

UNITED NATIONS DEVELOPMENT PROGRAMME



UN  
DP

# NATURE FOR FOOD SECURITY

NATURE  
PLEDGE

NATURE FOR DEVELOPMENT  
ACTION KITS



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## ABOUT THE 'NATURE FOR DEVELOPMENT' ACTION KIT SERIES

This document, 'Nature for Food Security' is one of a series of 'Nature for Development' Action Kits, as part of UNDP's Nature Pledge. This series includes 'Nature for Water Security,' 'Nature for Climate Action,' 'Nature for Food Security,' 'Nature for Prosperity,' 'Nature for Disaster Reduction,' 'Nature for Peace,' and 'Nature for Gender Equality.'

This action kit provides UNDP staff with an overview of the many intertwined relationships between nature and sustainable development. It also provides key facts, figures and talking points, as well as programming entry points needed to make the case for investing in nature to achieve development outcomes. This kit, which also provides the tools and information needed to learn more and take action, aims to:

- highlight entry points for implementation of the UNDP Nature Pledge;
- strengthen UNDP policy, advocacy and awareness-raising efforts;
- inform effective national, regional and integrated programming efforts, and support issue-based portfolio approaches in line with national priorities and UNDP's Moonshots;
- support resource mobilization with traditional and non-traditional funding partners;
- strengthen and forge new partnerships with sister UN agencies, other international development partners, national and local stakeholders in government, the private sector, academia, media and other civil society groups; and
- leverage and strengthen internal UNDP capacities and expertise at all levels.

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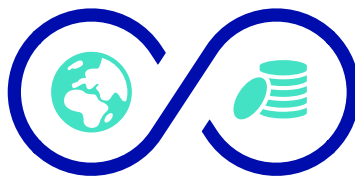
## ABOUT UNDP'S NATURE PLEDGE

The Nature Pledge is UNDP's commitment to support more than 140 countries in achieving their ambitious goals under the [Global Biodiversity Framework](#) and nature-dependent Sustainable Development Goals. The Nature Pledge focuses on three system shifts essential to put nature at the heart of sustainable development:



**VALUE SHIFT**

**A 'Value Shift' to transform the value we place on nature and drive changes in people's behavior so that we place nature at the heart of development and across sectors including governance, economics, finance, health, and conservation.**



**FINANCE AND ECONOMIC SHIFT**

**An 'Economic and Finance Shift' to support a system where decision makers value natural capital, alongside financial, human and man-made capital.**



**POLICY AND PRACTICE SHIFT**

**A 'Policy and Practice Shift' to deliver change at scale on the ground - led by governments, and grounded in partnerships with Indigenous Peoples and local communities.**

The Nature Pledge provides a pathway to transform our global systems by meeting vital targets to protect and restore our planet, eradicate poverty, reduce gender and other inequalities, protect human rights, and accelerate overall progress on nature-dependent sustainable development goals.

## NATURE FOR FOOD SECURITY

Nature-based solutions [are defined](#) as “actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature.” Food and Agricultural Commodity Systems (FACS) depend on nature and functioning ecosystems to be productive. Protecting and restoring nature is essential to supporting food security. [Restoration through agroforestry alone has the potential to increase food security for 1.3 billion people.](#) [Restoring mangroves could add 60 trillion edible fish to coastal waters every year.](#) As land and ecosystems that serve as the foundation for crop and livestock production are degraded, transitioning towards agroecological and regenerative food systems will be key to both securing livelihoods and advancing action on climate change and biodiversity loss.

Food and agricultural commodities produced using agroecology and regenerative agriculture principles increase biodiversity, enrich soils, improve watersheds, and enhance ecosystem services, all essential for sustaining food production into the future. Actions to protect nature and support food security include practising minimal tillage farming, eliminating bee-harming pesticides that threaten essential pollination services, and diversifying crops planted ([the world has over 50,000 edible plants, but just three of them - rice, maize, and wheat - provide over 50% of the world's food energy intake](#)). Crop diversity is not only key for dietary quality and food security, but evidence has also shown that diversified cropping systems – including agroecological systems, which nurture the environment in holistic ways, rebuild biodiversity and rehabilitate degraded land – have the capacity to deliver resilience in the face of environmental stresses.

