Food and Agriculture Organization of the United Nations

FAO STRATEGY ON CLIMATE CHANGE

ROME, JULY 2017



MYANMAR

Carrying a sack of fertilizer distributed by FAO as part of a project to support sustainable livelihoods for flood-affected communities in the Sagaing region.

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Contents

ACRONYMS AND ABBREVIATIONS Page 4

FOREWORD Page 6

EXECUTIVE SUMMARY Page 8

INTRODUCTION Page 11

The agricultural sectors, the Paris Agreement and beyond Page 11

Climate change impact - food and agriculture Page 13

SECTION 1 CLIMATE WORK AT FAO Page 14

Evolution Page 14

Vision Page 15

Approach Page 15

SECTION 2 GUIDING PRINCIPLES Page 17

Give precedence to food security, poverty reduction and sustainability Page 17

Leave no one behind Page 17

Support policy integration and mainstreaming Page 17

Promote evidence-based, scientific approaches Page 18

Promote ecosystem-based approaches Page 18

Learn from experience Page 18

Lead by example Page 18

Measure and evaluate impact Page 18

SECTION 3 EXPECTED OUTCOMES Page 19

Outcome 1. *Enhanced capacities of Member Nations on climate change through FAO leadership as a provider of technical knowledge and expertise* Page 19

Outcome 2. *Improved integration of food security and nutrition, agriculture, forestry and fisheries considerations within the international agenda on climate change through reinforced FAO engagement* Page 19

Outcome 3. *Strengthened coordination and delivery of FAO work on climate change* Page 19

SECTION 4 PLAN OF ACTION Page 20

ANNEX 1: THE IMPACTS OF CLIMATE CHANGE ON THE FOOD AND AGRICULTURAL SECTORS Page 28

Food security Page 28

Nutrition and human health Page 29

The agricultural sectors Page 29

Natural resources Page 31

Post-production stages Page 33

Human migration Page 33

ANNEX 2: ACTION PLAN RESULTS FRAMEWORK Page 36

ANNEX 3: RESOURCE ALLOCATION Page 45

Acronyms and abbreviations

AFOLU	*Agriculture, Forestry and Land Use*
Agenda 2030	*2030 Agenda for Sustainable Development*
CBC	*FAO Climate and Environment Division (in the Climate, Biodiversity, Land and Water Department)*
CBD	*Convention on Biological Diversity*
CCAM	*Climate Change Adaptation and Mitigation*
CO_2	*Carbon Dioxide*
COP21	*21st Conference of the Parties to the UNFCCC*
COP22	*22nd Conference of the Parties to the UNFCCC*
CPFs	*Country Programming Frameworks*
CSA	*Climate-Smart Agriculture*
DRR	*Disaster Risk Reduction*
FAO	*Food and Agriculture Organization of the United Nations*
GCF	*Green Climate Fund*
GDP	*Gross Domestic Product*
GEF	*Global Environment Facility*
GHG	*Greenhouse Gas*
ha	*Hectares*
IDWG CC	*Interdepartmental Working Group on Climate Change*
IFAD	*International Fund for Agricultural Development*

IFIs	*International Financial Institutions*
INDCs	*Intended Nationally Determined Contributions*
IPCC	*Intergovernmental Panel on Climate Change*
LDCs	*Least Developed Countries*
LLDCs	*Land-Locked Developing Countries*
LULUCF	*Land Use, Land Use Change and Forestry*
MTP	*Medium Term Plan*
NAMAs	*Nationally Appropriate Mitigation Actions*
NAPs	*National Adaptation Plans*
NDC	*Nationally Determined Contributions*
NRC	*FAO Climate and Environment Division (since December 2016 known as CBC)*
PWB	*Programme of Work and Budget*
SDGs	*Sustainable Development Goals*
SFM	*Sustainable Forest Management*
SIDS	*Small Island Developing States*
SPs	*FAO Strategic Programmes*
TNCC	*FAO Technical Network on Climate Change*
CO_2e/ha/ year	*Tonnes of carbon dioxide equivalent per hectare per year*
UN	*United Nations*
UNCCD	*United Nations Convention to Combat Desertification*
UNDP	*United Nations Development Programme*
UNEP	*United Nations Environment Programme*
UNFCCC	*United Nations Framework Convention on Climate Change*
WFP	*World Food Programme*
WMO	*World Meteorological Organization*

Foreword

There is no peace without tackling food security and eliminating hunger and there will be no food without tackling climate change. I am convinced that we can end hunger in our lifetime. We have the tools and the know-how. However, the goals and aspirations of the 2030 Agenda for Sustainable Development to end hunger, reduce rural poverty and manage natural resources in a sustainable manner cannot be achieved if temperatures continue to rise.

We have a window of opportunity to stabilize global average temperatures to safe levels but we must act now. Now is the time to take action to meet the target included in the Paris Agreement of the UN Framework Convention on Climate Change.

That is why climate action, a cross-cutting theme of FAO's Strategic Framework, is being integrated into every facet of our work, bolstering and building on decades of accumulated global experience and expertise.

Agriculture and food systems are partly responsible for increased temperatures but are also a fundamental part of the solution to mitigate greenhouse gas emissions and promote adaptation to a changing climate, especially for rural family farmers in developing countries. Often the poorest, they are also the most vulnerable to climate change. For millions of people, our actions can make a difference between poverty and prosperity, between hunger and food security.

As the impacts of climate change increase and become more intense, a global transformation to sustainable agriculture must begin immediately.

Noting that around 90 percent of the countries' climate commitments, known as Nationally Determined Contributions (NDCs), include the agricultural sectors clearly demonstrates the strong demand from FAO Member Nations for climate action and also underlines that FAO has a fundamental contribution to make.

FAO considers climate change a top-line corporate priority - as reflected in the newly-endorsed Strategy on Climate Change where FAO will focus its work on three fronts:

First, to enhance institutional and technical capacities of Member States.

Second, to improve integration of food security, agriculture, forestry and fisheries within the international climate agenda.

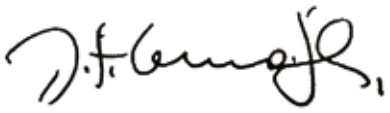
And third, to strengthen internal coordination and delivery of FAO's work.

This Strategy translates FAO's core mandate into strategic choices and action priorities at global, regional, national and local levels with the central goal of supporting its Member Nations in achieving their commitments to face climate change. It will be implemented through FAO's Strategic Framework as well as through strategic partnerships.

It is my honour to thank the numerous FAO Member Nations, partners and colleagues who participated in the consultative process that gave way to this first corporate FAO Strategy on Climate Change.

The FAO Strategy on Climate Change lays out an ambitious way forward that will require a decisive and collaborative effort in the coming years to deliver the transformational solutions that the agricultural sectors offer for climate action.

This Strategy is a roadmap for FAO, but also an invitation to you, our partners, to join us in the endeavor to overcome the defining development challenge of our time: to safeguard food security in a changing climate and to leverage the potential of the agricultural sectors to ensure that climate change is limited to levels that still allow Earth's natural systems to thrive.



José Graziano da Silva
Director-General
Food and Agriculture Organization
of the United Nations

Executive summary

Despite the considerable progress being made, humanity's future still hangs in the balance. Climate scientists call attention to two contrasting paths: The 'business-as-usual' path is an unsustainable path whose outcome would be sustained rates of high global warming and, possibly, runaway climate change. The sustainable path represents a sustainable future with an average warming of below two degrees Celsius. FAO places sustainability at the core of all that it does, to ensure Earth's mountains, oceans, forests, waters and soils can continue to provide for the 10 billion population that is expected over the next century, and their descendants.

2015 was an extraordinary year of global commitment towards a better future. In September, the international community laid out the vision of a hunger-free, more equitable, sustainable, peaceful and resilient world by creating the 2030 Agenda on Sustainable Development with its 17 Sustainable Development Goals (SDGs). In December, the Paris Agreement on climate change pledged to keep global warming "well under" two degrees Celsius and to create a climate resilient future. In Addis Ababa, the Action Agenda on financing this demanding, complex and interconnected Agenda was adopted. FAO has actively contributed to these milestones, most recently by highlighting food and agriculture prominently at the 22nd Conference of the Parties (COP22) of the United Nations Framework Convention on Climate Change (UNFCCC) in Marrakech, Morocco.

Based on FAO's work for over a decade, the Climate Change Strategy has been formulated to focus FAO's work on climate change in light of these landmark decisions. Driven by the desire to best serve its Member Nations in achieving their commitments under the Paris Agreement and their priorities under the Sustainable Development Goals, it translates FAO's core mandate into strategic choices and action priorities at global, regional and national levels.

The food and agricultural sectors[1] are central for human development; they need to be at the centre of the global response to climate change. As this Strategy shows, the food and agricultural sectors are vulnerable to a most worrying degree and face great challenges in adapting to climate change. Support for agriculture, particularly smallholder farmers, is pivotal to achieving SDGs 1 and 2[2] under a changing climate.

At the same time, the food and agricultural sectors represent enormous potential and opportunities to create synergies between both the climate and development agenda. FAO can support this development with a wealth of knowledge and suitable tools and advocates for large-scale climate finance to be funneled into the sectors where investment can lay the groundwork for the paradigm shift needed to achieve the future we want.

FAO envisages a world in which food and agricultural systems and dependent livelihoods have become

1 For the purposes of this document, the 'agricultural sectors' are understood to comprise crops, livestock, fisheries and aquaculture, and forestry.

2 SDG 1: No Poverty: End poverty in all forms everywhere. SDG 2: Zero Hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

resilient to the impacts of climate change through adaptation measures and mitigation options. Its approach connects global commitment with local action. The Strategy is grounded in seven principles relating to social inclusion, environmental sustainability and results-oriented action.

Three outcomes frame FAO's Climate Change Strategy and Plan of Action:

1. Enhanced capacities of Member Nations on climate change through FAO leadership as a provider of technical knowledge and expertise.
2. Improved integration of food security, agriculture, forestry and fisheries within the international agenda on climate change through reinforced FAO engagement.
3. Strengthened coordination and delivery of FAO work on climate change.

The Strategy sets FAO on a path to deliver on the SDGs, in particular SDGs 1, 2 and 13, and with relevance to several other SDGs, such as 14 and 15.[3] In operational terms, it is an integral part of FAO's Strategic Framework, Medium Term Plan and Programme of Work and Budget. The Strategy will be implemented through a Plan of Action, which will strengthen FAO's existing capacities, especially in decentralized offices, and sets out the results to be delivered by FAO through its Strategic Programmes, including through enhanced partnerships, in particular with FAO's fellow Rome-Based Agencies. ■

3 SDG 13: Climate Action: Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy.
SDG 14: Life below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
SDG 15: Life on Land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

UNITED REPUBLIC OF TANZANIA

Using a push weeder in a rice paddy. FAO is working to strengthen the capacity of farms by improving land and water management, and promoting climate-resilient agriculture.

