APEC Climate Symposium 2016: Smart Climate Information and Accountable Actions

Food Security and Climate Change: Policy Recommendations

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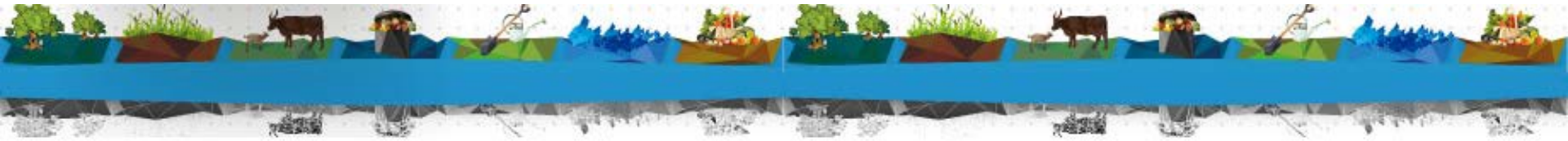
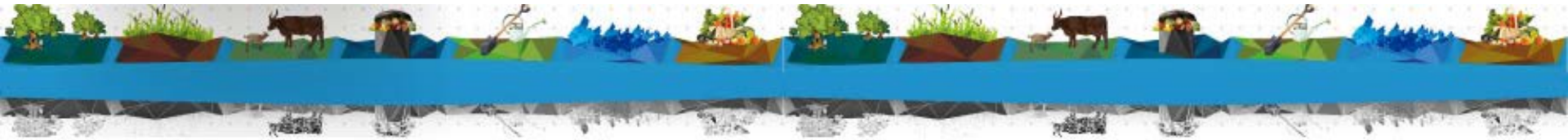
www.fao.org/climatechange

Overview

1. *Food Security in a Changing Word*
2. *Impact on Food Systems and Trade*
3. *Policy Recomendations*
4. *FAO' work on Climate Change*



1 Food Security in a Changing Word



Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

Food and Agriculture Organization of the United Nations

4 Dimensions of Food Security

Availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports;

Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet;

Stability: reliable access to adequate food at all times, for populations, households or individuals

Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being in which all physiological needs are met;

THE GLOBAL COST OF MALNUTRITION[23]

US $3.5 T

Malnutrition costs the global economy US $3.5 trilion per year.

US $1.4 T

The cost of obesity and overweight-related non-communicable diseases was estimated at US $ 1.4 trillion in 2010.

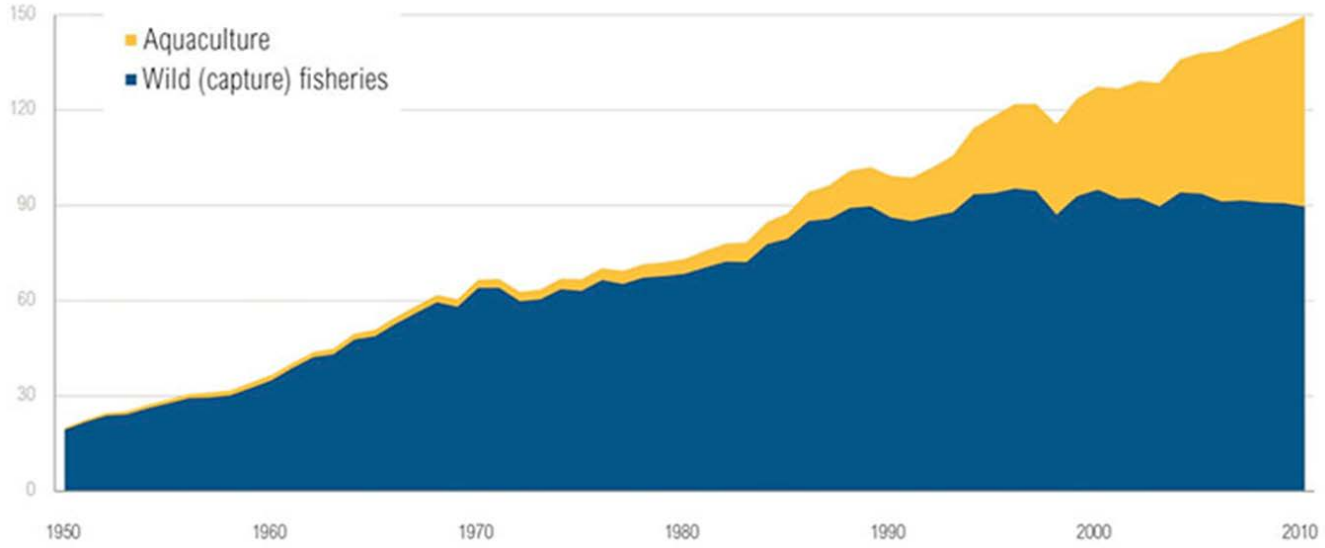
US $2.1 T

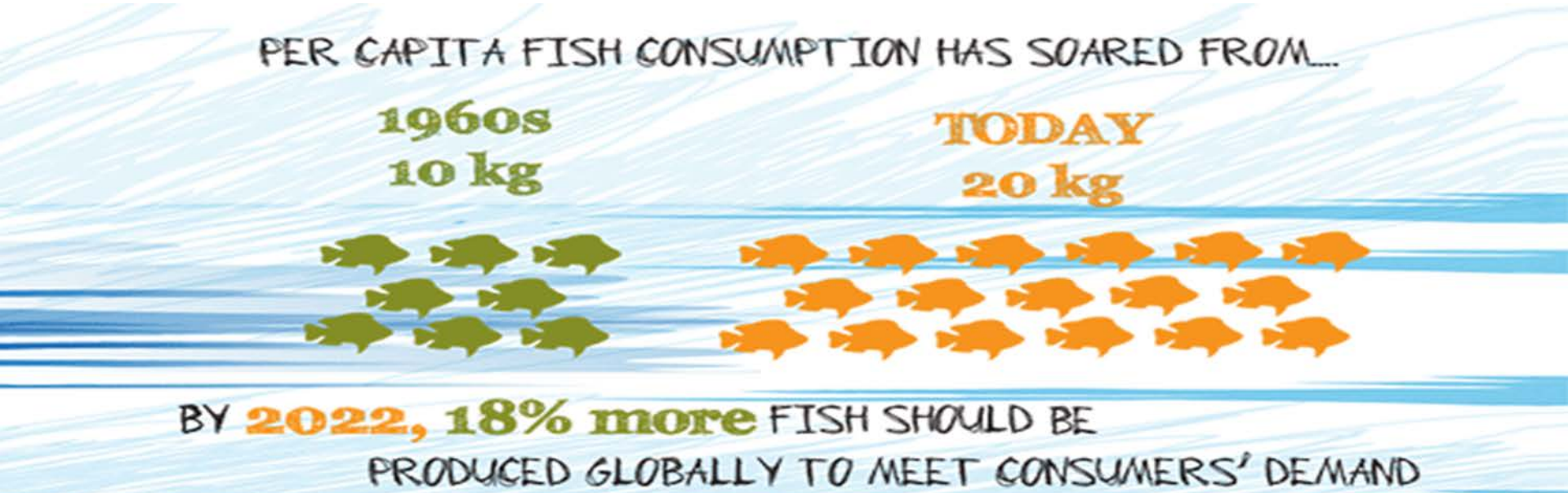
Undernutrition and micro-nutrient deficiencies cost up to US $2.1 trilion per year.

