



UN  
DP

# ISSUES BRIEF

## Resilient Food and Agriculture

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**As climate change continues to drive food insecurity, addressing the risks of climate change across the value chain – especially agricultural products that are important to food and nutrition security – will yield significant adaptation benefits to vulnerable small producers and rural communities at large. This will support global efforts to end hunger and poverty, build more effective farming practices that reduce greenhouse gas emissions, and accelerate the ambition of Nationally Determined Contributions to the Paris Agreement.**

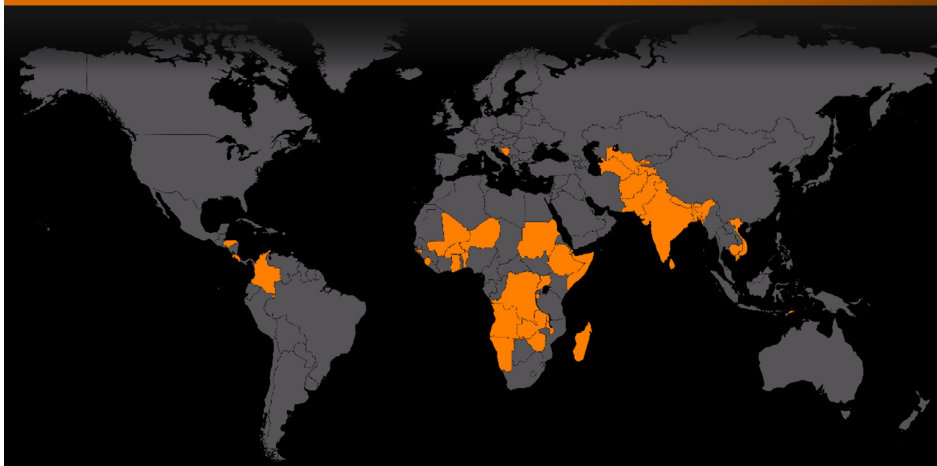
Agriculture is socio-economic backbone of rural landscapes employing an estimated 2.5 billion people. Over the 20th century food and agriculture commodity production and consumption has grown largely at the cost of negative externalities that led to social inequalities and environmental degradation.

Agriculture contributes about one-fifth of all greenhouse gas emissions and is a primary cause of biodiversity loss. As relying on topsoil fertility, water resources and other

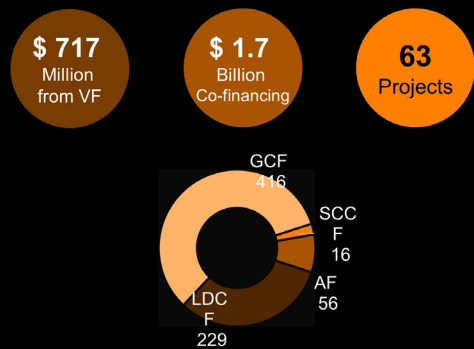
essential ecosystem services, agriculture is highly sensitive to changes in climate variability. Climate change exerts additional pressures on agriculture to produce nutritious food in sufficient quantity to satisfy increasing demand of fast-growing population. The current production and consumption practices are not adapted to the impacts of climate change and driving agriculture towards unsustainable trajectory with multiple human development impacts.

### Fostering resilience for food security

Coping with droughts, floods, changing rainfall patterns and other extreme weather events



#### Portfolio under implementation



#### Since 2008 and currently under implementation



6.3 million smallholder farmers across 1,100+ communities benefit from more resilient agriculture



552 crab, fish farms, nurseries and vegetables gardens established



873,771 ha of agricultural land under improved management

43 COUNTRIES

27 LDCs

7 SIDS

\*The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.