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Introduction

For more than 70 years, FAO has been working on its core mandate to eliminate hunger, food insecurity and malnutrition, to reduce rural poverty, and to make agriculture, forestry and fisheries more productive and sustainable. FAO's mandate was reinforced in 2015 by the Sustainable Development Goals with their prominent commitment to end poverty and hunger at the heart of the 2030 Agenda.

Climate change jeopardizes the achievement of these vital goals for human development. The ever-increasing impacts of the changing climate threaten to undercut and possibly reverse the progress that has been made in the fight against hunger and malnutrition in recent years. Slow onset environmental change processes, increasing climate variability and more frequent and severe extreme weather events impact agricultural productivity and add pressure to already fragile food and ecological systems. Smallholder producers and the rural poor in developing countries are particularly vulnerable to the effects of climate change and climate variability largely due to limited resilience and diversity in their production systems - factors that also make it more difficult to adopt practices that support improved climate change adaptation and mitigation (CCAM).

The negative impacts of climate change will be felt by all countries, and most severely in Least Developed Countries (LDCs), Small Island Developing States (SIDS) and areas with particularly fragile ecosystems (e.g. drylands, mountains, coastal areas). These are the same locations where attaining the goals of Agenda 2030 is already most crucial and challenging.

Food and agricultural systems have great adaptation potential that can bring about greater resilience in the production and supply of food while also protecting and enhancing natural resources. They also offer considerable climate change mitigation potential both in the form of reducing emissions intensity per unit produced, as well as carbon sequestration in soils and biomass. Increased ambition will be needed to achieve the agreement's goal to stay "well below" 2 degrees Celsius and to accelerate countries' transition to low-carbon economies. It is in this context that the Strategy focuses on providing quality support to its Members to fulfil their commitments in their food and agricultural sectors.

The agricultural sectors, the Paris Agreement and beyond

The agricultural sectors are beginning to receive attention for the central role they can and need to play in the global response to climate change. At the global level, the Paris Agreement recognizes in its Preamble "the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse effects of climate change", embracing the more inclusive concept of "food security". The *Marrakech Action Proclamation for our Climate and Sustainable Development*, issued by Heads of State and Government in Marrakech, Morocco at COP22 makes a strong call

for "all Parties to strengthen and support efforts to eradicate poverty, ensure food security and to take stringent action to deal with climate change challenges in agriculture".[4]

At national level, Member Nations are guided by their Nationally Determined Contributions (NDCs), which Parties submitted ahead of COP21 as Intended Nationally Determined Contributions (INDCs), an expression of their goals and priorities. Having based the Paris Agreement on their individual contributions, countries are now turning their attention to the implementation of these adaptation and mitigation commitments. FAO is supporting countries in realizing their NDC ambitions in the agricultural sectors.

An analysis of the INDCs shows that Member Nations see the agricultural sectors as being central to their response to climate change: out of the 189 countries that had submitted INDCs as at 29 July 2016, 89 percent of all countries include agriculture and/or land use, land use change and forestry (LULUCF) as a sector in their mitigation and/or adaptation contributions.[5] Agriculture and LULUCF are among the most referenced sectors in countries' mitigation contributions (as targets and/or actions). LULUCF is referenced in 83 percent of all countries' INDCs, and as such is second only to the energy sector.

98 percent of all INDCs include priority areas for adaptation and/or adaptation actions in the agriculture sectors.[6] Of these countries, 97 percent refer to crops and livestock, while 88 percent refer to forests and 64 percent refer to fisheries and aquaculture. At the same time, 116 countries refer to the agricultural sectors both with regard to mitigation and adaptation, and approximately 50 countries endorse or even prioritize actions based on the potential synergies between mitigation and adaptation in the context of the agricultural sectors.

The agricultural sectors are only now receiving the high-level attention required to mobilize funding to realize their full potential in providing food security, eliminating poverty and maintaining resilient ecosystems under a changing climate. However, a meagre 8 percent of total spending by Multilateral Development Banks on climate change adaptation and mitigation related investments went on agriculture and ecological resources in 2014.[7] Further effort is needed to ensure that international climate finance reflects the vital importance of the agricultural sectors, for example by increasing the annual investment to 20 percent of total climate finance - a share equivalent to the agricultural sectors' contributions to global greenhouse gas emissions.

Addressing agriculture in national responses to climate change and the achievement of the Sustainable Development Goals are mutually reinforcing. Agriculture is uniquely placed to deliver on climate and development in tandem. This is particularly true for the core goals of eradicating poverty and hunger, SDGs 1 and 2, which are of central importance for this Strategy. By undertaking concerted action in the agricultural sectors at national, regional and global levels, achieving a low carbon economy by 2030 will be possible.

4 COP22, 2017. *Marrakech Action Proclamation for our Climate and Sustainable Development.* https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/marrakech_action_proclamation.pdf

5 FAO, 2016. *The agriculture sectors in the Intended Nationally Determined Contributions:* Analysis. http://www.fao.org/3/a-i5687e.pdf

6 World Bank, 2014. Joint Report on Multilateral Development Banks' Climate Finance. http://www.worldbank.org/content/dam/Worldbank/document/Climate/mdb-climate-finance-2014-joint-report-061615.pdf

7 World Bank, 2014. Joint Report on Multilateral Development Banks' Climate Finance. http://www.worldbank.org/content/dam/Worldbank/document/Climate/mdb-climate-finance-2014-joint-report-061615.pdf

Climate change impact - food and agriculture

Climate change is already affecting the food and agriculture sectors, and these effects are projected to grow, along with global average temperatures. While some positive effects of climate change are foreseen in certain contexts, for example in some parts of countries in northern latitudes, the majority of anticipated climate impacts give cause for serious concern. This holds true particularly in developing countries, where the food and agricultural sectors contribute significantly to national Gross Domestic Product, but are already absorbing approximately 22 percent of the economic impact caused by medium- and large-scale natural hazards and disasters.[8] Up to 122 million more people worldwide may live in extreme poverty by 2030 as a result of climate change and its repercussions on the incomes of small-scale farmers.[9]

The impacts of climate change on food and agriculture are interconnected across environmental, social and economic dimensions. Annex 1 presents various perspectives relevant to food, agriculture and dependent livelihoods, considering in turn climate impacts on the four dimensions of food security; nutrition and human health; the agricultural sectors; natural resources; post-production stages, and human migration. ■

8 FAO, 2015. *The impact of natural hazards and disasters on agriculture and food security and nutrition*. http://www.fao.org/3/a-i4434e.pdf

9 FAO 2016. *The State of Food and Agriculture: Climate Change, Agriculture and Food Security*. http://www.fao.org/3/a-i6030e.pdf

SECTION 1
CLIMATE WORK AT FAO

Evolution

The goals of FAO are to eliminate hunger, food insecurity and malnutrition, reduce rural poverty, and make agriculture, forestry and fisheries more productive and sustainable. FAO recognizes that these goals cannot be fulfilled without decisive action on climate change, and climate change cannot be addressed without managing the world's natural resources and agricultural systems sustainably.

The FAO portfolio on climate change has grown exponentially since its beginnings in the 1980s. Sectorial work programmes or strategies addressing climate change perspectives were defined for forestry (2010),[10] crops (2011),[11] fisheries (2012),[12] livestock (2013)[13] and genetic resources for food and agriculture (2015).[14] In 2010, FAO launched the concept of climate-smart agriculture (CSA), an approach designed to help develop the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change.[15] CSA was also conceived to address the lack of attention to agricultural sectors in the international climate agenda. In 2011, FAO provided a more extensive framework for climate change adaptation: FAO-Adapt.[16] In the wake of the Rio+20 Conference in 2012, climate change featured as one of the 14 themes framing the Organization's engagement in the Post-2015 Development Agenda negotiations.

An estimated 15 percent of the project portfolio of FAO in 2016 can be identified as being dedicated to, or significantly associated with climate change. This share has already increased to 20 percent in the first quarter of 2017, and is expected to continue to grow in the future. In 2015, climate change was adopted as a cross-cutting theme of the FAO Strategic Framework, meaning that climate implications and opportunities are being reflected in each Strategic Programme at regional and country level (see Annex 1). The 2015 *Evaluation of FAO's contribution to climate change adaptation and mitigation*[17] noted that FAO has unique strengths with which to address CCAM, and advised that results could be optimized through strategic changes in the way FAO currently works on climate change.

In the international setting, FAO takes a leading role in advocacy for food security, and the Organization's key messages are gaining traction. Most recently,

10 FAO, 2010. *FAO, forests and climate change*. http://www.fao.org/docrep/017/i2906e/i2906e00.pdf
FAO, 2013. *Climate change guidelines for forest managers*. http://www.fao.org/docrep/018/i3383e/i3383e00.htm

11 FAO, 2011. *Potential effects of climate change on crop pollination*. http://www.fao.org/3/a-i2242e.pdf

12 FAO, 2012. *Strategy for fisheries, aquaculture and climate change*. ftp://ftp.fao.org/fi/brochure/climate_change/stragegy_fi_aq_climate/2011/climate_change_2011.pdf

13 FAO, 2014. *Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities*. http://www.fao.org/3/i3437e.pdf

14 FAO, 2015. *Coping with climate change - the roles of genetic resources for food and agriculture*. Rome; http://www.fao.org/3/a-i3866e.pdf
FAO, 2015. *Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning* http://www.fao.org/3/a-i4940e.pdf

15 FAO, 2010. http://www.fao.org/climate-smart-agriculture/en/

16 FAO, 2011. http://www.fao.org/climatechange/27594-03ecd7bd225b93086e7dca3944de64307.pdf

17 FAO, 2015. *Evaluation of FAO's contribution to Climate Change Adaptation and Mitigation*. http://www.fao.org/3/a-bc126e.pdf

during the 2015-2016 Conferences of the Parties of the three Rio Conventions (UNCCD, UNFCCC and CBD), food and agriculture featured prominently as a result of growing attention to the simultaneous vulnerability and potential of the sectors.

Vision

FAO envisions a world free from hunger and malnutrition, where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner.

Climate change stands to jeopardize this vision.

In this context, FAO sees a world in which food and agricultural systems and dependent livelihoods are resilient to the impacts of climate change through both adaptation measures and mitigation potential.

Approach

The FAO approach to climate change is simultaneously country-driven and global. The Nationally Determined Contributions under the Paris Agreement present a natural framework for FAO's work on climate change, as they already define, at the highest political level, targets and strategies for responding to the consequences and addressing the causes of climate change. In addition, FAO programmes must approach climate change in its full context, by engaging with regional and global agendas, bridging short- and long-term timeframes, being climate-smart and working across sectors and stakeholder groups. This composite approach to climate change is fully consistent with the objectives of the Sustainable Development Goals, adheres to the FAO principles for sustainable food and agriculture[18] and serves to enhance the climate perspectives of existing FAO social and environmental policies.