### Key ecosystems essential for maintaining food security:



Food, shelter, energy, medicines and around 86 million associated jobs come from forest products



Soil carbon storage and water storage, forage for animal-based livelihoods, unique wildlife



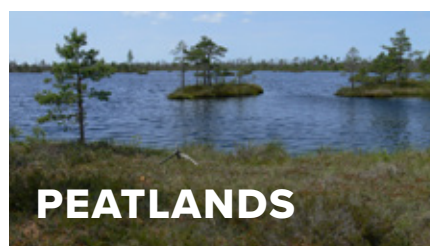
The ocean sustains all life on Earth. Salt marshes, coral reefs, seagrass beds and mangroves protect coastlines, and support artisanal fishing livelihoods



Provide water for drinking and irrigation, food through inland fisheries, water quality and climate regulation, flood protection, and transportation of goods



The 'water towers of the world' provide freshwater needs, half of the world's biodiversity hotspots, and are key food sources



Major store of soil carbon, they purify and supply water, and habitat for fish, wild animals, and plant food storage

Photo credits top row: UNDP Sumatra Tiger Project; UNDP Uzbekistan/Abbos Akhadov, Zulfiya Mamadalieva and Elena Turaeva; UNPD Fiji  
bottom row: UNDP/Andrea Egan; CIFOR/Mokhammad Edliadi; UNDP Climat Belarus

# THE VALUE OF FOOD FOR SUSTAINABLE DEVELOPMENT

Food and agricultural commodity systems have a key role to play in achieving the SDGs.



Rural people represent >80% of the world's extreme poor, growth in agriculture is at least twice as effective in reducing poverty compared to any other sector.



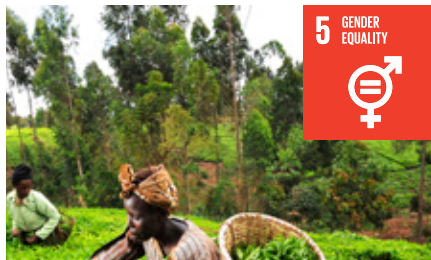
Food security is essential to ending hunger.



Good health requires adequate nutrition and a healthy environment.



Education. Agriculture extension enables farmers to access the skills, tools, inputs and knowledge they need to thrive.



Women produce over half the food world-wide, so bridging this gap could reduce global hunger by as much as 17%.



Agriculture is a major source of water pollution.



Agriculture is an engine of pro-poor economic growth in rural areas; entrepreneurship across the rural and food sectors can generate employment and growth.



If food waste was a country, it would be the 3rd largest GHG emitter.



By 2030, agriculture's carbon mitigation potential could reach as much as 7.5% of total global emissions.



A third of commercial fish stocks are over-fished; agriculture run-off threatens coastal fisheries.



Improving farmland efficiency can help meet the world's growing consumption demand while minimizing the loss of nature habitats and forests for additional cultivation.

Photo credits: Row one: UN Women/Joe Saade; UN Women/Ryan Brown; UN Women/Ryan Brown; Row two: CIAT/Neil Palmer; CIAT/Neil Palmer; UNDP Somalia; Row three: FAO/Alberto Conti; UN Women/Ryan Brown; UNDP; Row four: UNDP Sierra Leon/Leone Mohammad Kanu; CIAT/ Neil Palmer

# TRENDS IN NATURE FOR FOOD SECURITY

## CURRENT TRENDS

### HUNGER

By 2022, approximately 735 million people – or 9.2% of the world's population – found themselves in a state of chronic hunger. Two billion people in the world do not have regular access to safe, nutritious and sufficient food.

### DEFORESTATION

Agriculture is the primary driver of global deforestation. Just seven agricultural commodities – cattle, oil palm, soy, cocoa, rubber, coffee and timber – accounted for 26% of global tree cover loss from 2001 to 2015.