## COVID-19

The impacts of the COVID-19 pandemic and economic crisis on food systems and global supply chains are yet to be assessed, however some of the weaknesses and vulnerabilities have already been exposed that will need to be tackled as part of the recovery efforts. With considerable disruptions in input production and supply chains, the pandemic exposes the needs for diversified food systems and agricultural livelihoods and the need to shift towards low-input sustainable agriculture. UNDP will continue policy and programme support towards this direction, facilitate the adoption of farm-to-fork approaches, and support the production and consumption choices that ensure not only food but also nutrition security. Digital transformation in accessing market and price information, agronomic advisories, and climate information services is another critical area of support that UNDP can offer in partnership with other agencies and private sector. Furthermore, UNDP will support the development for food storage facilities that are required to minimize the harvest loss due to climate events and other shocks, and support the development of urban agriculture to ensure a certain degree of self-sufficiency during the times of crisis and also develop local market linkages between rural, peri-urban and urban producers.

## UNDP's comparative advantage

UNDP in partnership with other organizations is taking programming and policy measures to shift food systems towards climate resilient and sustainable pathways. UNDP's approach is that of food systems approach, which is a departure from a traditional sectoral approach and addresses their limitations.

Uniqueness of UNDP's role lies in its ability to work cross-sectorally and connect and reconcile local needs and sub-national context with national policy change. As outlined in UNDP's Food and Agriculture Commodity Strategy, UNDP offers integrated systemic approaches to development issues, catalysing and supporting cross-sectorial policy dialogue at national and subnational levels. Within countries, UNDP has the ability to work across all levels of territorial governance, down to provincial, departmental and municipal levels, meaningfully bridging the gap, connecting and improving the integration between global, national, jurisdictional and local levels. As a result, UNDP can forge collaboration and partnerships, leverage specialized knowledge, and catalyse public and private finance. UNDP's Food and Agriculture Commodities Strategy aims to upscale sustainable production landscapes and jurisdictions, transform food and agricultural commodity supply chains to become sustainable, and empower all members of vulnerable households and smallholder producers to become more resilient, attain food security and pursue sustainable livelihoods.

## Challenges

There are numerous challenges related to resilient food and agriculture. One of the key challenge that needs to be addressed is narrowly defined scopes that do not take a whole-of-systems approach. Narrowly defined focus often leads to siloed technical fixes that do not address the complex interactions of multiple drivers. Such challenges require cross-sectoral solutions that tackle (i) pre-production, input management, climate risk information and adaptation advisories; (ii) production at the farm and pastoral systems with the view of functional integrity of productive landscapes; and (iii) post-production, harvest management, access to market, agricultural entrepreneurship and finance, including risk finance.

Another key challenge is to break away from current unsustainable production and consumption patterns towards more sustainable practices across the value chain. In relation to this, specific challenges are to achieve transformation in the supply chain towards climate resilience and sustainability, rehabilitate and maintain ecosystems within which agricultural productive landscapes are nested, and ensure policies and finances reach the most vulnerable subsistence and small-scale producers.

## Main areas of work

### Pre-production / input management

- Climate risk and vulnerability assessment and value chain assessment to establish the risks of losses and damages across the entire value chain; market assessments
- Crop residue management (CRM) for soil carbon conservation and sequestration (composting, green manure, compost extract fertilizer)
- On-farm and off-farm water management, including water storage and supply infrastructure, including, last mile irrigation and efficiencies in irrigation systems
- R&D for resilient crops and breed varieties and accessible multiplication centres

### Capacity for the provision of climate information services and advisories

- Production and delivery of weather forecasts and early warning
- Provision of extension services, setting up farmers field school networks as field-based advisories; homologue farm networks to facilitate adaptation experimentation and farm transformation

### Production / diversified integrated systems

- Introduction and promotion of good agricultural practice (GAP), including support to certification

- Technologies for efficiencies in production (drones for seed bombs and precision agriculture), renewable energy technologies for resilient farming (irrigation, greenhouses, hydroponics)
- Integrated pest management
- Integrated tree crop livestock farming system
- Catchment management and rehabilitation through agroforestry and assisted natural regeneration methods; promotion of deforestation free agriculture practice

### Post-production

- Renewable energy powered and climate proofed storage facilities
- Climate proofing of rural infrastructure to ensure local mobility and access to services
- Provision of market information and ensuring access to market
- Provision of financial services. Innovative agriculture finance and insurance (index insurance, disaster risk insurance, mobile money / banking, revolving funds / MOIs, crowdfunding platforms, etc.)
- Enabling market innovations for farmers markets, processing cooperatives and agri-business incubation and development.