Country-driven

This bottom-up approach will be in line with development effectiveness principles anchored in country ownership, leadership, commitment and mutual accountability. Countries' NDCs under the Paris Agreement provide the framework for collaboration between FAO and Member Nations on climate change, according to the priorities and commitments they outline. FAO's Country Programming Frameworks (CPFs) will need to take NDCs into account alongside national policies and strategies in the agricultural sectors.

FAO supports countries in strengthening their institutional and technical capacities for climate change adaptation and mitigation in the agricultural sectors. National policies and strategies on climate change need to reflect and include the adaptation needs and mitigation potential[19] of food and agricultural systems, and vice versa, planning in the agriculture, forestry and fisheries sectors need to take into account climate perspectives. FAO is committed to support the scaling up of investment to the NDCs from multiple sources.

Regional

FAO country-level actions take place in the context of regional priorities, as well as the global climate and sustainable development agenda. Many issues that affect food and agricultural systems are transboundary in nature. These include climate change itself, and issues affected by climate change such as water availability, pests and diseases and extreme climatic events. Addressing environmental factors such as agro-ecological conditions and social factors, such as diet,[20] benefit from a regional perspective, as do transboundary

18 FAO, 2014. Building a common vision for Sustainable Food and Agriculture. http://www.fao.org/3/a-i3940e.pdf

19 The UNFCCC principle of 'common but differentiated responsibilities' will guide FAO's support to countries with regard to mitigation activities.

20 IPCC, 2014. "Demand-side measures, such as changes in diet and reductions of losses in the food supply chain, have a significant, but uncertain, potential to reduce GHG emissions from food production (medium evidence, medium agreement). Estimates vary from roughly 0.76-8.6 $GtCO_2eq/yr$ by 2050 (limited evidence, medium agreement)." https://ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf

programmes such as the "Great Green Wall" in Africa. FAO will intensify its efforts to foster regional collaboration, facilitate the exchange of experiences and lessons, as well as the access to resources and technical capacity; and will thus realize economies of scale through undertaking regional activities.

Global

Climate change is a global issue requiring a global response. FAO advocates on behalf of food security and nutrition, as well as environmental, social and economic sustainability for farmers, pastoralists, fishers, foresters and other rural dwellers at the global level. Within the broad, diverse and multi-sectorial international debate on climate change, FAO will intensify its work within the UN system, among Multilateral Financing Institutions, with development partners and partners in the private and civil society sectors to ensure that food and agricultural systems are featured as a global priority within the climate agenda.

Short-and long-term

Disaster risk reduction is significantly more cost effective than post-disaster response. Addressing the root causes of risks and increasing the resilience of livelihoods and food systems to lessen the impacts of natural and man-made disasters can also introduce effective adaptation measures with co-benefits for climate change mitigation. FAO's work on climate therefore spans support for, and lessons learned from disaster risk reduction and emergency response to current hazards and support for long-term climate change adaptation and mitigation efforts.

Climate-smart

Thirty-two countries specifically refer to climate-smart agriculture (CSA) in their INDCs.[21]

Climate-smart agriculture (CSA) provides an inclusive conceptual framework for a wide range of agricultural interventions in diverse contexts. The CSA approach helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. It is an approach for practitioners and decision-makers to assess a range of options and identify context-appropriate solutions at farm, landscape and national levels that maximize benefits, pursuing synergies and managing trade-offs across the following three objectives: (a) sustainably increase agricultural productivity and incomes;[22] (b) adapt and build resilience to climate change; and (c) reduce and/or remove greenhouse gas emissions, where possible. CSA is not a set of practices that can be universally applied.

Cross-sectorial and multi-stakeholder

FAO promotes and supports integrated landscape and value chain approaches, identifying the optimal interventions which address climate change adaptation and mitigation challenges while also taking into consideration social, economic and environmental constraints and opportunities within the landscape and through entire value chains. At the same time, FAO works across agricultural and natural resources sectors and promotes cross-sectorial approaches with the understanding that different food and agricultural systems face different constraints, offer different opportunities and may impact upon each other. Engagement with other sectors, such as energy, health and transport can add value to CCAM action in all sectors. This requires working with multiple stakeholders from public and private sectors and civil society at appropriate levels (local to global). ■

21 FAO, 2016. *The agriculture sectors in the Intended Nationally Determined Contributions: Analysis.* http://www.fao.org/3/a-i5687e.pdf

22 Sustainable productivity increase can be an effective means to remove pressure for land use change and encroachment into natural forests. See: FAO, 2016. *State of Food and Agriculture: Climate Change, Agriculture and Food Security.* http://www.fao.org/3/a-i6030e.pdf

SECTION 2
GUIDING PRINCIPLES

The Strategy aims to facilitate FAO's contribution to the transition of food and agricultural systems and dependent livelihoods to become more resilient to climate change, as well as national transitions towards low carbon economies. It is founded on the following principles of social inclusion and environmental sustainability.

Give precedence to food security, poverty reduction and sustainability

Climate change undermines food security, nutrition, poverty reduction and sustainability in many contexts, and creates opportunities for improvement in others. FAO applies its core functions through its Strategic Programmes to address climate change.

Leave no one behind

Through its long experience in people-centered work on agriculture, rural development and climate change, FAO recognizes that CCAM work requires participatory and inclusive modalities in order to ensure that everyone can benefit, and that no one is left behind. Prioritizing the most vulnerable groups and countries is therefore at the heart of this Strategy, and FAO consequently considers gender-specific vulnerabilities and needs along with opportunities and capabilities with regard to climate change; the vulnerabilities and needs along with opportunities and capabilities of indigenous people; as well as other vulnerable communities, including communities living in fragile environments such as SIDS, drylands, mountain areas or coastal zones. The Strategy is implemented in the context of the FAO Policy on Gender (2013)[23] and the FAO Policy on Indigenous and Tribal Peoples (2010).[24] Planning focuses on identifying and acting to protect and enhance support in particular to those livelihoods, communities and systems that are most vulnerable to the adverse impacts of climate change. FAO will work to develop financing vehicles and safety nets for the small landholders of the world, usually excluded from "green finance".

Support policy integration and mainstreaming

FAO promotes both the integration of CCAM into policies and strategies relating to the food and agricultural sectors, as well as the integration of food and agricultural sector considerations into climate-related policies. Such policy harmonization lays a strong foundation for cohesive action, and is proven to be more effective than stand-alone solutions.

23 FAO, 2013. *FAO policy on gender equality.* http://www.fao.org/docrep/017/i3205e/i3205e.pdf

24 FAO, 2010. *FAO policy on indigenous and tribal peoples.* http://www.fao.org/fileadmin/user_upload/newsroom/docs/FAO_policy.pdf

Promote evidence-based, scientific approaches

Interventions supported by FAO are always built upon evidence-based science. Where uncertainties remain, scenarios to support informed decision-making are provided.

Promote ecosystem-based approaches

Ecosystems provide valuable services that help to build resilience and reduce the vulnerability of people and their livelihoods to climate change impacts. Integrating the protection of biodiversity and ecosystem services into adaptation strategies and mitigation options through agro-ecological approaches and the conservation and sustainable use of genetic resources for food and agriculture increases the resilience of human and natural systems to climate and non-climate risks, providing benefits to society and the environment.

Learn from experience

Knowledge management, strategic partnerships, South-South Cooperation and other mechanisms are optimized to share experiences and learn lessons, as well as to identify gaps that FAO and its partners can fill. The Strategy is guided by existing, relevant FAO Strategies, in particular on Capacity Development (2010)[25] and Partnerships (2012).[26]

Lead by example

Interventions embody the principles they seek to convey. FAO demonstrates its commitment by having integrated CCAM considerations into its programming and project cycle. In addition, the Organization is committed to a sustainable future by continuing to reduce the environmental impact of FAO's own operations under its Corporate Environmental Responsibility Policy,[27] interlinked with the UN Greening the Blue initiative.[28] Efficiency in construction projects and in FAO offices, smart travel, and sustainable procurement practices are important ways in which the Organization increasingly supports itself and its partners in the quest for green development.

Measure and evaluate impact

Results-oriented action has been described by UN Secretary-General Guterres as a priority for the United Nations during his term in office. Through its Climate Change Strategy, FAO commits to deliver on the topic of food security and climate change, as well as to measure and evaluate the results achieved for further improvement in the future. ■

25 FAO, 2010. *Corporate Strategy on capacity development.* http://www.fao.org/docrep/meeting/019/k8908e.pdf

26 FAO, 2012. *FAO Organization-wide Strategy on partnerships.* http://www.fao.org/fileadmin/user_upload/corp_partnership/docs/stratbrochure_en_web.pdf

27 FAO, 2016. *FAO Corporate Environmental Responsibility Policy.* http://www.fao.org/documents/card/en/c/6cfe9d6e-545f-4452-abc2-35c817c54dca/

28 http://www.greeningtheblue.org/

SECTION 3
EXPECTED OUTCOMES

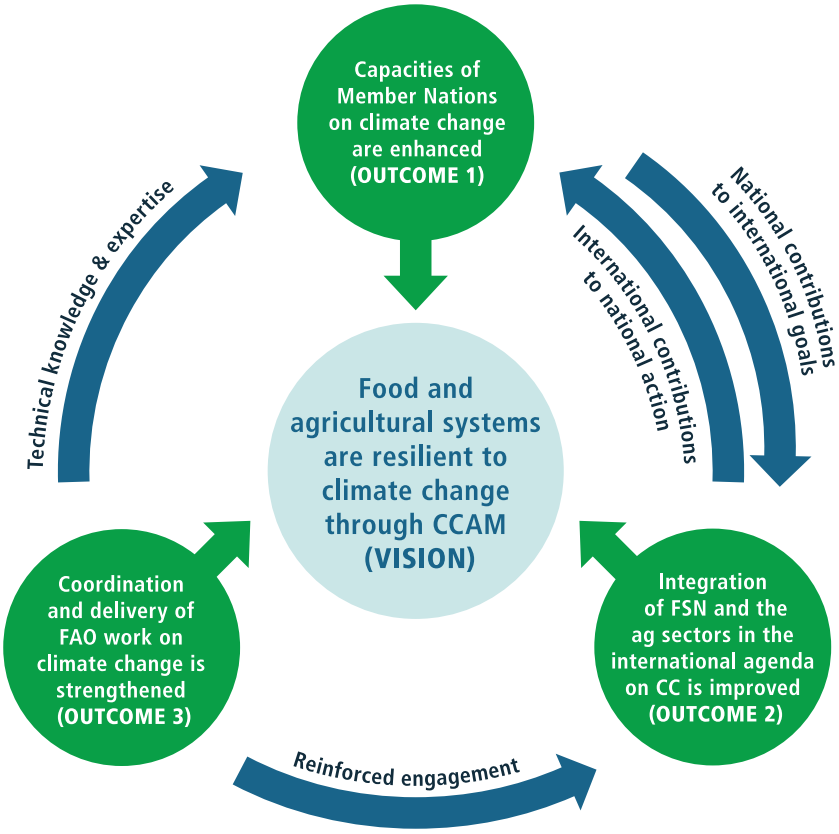
This Strategy guides FAO's action to achieve three mutually reinforcing outcomes:

❶ Enhanced capacities of Member Nations on climate change through FAO leadership as a provider of technical knowledge and expertise.