### MALNUTRITION

Nearly two billion people are overweight or obese, and poor diets are the leading cause of non-communicable diseases such as diabetes and cardiovascular disease.

### OVERFISHING

35% of global fish stocks have been overexploited.

### LAND DEGRADATION

Roughly 80% of global arable land is impacted by at least one form of degradation.

### GENDER INEQUALITY

32% of women in the world are moderately or severely food insecure, compared to 27% of men.

### CLIMATE CHANGE

Agriculture accounts for a third of global GHG emissions. Fertilizers are the main cause of N<sub>2</sub>O emissions, which is 300x more potent than CO<sub>2</sub> and remains active for 100+ years in the atmosphere. Emissions have increased 30% in the past 30 years.

### SOIL DEGRADATION

33% of global soils are already degraded, due primarily to agriculture. The implications of this are potentially far-reaching for food security as 95% of human food is produced on soils. Rates of soil erosion are predicted to rise by up to two thirds over the next 50 years, reducing future food production capacity.

### GENETIC EROSION

Industrial agriculture significantly reduces agrobiodiversity by employing a reduced range of animal breeds and plant varieties. Between 2001 and 2007, 62 breeds of animals became extinct. Globally, an estimated US\$30 billion worth of food is lost to pathogens every year.

### POLLUTION

Overuse of chemical fertilizers and pesticides in farming is polluting soils, water systems, and ecosystems.

### PRODUCER POVERTY

Up to 139 million smallholder farming households are estimated to be below the median poverty line, and up to 54 million households are in extreme poverty.

### BIODIVERSITY LOSS

Agriculture drives around 80% of native habitat loss. Globally, 35% of our crops rely on pollinators, yet over 40% of all insects are declining, and a third are endangered.

### FOOD WASTE

If food waste was a country, it would be the 3<sup>rd</sup>-largest GHG emitter.

### FRESH WATER SCARCITY

Agriculture uses 70% of global freshwater.

### HUMAN RIGHTS ISSUES

Around 70% of child labour globally is estimated to be in the agriculture sector.

## FUTURE TRENDS

Agriculture water use is expected to **increase by at least 11%** by 2050

Arable land is expected to **increase by >13%** (200 million ha) by 2050, largely due to deforestation

Nitrogen fertilizer use volumes could **increase by 50%** by 2050, increasing GHG emissions and pollution



It is projected that more than **600 million** people worldwide will be facing hunger in 2030, highlighting the immense challenge of achieving the zero-hunger target



By 2050, food demand is expected to **increase by >50%**, and animal-based foods by **70%**

Climate change could reduce global agricultural yields **>30%** by 2050

Unsustainable agriculture practices could result in **95% of land being degraded** by 2050

Photo credits: UNDP Guatemala/Giovanni Diffidenti; UN Women/Catianne Tijerina

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## KEY MESSAGES ON THE VALUE OF NATURE FOR FOOD SECURITY

### BIODIVERSITY CONSERVATION

Biodiversity has been the foundation of agriculture for over [10,000 years](#). Over [80% of the world's terrestrial biodiversity](#) can be found in forests. Preventing forest loss could ensure the survival of many species, and preserve the ability of forests to provide essential ecosystem services such as clean air and water, healthy soils for agriculture, and climate regulation. [Freshwater bodies are home to one-third of vertebrate species and 10% of all described species on Earth](#). Food system approaches need to be integrated into NBSAPs, in addition to NDCs and NAPs; stronger policy coherence between these global policy processes is needed.

### SOILS

Making agricultural practices more sustainable and climate smart is key to halt soil degradation, restore soil health and help farmers better manage climate change. Healthy soils potentially allow more water to infiltrate and be retained, better absorbing extreme rainfall, as well as supporting crops during droughts more effectively.

### LAND RESTORATION AND REGENERATION

Restoring 150 million hectares of degraded agricultural land could [generate \\$85 billion in net benefits](#), provide \$30 billion to \$40 billion each year in extra income for smallholder farmers, and grow additional food for nearly 200 million people. A key element of regenerative agricultural practices is to help maintain soil organic matter and restore degraded soil biodiversity, which strengthens soil functions essential for storing carbon, improving water infiltration and storage, and improving nutrient cycles for better crop growth.