## Successes and key programmes

**Joint partnership in Zambia.** Aiming to limit the negative impact of climate change on farmers, the Government of Zambia, through a United Nations-led partnership including UNDP, FAO and WFP, accessed US\$32m from the Green Climate Fund for a 7-year, US\$137 million project (known locally as the SCRALA project). The project is designed to indirectly support 3 million small-scale farmers in Zambia in building climate resilient lives. Implemented by the Zambian Ministry of Agriculture, the SCRALA project is helping farmers in 16 districts across five provinces cope better with climate change threats through modern technology, sustainable growing techniques and better understanding of climate issues. Since the project was launched in February 2019, over 170,000 small-scale farmers have become involved.

**Canada-UNDP Climate Change Adaptation Facility (CCAF)** - With support from the Government of Canada and the Global Environment Facility's Least Developed Countries Fund, the Canada-UNDP Climate Change Adaptation Facility (CCAF) worked across six countries to build gender-responsive resilience to climate change - Cambodia, Cabo Verde, Haiti, Mali, Niger and Sudan. CCAF activities supported women to increase food production, diversify their livelihoods and transform gender-based social norms in food production.

**Guatemala.** The Climate Change and Resilient Productive Landscapes project in Guatemala bridged the gap between ecosystem-based approaches and climate-smart agriculture and food security. Funded by the Adaptation Fund, the project trained farmers in new techniques and land-management practices to not only increase yields but also adapt farming to better withstand the negative impacts of climate change. Unique projects included everything from chocolate microenterprises to larger forestry and land initiatives.

## Innovation and looking ahead

- **Digitization strategies** to help most vulnerable and isolated farming and pastoral communities to access strategic information, on markets, pricing, weather forecasts and early warning.
  - Digitization strategy may also include use of blockchain to verify access to service (e.g. availability of water, resilient crops) or ability to sell produce at a fair market price (linked with Fair Trade).
- **Food waste reduction and management.** According to Eat Lancet report if food waste were its own country it would be the thirds largest greenhouse gas emitter. Crop residue management CRM and compost and green manure production may offer new agribusiness opportunity.
- **Food consumption and dietary choices.** This option works to tackling nutrition as part of food security. Taking a farm-to-fork approach is therefore required to influence consumption and diet patterns. According to the same report, modern diet is a greater disease risk than alcohol and tobacco combined. Dietary choices must be changed to address both mitigation and adaptation needs in the food systems.
- **Engaging the private sector, adaptation services and technologies.** Many adaptation products and services can be turned into new opportunities for entrepreneurship, private sector creation and engagement. For example, dissemination of forecasts, adaptation advisories and other digital services; production of green manure, water efficient irrigation technologies; energy efficient and resilient storage facilities; renewable energy for agriculture services; and technologies such as solar-powered irrigation, storage, greenhouses and hydroponics. These adaptation services and technologies offer new opportunities for agri-business incubation and the emergence of private sector engagement.
- **Financial services in the remote rural areas.** In most LDCs remote rural communities are unbanked and trapped in highly vulnerable subsistence agriculture with limited opportunities for alternative livelihoods. Creating and supporting community aggregations, associations, cooperatives and member-owned institutions such as village saving and loan banks or associations and self-help groups are the ways to address the finance gap and create new livelihood opportunities in the remote rural areas.
- **Last mile investments** may offer the opportunities for blended finance through PPP models.