❷ Improved integration of food security and nutrition, agriculture, forestry and fisheries considerations within the international agenda on climate change through reinforced FAO engagement.

❸ Strengthened coordination and delivery of FAO work on climate change.

These outcomes focus the Strategy and FAO's action on the enhancement of Member Nations' capacities (Outcome 1), within the enabling environment of the international agenda on sustainable development and in particular on climate change (Outcome 2). The achievement of Outcomes 1 and 2 necessitates the strengthening of FAO's capacities and streamlining of existing FAO mechanisms (Outcome 3). This theory of change can be illustrated as follows:



SECTION 4
PLAN OF ACTION

Actions to be taken by FAO to implement the Climate Change Strategy are set out for each expected outcome of the Strategy. These actions will be carried through FAO's Strategic Programmes and Objective 6, including through enhanced partnerships, and measured by FAO's results framework.

Outcome 1. Enhanced capacities of Member Nations on climate change through FAO leadership as a provider of technical knowledge and expertise

National priorities will guide the support that FAO provides to each Member Nation in meeting the commitments of their NDCs within the broader sustainable development context. Noting the extensive ongoing work programme in countries supported by FAO, the Strategy will augment efforts with a specific focus on CCAM delivery at country level through the following actions.

FAO will:

a) Directly support NDC implementation in the food and agricultural sectors in countries through policy processes, capacity-development and technical interventions on the ground.

b) Facilitate country access to financing for the food and agricultural sectors by leveraging national and international climate finance, providing assistance for drafting investment programmes and supporting countries in making their domestic investments more climate-smart, with a view to becoming low-carbon economies.

c) Support countries to integrate food security, agricultural sector considerations and climate change across relevant national policies and regional policies, strategies, programmes. This applies to frameworks on CCAM (in particular NDCs, National Adaptation Plans (NAPs), Nationally Appropriate Mitigation Actions (NAMAs) and the implementation of the Sendai Framework for Disaster Risk Reduction), as well as national and regional agriculture, forestry, fisheries and biodiversity frameworks. FAO's Country Programming Frameworks will be updated to reflect national climate priorities and hence target resources and action most effectively.

d) Guide countries to develop and adopt Disaster Risk Reduction and upstream of adaptive and preventive approaches as a cost-effective way to deal with the significant impacts of climate-triggered extreme events.

e) Convene multi-country technical and policy exchanges to address emerging issues relating to climate change and advance understanding and adoption of best CCAM practices among Member Nations.

f) Develop new codes of practice, guidelines, standards and other documents that support countries in addressing climate change more effectively. Responses to climate change will require new measures to protect consumers and producers of food and agricultural products, as well as natural resources. Existing norms and standards across FAO will integrate climate change perspectives where relevant.

g) Strengthen national and regional institutional capacity to generate, collect and use data and

information that enhances their ability to address climate change adaptation and mitigation. This will include, among others, weather, yield and loss data, greenhouse gas emissions, soil carbon and water availability, and the capacity to exchange information among farmers, government authorities, research establishments and the private sector. Countries will be assisted to develop dissemination systems that make relevant information accessible to farmers and others who would benefit from it, for example through cellphone networks and mass media channels.

h) Develop new tools and disseminate existing tools to assist with analysis of and planning for the impacts of climate change and new national reporting requirements. Links will be made with partners to use or adapt their tools and thus avoid duplication of effort.

i) Increase knowledge and technical support to countries on climate-smart agriculture approaches. Successful approaches will be upscaled, and new approaches will be developed in collaboration with partners where gaps and needs are identified.

j) Leverage strategic national partnerships with key research and implementation actors in the international climate and development process including farmers and food producers, academia, the private sector and civil society to synergize and complement the financial, human, and technical resources needed to improve delivery, avoid duplication, make more efficient use of resources, and mobilize finance in support of national programmes.

Outcome 2. Improved integration of food security and nutrition, agriculture, forestry and fisheries considerations within the international agenda on climate change through reinforced FAO engagement

FAO commits to reinforce and strengthen its role as the international advocate for food security and nutrition, agriculture, forestry and fisheries considerations in the context of climate change. This set of actions aims to guide international priority setting and thereby serves to create an enabling environment for national action.

In particular, FAO will:

a) Ensure that the perspectives of food security and nutrition, agriculture, forestry and fisheries, rural livelihoods and natural resource management and conservation are appropriately prioritized in international fora addressing climate change. Key fora include the Rio Conventions (UNFCCC, UNCCD and CBD) as well as the 2030 Sustainable Development Agenda. Other relevant processes include the Sendai Framework for Disaster Risk Reduction; and the World Humanitarian Summit process, among others.

b) Work with relevant funding bodies to promote higher profiling of the food and agricultural sectors in financing decisions related to climate change. Key partners include the Green Climate Fund (GCF), Global Environment Facility (GEF), the World Bank, regional development banks, multilateral and bilateral development partners, the private sector, as well as other innovative financing opportunities.

c) Extend its engagement to relevant fora that do not specifically deal with the agricultural sectors, such as those dealing with humanitarian issues, migration or conflict. FAO will explore the possible role of climate change in triggering or exacerbating conflict, migration and social instability through pressures on food and agricultural systems and rural communities.

d) Maintain and strengthen its role as a provider of global data and information resources and knowledge and technologies on CCAM, including global goods such as data on food insecurity around the world, and global GHG databases on agriculture and land use.

e) Convene actors from the food and agricultural sectors with actors from other

sectors that primarily deal with climate change, including environment, energy, industry, transport, economic development/planning and investment, as well as actors from sectors with consequential interests such as health, social, labor, education, defense and others. FAO will work through its networks of decentralized offices to do so.

f) Leverage strategic international partnerships with key research and implementation actors in the international climate and development process including UN System, public, private, research and civil society organizations to synergize and complement the financial, human, and technical resources needed to improve delivery, avoid duplication, make more efficient use of resources and mobilize finance in support of national programmes.

g) Support the engagement of younger generations in climate change issues through education and public awareness raising at global and national level, mobilizing them as agents for sustainable behaviour change.

Outcome 3. Strengthened coordination and delivery of FAO work on climate change

As a cross-cutting theme under the Strategic Framework, climate change will be reflected in each Strategic Programme (Annex 1) and relies on the contribution of all FAO units at all locations and on the active engagement of Member Nations and partners.

FAO will strengthen and streamline internal mechanisms for coordination, knowledge development and management, innovation and delivery. The Strategy will be backed by an extensive and continuing learning programme to ensure good understanding of what FAO can offer to countries on CCAM in food and agricultural systems and how this support can be delivered most effectively.

In December 2016, FAO **established a Climate, Biodiversity, Land and Water Department under the Deputy Director-General, Climate and Natural Resources.** The department will play an important role in supporting Member Nations' drive to implement the three Rio Conventions on climate, biodiversity, and desertification, and will also address biodiversity, land, water, environment and bio-economy action[29] at scale. It will facilitate in an integrated manner the delivery of FAO's cross-cutting work on climate change adaptation and mitigation, climate policy and finance, environment and promoting sustainable bio-economies.

Specifically, FAO will:

a) Establish operational modalities for the implementation of the Strategy and the new Climate, Biodiversity, Land and Water Department.

b) Maximize its impact through strategic partnerships guided by the FAO Strategy on Partnerships.[30] Particular attention will be given to:

- The Rome-Based agencies: The International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP), with whom existing collaboration will be enhanced specifically around CCAM, DRR and the mobilization of climate finance on behalf of Member Nations;[31]

- Commissions, committees, conferences, working parties and consultations under Article VI and conventions, agreements and treaties deposited with FAO under Article XIV of the FAO Constitution that address climate change;[32]

29 See *Final Communiqué of the 2015 edition of the Global Forum for Food and Agriculture* (GFFA, Berlin 17 January 2015).

30 FAO, 2012. *FAO Organization-wide Strategy on partnerships.* http://www.fao.org/fileadmin/user_upload/corp_partnership/docs/stratbrochure_en_web.pdf

31 This collaboration will build on the document *Rome-based Agencies Collaboration* (http://www.fao.org/3/a-mr918rev1e.pdf), endorsed by the 155th Session of the FAO Council in December 2016, within which climate change is identified as a thematic area for collaboration. This is the first joint strategic document on collaboration between the Rome-Based Agencies, indicating a new vision to ensure improved complementarity and synergies between FAO, WFP and IFAD, both at the global and country level.

32 FAO Constitution: http://www.fao.org/3/a-mp046e.pdf

- Key technical fora, in particular the Committee on World Food Security (CFS);
- UN agencies and programmes, World Meteorological Organization (WMO), The United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP) (UNEP, UNDP and FAO are also joint members of the UN-REDD partnership);[33]
- Investment institutions: Allowing FAO to bring its tools, data and technical expertise to bear in a wider network of programmes, as well as enhancing opportunities for resource mobilization;
- Development partners, academia and research, the private sectors and civil society organizations.

c) Expand internal programmes for sharing knowledge and fostering learning to ensure continuous learning and access to the latest information in the rapidly developing and diverse field of climate change. In particular, the capacities of FAO's country, subregional, regional and liaison offices will be strengthened to enable them to effectively engage with relevant climate change processes and stakeholders. The Technical Network on Climate Change will serve to share knowledge and the delivery of learning for individuals, units and the institution as a whole.

d) Measure progress in implementing this Strategy. Progress will be measured through relevant indicators of FAO's results framework.

The Climate Change Strategy contributes to the achievement of the SDGs. FAO is specifically proposing to undertake efforts contributing to all targets under SDG 13 on Climate Action:

13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

13.2: Integrate climate change measures into national policies, strategies and planning.

13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

13.A: Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly USD 100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.

13.B: Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and Small Island Developing States, including focusing on women, youth and local and marginalized communities. ■

33 UN-REDD stands for the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries.

Contributions of FAO's Strategic Programmes and Objective 6 actions to the outcomes of the Climate Change Strategy.

