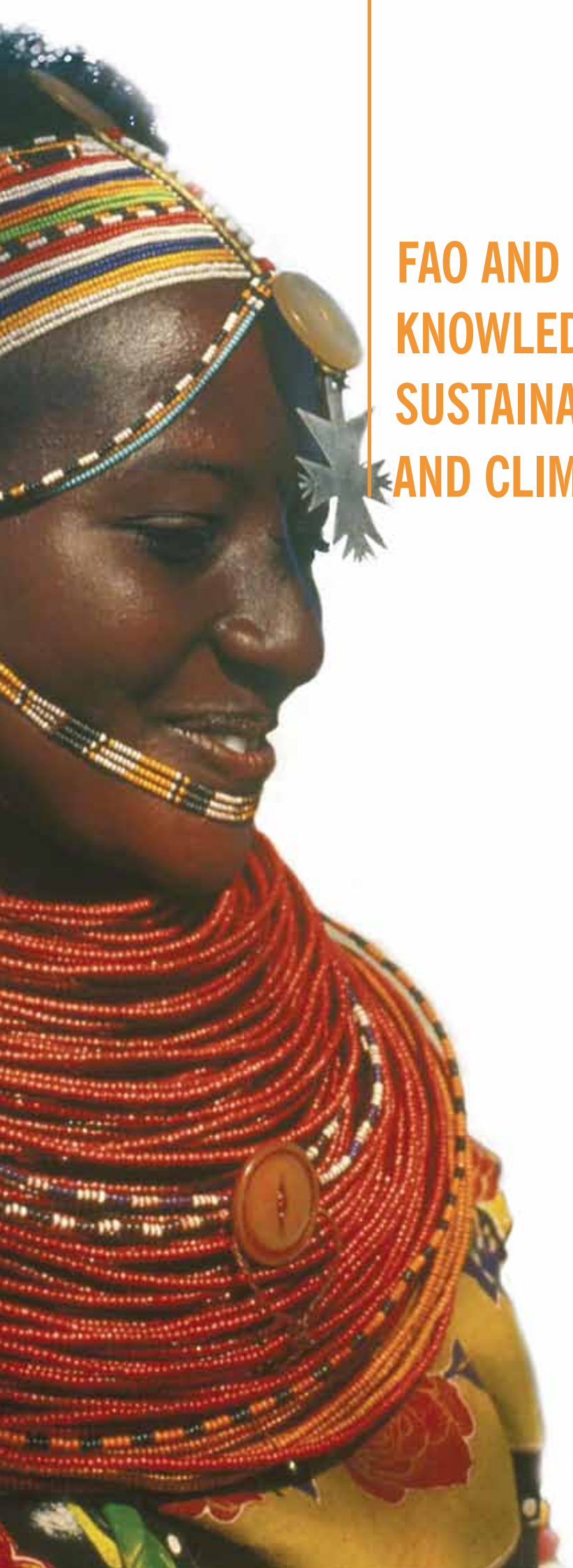
FAO AND TRADITIONAL KNOWLEDGE: THE LINKAGES WITH SUSTAINABILITY, FOOD SECURITY AND CLIMATE CHANGE IMPACTS



