Advisory Services, to lead a continent-wide survey, in-depth learning exercises in four countries, and action-oriented dissemination of results to stakeholders.

### **Assessing the potential of farmer exchanges based on climate analogue analysis**

NRI is working with the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) to pilot methods for farmer-to-farmer exchanges using participatory learning approaches and the CCAFS spatial climate analogue tool.

The aim is to assess how adaptive capacity may be strengthened through visits by farmers to areas which are thought likely to represent their future climate and farming systems. The project will involve exchanges in East and West Africa during 2012.

### **Coffee and climate change: impacts of climate change on four countries**

NRI led the development of a report for the GIZ Coffee and Climate Change programme, a public-private partnership with various European coffee roasters and traders. The project highlighted the substantial impacts on coffee production and supply of current climate variability and projected climate change in Guatemala, Brazil, Tanzania and Vietnam.

### **Technologies for Climate Change Adaptation in the Agriculture Sector**

An NRI staff member acted as co-author and reviewer for this important handbook published by the UNEP Risø Centre on Energy, Climate and Sustainable Development.

### **Agricultural adaptation in Tanzania and Malawi**

Action research and shared learning among different stakeholder groups is strengthening local agricultural innovation systems to respond to climate change. NRI is working in partnership with the University of Dar es Salaam and the University of Malawi to establish farmer learning groups covering soil, water, seed and agrobiodiversity management and weather information. The partnership also brings together researchers, local governments, extension services, media and NGOs in regional and national learning platforms. This project is funded by the Department for International Development (DFID) through the International Development Research Centre (IDRC).

## Study on climate change, agriculture and Fairtrade

This desk study for the Fairtrade Foundation on the implications of climate change for smallholder producers and Fairtrade reviewed the risks to some major Fairtrade commodities and trade flows, and highlighted the possibilities for adaptation associated with Fairtrade.

## Urban-rural interdependence and the impact of climate change

This three-year IDRC and DFID-funded action research project managed by the University of Dar es Salaam with NRI and the University of Malawi, explores the complex and interdependent rural-urban food and agricultural systems in Malawi and Tanzania. NRI is working with key stakeholders in order to strengthen their understanding of these interactions and dynamics and collectively to develop ways of improving the climate resilience of these systems.

## Rural areas chapter for the Fifth Assessment Report of the IPCC

An NRI staff member is serving as Co-ordinating Lead Author of the chapter on rural areas within the second volume, Impacts, Adaptation and Vulnerability, of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).



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