Outcome 1 - Enhanced capacities of Member Nations on climate change through FAO leadership as a provider of technical knowledge and expertise.	Outcome 2 - Improved integration of food security, agriculture, forestry and fisheries within the international agenda on climate change through reinforced FAO engagement.
SP1 - Contribute to the eradication of hunger, food insecurity and malnutrition	
• **Supporting countries and regions to help orient climate change policy and action** towards enhanced food security and nutrition outcomes. • **Providing guidance and advice to enhance countries' capacities** to effectively integrate food security and nutrition considerations into national and regional policies, strategies, programmes on CCAM including their NDCs. • **Providing information and assistance to Member Nations** to improve access to international climate finance and ensure food security and nutrition concerns are incorporated in their requests.	• **Improving data and evidence building** and associated capacities to better inform policy and investment decisions on the interlinkages of food security, nutrition and climate change. • **Strengthening evidence and capacities** to analyse the impact of climate change on food security and nutrition and on how food and agriculture (including healthier diets) can enhance adaptation and mitigation. • **Promoting coherence and complementarity of international commitments** on climate change with related global agendas and fora on sustainable development, such as SDG1 on ending poverty, SDG2 on ending hunger, the Rome Declaration on Nutrition (ICN2, 2014) and the UN Decade of Action on Nutrition (2016).
SP2 - Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner	
• **Promoting sustainable production systems for crops, livestock, forestry, fisheries and aquaculture that are climate-resilient** and address climate change adaptation and mitigation, and thereby promoting the implementation of the 2030 Agenda for Sustainable Development and the Paris Agreement. • **Developing or improving policies and governance mechanisms** to address sustainable production, climate change and environmental degradation in a coherent and integrated way. • **Improved implementation of policies and international instruments,** in particular to support institutions in implementing policies and international instruments that foster sustainable production and resilience and address climate change and environmental integrity. • **Strengthening decision-making based on evidence and derived from sectoral/cross-sectoral analysis of data, information and knowledge,** including through developing capacities of institutions to collect data and produce evidence for decision-making on sustainable production, climate change adaption/mitigation, and environmental protection, including relevant SDGs.	• **Effectively integrating agriculture, forestry and fisheries in international governance mechanisms** related to the 2030 Agenda, climate change, biodiversity and environmental agendas, including mechanisms or instruments under FAO's responsibility. • **Developing strategic knowledge products** that address global issues and that integrate information on sustainable production, climate change and environmental degradation.

SP3 - Reduce rural poverty

- **Improving understanding of the social and economic impacts of climate change,** in particular on the most vulnerable groups, and analysing the links between climate change and rural poverty, including through collection and sharing of evidence that can be fed into policy and programming.
- **Mainstreaming gender equality, equity and social inclusiveness into climate-related planning processes and promoting inclusive and diversified sustainable food and agriculture systems** to help reduce rural poverty and avoid crises that may include distress migration, conflict over resources or greater discrimination against women or particular social groups, while capitalizing on the positive contribution to climate action such groups can make.
- **Supporting employment creation schemes** in affected areas to enable households to diversify their incomes and engage in green entrepreneurship with a focus on women and youth.
- **Designing and supporting poverty reduction risk management strategies,** including social protection, for the poor and most vulnerable communities (including indigenous peoples, women and youth) to prevent and mitigate climate-related risks, based on their own expertise and stewardship of natural resources.
- **Advocating for inclusive sustainable rural transformation** as a tool to avoid climate change related distress migration and conflicts over resources.
- **Improving understanding of the social dimensions of climate change** in triggering or exacerbating social instability, poverty and gender inequality through pressures on food and agricultural systems and livelihoods in rural areas.

SP4 - Enable more inclusive and efficient agricultural and food systems

- **Improving understanding of the adaptation and mitigation benefits** of inclusive, efficient and sustainable agrifood value chains.
- **Promoting good adaptation and mitigation practices,** such as using water and energy efficiently and using renewable energy along value chains.
- **Exploring potential co-benefits of redesigning existing value chains and energy supplies** for climate change mitigation.
- **Supporting countries** in integrating climate change considerations into agrifood systems policies, strategies and programmes.
- **Engaging with global climate-related initiatives** to strengthen dialogue and partnership with the private sector.
- **Advocating for a bioeconomy approach** in agrifood system development, and for better alignment of climate change strategies and the greening of value chains.
- **Developing international data and analysis** in support of more inclusive and efficient agricultural and food systems to address challenges posed by climate change.
- **Identifying and applying innovative or improved financial approaches** and investment mechanisms and services for climate friendly agrifood system development.

SP5 - Increase the resilience of livelihoods to threats and crises

- **Assessing risks and vulnerabilities and guiding countries** towards enhanced Disaster Risk Reduction and Climate Change Adaptation strategies and practices that prioritize prevention of climate-induced disasters as a significantly more cost-effective option than rehabilitation and recovery, while ensuring sound capacities for response to disasters whenever they cannot be avoided.
- **Addressing both localized pressures and international impacts** such as from increased migration and resource degradation.
- **Providing regular data analysis, monitoring and early warning systems** to regions and countries on hazards and threats which are influenced by the impacts of climate change.
- **Engaging in international fora** such as the Sendai Framework for Disaster Risk Reduction and the World Humanitarian Summit process to promote climate resilience and the risk reduction approach.
- **Improving understanding of climate change pressures** on food and agricultural systems and livelihoods in rural areas and their role in triggering or exacerbating conflict and migration.
- **Introducing data from monitoring information systems** for damage and loss from extreme events on agriculture, food security and nutrition in international processes.

Across all SPs / Coordinated by Objective 6 - Technical quality, knowledge and services

- **Supporting countries to integrate the agricultural sectors in defining their NDCs** and support strategic dialogues at regional and international level.
- **Supporting countries to integrate a gender perspective** in their National Adaptation Plans and in the implementation of their NDCs.
- **Providing information, assistance and support for project development** to countries to improve access to international climate finance.
- **Strengthening national institutional capacity** to deliver on climate change adaptation and mitigation in food and agriculture.
- **Building evidence on the effects of adapted technologies** on food security under climate change and the barriers to their adoption and upscaling.
- **Strengthening integration of food and agricultural perspectives** in international climate-related fora.
- **Advocating for increased investment** for climate change adaptation and mitigation for food and agricultural sectors.
- **Advocating in UN system processes for a stronger role of the agricultural sectors in countering** climate change.

CHINA
Rice-fish culture system. Fish and rice grow side by side in the paddy fields.
©FAO

Annex 1

THE IMPACTS OF CLIMATE CHANGE ON THE FOOD AND AGRICULTURAL SECTORS

The impacts of climate change on food and agriculture are interconnected across environmental, social and economic dimensions. Below, climate impacts are considered from a range of perspectives related to food, agriculture and dependent livelihoods: food security; nutrition and human health; the agricultural sectors; natural resources; post-production stages and human migration.

Food security

Climate change stands to undermine the four dimensions of food security in different ways.

Food availability will be compromised by projected yield declines across the crop, livestock and fisheries and aquaculture sectors (see 'agricultural sectors'), especially in sub-Saharan Africa and South Asia, where most of today's food insecure live. This will raise the pressure on the natural resource base and add to upward pressure on international food prices, while global food supply needs to increase by 60 percent from 2006 to 2050 to meet the needs of a growing population and changing diets.[34] Expected changes in natural resources and growing conditions also mean that climate change will very likely change the geography of production. For instance, in many cases, production is projected to shift from low latitude areas to high latitudes areas, and thus, from food deficit areas to food surplus areas.

Climate change also compromises **food access** by affecting the purchasing power of consumers, especially of the poor. Impacts on production directly translate into social and economic impacts through a range of different pathways that can result in changes in agricultural incomes and prices and also affect trade patterns and investment trends (see 'post-production stages'). Regarding food prices, most model projections indicate some price increases as a result of climate change, although the magnitude and locations vary considerably across models and climate change scenarios.

Climate change affects **food utilization** primarily through its impacts on food safety and health (see 'nutrition and human health'). In general, climate change is likely to reduce food safety through a higher incidence of food-borne diseases. Climate also affects health via multiple pathways, including geographical shifts in vector-borne diseases, heat stress and natural disasters, which in turn affect the nutrition of people and their ability to provide care as well as nutritional contents of food.

With regards to **food stability**, the risks to food and nutrition security are exacerbated by the expected increase in the frequency and intensity of climate-related events. Shocks and crises caused by extreme weather events destroy resources and infrastructures

34 Alexandratos, N. and Bruinsma, J., 2012. World Agriculture towards 2030/2050, The 2012 Revision FAO, http://www.fao.org/docrep/016/ap106e/ap106e.pdf

and hence reduce overall food production capacity. Another potential impact of climate change lies in increased food price volatility. Recent international food price spikes often followed climate extremes in major producing countries, and have become more likely as a result of climate trends.

Integrated **food safety** management to control the safety of foods along value chains will be required as a consequence of climate change affecting food production systems and supply chains.[35] For example, shifting patterns of algal blooms are expected to expose new countries to ciguatera fish poisoning, a severe food-borne illness. Higher temperatures and humidity are increasing the risk of fungal growth and thus contamination of stored cereals and pulses with mycotoxins (fungal metabolites). Climate change will cause unexpected changes in patterns of plant and animal diseases, which will increase the risk of over- or misuse of agricultural chemicals in an effort to control these diseases. The management of these challenges will require all operators along the value chain to be able to implement suitable good practices.

Nutrition and human health

Linked to food security, climate change directly affects the **nutrition** of millions of people, undermining current efforts to address undernutrition and hitting the poorest the hardest, especially women and children. It is seen as a significant "hunger-risk multiplier" for which some forecasts anticipate 24 million additional malnourished children by 2050 - almost half of them in sub-Saharan Africa.[36] This negative impact will be significant in developing countries, especially on per capita calorie availability, childhood undernutrition, and undernutrition-related child deaths.[37] The composition of diets, as well as caloric availability, are both risk factors for climate-related health impacts. A 2016 model[38] projects that by 2050, climate change will reduce per capita food availability by over 3 percent, fruit and vegetable consumption will decline by 4 percent and the consumption of red meat will fall slightly. Next to this, climate change is expected to increase the incidence of diseases that will contribute to undermining the body's ability to absorb nutrients. The great majority of people whose diets are inadequate, both in terms of calories and micronutrients, live and work as farmers, pastoralists or fishers in rural farming communities in the developing world.

At the same time, climate driven shifts in animal and plant pests and diseases could lead to increased uses of pesticides and pharmaceuticals such as antibiotics. These, in turn, may exacerbate incidences of antimicrobial resistance (AMR) in humans that results from over-exposure to antibiotics, and to food and water safety issues resulting from excessive pesticide residues.

