

# Biodiversity for Food Security and Nutrition



Convention on Biological Diversity



## Biodiversity is key to sustainable, efficient, resilient and nutritious food production

### FAST FACTS

#### INVISIBLE WORKERS

About 100,000 species of insects, as well as birds and mammals, pollinate more than two-thirds of food plants and are responsible for 35% of the world's crop production.

#### WILD ANIMALS

Bushmeat and other edible wild mammals, reptiles, birds and insects that live in trees and forests can account for up to 85% of the protein intake of people living in or near forests.

#### LOSING DIVERSITY

About 7,000 species of plants have been cultivated or collected for consumption in human history. Presently, only about 30 crops provide 95% of human food energy needs, with 5 cereal crops (rice, wheat, maize, millet and sorghum) providing 60% of the energy intake of the world's population.

#### OCEANS, SEAS, RIVERS, AND LAKES

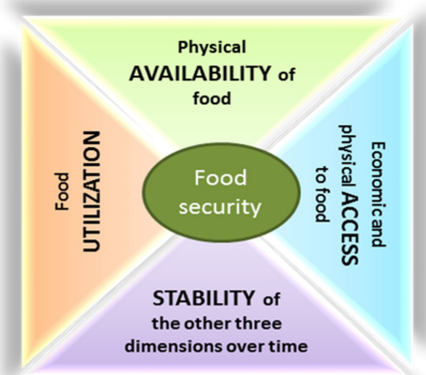
Fish provides about 3 billion people with almost 20% of their intake of animal protein. About 30% of major marine stocks are overexploited, producing lower yields than their biological and ecological potential and in need of strict management plans to restore their full and sustainable productivity.

The world population is expected to reach nine billion by 2050. In terms of food availability, **global food production will need to rise by about 60%**.

**Food production depends largely on biodiversity and on the services provided by ecosystems.** We would not have the thousands and thousands of different crop varieties and animal breeds without the rich genetic pool of the species they originated from. We could not keep livestock, fish or grow trees and other plants without the services delivered by the terrestrial and marine ecosystems and by biodiversity, including the often invisible contribution from microorganisms and invertebrates.

The genetic diversity of crops and livestock, including their wild relatives, **are a fundamental resource** for the continued improvement of crop varieties and livestock breeds, needed to cope with ongoing changes. Many of these genetic resources are particularly held *in situ* within farming

The four dimensions of food security



systems and the broader landscape, and maintained productive thanks to the skilled stewardship of farmers and local communities.

Natural renewable resource degradation, including the loss of biodiversity and the erosion of genetic diversity, is one of the major challenges in food production today. **Biological diversity and the related ecosystem services are crucial to cope with changes and achieve food security for all.** Addressing food security and biodiversity requires appropriate practices and adequate policies.

more information:

[www.cbd.int/agro/cross-cutting.shtml](http://www.cbd.int/agro/cross-cutting.shtml)  
[www.fao.org/biodiversity](http://www.fao.org/biodiversity)  
[www.fao.org/nr/cgrfa](http://www.fao.org/nr/cgrfa)  
[www.fao.org/ag/save-and-grow](http://www.fao.org/ag/save-and-grow)  
[secretariat@cbd.int](mailto:secretariat@cbd.int)





©FAO/Simon Maina / FAO, Tanzania

## STRATEGIC PLAN FOR BIODIVERSITY 2011-2020

Aichi Biodiversity Targets of relevance to food security, include those that by 2020: incentives and subsidies are reformed; plans are implemented for sustainable production and consumption; fisheries are harvested sustainably; areas under agriculture, aquaculture and forestry are managed sustainably; pollution, including excess nutrients, is reduced below detrimental levels; genetic diversity of cultivated and farmed species, and their wild relatives, is maintained; ecosystems providing essential services are restored; and that traditional knowledge, innovations and practices are respected and integrated.

### For the Benefit of Producers and Consumers

Supporting the conservation and sustainable use of biodiversity, including through local knowledge and the traditional management practices associated with them, is necessary to **enable farming systems to continue to evolve and meet future needs**. It is therefore especially important to promote the key role farmers, pastoralists, forest dwellers and fisher-folk around the world play in the maintenance of biodiversity for food and agriculture, and of the vital contribution biodiversity makes to their livelihoods.

There are significant ways to **enhance production and resilience of food systems by integrated management** of farming, livestock and forestry at their different scales and integrated with other land uses.

For instance, protected or community conserved forested areas within a landscape can provide significant ecosystem services for farmers, such as pollination, improved water supplies and regulation of local climate. Moreover, improved resilience of food pro-

duction systems within a landscape can also **contribute to reducing risks** from weather-related disasters such as floods, droughts and land-slides. Landscape and agricultural diversity is a highly desirable goal, particularly under a changing climate.

**Conserving or restoring key elements of biodiversity** for food and agriculture, for example soil biodiversity, **supports the related ecosystem functions**. Degradation of soils can be reversed to deliver multiple benefits, including improved nutrient and water management, soil organic carbon content, natural pest and disease regulation and reduced soil erosion. This significantly increases the efficiency of the use of inputs (e.g. fertilizer, pesticides and herbicides), thereby simultaneously increasing food productivity, reducing off-farm impacts and increasing resilience to climate change.

By providing a diverse range of foods, biodiversity underpins nutritious and sustainable diets, which are those diets with low

environmental impacts which contribute to food and nutrition security. A growing awareness by consumers of the importance of diversified diets is a powerful instrument to promote a higher diversity of foods. For example, educating urban populations on the relationship between diet, biodiversity and health can increase nutrition security and agricultural practices that support biodiversity. **Diversity of foods and farming systems is also known to support economic diversity** and increase resilience to local or global economic shocks, thereby supporting livelihoods and food security.

**More, and nutritionally adequate, food will need to be produced using less input per unit of produce**. This can be done mainly by maintaining and enhancing the ability of ecosystems to **underpin sustainable increases in productivity** whilst simultaneously **reducing impacts** across the scales, from industrialised to smallholder farming.