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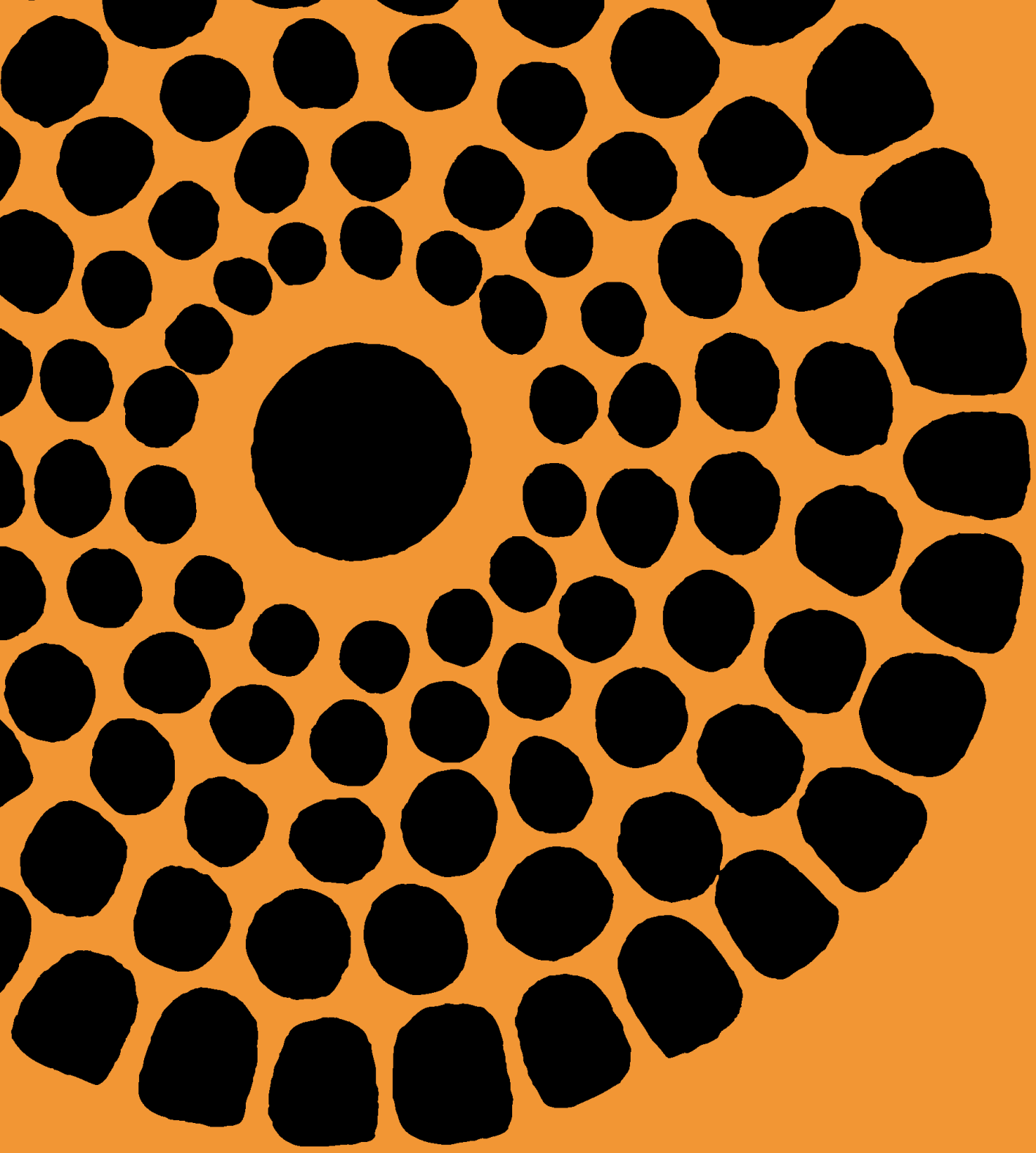

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INTRODUCTION

In developed and developing countries all over the world, farmers and indigenous and local communities have traditional knowledge, expertise, skills and practices related to food security and to food and agricultural production and diversity. Since its creation in 1945, FAO has recognized the significant contributions these make to food and agriculture, and the relevance of on-farm/*in situ* and *ex situ* conservation of genetic resources for food and agriculture. Over the decades, FAO has included traditional and local knowledge and activities in policies, programmes and projects related to a wide range of issues, including farmers' rights, poverty alleviation, nutrition and health, and gender equity, among many others. More recently, it has used traditional knowledge to tackle the emerging problems of soaring food prices and climate change.