The agricultural sectors

In the **crop sector,** there is evidence that climate change has already negatively affected wheat and maize yields in many regions and at the global level.[39] The Intergovernmental Panel on Climate Change (IPCC) warns that decreases in crop yields of 10 to 25 percent and more may be widespread by 2050.[40] The increased frequency of warmer nights in most regions is damaging for many crops, with observed impact on rice yields and quality. The number of

35 FAO, 2008. *Climate Change: Implications for Food Safety.* ftp://ftp.fao.org/docrep/fao/010/i0195e/i0195e00.pdf

36 IFPRI, 2009. *Food policy report "Climate Change: Impact on agriculture and costs of adaptation."* http://www.ifpri.org/publication/climate-change-impact-agriculture-and-costs-adaptation

37 IPCC, 2014. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap7_FINAL.pdf

38 Springmann M., Mason-D'Croz D., Robinson S., Garnett T., Godfray H.C. J., Gollin D.; Rayner M.; Ballon P., and Scarborough P., 2016. *Global and regional health effects of future food production under climate change: A modelling study.* The Lancet.

39 Lobell D.B., Schlenker W. and Costa-Roberts J., 2011. *Climate trends and global crop production since 1980,* Science, 333(6042), 616-20

40 IPCC, 2014. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap7_FINAL.pdf

crop varieties has decreased dramatically during the 20th century, raising concerns for adaptive capacity, genetic vulnerability and nutritional diversity. Ecological processes which are typical in diverse cropping systems have been replaced or suppressed by the use of external inputs. Intensive mono-cropping systems have expanded across the globe, leading to lower resilience of agro-ecosystems and livelihoods. The conservation of both crop and wild plant genetic resources is therefore an important adaptation measure.[41] Climate change is also expected to have a significant impact on the frequency and intensity of plant pest and disease outbreaks. For example, an increase in extreme weather events (i.e. drought spells or intense short-lived widespread rainfall, including cyclones), in addition to causing severe disruption in their own right, can lead to more frequent and intense plant pest and disease outbreaks, as was the case during the Desert Locust outbreaks in Northwest Africa and in Yemen in late 2015 and early 2016.[42]

Livestock, including feed crops, contributes approximately a third of GHG emissions from the AFOLU sector.[43] However, FAO estimates that a reduction of up to 30 percent can be achieved through improved feed and stock management.[44] The livestock sector experiences important negative climate impacts in animal productivity, yields of forage and feed crops, animal health and reproduction, and biodiversity. For example, in various Sub-Saharan African countries, 20-60 percent losses in animal numbers were recorded during serious drought events in the past three decades.

41 FAO, 2015. *Voluntary guidelines to support the integration of genetic diversity into national climate change adaptation planning.* http://www.fao.org/documents/card/en/c/290cd085-98f3-43df-99a9-250cec270867/

42 FAO, 2016. *Desert locus bulletin.* http://www.fao.org/ag/locusts/common/ecg/2293/en/DL450e.pdf

43 FAO, 2013. *Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities.* http://www.fao.org/docrep/018/i3437e/i3437e.pdf

44 FAO, 2013. *Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities.* http://www.fao.org/docrep/018/i3437e/i3437e.pdf

In South Africa, dairy yields were predicted to decrease by 10-25 percent under certain climate change scenarios.[45] Increased temperatures and reduced precipitation have direct negative impacts on yields, and records during drought events can reveal important drops in forage production. Increased animal pest, disease and epidemic outbreaks are another likely result of climate change.

The impacts of climate change on **fisheries and aquaculture** occur as a result of both gradual atmospheric warming and associated physical and chemical changes of the aquatic environment.[46] Climate change is likely to affect already vulnerable fisheries and ocean-dependent communities through less stable livelihoods, changes in the availability and quality of fish for food, and rising risks to their health, safety and homes. One scenario projects a decrease in landed fish value of 21 percent and a total annual loss of USD 311 million by 2050 over 2000 values, and a significant loss in fisheries-related jobs of almost 50 percent in 14 West African countries.[47] Overall, rising temperatures are predicted to reduce catches of main fish species by 40 percent by 2050.[48] Extreme events such as deep sea ocean swells, particularly high temperatures, and cyclones can affect the ability of ecosystems such as coral reefs and mangroves to provide services crucial for livelihoods and food security. Climate change and carbon absorption in the aquatic systems are and will continue to manifest changes in aquatic systems through rising water temperatures, increased thermal stratification, changes in salinity and freshwater content, changes in oxygen concentrations, and ocean acidification. Climate change is also a compounding threat to the sustainability of capture fisheries and aquaculture

45 IPCC, 2014. http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-PartB_FINAL.pdf

46 IPCC, 2013. http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf

47 Lam V.W.Y., Cheung W.W.L., Swartz W., and Sumaila U.R., 2012. Climate change impacts on fisheries in West Africa: implications for economic, food and nutritional security. *African Journal of Marine Science,* 34(1), 103-117

48 IPCC, 2014. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap7_FINAL.pdf

development in marine and freshwater environments as it exacerbates issues already faced by the sector such as overfishing, pollution and disease, as well as the natural variability within the aquatic systems, impacting both local access to food and globally traded fisheries products. The primary potential for GHG reduction in the fisheries and aquaculture sector has been associated with reducing fuel and energy use either through direct or indirect action.

Although **forest ecosystems** are inherently dynamic, the speed of predicted climate change is likely to far exceed the natural capacity of many forest species and ecosystems to adapt, especially in the tropics where there is high instance of endemism. Climate change constitutes a direct threat to forest ecosystems, forest-dependent peoples and society as a whole through reduced delivery of products and forest ecosystem services. Reduced forest productivity, forest dieback, increased pest and disease outbreaks, increased wildfire incidences or severity and loss of forest biodiversity in various global locations are evidence of climate change impacts. Forest degradation, reduced availability of forest products and impaired forest ecosystem services, such as regulation of water supply and erosion, affect the wellbeing of local forest-dependent communities as well as water supplies and food production in downstream areas. Climate impacts on forests affect food security by reducing forest foods, forest-employment and income, environmental sustainability and availability of fuelwood needed for food production. Adaptation measures in the forest sector are therefore crucial for food security as well as poverty alleviation. Forests as important carbon stocks, sinks and sources, are key to the global carbon balance. Deforestation and forest degradation contribute an estimated 10-11 percent of global greenhouse gas emissions. On the other hand, afforestation and reforestation, forest restoration and agroforestry development have significant mitigation potential, which can also provide adaptation benefits. While safeguarding natural forests is to be prioritized, planted forests also contribute to carbon sequestration in incremental terms and offer adaptation options for agriculture, such as shade-grown coffee or agroforestry. By 2030, forestry mitigation options could contribute to reductions of 0.2 to 13.8 Gt CO_2e per year at carbon prices up to USD 100 per tonne CO_2e and to reductions of 0.01 to 1.45 Gt CO_2e per year at prices below USD 20 per tonne CO_2e.[49] In addition, climate benefits can be achieved by the use of timber and harvested wood products that store carbon in the long term, in place of fossil fuel based on other materials.[50] Climate change actions in forestry will need to optimize mitigation and adaptation benefits and consider these options in light of forest management objectives.

Natural resources

Climate change poses large-scale threats to natural resources that are essential to agricultural production. Damage to and depletion of natural resources undermines the natural ecological processes on which healthy, productive landscapes rely. Key resources under pressure are described below.

It is predicted that climate change may become the main driver of **biodiversity** loss.[51] The IPCC's Fourth Assessment Report outlines a broad risk of climate change impacts to terrestrial ecosystems, and consequently, to ecosystem services. Along with a higher risk of extinctions, it is predicted that temperature increases will impact ecosystem functioning, including those important for food supply. These climate change risks are expected to not only impact ecosystems, but also biodiversity-based livelihoods. The fate of pollinators is one important example, with potentially devastating implications for systems reliant on pollinators that are unable to adapt to rising temperatures. The ranges, abundances and seasonal activities of some wild pollinator species have already changed in response

49 IPCC, 2014. https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter11.pdf

50 FAO, 2010. *Impact of the global forest industry on atmospheric greenhouse gases*. http://www.fao.org/docrep/012/i1580e/i1580e00.pdf

51 Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute, Washington, DC.

to observed climate change over recent decades, and future impacts on pollinators and pollination services to agriculture may not be fully apparent for several decades, owing to delayed responses in ecological systems.[52] In marine ecosystems, climate change projected to the mid-21st century and beyond could result in global redistribution of marine species and the reduction of marine biodiversity in sensitive regions. This will challenge the sustained provision of fisheries productivity and other ecosystem services. It is therefore very likely that climate change will affect the ecosystem services provided by agricultural biodiversity.

Loss of biodiversity may also lead to significant losses of **genetic diversity** within species most important for food and agriculture. Climate change threatens the survival of the strategic reservoir of crop and livestock genetic resources needed to adapt production systems to future challenges. As conditions change, varieties and breeds may be abandoned by farmers and livestock keepers, and may be lost forever if steps are not taken to ensure their conservation. Catastrophic extreme weather events such as floods and droughts, which in many parts of the world are expected to become more frequent because of climate change, can pose an immediate threat to the survival of breeds and varieties that are raised only in specific small geographical areas.[53] The sustainable use of genetic resources for food and agriculture will thus be the foundation for many of the adaptation strategies required in food and agriculture. An ecosystem approach to the management of agriculture, forestry and aquatic food production in the face of climate change will be essential.

At the same time, **soils,** the basis for plant growth, degrade and are lost at high rates as a consequence of climate change impacts on landscapes. Loss of soil fertility is mostly accompanied by soil carbon losses, making soil degradation a source for carbon dioxide (CO_2) emissions. Increases in soil carbon stabilize soils, improve its buffer and storage function for nutrients and soil water, and thus help farmers' resilience to climate change while also mitigating increased atmospheric CO_2. Restoration and rehabilitation of degraded lands has the important co-benefit of potentially sequestering carbon. This potential is enormous: around 200 million hectares (ha) of degraded land could be restored by 2030. Many of these areas include organic soils which have an even larger potential to sequester carbon and their restoration under different scenarios could bring additional financial resources to communities that depend on today's degraded lands. For example, estimates for potential carbon sequestration (which includes soil carbon sequestration) from the agricultural sector ranges from 0.3 to 4.6 $GtCO_2eq/yr$.[54] Looking at soil carbon sequestration alone, restoration of degraded lands was estimated to have the potential to sequester up to 7.26 tonnes of CO_2 per hectare per year ($tCO_2/ha/year$)[55] which, when accumulated to 2030, would greatly contribute to mitigating the current global CO_2 emission levels and has the potential to attract financial flows.