### CLIMATE MITIGATION

The world's forests [absorb around 7.6 billion tonnes of CO<sub>2</sub>e per year](#). Avoiding deforestation and degradation could [prevent up to 4.3–5.5 Gt CO<sub>2</sub> being emitted](#) into the atmosphere each year, helping to meet the goals of the [Paris Agreement](#). Action to reduce deforestation could be [more rapidly deployed](#) than other mitigation strategies, which could reduce risks of rising future climate policy costs. Peatlands and grasslands also have a major climate mitigation role to play, holding [an estimated 30%](#) and [12% of terrestrial carbon stocks](#), respectively. Agroforestry, intercropping, crop rotation, reducing chemical inputs, and holistically managed grazing all have a significant positive effect on climate change mitigation, measured in terms of soil organic carbon and/or carbon sequestration rates.

### CLIMATE ADAPTATION

Forests play a [crucial role](#) in climate change adaptation efforts. They act as a food safety net for local and Indigenous communities during climate shocks, reduce risks from disasters like coastal flooding, and help regulate water systems and microclimates to ensure ecological balance. [Forests and water are interlinked, with an estimated 75% of the world's accessible freshwater coming from forested watersheds](#). Wetlands also provide both water filtration and buffers from storm surges and coastal erosion – [87% of natural inland wetlands have been lost since 1700](#).

### 'BLUE' FOODS CAN HELP ADDRESS MALNUTRITION<sup>1</sup>

Increased supply of [blue foods](#) through sustainable aquaculture investment and improved fisheries management could help to avoid 166 million cases of micronutrient deficiency by 2030.

### SOCIO-ECONOMIC BENEFITS

The sustainable management of forests could create [\\$230 billion in business opportunities](#) and 16 million jobs worldwide by 2030. The global organic farming market was worth [\\$95.38 billion in 2020](#) and is expected to reach \$151.36 billion in 2025, indicating growing demand for sustainable commodities. [Mountain ecosystems](#) are also a major source of food: of the 20 plant species that supply 80% of the world's food, six – maize, potatoes, barley, sorghum, tomatoes and apples – originated from and have been diversified in mountains.

### SUSTAINABLE LIVELIHOODS AND POVERTY REDUCTION

A study on the benefits of sustainability certification and standards for palm oil, coffee and cocoa producers has [found improvements in income](#) from the target commodity in 65% of cases. Fairtrade certification is associated with [higher output prices and higher incomes](#) among smallholder farmers.

### COST SAVINGS FROM ECOSYSTEM SERVICES

The economic value of forests is vast – one estimate suggests that the total value of intact forests and their ecosystem services is [up to \\$150 trillion](#), around double the value of global stock markets. A total cost of \$2.7 trillion for anti-deforestation measures and a further \$3.5 trillion on restoration for the 2030-2070 period would save \$33.5 trillion in economic costs.

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<sup>1</sup> Blue foods include over 2,500 species groups of aquatic animals and plants consumed throughout the world.

# RESOURCES

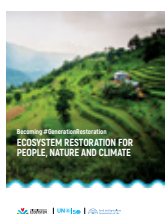
## TECHNICAL PUBLICATIONS AND REPORTS – ESSENTIAL READING

### UNDP Food and Agricultural Commodity Systems (FACS) Strategy 2020 – 2030



Food and Agricultural Commodity Systems (FACS) are fundamental to the sustainable development of the 170 countries UNDP supports. This [document](#), developed in 2020, aims to articulate and unify UNDP’s vision, offering a response to current global challenges, as well as guiding the future programming, partnerships and investments of UNDP in this area of work.

### Becoming #GenerationRestoration: Ecosystem Restoration for People, Nature and Climate



This [report](#) presents the case for why we all must throw our weight behind a global restoration effort. Drawing on the latest scientific evidence, it explains the crucial role played by ecosystems from forests and farmland to rivers and oceans, and charts the losses that result from poor stewardship of the planet.