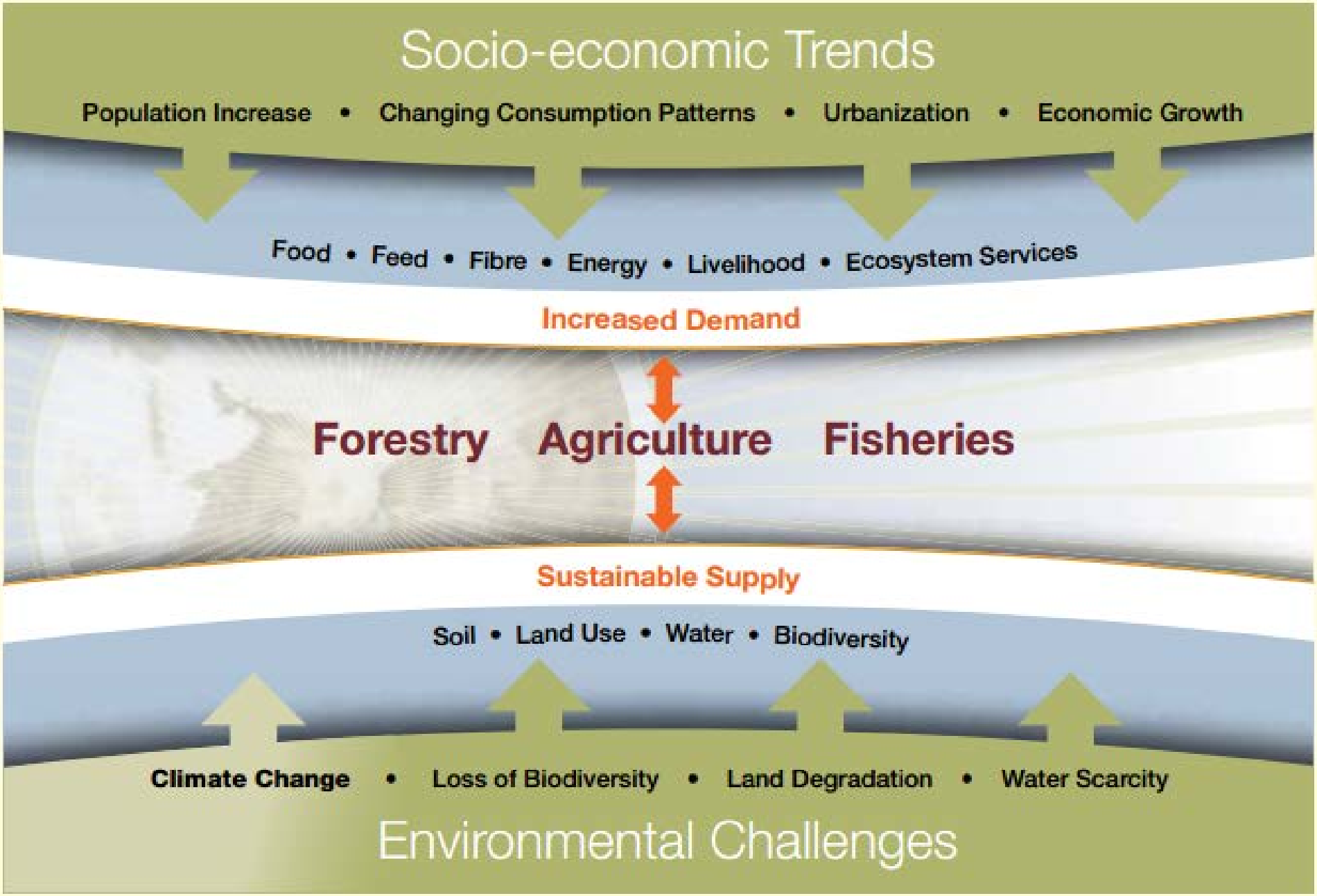
Source: EAT and Sustainia 2015.


BY 2050 WE WILL BE MORE THAN
9 billion HUMANS
ON Earth
AND WE WILL NEED
TO produce
60%
MORE FOOD

World Fish Production (in million tons)



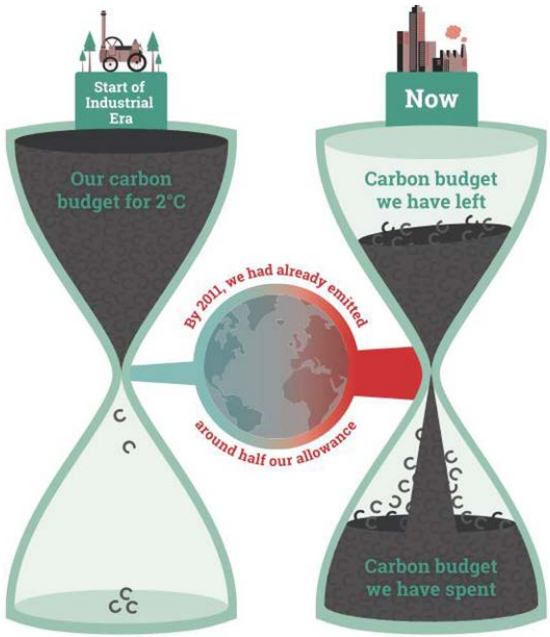




Source: FAO, 2010

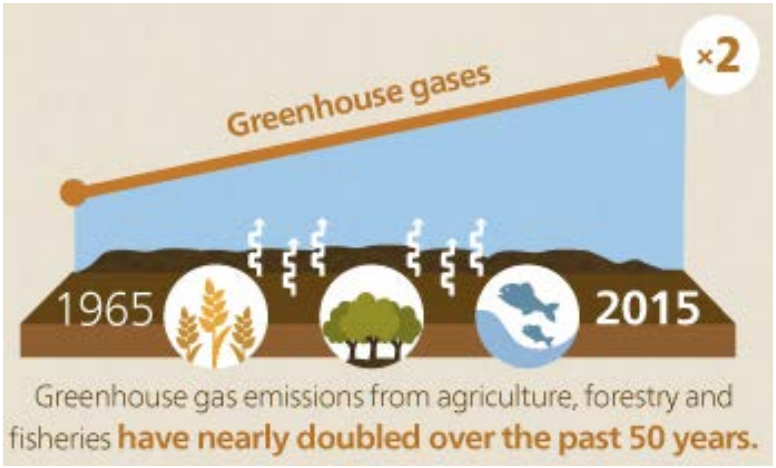
Reality Check

1. **Carbon dioxide** concentration is 40% higher than in pre-industrial times.
2. **Human activity** caused most of the warm between 1951 and 2010.
3. Earth's surface **warmed 0.85°C** over the period 1880 to 2012.
4. **Heatwaves and heavy rains** have become more frequent since the 1950s.
5. Arctic sea **ice has declined** on average 3.8% per decade since 1979.
6. Global **sea level is expected to rise** between 26 and 82 cm by 2100.
7. Only an **aggressive mitigation scenario** can keep temperature rise below 2°C.

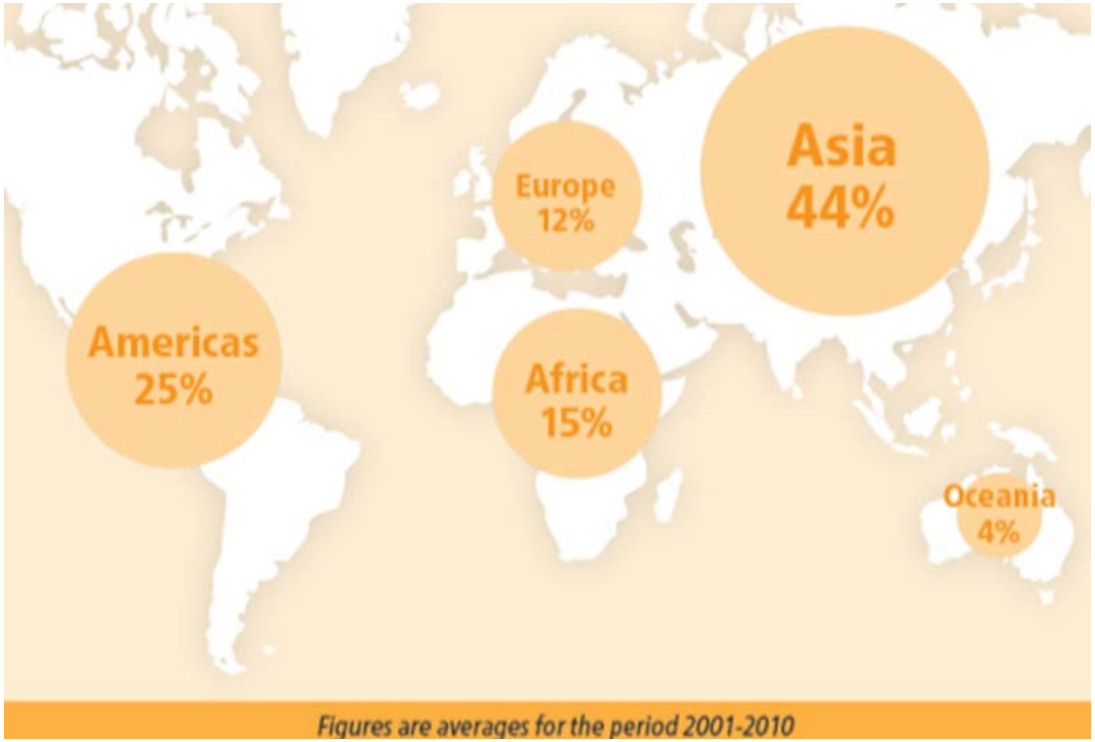


Source: Cambridge University.