Climate change is projected to significantly reduce renewable **surface water and groundwater resources** with particular intensity in most dry subtropical regions. For each degree increase in global surface temperature, approximately 7 percent of the global population is projected to be exposed to a minimum of 20 percent decrease of renewable water resources.[56] Agriculture is now responsible for approximately 70 percent of the global water withdrawals. With the impacts of climate change,

52 IPCC, 2014. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5_wgII_spm_en.pdf

53 FAO, 2016. http://www.fao.org/3/a-i3866e.pdf

54 IPCC, 2011. www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter11.pdf
IPCC, 2007. http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch8s8-4-2.html
McKinsey, 2013. Report "Pathways to a low-carbon economy: Version 2 of the global greenhouse gas abatement cost curve." http://www.mckinsey.com/client_service/sustainability/latest_thinking/pathways_to_a_low_carbon_economy

55 IPCC, 2007. http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch8s8-4-2.html

56 IPCC, 2014. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap3_FINAL.pdf

many regions are likely to face substantial water scarcity. If not dealt with properly and in a timely manner, water shortages will result in increasing competition between water users, which may constrain agricultural production, affect food security, incomes and livelihoods. Adjusting the agricultural sector to less water availability is crucial to ensure food security into the future. FAO therefore launched the Global Framework for Action to Cope with Water Scarcity in Agriculture in the Context of Climate Change at COP22 in Marrakech in 2016.[57]

Post-production stages

Post-harvest stages consume over 70 percent of the energy and emit about 30 percent of GHGs of total agrifood chains (excluding those from land use change).[58] In addition, food loss and waste is responsible for about 8 percent of global GHG emissions.[59] Improved energy efficiency along the length of the agrifood chain and the deployment of renewable energy systems to displace fossil fuels and to provide access to modern energy, especially in post-harvest or post-capture activities, can reduce emissions. Increased access to modern energy and technologies facilitates increased food productivity (on and off-farm), hence reducing the emission intensity per unit of food produced. Consumption patterns can significantly influence GHG emissions, meaning that related adjustments in policy, industry and consumer behaviour can be influential in the response to climate change. FAO is providing support in this field, for instance through the Save Food Initiative[60] which was formally showcased at COP21 in Paris.

The shift in the production potential induced by climate change could result in substantially higher **trade** flows from mid- to high latitude areas to low latitudes areas.[61] Many factors will eventually affect the volumes and the composition of trade flows under climate change. They include yields and yield potentials under new agro-climatic conditions, changes in the suitability of arable land, the availability of precipitation and water for irrigation, developments in energy markets, population growth and changes in consumption patterns. They also include policies, with an obvious role for trade policies at the global and regional level. Trade can play a stabilizing role in compensating for regional changes in productivity and food price volatility as well as an equilibrating role between resource rich and resource poor regions.

Human migration[62]

Environmental and climate stresses on livelihoods - such as droughts, floods and unpredictable weather patterns - push rural people to migrate. As land is farmed more intensively, soil degradation increases, production declines, and incomes fall. Likewise, water scarcity caused by prolonged drought and conflicts over water use may induce poorer farmers to abandon the land. Temporary, seasonal and permanent migration can be a form of livelihood diversification, which provides significant benefits to many rural households. It is a key source of income diversification that boosts household resilience and provides the means for productivity-enhancing investments. On the downside, migrants often face multiple hardships, risks and dangers. One study projects that hundreds of millions of people might need to flee their homes as a result of climatic and environmental pressures between now and 2050.[63]

57 Global Framework for Action to Cope with Water Scarcity in Agriculture in the Context of Climate Change: http://www.fao.org/nr/water/cop22.html

58 FAO, 2011. *Energy-smart food for people and climate.* http://www.fao.org/docrep/014/i2454e/i2454e00.pdf

59 FAO, 2015. *Food wastage footprint and climate change.* http://www.fao.org/3/a-bb144e.pdf

60 Save Food: http://www.fao.org/save-food/en/

61 IPCC, 2014. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-FrontMatterA_FINAL.pdf

62 FAO, 2016. *State of Food and Agriculture: Climate Change, Agriculture and Food Security.* http://www.fao.org/3/a-i6030e.pdf

63 International Institute for Environment and Development, 2010. *Moving to adapt to climate change.* Reflect & Act. London, International Institute for Environment and Development.

Such forecasts have helped to place migration as an issue to be addressed in climate change adaptation. In their adaptation strategies, governments tend to take one of two approaches.[64] The first, and most common, sees adaptation as a way of reducing migration pressures and allowing people to remain where they are by improving agricultural practices and infrastructure. In the second view, migration is itself an adaptation strategy, which alleviates population pressure on fragile areas. Of particular interest to development policy-makers is the potential of migrants already living outside of vulnerable areas to help their home communities adapt and respond to climate change.

Social protection and active labour market policies can play important roles in mitigating many of the risks associated with migration. Better quality education and training would enhance the employment prospects of rural people who decide to migrate, especially youth, and of those who seek more skill-intensive employment in sustainable agriculture. Provision of suitable transport and communications infrastructure, either directly by the public sector or by promoting private investment, will be important in bringing down the costs associated with both travel and sending remittances, as well as facilitating flows of information on employment and business opportunities. ■

64 KNOMAD (Global Knowledge Partnership on Migration and Development), 2014. *Environmental change and migration: State of the Evidence*. KNOMAD Thematic Working Group on Environmental Change and Migration. Washington DC.

GUATEMALA
Crop residue practice in Alta Verapaz.
©FAO Guatemala country Team

Annex 2

ACTION PLAN RESULTS FRAMEWORK

This Action Plan Results Framework translates the commitments set out in the Plan of Action (Section E) into outputs and provides greater detail on how these outputs will be achieved. In addition, the Results Framework embeds the implementation of the Strategy within the FAO Strategic Framework. Monitoring the Strategy's implementation will be aligned with the reporting cycle of the Strategic Framework and a Strategy Implementation Report will be produced every two years.

In the Results Framework presented below, a distinction is made between primary output indicators (which serve to provide a clear and full reflection of FAO's success in achieving its targets under each output) and complementary output indicators (which give additional detail on achievements relevant to particular aspects of a specific output). Wherever possible for Outcomes 1 and 2, primary output indicators are drawn from the Results Framework of the five Strategic Programmes (SPs). Where this is not possible, new output indicators that have been formulated to serve the Climate Change Strategy serve as primary indicators, and will be monitored by the Climate and Environment Division (CBC) in the context of FAO's Objective 6.6. All complementary indicators are drawn from the Strategic Framework, highlighting how the Strategy and its monitoring are embedded in the corporate Strategic Framework.

Each Strategy Implementation Report will include an introductory section dedicated to the indicators of the Sustainable Development Goals (SDGs), in particular the 21 for which FAO is the custodian agency.[65] The SDGs provide the global context in which the Strategy is implemented, and cross-referencing progress will give a valuable picture of how well FAO's specific efforts on climate change and food security are aligned with broader, global trends.

The following tables articulate the outputs to be delivered under each of the Strategy's three outcomes alongside their respective output indicators, as well as complementary SP indicators. ■

65 FAO is custodian of 21 SDG indicators, referring to SDG2 Zero Hunger, SDG5 Gender Equality, SDG6 Clean Water and Sanitation, SDG12 Responsible Consumption and Production, SDG14 Life below Water and SDG15 Life on Land. http://www.fao.org/3/a-i5947e.pdf

OUTCOME 1

Enhanced capacities of Member Nations on climate change through FAO leadership as a provider of technical knowledge and expertise

Outcome 1 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*	Contributing SP output indicators
1.a. NDC implementation in the food and agricultural sectors is directly supported in countries through policy processes, capacity development and technical interventions on the ground.	1.a.i. Number of countries that identify institutional capacity needs and/or develop capacity for CCAM delivery.	SP2.1.2. Number of institutions (extension services, producer organizations, government institutions, relevant civil society organizations, research and education institutions) that received organizational or technical capacity development support to promote the adoption of integrated and cross-sectoral practices. SP2.3.2. Number of countries where the capacities of governmental institutions and other relevant institutions were strengthened to implement policies, strategies or governance mechanisms that foster sustainable production and/or address climate change and environmental degradation. SP3.1.2. Number of countries (OR regional institutions or processes) in which support was provided to improve the rural poor's access to, and control over, a set of services, finance, knowledge, technologies, markets and natural resources, including in the context of climate change. SP3.4.1. Number of countries (OR regional/global institutions or processes) in which support was provided to design and implement comprehensive, gender-equitable, multi-sectoral rural poverty reduction policies, strategies and programmes, including in the context of migration and climate change. SP4.2.2. Number of countries in which public and private sector organizations benefitted from FAO support to strengthen their capacities to design and implement institutional arrangements that are supportive of inclusiveness and efficiency in agricultural and food systems. *Climate change sub-indicator:* Number of public and private sector organizations that received support to integrate climate change aspects in the design and implementation of market-based institutional arrangements. SP4.3.1. Number of countries provided with FAO support to strengthen technical and managerial capacities of agrifood value chain actors. *Climate change sub-indicator:* Number of countries in which the climate change perspective was included in the support provided.

Outcome 1 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*	Contributing SP output indicators
		SP5.3.2. Number of countries with improved application of measures that reduce vulnerability and strengthen resilience of communities at risk of threats and crisis as a result of FAO support.
1.b. Country access to financing for the food and agricultural sectors is supported by leveraging national and international climate finance.	1.b.i. Amount of finance targeted at CCAM in food and agriculture that is mobilized with FAO support. 1.b.ii. Number of new funded CCAM initiatives supported by FAO.	SP1.4.1.A. Number of policy processes with enhanced human and institutional capacities for allocating and using financial resources for food security and nutrition as a result of FAO support. SP4.3.2. Number of countries receiving FAO support to increase responsible investments in, or to design and implement financial instruments and services and risk management mechanisms for, efficient and inclusive agricultural and food systems. SP5.1.2. Number of countries and regions that improved resource mobilization and coordination mechanisms for risk reduction and crises management as a result of FAO support.
1.c. Countries are supported to integrate food security, agricultural sector considerations and climate change across relevant national policies and regional policies, strategies, programmes.	1.c.i. Number of FAO CPFs that reference NDCs and identify areas for FAO collaboration with countries on CCAM. 1.c.ii. (SP2.2.1.) Number of policies, strategies and investment programmes formulated with substantial support from FAO aiming at making agriculture, forestry and fisheries more productive and more sustainable, and addressing climate change and environmental degradation. 1.c.iii. (SP2.2.2.) Number of strategy documents on sustainable agriculture, forestry and fisheries developed through cross-sectoral policy dialogue and governance mechanisms, related to 2030 Agenda and NDC implementation plans.	SP1.1.1.A. Number of policy processes with enhanced human and institutional capacities for the incorporation of food security and nutrition objectives and gender considerations in sectoral policies, investment plans and programmes as a result of FAO support. SP3.3.2. Number of countries (OR regional institutions or processes) in which support was provided for enhancing synergies amongst social protection, nutrition, agriculture and natural resources management, including climate change. SP3.4.1. Number of countries (OR regional/global institutions or processes) in which support was provided to design and implement comprehensive, gender-equitable, multi-sectoral poverty reduction policies, strategies and programmes, including in the context of migration and climate change. SP4.2.1. Number of countries in which public sector organizations benefitted from FAO support to strengthen their capacities to design and implement national policies, strategies, regulatory frameworks and investment plans supportive of inclusive and efficient agriculture and food systems development. *Climate change sub-indicator:* Number of public sector organizations that received support to integrate climate change aspects in the design and implementation of policies, strategies, regulatory frameworks and investment plans.