Traditional farming, fishing, pastoralism/herding, foraging and forestry are based on long-established knowledge and practices that help to ensure food and agricultural diversity, valuable landscape and seascape features, livelihoods and food security. However, traditional livelihoods and indigenous plant varieties, landraces and animal breeds are now increasingly endangered by large-scale commercialization of agriculture, population dynamics, land-use/cover changes and the impacts of climate change.

FAO is developing innovative projects that support the use of traditional knowledge to promote rural development, gender equity, conservation of biocultural diversity, and sustainable management of agro-ecosystems, among others. At the same time, the projects seek to manage the risks to food and agriculture that result from natural and human-induced disasters, climate change impacts, soaring food prices and other emerging issues. FAO is also promoting international and interdisciplinary collaboration to strengthen the interface between traditional knowledge and cutting-edge science and technology, to help maintain and enhance the world's food and agricultural diversity and sustainability.

The traditional
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What are the linkages between traditional knowledge and food security?

Millions of traditional farmers and indigenous and local communities use their traditional knowledge to ensure food and livelihood security in a wide range of ecosystems, including fragile and harsh ones. Traditional practices are related to cultural traditions and biocultural dynamics and can regenerate local food systems while increasing socio-environmental sustainability and resilience. Such practices can also be applied in innovative ways to help tackle today's problems.

Through their on-farm/*in situ* conservation and management of resources, farmers, pastoralists/herders, fishers, foresters, foragers, mountain people and other communities following traditional lifestyles maintain high levels of genetic resources for food and agriculture. This creates an important basis for the food security of present and future generations worldwide.

The application of traditional knowledge in such areas as ecosystem and landscape management, water management, soil conservation, biological control of pests and diseases, ecological agriculture and livestock practices, and plant and animal breeding often enhances food security and prevents or alleviates poverty.

Who creates, innovates and maintains traditional knowledge?

Worldwide, 2.5 billion people derive their livelihoods from agricultural resources; 900 million poor people live in rural areas and 720 million – 400 million of whom are indigenous peoples – directly depend on agriculture and related activities.

Traditional knowledge of food and agriculture has existed for millennia, and has evolved over the last 10 000 years with the domestication of plants and animals and the development of agriculture.

Many rural peoples have generated traditional knowledge related to the thousands of indigenous crop and plant varieties, animal breeds, landraces and wild species that they use as food, medicine and other products to ensure food and livelihood security. Today, throughout the world, 10 000 cultures and 6 900 languages are involved in thousands of traditional knowledge systems.

Men and women often have different types of traditional knowledge related to food and agriculture. Combining the gender-based knowledge of both women and men contributes to food security, agrobiodiversity and rural development.

Traditional knowledge is maintained by experts and non-experts in local communities; it is held, owned and developed both collectively and individually; and it is transmitted through written, oral and non-verbal means among and within cultures, generations, population groups, communities, households and individuals.

FAO is taking urgent action to prevent the loss of these valuable systems and practices. As part of these efforts, it has pioneered international recognition of the concept of farmers' rights, which are linked to the traditional knowledge of farmers and indigenous and local communities. The FAO International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) entered into force in 2004 and is the first international legally binding instrument that endorses these rights and acknowledges farmers' enormous contributions to the conservation and development of plant genetic resources.

Why is sustainable food and agricultural diversity important?

Of the 10 000 to 15 000 plants that are known to be edible, about 7 000 species have been used in agriculture for food and fodder throughout human history. Today, less than 2 percent of these are recognized as economically relevant at the national and global levels. Currently, 20 cultivated plant species provide 90 percent of all the human food derived from plants; 12 plant and five animal species together provide 70 percent of the human diet. Such a narrow genetic basis puts food sustainability at risk.

Of the 7 000 animal breeds developed by traditional herders/pastoralists, 1 000 have become extinct over the last century. If remedial action is not taken, a further 2 000 domestic breeds will become extinct in the next 20 years. Only 14 domesticated mammal and bird species now provide 90 percent of the human food supply from animal sources. Today's international breeds are based on a narrow genetic base; food security is threatened when these breeds are affected by pests and diseases, and by climate and environmental changes.