GHG Emissions from Agriculture

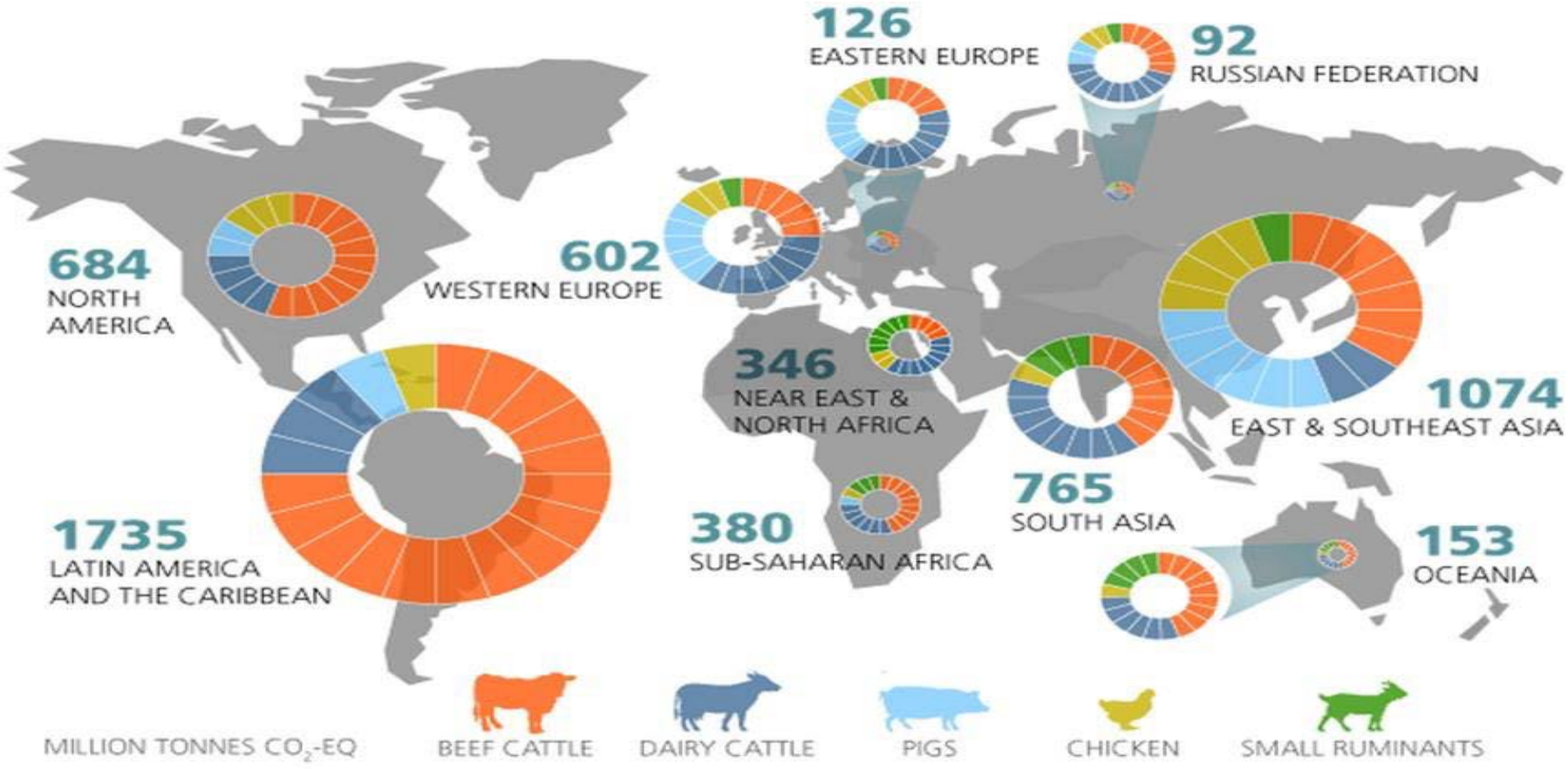


Without greater efforts to reduce them, they could increase an additional 30% by 2050



Source: FAOSTAT

GHG emissions from livestock



Regional emissions. *Regional total emissions and their profile by animal species are shown. Results do not include emissions allocated to non-edible products and other services.*

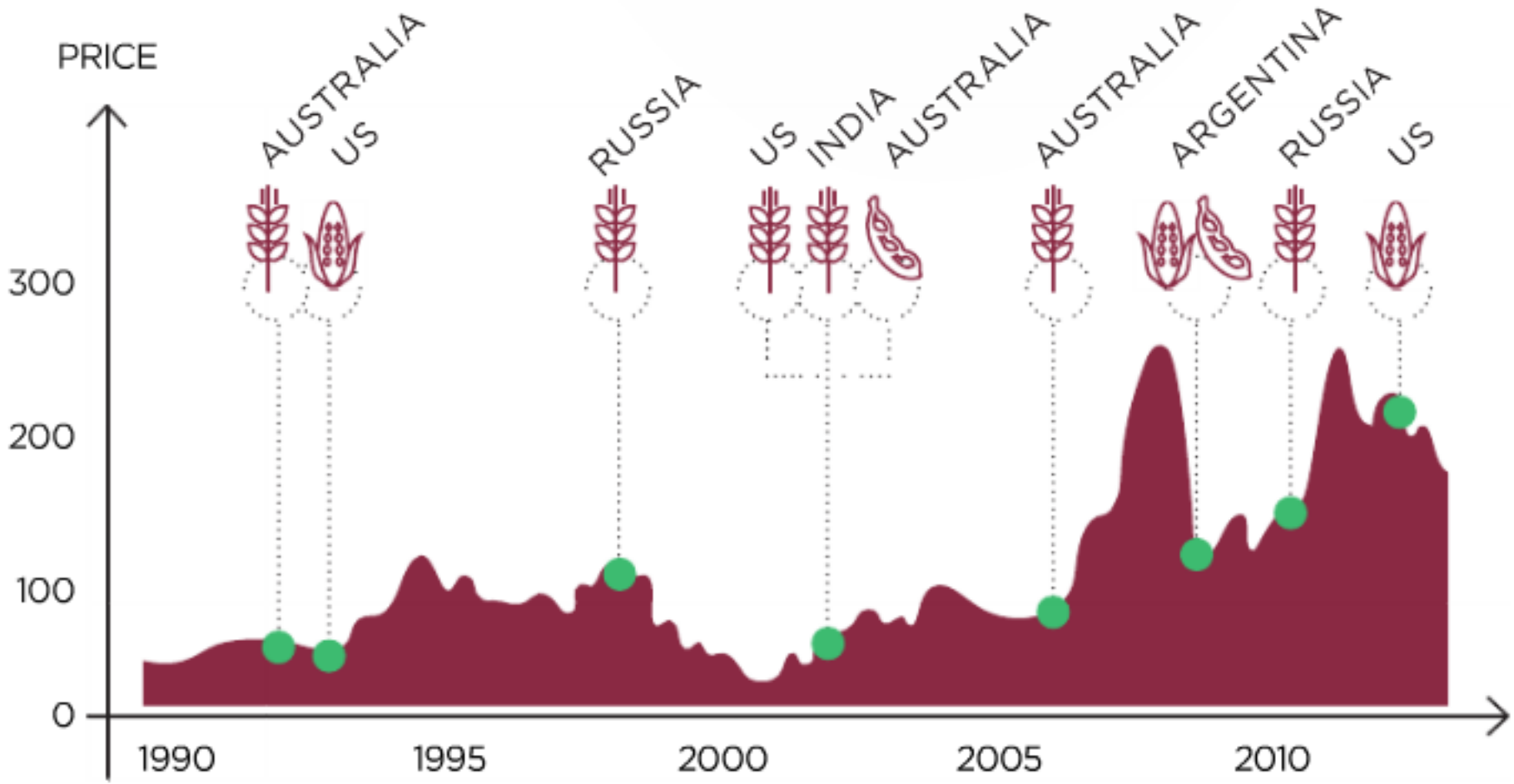
Agriculture is part of the problem and the solution

- agriculture, land use, and forestry sectors account for about 25% of Greenhouse Gas (GHG) emissions globally.
- Largest contributor of non-carbon GHGs, such as methane.

The agricultural sector has **significant potential** to make cuts in GHG emissions.

- Opportunities for Mitigation: Livestock & land use management, CO_2 storage in soil & biomass, Changing in consumption.