Outcome 1 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*	Contributing SP output indicators
1.d. Countries are guided to develop and adopt Disaster Risk Reduction and upstream adaptive and preventive approaches.	1.d.i. (SP5.1.1A.) Number of countries that formulated and institutionalized a strategy/ plan for risk reduction and crisis management as a result of FAO support.	/
	1.d.ii. (SP5.4.1.) Number of countries benefiting from FAO support to uptake standards, guidelines and practices for hazard and sector specific emergency preparedness.	
1.e. Multi-country technical and policy exchanges to address emerging issues relating to climate change are convened.	1.e.i. Number of multi-country workshops organized or supported by FAO to facilitate technical and policy exchanges to address emerging issues relating to climate change.	/
	1.e.ii. Number of countries attending workshops organized or supported by FAO to address emerging issues relating to climate change.	
1.f. New or updated codes of practice, guidelines, standards and other documents that support countries in addressing climate change more effectively are developed.	1.f.i. Number of new or updated codes of practice, guidelines, standards and other documents that support countries in addressing climate change more effectively.	SP5.1.1.B. Number of normative global and regional products that support countries in formulating and promoting risk reduction and crises management policies, strategies, plans and investment programme.
1.g. National and regional institutional capacity to generate, collect and use data and information that enhances their ability to address climate change adaptation and mitigation is strengthened.	1.g.i. (SP2.4.2.) Number of institutions that received capacity development support from FAO to collect, analyse and report data for decision making that foster sustainable production, address climate change and environmental degradation, including relevant SDGs.	/
	1.g.ii. (SP5.2.1.) Number of countries that have improved threat monitoring mechanisms/ systems to enhance delivery of early warnings as a result of FAO support.	
	1.g.iii (SP4.3.1.) Number of countries provided with FAO support to strengthen technical and managerial capacities of value chain actors. *Sub-indicator:* Number of countries in which the climate change perspective was included in the support provided.	

Outcome 1 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*	Contributing SP output indicators
1.h. New tools are developed and existing tools are disseminated to assist with analysis of and planning for the impacts of climate change and new national reporting requirements.	1.h.i. Number of new tools developed to assist with analysis of and planning for the impacts of climate change and new national reporting requirements.	SP5.2.2. Number of countries/regions that improved resilience/ vulnerability mapping and analysis as a result of FAO support.
	1.h.ii. Number of countries that received training to apply tools to assist with analysis of and planning for the impacts of climate change and new national reporting requirements.	
1.i. Knowledge and technical support to countries on climate-smart agriculture approaches is increased.	1.i.i. (SP2.1.1.a.) Number of initiatives where innovative practices and technologies are piloted, validated and adapted to sustainably increase productivity and production, while addressing climate change and/or environmental degradation.	/
	1.i.ii (SP2.1.1.b.) Number of initiatives where innovate practices or the use of technologies are scaled up to sustainably increase productivity and production, while addressing climate change and/ or environmental degradation.	
1.j. Strategic national partnerships with key research and implementation actors in the international climate and development process including farmers and food producers, academia, the private sector and civil society are leveraged.	*Outputs 1.j. and 2.f. are measured by Output Indicator* 3.b.i.	/

OUTCOME 2

Improved integration of food security, agriculture, forestry and fisheries considerations within the international agenda on climate change through reinforced FAO engagement

Outcome 2 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*
2.a. Perspectives of food security and nutrition, agriculture, forestry and fisheries, rural livelihoods and natural resource management and conservation are appropriately prioritized in international fora addressing climate change.	2.a.i. Number of international meetings/fora addressing climate change to which FAO contributes.
	2.a.ii. (SP2.3.1.) Number of formal session documents with input by FAO submitted to international governance mechanisms focusing on sustainable agriculture, forestry and/or fisheries considerations. International governance mechanisms include in particular: a) 2030 Agenda implementation b) UNFCCC/ Paris Agreement c) UNCBD, UNCCD or other relevant institutional initiatives d) mechanism or instruments under FAO's responsibility and related regional governance mechanisms
2.b. Higher profiling for food and agricultural sectors in financing decisions related to climate change is promoted.	2.b.i. Number of GCF governance and regional meetings in which FAO participates.
	2.b.ii. Number of collaborative programmes between FAO and climate finance partners regarding the agricultural sectors.
2.c. FAO's engagement on climate change is extended to relevant fora that do not specifically deal with the agricultural sectors, such as those dealing with humanitarian issues, migration or conflict.	2.c.i. Number of fora and international processes FAO is engaging in.
2.d. FAO's role as a provider of global data and information resources and knowledge and technologies on CCAM is maintained and strengthened.	2.d.i (SP2.4.1.) Number of new or substantially updated strategic knowledge products related to sustainable production, climate change and environmental degradation that were developed in an inclusive manner and are published to make them available to countries.

Outcome 2 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*
2.e. Actors from the food and agricultural sector and actors from other sectors that primarily deal with climate change are convened.	2.e.i. Number of inter-sectorial dialogues on climate change convened.
2.f. Strategic international partnerships are leveraged with key research and implementation actors in the international climate and development process including UN System, public, private, research and civil society organizations to synergize and complement the financial, human, and technical resources needed to improve delivery, avoid duplication, make more efficient use of resources and mobilize finance in support of national programmes.	*Outputs 1.j. and 2.f. are measured by Output Indicator* 3.b.i.
2.g. FAO's support to engaging younger generations in climate change issues is strengthened through education and public awareness raising at global and national level.	2.g.i. Number of new materials on climate change issues for younger generations released.
	2.g.ii. Number of learning events on climate change issues for younger generations organized or supported by FAO.
	2.g.iii. Number of young people contributing to SDG targets related to climate change in their communities through FAO structured programmes.

OUTCOME 3

Strengthened coordination, and delivery of FAO work on climate change

Outcome 3 Outputs	Primary Indicators for FAO's role *(Strategic Objectives Output Indicators are stated in brackets)*
3.a. Operational modalities for the implementation of the Strategy as well as the new Climate, Biodiversity, Land and Water (CB) Department are established.	3.a.i. Number of CPFs integrating climate change.
	3.a.ii. Climate change is integrated into the FAO project cycle as a required consideration.
	3.a.iii. Number of regular programme staff with an explicit climate change function included in their ToRs.
	3.a.iv. Proportion of FAO's regular programme budget significantly associated with climate change activities.
	3.a.v. Proportion of FAO's project portfolio budget significantly associated with climate change activities.
	3.a.vi. Proportion of climate-specific outputs in the MTP 2018-21.
3.b. Impact is maximised on a national, regional and international level through strategic partnerships with key research and implementation actors in the international climate and development process including the UN system, farmers and food producers, academia, the private sector and civil society organizations, among others.	3.b.i. Number of partnerships with non-state actors established that include explicit climate change activities in the MoU.
3.c. Internal programmes for sharing knowledge and fostering learning are expanded. In particular, capacities of FAO's country, subregional, regional and liaison offices are strengthened.	3.c.i. Number of members of the Technical Network on Climate Change mailing list in number of countries.
	3.c.ii. Number of training modules and guidance documents produced.
	3.c.iii. Number of exchanges and/or learning events organized.
3.d. Progress in implementing this Strategy is measured.	3.d.i. A Strategy Implementation Report is produced at the end of every second year, in line with FAO's PWB reporting cycle.

PAKISTAN
Female farmer harvesting sunflower crops in Sindh province.
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Annex 3

RESOURCE ALLOCATION

Extensive work is already being undertaken across FAO that contributes to national, regional and global efforts to combat climate change. This is reflected in the activities of all five Strategic Programmes and in the project portfolio of the organization. Much climate change work is closely embedded into activities and projects that are addressing other technical issues, and it is therefore difficult to provide precise figures. Nevertheless, a process of consultation with the Strategic Programme Leaders indicates the following resource allocations to climate-related work in 2016-2017:

Table: FAO Regular Programme resources for work on climate change 2016-17

Strategic Programmes (SPs)	USD '000
Strategic Programmes (SPs) Total approved budgets 2016-2017	506,940
SPs financial contribution to climate change activities 2016-2017 (25,31% of total SPs budgets) [66]	128,307
Objective 6	
Objective 6 Outcome 6 climate change 2016-2017	500
Total	
Total estimated biennial resources for climate change	128,807

In the PWB 2018-19, USD 3.7 million in resources is dedicated to climate change adaptation and mitigation, in line with the Climate Change Strategy and Plan of Action, including to support countries to access climate finance and support to Small Island Developing States.

An analysis of the total FAO project portfolio in 2016 showed that 15 percent of budgets associated with active projects contributed to climate change adaptation and/or mitigation work aimed at supporting Member Nations. In the first two months of 2017, this proportion has increased to 20 percent of a total USD 3 billion portfolio, and the trend will probably continue for some time into the future.

66 FAO, 2015. *FAO Council 153/3: Adjustments to the Programme of Work and Budget 2016-17. http://www.fao.org/3/a-mo518e.pdf*

FAO has been scaling up its capacity to provide support to countries in implementing their climate change policies, accessing climate finance, supporting NDC implementation and monitoring and reporting on climate change mitigation in agricultural systems. In December 2016, a new department dedicated to Climate, Biodiversity, Land and Water (CB) was established and an Assistant Director-General was appointed. Moreover, FAO gained accreditation with the Green Climate Fund (GCF) in October 2016 and formalized its role as a delivery partner for countries under the GCF readiness programme through the signature of the Readiness and Preparatory Support Framework Agreement in November 2016.

The Organization must now rapidly work with Member Nations to develop and deliver readiness and full-scale GCF projects in the agricultural sectors. An initial allocation of USD 2 million will be used in 2017 to initiate this work. Once a GCF portfolio is generated, accredited entity fees can support some of the costs of managing the portfolio and developing further projects. FAO is also exploring possibilities to apply for funding from the GCF Project Preparation Facility (PPF) to support the development of full GCF Funding Proposals.

Addressing climate change is one of the main programme priorities addressed in the Director-General's Programme of Work and Budget proposed for the 2018-19 biennium (C 2017/3).[67] Resources amounting to USD 3.7 million are reallocated to bolster technical capacity related to climate change across the Strategic Programmes, including for seven new technical posts. ■

67 FAO, 2017. *FAO Council 2017/3: The Director-General's Medium Term Plan 2018-21 and Programme of Work and Budget 2018-19. http://www.fao.org/3/a-ms278e.pdf*

FAO STRATEGY ON CLIMATE CHANGE

Rome, July 2017

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