This unprecedented reduction in the diversity of food systems and food-related genetic resources is due to changes in consumer preferences, population growth, changes in land cover and land use, loss of biodiversity and the expansion of uniform commercial varieties and breeds that accompanies the demise of traditional knowledge and practices.

It is important to support *in situ*/on-farm conservation for local food and livelihood security because *ex situ* collections cannot replicate the evolutionary processes and cultural practices required to maintain and improve the genetic resource diversity of plants, animals and microorganisms, manage landscapes and maintain ecosystem services.

Many of the plant varieties and animal breeds developed and used by indigenous and local communities have traits that allow them to adapt to local environments and climates, resist pests and diseases and satisfy local cultural preferences. Traditional farmers have created great variety, variability and robustness for food and agricultural sustainability.

Traditional indigenous and local communities conserve and use domestic and wild species sustainably, which helps to ensure food security, improved livelihoods, incomes and participation in markets. These communities also provide food to other societies all over the world.

Food and agricultural sustainability are key aspects of sustainable development, but economic, environmental and social sustainability is now challenged by energy crises, conflicts over resources, inequitable distribution, pandemics, ecosystem degradation and the impacts of climate change.

Traditional knowledge, climate change and food security

Climate change, extreme weather events and disasters are having increasing impacts on rural poor populations, threatening lives, food security, agricultural production and the fisheries, forest and aquatic resources on which people depend for their subsistence.

Many rural communities have vast knowledge of previous variations in climate and weather and have developed mitigation and adaptation strategies for ensuring food security.

Communities apply traditional knowledge in early warning systems that calculate risks or detect extreme weather events, droughts or floods. They use it in adapting subsistence strategies for agriculture, fishing, forestry and foraging; improving water and resource management; enhancing

ecosystems; selecting which resources to use to mitigate or adapt to climate change effects.

Traditional knowledge is used to observe, monitor and report weather-related changes in food and agricultural systems and to adjust to these climate-related impacts. The loss of such knowledge and resilience results in increased food insecurity, poverty and conflicts, while livelihoods decline and biodiversity disappears.

Extreme weather events are becoming increasingly frequent and intense; responses are needed that manage and reduce the risks and that improve preparedness for climate-related disasters and emergencies affecting food and agriculture. Such responses should combine traditional and local knowledge with data and applications from cutting-edge science and technology, and should involve innovative collaboration among local communities and government and Non-Governmental Organizations (NGOs).

Communities change their settlement patterns and food and agricultural practices to adapt to or mitigate such climate change impacts as droughts, floods, sea level rises, changes in temperature, flora, fauna or water conditions, and outbreaks of pests and diseases.

The traditional knowledge and networks of communities and households can be mobilized to prepare for, mitigate and manage disasters related to climate change before, while and after they occur.

To adapt to or reduce the impacts of climate change, rural communities select and improve both traditional and introduced seeds, crop varieties and domesticated animal breeds.

Communities can reduce food insecurity risks by complementing their traditional knowledge and practices with information and support from governments and others, including rapid response systems and capacity building for disaster preparedness, mitigation and management.

FAO programmes and projects linking traditional knowledge with climate change and disaster preparedness and mitigation

In 1996, the World Food Summit Plan of Action called for the development of efficient emergency response mechanisms, recommending that governments involve communities, local authorities and institutions in implementing emergency operations in order to reach populations and high risk areas more effectively. It also recommended that governments strengthen the linkages between relief operations and development programmes.