FOOD PRICE HIKES AND EXTREME WEATHER EVENTS IN SELECTED COUNTRIES [56]

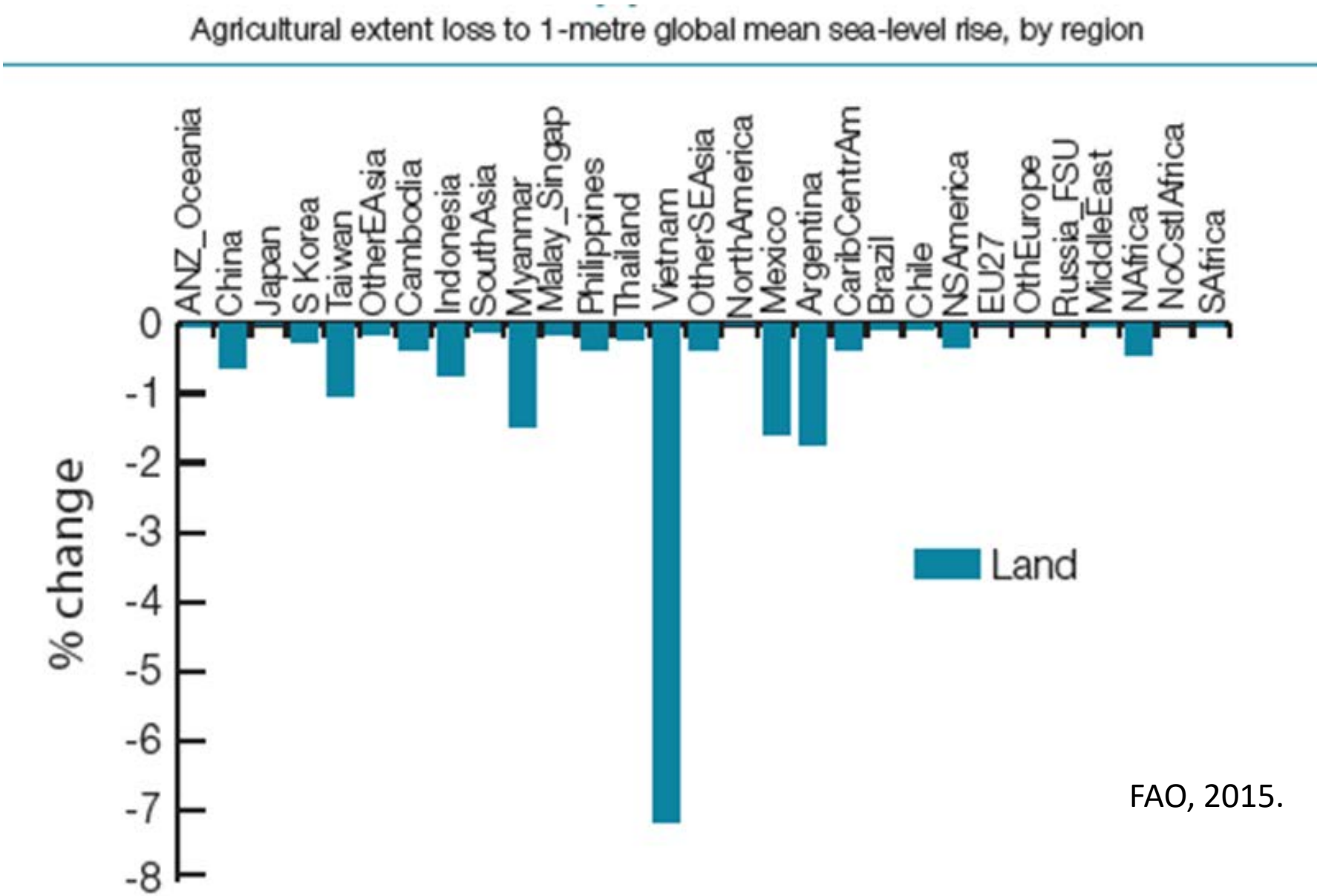


Source: EAT and Sustainia 2015, based on CCAFS and World Bank data.

With 3ºC or more, agricultural adaptive capacity is projected to be exceeded in low latitude regions. Family farmers with fewer assets will need more support for adaptation (insurance, weather forecast, investments, etc.)

Source: EAT and Sustainia 2015, based on Vemeulen 2014.

Land endowments losses in low-lying zones

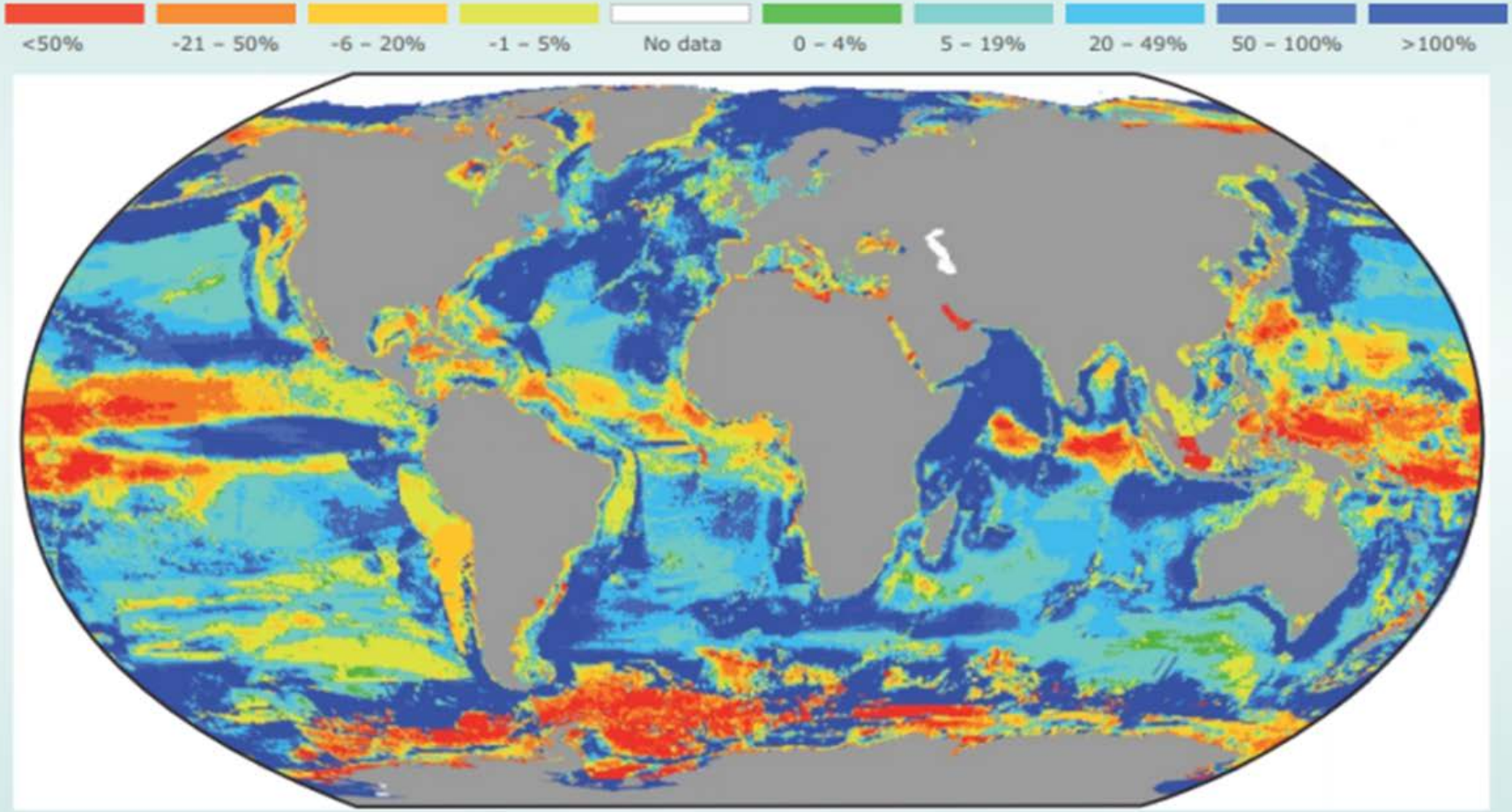


FAO, 2015.

PROJECTIONS

Ocean warming 2051-60: displaced and reduced fish and invertebrate stocks

CHANGE IN MAXIMUM CATCH POTENTIAL (2051-2060 COMPARED TO 2001-2010, SRES A1B, 2°C warming)



