



Food and Agriculture  
Organization of the  
United Nations

# GREEN AND CLIMATE-RESILIENT AGRICULTURE



## Context

In April 2021, the U.S. Special Presidential Envoy on Climate John Kerry and China Special Envoy for Climate Change Xie Zhenhua met ahead of the US-hosted Leaders' Summit on Climate to discuss their commitment to work together and with other parties to strengthen implementation of the Paris Agreement. Their joint statement listed areas for further discussion, both on the road to UNFCCC COP26 and beyond, and for concrete actions in the 2020s to reduce emissions aimed at keeping the Paris Agreement-aligned temperature limit within reach.

In December 2019, the European Commission adopted the European Green Deal aiming to make food systems fair, healthy and environmentally friendly, and Europe climate neutral by 2050. Green and climate-resilient agriculture, which aligns with FAO's mandate, was identified as an important area of action.

Greenhouse gas (GHG) emissions from agri-food sectors represent 34 percent of total GHG emissions, caused mainly by deforestation, livestock production, soil and nutrient management, and food loss and waste. For agriculture to become part of the climate solution and to feed an increasing world population of 9.9 billion by 2050, agri-food systems need to be transformed and strengthened through effective climate change adaptation and mitigation, for people to have access to sustainable, affordable and healthy diets, now and in the future.

This paper describes FAO's vision and gives guidance on the implementation of green and climate-resilient agriculture. It looks at how FAO is applying and scaling it up in an integrated way through country support and global advocacy. It is complemented by a webpage showcasing relevant FAO practices, success stories as well as related articles, publications and videos.

## Importance and application

Agri-food systems contribute to GHG emissions and are at the same time extremely vulnerable to climate change. Without urgent action, climate change will continue to put food production at risk, particularly in countries and regions that are already highly food insecure. The recent Intergovernmental Panel on Climate Change report confirms that observed climate change is already affecting food security because of increasing temperatures, changing precipitation patterns, and greater frequency of certain extreme weather events. It also underlines that food security will be increasingly affected by projected climate change.

To respond to these intrinsically interconnected challenges, FAO is significantly increasing the scale and scope of its work. While substantially contributing to resolving problems including hunger, obesity, zoonotic diseases, deforestation and degradation, overfishing, and food loss and waste, FAO contributes to addressing global problems of climate change, biodiversity loss, and poverty.

This is in line with the new FAO Strategic Framework 2022–2031, where green and climate-resilient agriculture are part of FAO's aspirations for better production, better nutrition, a better environment and a better life, leaving no one behind. It is linked with several programme priority areas (PPAs) such as green innovation, climate change mitigating and adapted agri-food systems, bioeconomy, biodiversity and ecosystem services for food and agriculture, reducing food loss and waste, resilient agri-food systems, and scaling up investments.

Green and climate-resilient agriculture brings together the climate, resilience, environment and agriculture agendas, triggering action in agri-food systems to respond to the climate crisis. FAO's work, examples of which are given in our [webpage](#), reveals how green and climate-resilient agriculture can contribute to the achievement of key SDG targets (in particular targets under SDGs 1, 2, 10, 12, 13, 14, 15 and 17).

**Green and climate-resilient agriculture** ensures that agri-food systems are adapted to, halt or significantly lower their GHG emissions and other environmental impacts while maintaining or increasing their benefits. It is an integral part of FAO's work, applied through its programmes, projects and initiatives such as the Hand-in-Hand and Green Cities initiatives, the work on emergencies and resilience in line with the humanitarian-development-peace nexus (HDPN), and through the UN Decade on Ecosystem Restoration (2021–2030), the UN Decade of Ocean Science for Sustainable Development (2021–2030) and the UN Decade of Family Farming (2019–2028).

