FAO SAFEGUARDING THE GLOBAL ENVIRONMENT

Adapting Agriculture to Climate Change

ADAPTING FOOD SYSTEMS to climate change is essential for promoting food security and poverty alleviation, as well as for the sustainable management and conservation of natural resources. Many countries already are experiencing climate change impacts such as irregular, unpredictable rainfall patterns, increased incidence of storms and prolonged droughts. Changing weather patterns also allow for the emergence of pests and diseases that affect crops and animals.

The croplands, pastures and forests that occupy 60 percent of the Earth's surface are progressively being exposed to increased climate variability and change. Climate change threatens to undermine development achievements and slow progress towards the achievement of Millennium Development Goals (MDGs), especially those dealing with hunger and poverty reduction and ensuring environmental sustainability.

Supporting impact assessment and adaptation with data and knowledge

Climate change impact assessments and adaptation planning should consider location-specific vulnerabilities, risks, natural resource endowments and socio-economic contexts. Rural communities in fragile environments – such as coastal zones, drylands and mountain areas – will be the most affected, as they face the risk of recurrent crop failure, loss of livestock, fisheries and forestry products, and reduced availability of natural resources. In these situations, vulnerable groups, such as women and indigenous peoples, may suffer the most.

Countries need a sound understanding of how their food systems, ecosystems, societies and national economies are vulnerable to current and future impacts of climate variability and change. FAO has developed a wide range of innovative, user-friendly data systems and tools for assessing climate impact and vulnerabilities, and for planning adaptation practices, such as: Farm Adaptive Dynamic Optimization (FADO) methodology; weather-based indices for crop insurance; a standardized methodology for assessing climate change impact on agriculture; medium-term early warning systems for food security; a local climate estimate tool (New LocClim); a satellite-based rainfall estimate method (FAO-RFE); an agroclimatic database management system (FAOCLIM-Net); and a crop yield forecasting toolkit (CMBox).

Morocco: climate change will affect both rainfed and irrigated crops

FAO, together with the World Bank and Moroccan national institutions, undertook a detailed study of the impact of climate change on 50 crops, major agro-ecological zones and several climate change scenarios. The study found that the warmer and drier climate projected for Morocco will have adverse impacts on all major rainfed crops; that by 2050, the yield of soft wheat will decline by 33 percent in dry years, more than triple the decline in wet years; and that several important irrigated crops also will suffer, with the negative impact increasing over time. Studies and analyses such as this are especially useful for adaptation planning.

Climate change adaptation programme in Mozambique

The MDG Joint Programme on Environment Mainstreaming and Adaptation to Climate Change in Mozambique has implemented activities in some of the country's most affected and at-risk areas along the Limpopo River Basin and in the District of Chicualacuala. The programme is working toward five outcomes: i) informing, sensitizing and empowering government, civil society, communities and other stakeholders regarding environment and climate change issues; ii) strengthening government capacity at central and decentralized levels to implement existing environment policies; iii) mainstreaming climate-proofing methodology into government development plans, UN/donor programming and local stakeholders' activities and investments; iv) enhancing community coping mechanisms to climate change; and v) diversifying community livelihoods options. The programme's community-driven approach promotes the active participation of local stakeholders including women and vulnerable groups.

Strengthening climate resilience and reducing disaster risks in agriculture in Haiti

With co-funding from the GEF Least Developed Countries Fund (LDCF), FAO has assisted the Government of Haiti in developing a project to reduce the impact of climate variability and change on agro-ecosystems, vulnerable farmers and their livelihoods post-earthquake. The project, building on an IFAD co-funded project which identified and established a local multiplication system for climate resilient seed varieties, will integrate disaster risk management and adaptation in the agricultural sector at national and local levels, and support the replication and adoption of climate resilient crop varieties and cultivation practices. Specifically, the project will work towards: (i) immediate restoration and sustaining of results made before the earthquake in the adoption of climate resilient seed varieties and cultivation practices; (ii) building capacities and developing tools for scaling-up farmers' adoption of climate resilient practices to reduce disaster and food insecurity risks; (iii) incorporating climate change risk mitigation measures in local disaster risk management plans; and (iv) establishing local early warning systems for climate risk management and provision of climate information to farmers and communities.

Increasing ecosystem and livelihood resilience through sustainable natural resources management

Adaptation is an integrated, flexible process that depends on sustainable management of natural resources. There is already a wealth of knowledge on sustainable technologies and innovative practices for promoting better natural resource management and ecosystem resilience. Fine-tuning these practices in the context of emerging and anticipated future climate change impacts is essential.

Adapting agriculture to climate change requires identification, testing, demonstration and dissemination of good agricultural practices to meet changing climatic conditions. To ensure appropriate practices are shared


S. Ramasamy


S. Ramasamy

and put into practice, FAO works with its member countries to identify and prioritize suitable adaptation practices and technologies at national, local and community levels, integrate them into existing databases and disseminate them at the community level to local agriculture service providers who apply them through site-specific analyses. Adaptation practices can include crop-livestock integration, agroforestry, soil and water management, sustainable land management, watershed management and disaster risk reduction/management for application and possible up-scaling. In Bangladesh, an FAO-initiated project to improve rural populations' adaptive capacities and resilience to drought, floods and other climate change impacts has assisted in developing a methodology for translating climate change impact assessments into livelihood adaptation practices. This has involved working with farmers to test and implement adaptation options, and feeding results back to agricultural researchers and policy-makers in order to facilitate replication of successes.

Strengthening institutions and assisting countries in implementing adaptation priorities

FAO assists member countries in integrating climate change adaptation into national and sub-national agriculture, forestry and fisheries sector policies, food security programmes and investment priorities. FAO can support countries in developing and implementing their adaptation priorities and National Adaptation Programmes of Action (NAPAs). Sustainable crop, livestock, forestry, fisheries and aquaculture technologies can simultaneously increase adaptive capacity and contribute to climate change mitigation. FAO works together with GEF, UNFCCC and other partners to ensure that broad expertise and experience are brought together to assist the countries in meeting the challenges ahead.

For further information, please visit:
FAO Climate Change Web Portal: www.fao.org/climatechange/en
Or contact: Peter Holmgren, Director, Climate, Energy and Tenure Division Peter.Holmgren@fao.org