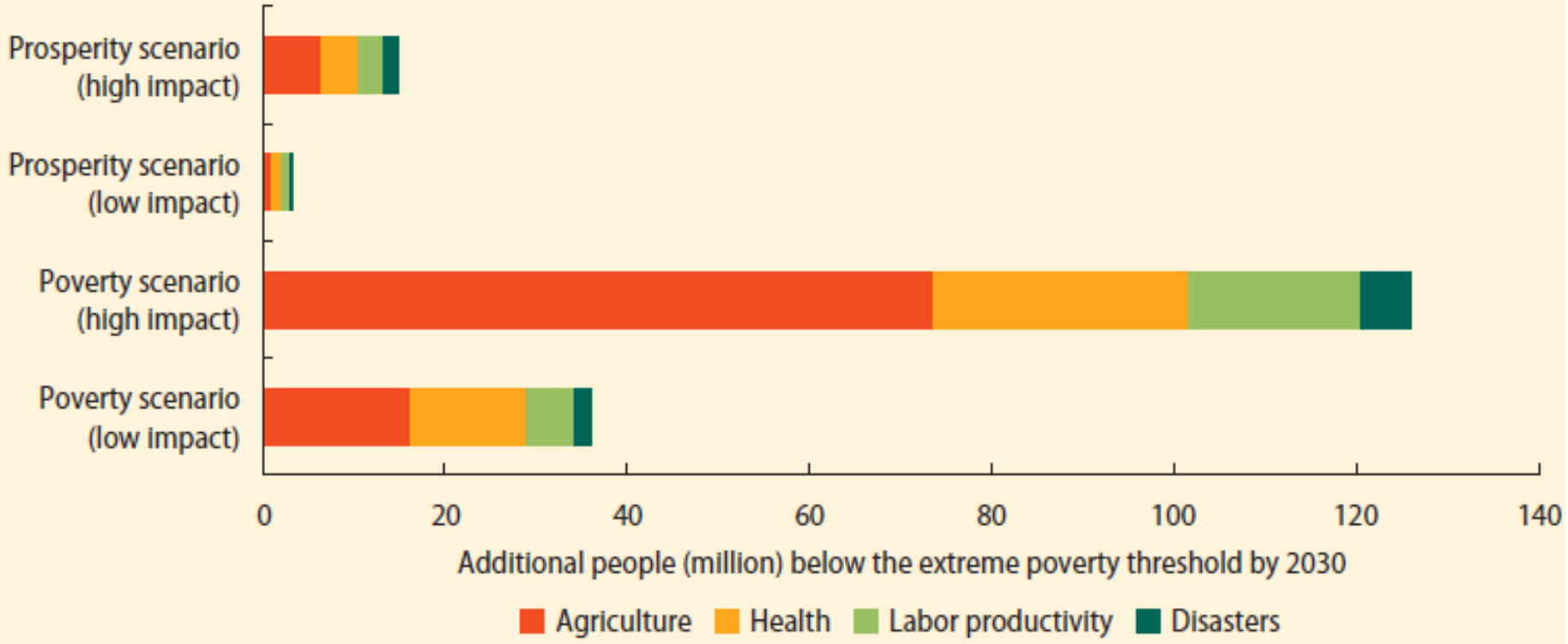
WGII, 6-14, SPM.6

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Climate change could add more than 100 million people living in **extreme poverty** (2030) due to reductions in Ag productivity and income

FIGURE BO.1.1 **Agriculture is the main sectoral driver explaining higher poverty due to climate change**

(Summary of climate change impacts on the number of people living below the extreme poverty threshold, by driver)



Source: Rozenberg and Hallegatte, forthcoming.

Source: World Bank, 2016.

Availability

Yields reductions

Crop movement to new areas

Agro biodiversity and ecological services losses

Access

loss of agricultural and non-agricultural income

Humanitarian aid dependency

Stability

Increase on food princes

Food chain modifications and increase on trading costs

Use

Pollution of irrigation water

New diseases affecting human health and productivity

Climate Change impact 4 pillars of Food Security

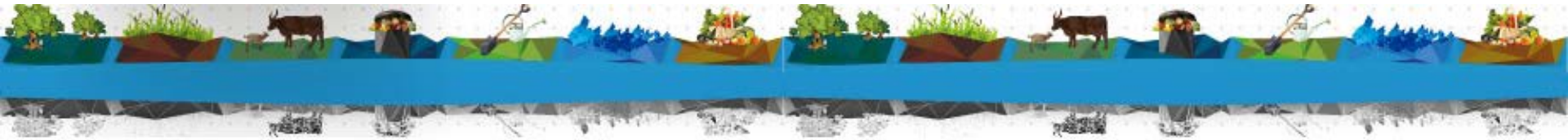
Critical issues at the interface of climate and food security

- Improving analysis of climate nutrition-health links
- Growing need for systematic climate-food-water analysis
- Co-benefits versus trade-offs
- Understanding the trends and tackling trade-offs
- Mainstreaming adaptation into development

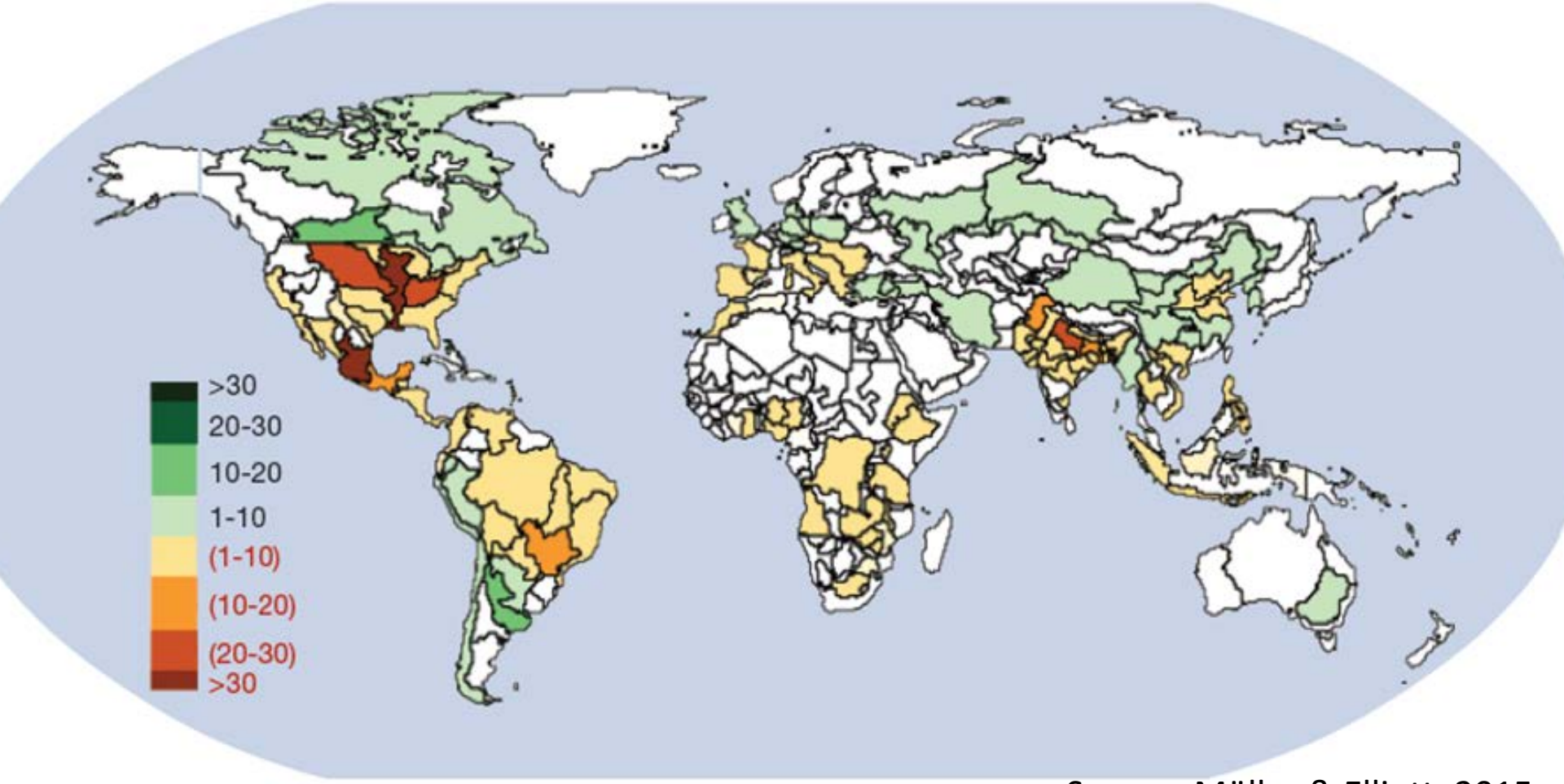
Key Messages:

- Climate related impacts are already reducing crops yields in some parts of the world this trend will continue as Tº increases further.
- Climate variability and change will add further stresses on a global food production system that needs to respond to future trends of increasing population, changes in diet and urbanization.
- The impacts on food security will vary from one part of the world to another and hinder progress on hunger eradication.
- The stability of whole food systems may be at risk under climate change, largely due to short term variability and extreme events in agricultural markets.
- Climate change risks to agricultural output, to food systems and for food security will increase over time and so should not be ignored by those making medium- and long-term planning decisions about food security

2 Implications on Food System and Trade



Expected Annual caloric production: implications for trade patterns



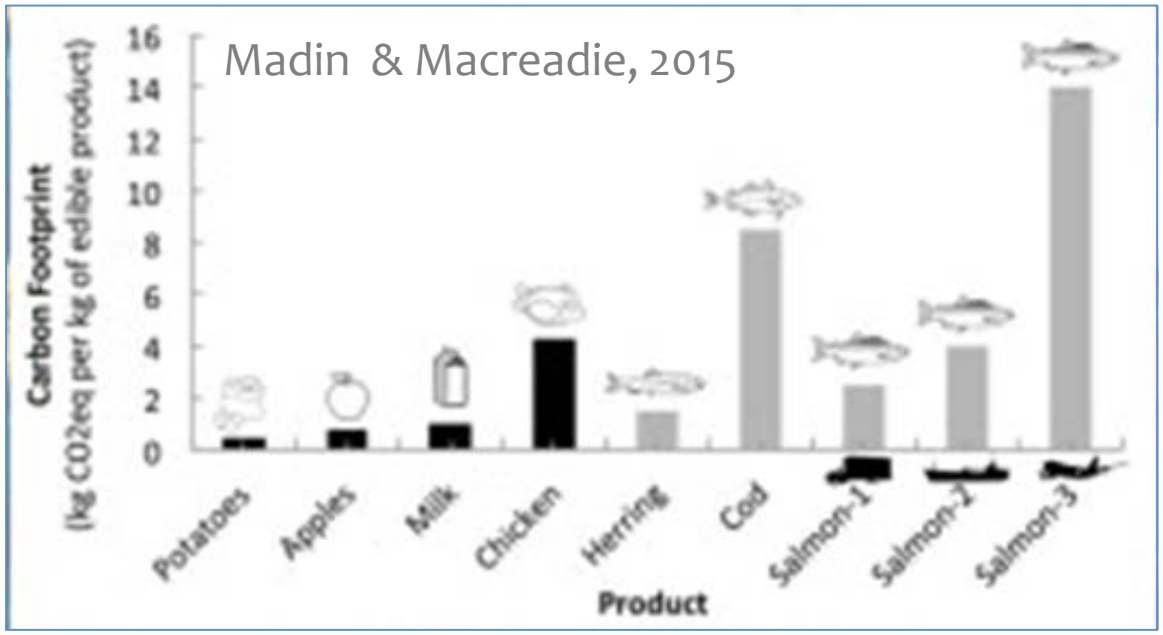
Source: Müller & Elliott, 2015.