In 2008, the FAO High-Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy (held from 3 to 5 June) called for urgent measures to increase the resilience of the world's food systems to climate change. The international community committed itself to implementing short-, medium- and long-term measures to address these and other emerging issues. The conference declaration emphasized the need to adopt urgent measures in response to the crisis of soaring food prices, as well as to address the resilience of food production systems affected by climate change impacts and to maintain biodiversity for future production. It urged governments to prioritize the agriculture, forestry and fisheries sectors and to create opportunities for smallholder farmers and fishers – including indigenous peoples and, especially, those in vulnerable areas – to participate in and benefit from mechanisms for climate change adaptation and mitigation. It called for technology development, transfer and dissemination, and support to agricultural systems and sustainable forest management practices that contribute to climate change mitigation and ecological balance.

Programmes and projects for food security, livelihood sustainability, poverty alleviation, and disaster management

FAO programmes and projects assist governments and development agencies in implementing rural development plans that include preparedness for and management of disasters related to climate change. These focus on the linkages between food security and disaster risk reduction.

By providing training and capacity building, enhanced coordination and communication, early warning systems and public awareness raising, FAO empowers local institutions, improves risk identification, monitoring and management, and enhances disaster response, mitigation and rehabilitation. In all of these activities, local traditional knowledge, institutions and practices related to climate change are taken into account.

FAO provides technical and policy advice to countries affected by natural disasters resulting from climate change. It applies expertise and methods to help mainstream disaster management into agricultural development policies and programmes and to ensure that emergency and post-emergency support is integrated with long-term disaster risk management and rural development. The following paragraphs describe some of these programmes and projects.

Climate change and livelihood adaptation: in northwest Bangladesh, FAO and the Asian Disaster Preparedness Center (ADPC) are supporting livelihood adaptations to climate change and variability; profiling vulnerable populations; gathering local knowledge, perceptions and practices regarding climate change in drought-prone areas; strengthening farmers' resilience, coping capacities and adaptation strategies. The Livelihood Adaptation to Climate Variability and Change in Drought-prone Areas of Bangladesh project is being implemented under the government's Comprehensive Disaster Management Programme (CDMP) in collaboration with the Department of Agricultural Extension. Farmers in pilot areas apply their traditional knowledge and decision-making institutions to adapt agricultural and food production practices, such as cropping patterns and livestock composition, to environmental and climatic changes. Risk assessments are based on local observations and use information from governments, early warning systems, weather forecasts and applied research. This enhances risk evaluation and disaster preparedness for agriculture and food issues.

Farming and fishing communities implement traditional activities and strategies to improve community ponds and water retention, conserve soil moisture, and adapt or replace crops in response to drought risks. The government supports these communities with livelihood diversification opportunities, improved crops and breeds, modern irrigation systems and innovative technologies.

In other areas affected by climate change and variability – including parts of coastal India and the Pacific region – FAO engages in rural and participatory development processes in such areas as disaster preparedness, control and rehabilitation.

Climate change, drought and local institutions: the Role of Local Institutions in Reducing Vulnerability to Recurrent Natural Disasters in Sustainable Livelihoods Development Global Programme and The Role of Local-Level Institutions in Reducing Vulnerability to Natural Disasters Programme tackle the institutional aspects of managing disaster risk and elaborate strategies for incorporating disaster prevention and response activities into long-term sustainable rural development. The programmes support decentralization processes, develop the disaster risk management capacities