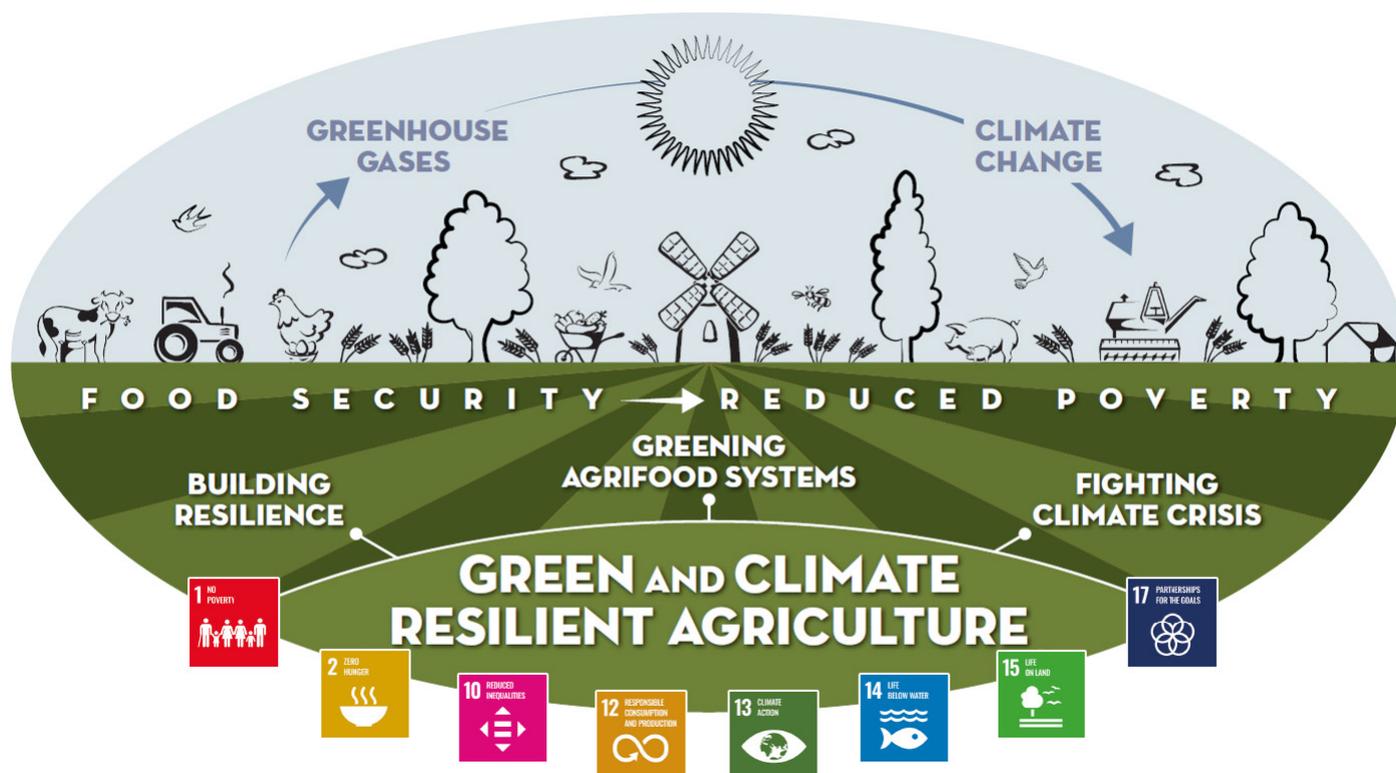
**Green and climate-resilient agriculture** links with the Koronivia Joint Work on Agriculture under the UNFCCC where agriculture and food systems are recognised as key in addressing climate change. It also contributes to the implementation of the Sendai Framework for Disaster Risk Reduction, and in considering the COVID-19 pandemic and the climate emergency, offering possibilities to build forward better.

**Green and climate-resilient agriculture** employs agricultural practices, technologies and innovations that enhance productivity in a sustainable manner, increase resilience and food security, reduce GHG emissions and

ensure higher incomes for small-scale producers. These include practices such as climate-smart agriculture, biotechnology and agroecological approaches, sustainable forest, fisheries and soil management, disaster risk management, and others as presented in the [webpage](#).

**Green and climate-resilient agriculture** practices support countries in the design, enhancement and implementation of their national policies and strategies including their Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs) and Disaster Risk Reduction (DRR) Plans. Green and climate-resilient agriculture includes deploying methodological tools and strengthening countries' capacity to collect and analyze data, for example through FAOSTAT, the Land Degradation in Drylands Assessment project, Global Agro-Ecological Zones, Global Land Cover-SHARE, the FAO Water Productivity Open-access portal (WaPOR) and Collect Earth. Furthermore, innovative technologies and early warning systems can provide farmers with information and advice to help enhance green productivity and build resilience. Local and indigenous knowledge, practices and technologies are also valuable for building resilience and ensuring inclusion.

**Figure 1. Green and climate-resilient agriculture**



## FAO's comparative advantage

Countries face increasing exposure to crises and shocks, such as climate change, biodiversity loss and pollution, aggravated by the COVID-19 pandemic. They are negatively affecting agri-food systems, and the livelihoods of tens of millions of people. FAO must increase its support to Members to better prepare, respond and pave the way to a green and climate-resilient future where the Sustainable Development Goals are achieved. FAO has a strong comparative advantage as the world's lead agri-food systems knowledge agency for technical cooperation, capacitybuilding, policy

development and dialogue, supporting action at global level and on the ground.

FAO is implementing a series of programmes and projects, working with governments, cities, regions, the private sector and communities, that are developing policy frameworks and enabling institutional arrangements for green and climate-resilient agri-food systems. FAO is an invaluable platform for the science-policy-practice interface, supporting the implementation of various international agreements and treaties, and helping to put science into practice.

**Figure 2. Green and climate-resilient agriculture and FAO's Strategic Framework**



## Moving forward

Achieving green and climate-resilient agriculture means reaching synergies and managing tradeoffs across the wider 2030 Agenda and other relevant frameworks, including the Paris Agreement and the Sendai Framework for Disaster Risk Reduction. This will require action on the ground, in collaboration with Members and partners to best support countries while maximizing synergies and minimizing trade-offs. The green and climate-resilient agriculture webpage provides examples that can support farmers (including herders, pastoralists, fisherfolk, foresters) and other stakeholders to adopt green and climate-resilient practices for transformation towards sustainability. In addition, FAO will continue advocating globally to promote green and climate-resilient agriculture in cooperation with partners, including through the dissemination of results at international events

(e.g., CBD COP15, the Global Platform for Disaster Risk Reduction (UNDRR GP7), UNFCCC COP 26 and UNCCD COP 15). FAO is working to ensure agendas and commitments at such events are better aligned to address food security and the needs of the most vulnerable people, as well as the climate crisis. FAO participates in the development of the Coalition of Action on "Climate Resilient Development Pathways: Food Systems for all beyond 2030" under the UN Food Systems Summit and is actively engaged in the Rio Conventions to ensure collaboration and outreach aiming at increased country support and action on the ground. These actions contribute to supporting FAO's aspiration to achieve sustainable, inclusive and resilient food systems for better production, better nutrition, a better environment, and a better life, leaving no one behind.