Spatial patterns of food supply impacts. Average annual change in caloric production of maize, soy, wheat and rice by end-of-century for RCP 8.5. Median of six global crop models, driven by outputs of five global climate models from CMIP5. Results are averaged to 309 Food Producing Units (FPUs), assuming no change in farm management and including the effects on crops of increased atmospheric CO_2

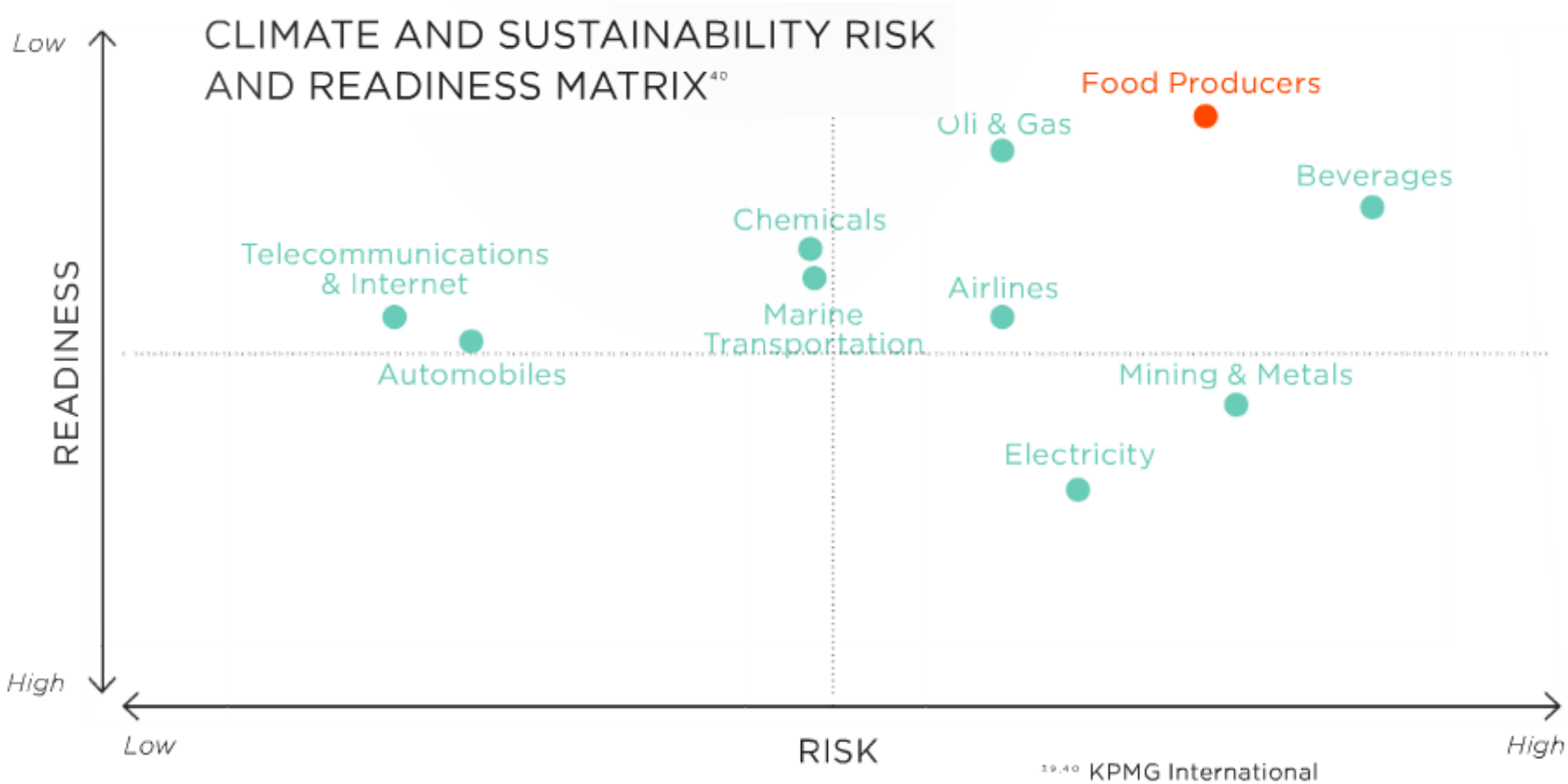
Sustainable consumption

Changes in consumption has high GHG mitigation potential

- Food waste and losses
- Overconsumption
- Consumption patterns: diets low GHG intensive food



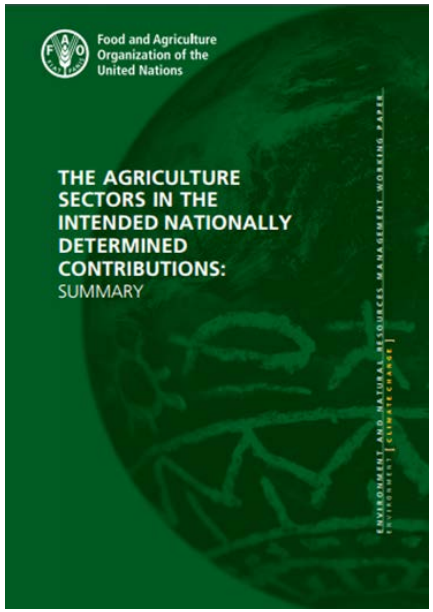
Farmers and Food producers can adapt to some changes, but there is a limit to what can be managed.



[39,40] KPMG International (2012). Expect the Unexpected: Building business value in a changing world. KPMG International.

Retrieve from EAT and Sustainia 2015.

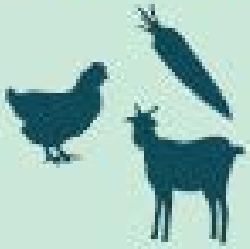
Agriculture in National Determined Contributions



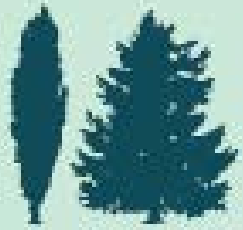
Countries have made agriculture sectors a priority for climate action

Out of 130 countries that included adaptation in their Intended Nationally Determined Contributions...

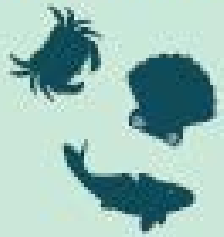
95% refer to crop and livestock production



83% refer to forests



46% refer to fisheries and aquaculture



Key Messages:

- Climate change is projected to cause food production to fall, crop shifting and new areas of production; that would lead to shift the current flows of food globally.
- Major current global breadbaskets are expected to see significant reductions in agricultural production that will reduce their export shares and may require increased imports.
- Climate Change is projected to increase price volatility for food and agriculture commodities and reduce food quality.
- Mitigation via consumption as well as the Paris agreement implementation could have an effect on food trade
- Global Food System and agriculture industry's own interests are best serve by ambitious approaches both in adaptation and mitigation

Policy Recommendations

Farmers, fishers and foresters need support now!

- Knowledge of alternative or improved production systems and management options.
- Local support institutions or mechanisms (extension services, cooperatives, etc.).
- Availability of more resilient varieties (need for research and development).
- Access to resources, both for men and women: inputs, land, financing/investment.
- An enabling policy environment.