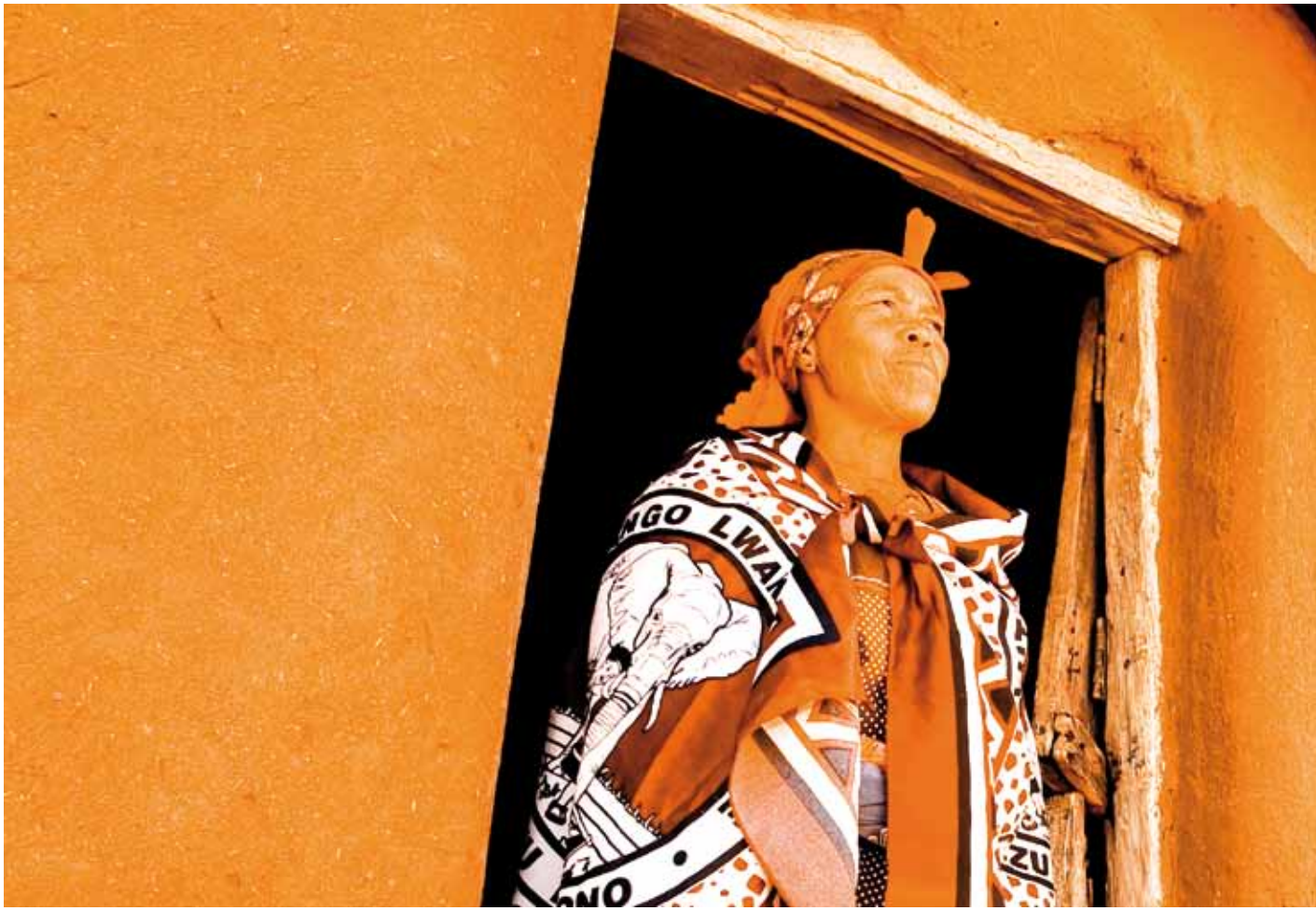
of stakeholders and networks, and build on local knowledge, practices and institutions through case studies from Argentina, Burkina Faso, Honduras, the Islamic Republic of Iran, Mozambique, the Niger, the Philippines, South Africa and Viet Nam. Community-based projects tap into local institutions' extensive traditional knowledge, skills, practices and risk reduction strategies for disaster preparedness and management, emphasizing the relevance of local networks and safety nets before, during and after disasters. FAO assists government and development agencies in including disaster prevention and mitigation in their long-term rural development plans, promotes disaster preparedness and contingency planning at the local level and recommends measures for enhancing local institutions' involvement in disaster risk prevention and management.