## Partnerships

### Existing partnerships

In all the projects, the teams work closely with national and local agriculture research institutes to expand the use of climate-resilient seeds. Work across the UN System is also expanding. In Madagascar, for instance, a UNICEF WASH programme is working closely with the ongoing GEF Least Developed Countries Fund-financed project for access to water for agriculture and the introduction of tree nurseries. In Mali, where conflict prevents project teams from freely circulating in some areas, a project has connected with a local organization (OMVF) to bridge the gap in these conflict areas. This has led to good results in terms of access to water (through the installation of ponds) and a strong ownership by the beneficiaries (including the local authorities).

**Integrating Agriculture into National Adaptation Plans (NAP-Ag)** – The joint UNDP-FAO programme supports partner countries to identify and integrate climate adaptation measures for the agricultural sector into relevant national planning and budgeting processes. It is a multi-year initiative funded by the German Government that responds to country driven needs, and is currently being expanded to support improved agriculture and land-use planning to accelerate the ambition of climate actions.

### New and emerging areas of partnerships

**Africa Centre for Climate and Sustainable Development.** With funding from the Italian Government and joint collaboration with FAO, this center will provide a fast-track, demand-driven mechanism for African countries to access grant resources that support policies, initiatives, and best practices on climate change, food security, access to water, clean energy, and accelerating progress on the Sustainable Development Goals (SDGs) in Africa.

**Telecoms.** Several countries are exploring the options of extending climate-information and agricultural advisories through public-private partnerships with telecoms providers.

**Global Commission for Adaptation.** GCA seeks to increase funding and support to build the resilience of 300 million small-scale farmers around the world. To achieve this goal, the Commission and its partners will increase investment in agricultural research, expanding access to crucial farmer advisory services and information, as well as access to improved risk management and financial services that farmers need to adapt to climate change.

**Other Partners.** Africa Adaptation Initiative, Alliance for Green Revolution in Africa, Adaptation of African Agriculture Initiative, the InsuResilience Global Partnership, Africa Risk Capacity, CGAIR, UNEP, FAO, UNICEF

## Connecting with the big picture

- **Accelerated ambition on Nationally Determined Contributions.** To keep temperature rises below two degrees, countries will need to vastly rethink the way agriculture systems work.
- **UNDP's Climate Promise.** Technical support for UNDP's climate promise will be delivered in close collaboration with key strategic partners -- most notably the International Renewable Energy Agency (IRENA), the Food and Agriculture Organisation (FAO), the United Nations Environment Programme (UNEP), and UNICEF.



## Impact



Photo: UNDP Guatemala

**“These days, families have so many children. And there’s less land available every day. That means fewer crops, less food. I never know if what my children eat is enough or not. Our land has steep slopes. So when it rains too much, all the nutrients in the soil are washed away. I want to learn how to take care of my land – how to build ditches and barriers, so that I can protect my crop from the heavy rains. [Before the project] I neither knew how to get the seeds, nor how to plant them. Now I do. When I received the seedlings, I was also taught how to plant them. Through a drawing, they showed me what my garden would look like. I dream that in the future my children won’t have to struggle for food. I don’t want them to have to go through what we’ve had to go through to be able to have food.” - Marta Ixtós Ajú, farmer, Guatemala**

Marta Ixtós Ajú lives with her husband and children in rural Guatemala. The daily life of her community, the indigenous people of Maya Quiche, revolves around agriculture and trade. Despite this, 1 out of 2 children in the country suffers from malnutrition. Through the Adaptation Fund-financed UNDP-supported Climate Change Resilient Productive Landscapes in Guatemala, Marta finally has a vegetable garden of her own. Supporting communities located in the middle and upper parts of the Nahuallate River basin, the programme also aims to bolster farmers’ work in upkeeping livestock farms and managing vegetable and medicinal gardens, improve the nutrition of themselves and their families, and create opportunities to strengthen food security of their communities.