### The future of food and agriculture – Alternative pathways to 2050



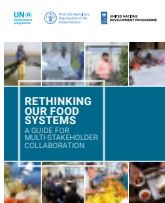
This [report](#) aims at inspiring strategic thinking and actions to transform food systems towards a sustainable, resilient and inclusive future. It analyses major drivers of agrifood systems and explores how their trends could determine alternative futures for agrifood, socioeconomic and environmental systems.

### Creating a Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050



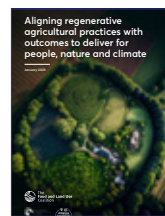
The [report](#) offers a five-course menu of solutions to ensure we can feed 10 billion people by 2050 without increasing emissions, fueling deforestation or exacerbating poverty.

### Rethinking our food systems: a guide for multi-stakeholder collaboration



UNEP, FAO and UNDP jointly created this [guide](#) to consolidate learnings and tools gathered from within and beyond the three agencies to contribute to the growing canon of knowledge on how to improve multi-stakeholder collaboration for sustainable food systems transformation.

### Aligning regenerative agricultural practices with outcomes to deliver for people, nature and climate



This [report](#) reviews the evidence linking a dozen specific farm-level regenerative agricultural practices to three farm-level outcomes: biodiversity, climate change mitigation, and yield.

### From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems



This [report](#) explores the potential for a shift to occur from current food systems - characterized by industrial modes of agriculture - to systems based around diversified agroecological farming. It asks what the impacts on food systems would be if diversity, rather than uniformity, were the key imperative.

### Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition



This [report](#) and its recommendations aim at presenting decision-makers, in the different ‘spheres of society’, with evidence on the potential contribution of agroecological and other innovative approaches, practices and technologies to design and implement sustainable food systems that contribute food security and nutrition.

**TOOLS**

**Effective Collaborative Action**



Solutions and improvements in the functioning of food and agricultural production and consumption are often expected to derive from technical, financial or technological innovations. Yet individual, institutional and societal innovations and best practices are essential for change. The quality of current multi-stakeholder collaboration in the sector is inadequate to meet the scale and nature of this challenge.

**Causality Assessment for Landscape Interventions**



How do we reflect in a systemic way on whether our landscape or jurisdictional interventions are being effective? How do we learn and adapt? To address these key questions, UNDP developed the [Causality Assessment for Landscape Interventions \(CALI\)](#) within the framework of the GEF-funded Good Growth Partnership (GGP).

**Multi-Stakeholder Collaboration for Systemic Change: A New Approach to Strengthening Farmer Support Systems**



UNDP helps developing economies around the world accelerate their progress on achieving the Sustainable Development Goals. A key part of this is supporting the [systemic transformation of agricultural commodity sectors](#), which are a vital economic driver for many of these economies. Farmer support systems – a key part of these sectors - are often weak, operating with top-down mechanisms that do not meet needs on the ground.

**Global Forest Watch**



[Global Forest Watch \(GFW\)](#) is an online platform that provides data and tools for monitoring forests. By harnessing cutting-edge technology, GFW allows anyone to access near real-time information about where and how forests are changing around the world.

**Trase**

[Trase](#) is a data-driven transparency initiative that is revolutionizing our understanding of the trade and financing of commodities driving deforestation worldwide. Its unique supply chain mapping approach brings together disparate, publicly available data to connect consumer markets to deforestation and other impacts on the ground. Trase's freely available online tools and actionable intelligence enable companies, financial institutions, governments and civil society organizations to take practical steps to address deforestation. Trase empowers markets, governments and civil society to transition towards more sustainable commodity production and consumption.

## EXAMPLES OF UNDP'S WORK ON NATURE FOR FOOD SECURITY

The project examples described in this publication reveal the power of communities in addressing land degradation through improved land management practices. For instance, organic farming and certification of agricultural produce have led to improved nutrition and economic empowerment in many communities.