Conserving landscapes and agro-ecological heritage: Through the Globally Important Agricultural Heritage Systems (GIAHS) global programme, FAO supports innovative agricultural systems at the landscape level, as well as the traditional knowledge and practices and the biocultural dynamics that maintain unique agro-ecological systems. GIAHS makes use of the cultural dynamics and traditional institutions and practices that enhance agrobiodiversity, food security, livelihood sustainability and water and soil management in the face of climate, environmental and social change.

Gender, local knowledge systems and biodiversity management: FAO promotes gender mainstreaming and gender-sensitive approaches in regions affected by food shortages and decreased agricultural production. Based on approaches and methods developed by the Local indigenous Knowledge Systems (LinKS) project, FAO programmes and projects give special attention to gender mainstreaming and gender issues related to food and livelihood security, agrobiodiversity and poverty alleviation among populations affected by conflict, climate change and disasters. They also gather and disseminate traditional knowledge on food and agriculture among populations suffering the results of diseases, pests or the HIV/AIDS and other pandemics.

Animal genetic resources and traditional knowledge: Climate change has impacts on the sustainable use and conservation of domestic animals for food and agriculture. Conserving the thousands of animal breeds that exist facilitates adaptability by providing a wide genetic base from which to improve breeds and adapt them to changing climate and weather regimes and ecosystems. In the Interlaken Declaration of 2007 and the Global Plan of Action for Animal Genetic Resources the international community committed itself to halting the present accelerated loss of domesticated animal genetic resources and to supporting the traditional pastoralists and farmers whose knowledge and practices help maintain livestock diversity, including for species adapted to harsh and fragile environments.

Indigenous peoples' traditional knowledge: FAO participates in the United Nations Permanent Forum on Indigenous Issues (UNPFII), which aims to enhance communication and develop strategies to promote indigenous peoples' involvement in policy dialogue and advocacy. FAO supports indigenous peoples on issues that link food security and climate change responses, and recognizes the importance of indigenous knowledge and indigenous management and stewardship of biocultural diversity. FAO provides technical expertise on traditional foods essential for indigenous food security and health.



In partnership with indigenous peoples' organizations, it develops cultural indicators for indigenous peoples' food and agro-ecological systems for food security. FAO assists governments with land delimitation that recognizes the ancestral lands of traditional farmers, pastoralists and hunter-gatherers, thereby ensuring their rights, livelihoods and food security. FAO's Communication for Development Strategies support indigenous peoples' communication and information needs.

Challenges and the way ahead

FAO seeks to promote and conserve traditional and local knowledge to advance its mission and objectives. ITPGRFA, the recognition of farmers' rights, the Convention on Biological Diversity (CBD) and other international agreements and declarations recognize the valuable role played by the knowledge systems and practices of thousands of traditional societies in conserving the world's biological, cultural and linguistic diversity.

In the coming decades, further advances are needed to coordinate short-, medium- and long-term actions, policies and programmes and to implement farmers' rights and traditional knowledge fully, to ensure the sustainable use and conservation of food and agricultural resources in a world of unprecedented social, environmental and climatic change.

The promotion and protection of traditional and local food and agricultural knowledge will require international, intercultural and interdisciplinary approaches, communication and cooperation. Coordination of indigenous and local communities' sustainable use, conservation and management of food and agriculture within and across ecosystems, landscapes and seascapes will also require synergies that link food security, livelihood sustainability, poverty alleviation and food and agricultural productivity to rural development processes based on *in* and *ex situ* conservation of food and agricultural genetic resources.

As part of its vision and mission for the twenty-first century, FAO is committed to reducing hunger and poverty, raising agricultural production and productivity, enhancing agrobiodiversity and conserving genetic resources for food and agriculture, while contributing to sustainable development. FAO is working to build capacity and maximize existing knowledge systems to achieve food and agricultural sustainability and food security for all. Its challenge over the next decades is to enhance international collaboration to make optimal use of both traditional knowledge and cutting-edge science and technology.

Long-term approaches will be required to ensure sustainable development and human well-being in the twenty-first century.

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