Enabling environment for a positive change requieres

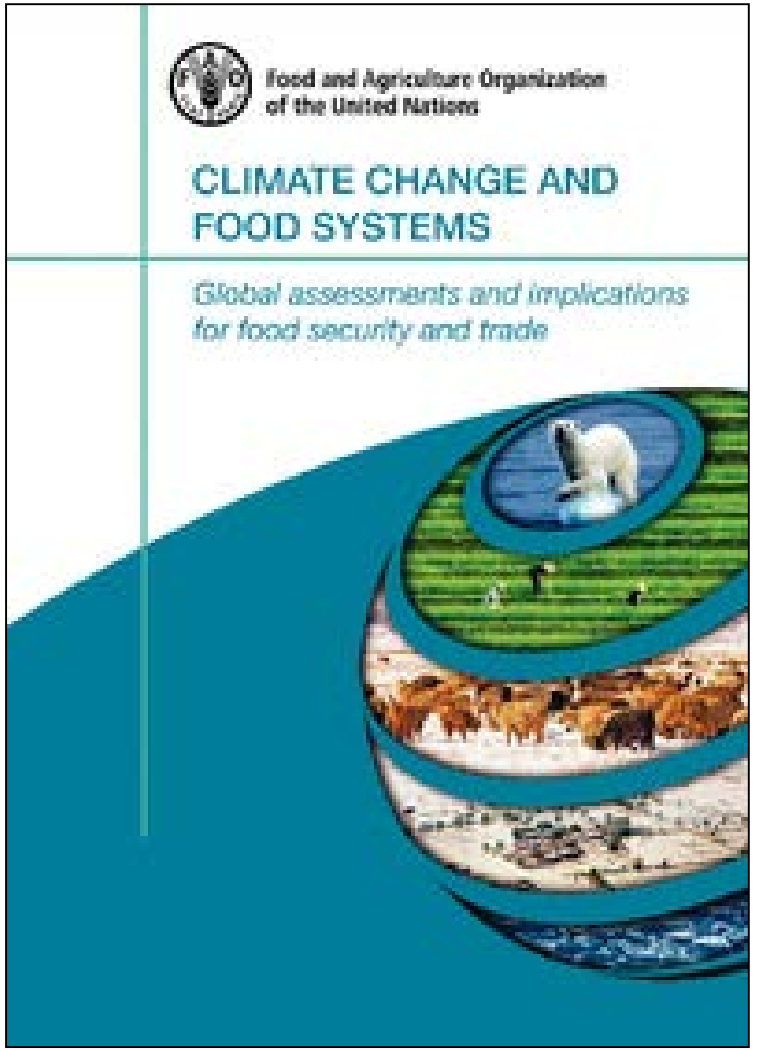
- Turn political will into policies, investments, legal frameworks.
- Sharpen the focus of policies and programmes for Climate Change on food security.
- Increase the base of evidence for policy-making.
- Involve all stakeholders in decision-making.

Policy messages, communication and the need for two-way science-policy dialogue

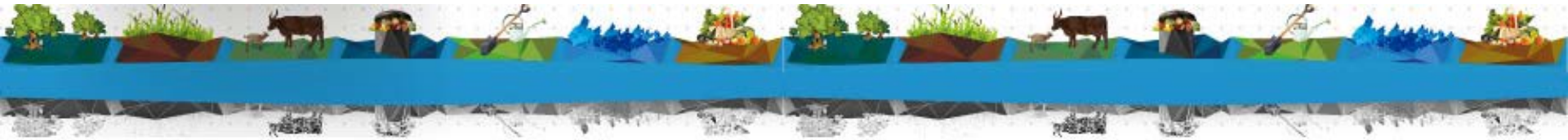
- Matching evidence on climate impacts to the needs of policy-makers
- Policy insights on climate change impacts under uncertainty
- Recommendations for structured science-policy dialogue
- Harmonizing climate with trade policy

Climate change, Trade, and Food Security Policies

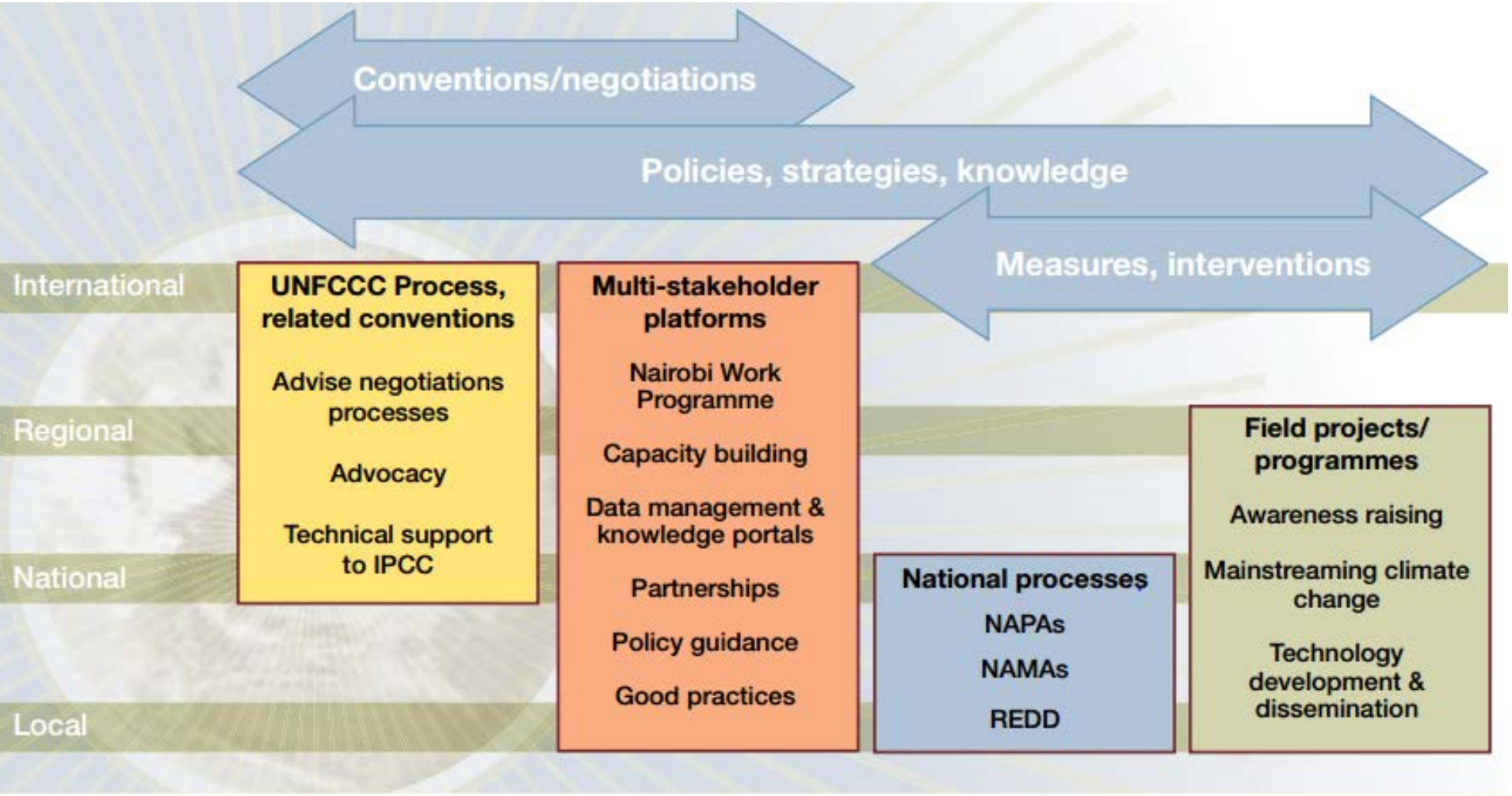
In the post-2015 development framework, the relationship between climate change and trade policies should change to a more positive one, in which climate change policies with economic and trade aspects and trade policies with environmental and climate change aspects are considered, regulated and implemented as mutually supportive in achieving sustainable development and poverty eradication in the post-2015 period. UNCTAD



4 FAO's Work on Climate Change

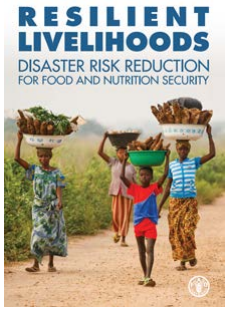


Implementation Mechanism of FAO's work



FAO supports capacity building for transformational change in agriculture through...