### FOSTERING SUSTAINABILITY AND RESILIENCE FOR FOOD SECURITY IN THE SAVANNA ZONES OF NORTHERN NIGERIA

The objective of this project is to foster sustainability and resilience for food security in Northern Nigeria through addressing key environmental and socioeconomic drivers of food insecurity across three agro-ecological zones. It sits under the Resilient Food Systems programme, one of the three Integrated Approach Pilots funded by the GEF. The RFS Nigeria project supports a process of agricultural transformation in 70 communities in 14 Local Government Areas of northern Nigeria, and in three different agroecological zones: Guinea savannah of the north central region, Sudan-Sahel savannah of the northwest region, and Sudan savannah of the northeast region. The Theory of Change is based on the recognition that food security is the product of both socio-economic and environmental factors.



### SUPPORTING RESILIENT LIVELIHOODS, FOOD SECURITY, AND CLIMATE ADAPTATION IN YEMEN, JOINT PROGRAMME (ERRY III)

This is a three-year programme co-funded by the European Union (EU) and Government of Sweden. The programme will build upon the progress and lessons learned from the previous phases of building community resilience. It will contribute to reducing vulnerabilities and improving levels of community resilience and self-reliance in targeted areas and local governance. This programme, managed by UNDP, is implemented jointly by FAO, ILO, UNDP, and WFP in seven governorates in Yemen. It aims to address three components: (1) Community conflict reduction and social cohesion; (2) Access to clean energy and climate adaptation; and (3) Livelihoods and food security. It will directly benefit vulnerable beneficiaries and marginalized communities including Internally Displaced People (IDPs), returnees, vulnerable host communities, Muhamasheen, female-headed households, youth, daily labourers, people with disabilities, and elderly community members.



### KIRIBATI: ENHANCING NATIONAL FOOD SECURITY IN THE CONTEXT OF CLIMATE CHANGE

With support from the GEF-Least Developed Countries Fund, this project focused on building the adaptive capacity of vulnerable Kiribati communities to ensure food security under conditions of climate change. Under Component One, the project will assist Kiribati to address urgent institutional capacity building needs primarily on the national level. Under Component Two, the project will assist Kiribati to address climate change vulnerabilities by implementing and demonstrating community-based adaptation measures.



### INTEGRATED LANDSCAPE MANAGEMENT TO ENHANCE FOOD SECURITY AND ECOSYSTEM RESILIENCE IN ETHIOPIA

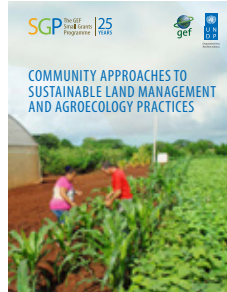
Smallholder farming dominates the agricultural sector in Ethiopia and is the pillar of the country's economy. Often farming takes place in degraded and vulnerable environments where there are substantial losses of vegetation, associated erosion, and declining soil fertility. The huge demand for natural resources - including fuel, wood, and water resources - exacerbates environmental degradation and affects food production. UNDP's intervention under this GEF-funded \$10m project focuses on integrated landscape management (ILM) to achieve food production resilience in landscapes under pressure. It ensures multi stakeholder platforms, establishes systemic monitoring, manages learning



and knowledge, strengthens institutional frameworks for better policies that foster sustainability and resilience.

## COMMUNITY APPROACHES TO SUSTAINABLE LAND MANAGEMENT AND AGROECOLOGY PRACTICES

The expansion of food production need not come at the expense of native habitats. Rehabilitating and restoring degraded lands offers tremendous opportunities to boost production and enhance food security. Improving land use practices can also go a long way in preserving the health of soils



and optimizing the use of water. The GEF Small Grants Programme (SGP), implemented by the United Nations Development Programme (UNDP), has been working with community organizations around the world to identify, implement and scale-up innovative technologies in sustainable land management (SLM). Grassroots agroecological practices that integrate the management of land, water, and biodiversity are starting to meet rising food demands, particularly in the vulnerable communities of dryland countries.

The project examples described in this [publication](#) reveal the power of communities in addressing land degradation through improved land management practices. For instance, organic farming and certification of agricultural produce have led to improved nutrition and economic empowerment in many communities.

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