Several entry points & Frameworks



Climate change adaptation (CCA) and Disaster Risk Reduction (DRR)

FAO-Adapt
Framework Programme on Climate Change Adaptation

FAO EPIC
ECONOMICS & POLICY INNOVATIONS FOR CLIMATE-SMART AGRICULTURE

FAO's Forest and Climate Change Programme

MICCA

Mitigation of Climate Change in Agriculture (MICCA)

PaCFA
Global Partnership for Climate, Fisheries and Aquaculture

FAO's Fisheries and Aquaculture Programme

Sustainable Crop Production Intensification

UN-REDD
PROGRAMME

Methods & Tools

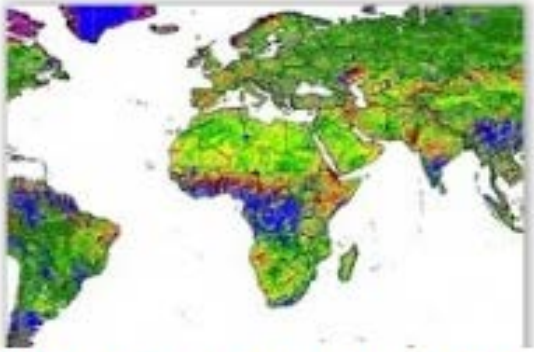
MOdelling System for Agricultural Impacts of Climate Change (MOSAICC)

EX-Ante Carbon balance Tool (EX-ACT)

Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists (SHARP)

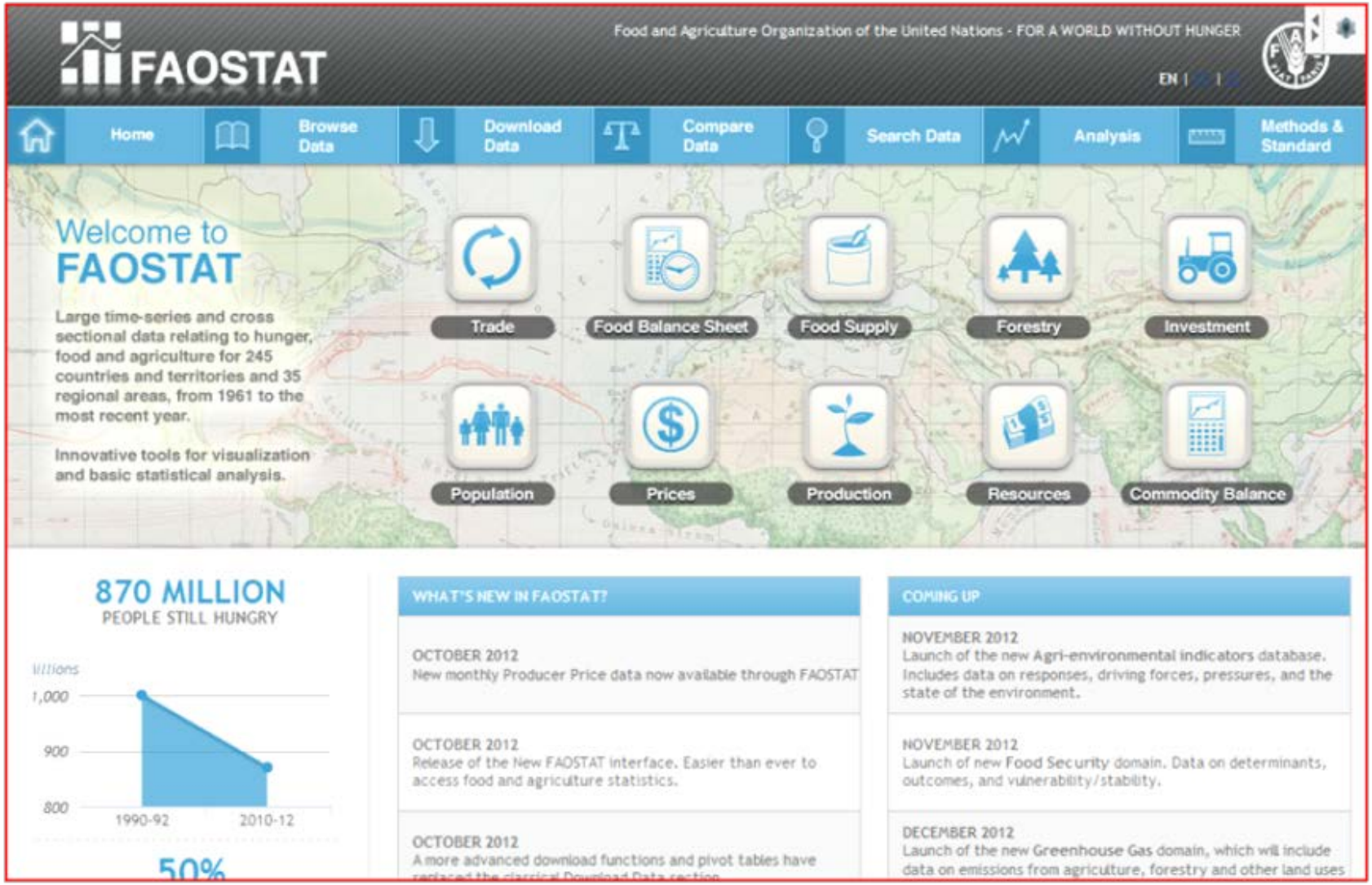
AQUACROP

EXACT

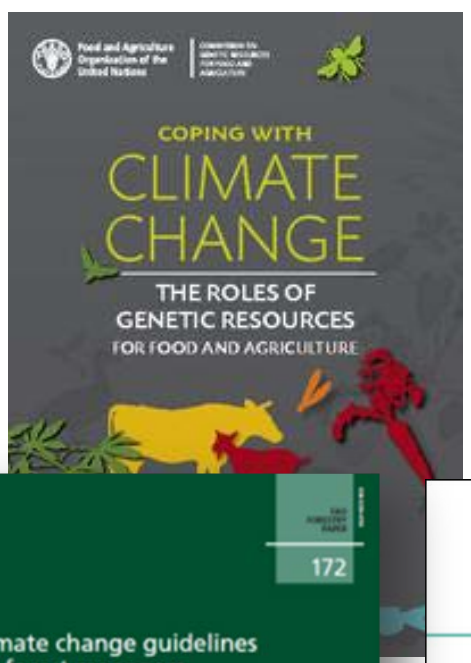


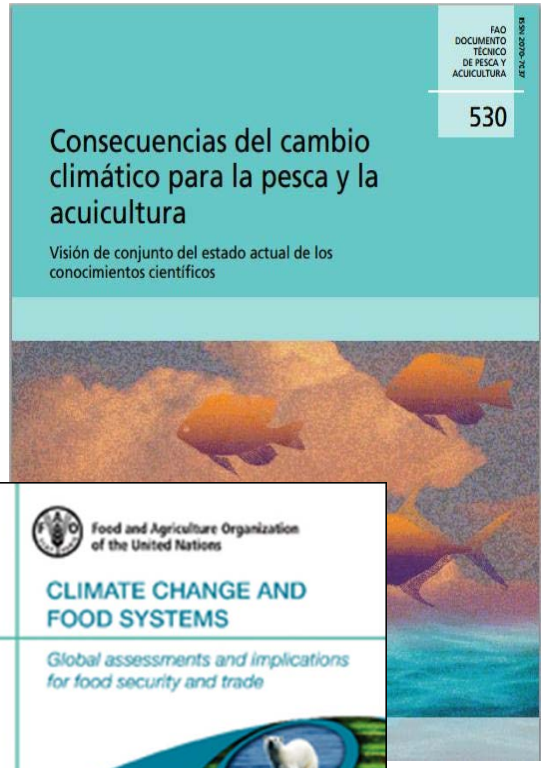
Agriculture Stress Index System (ASIS)

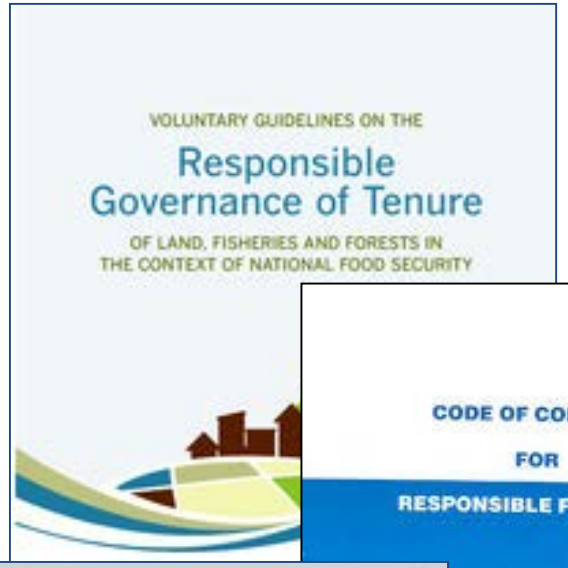
Global Data & Information Systems

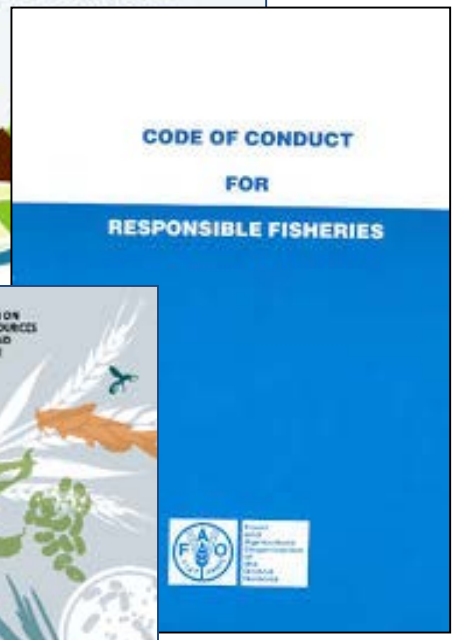


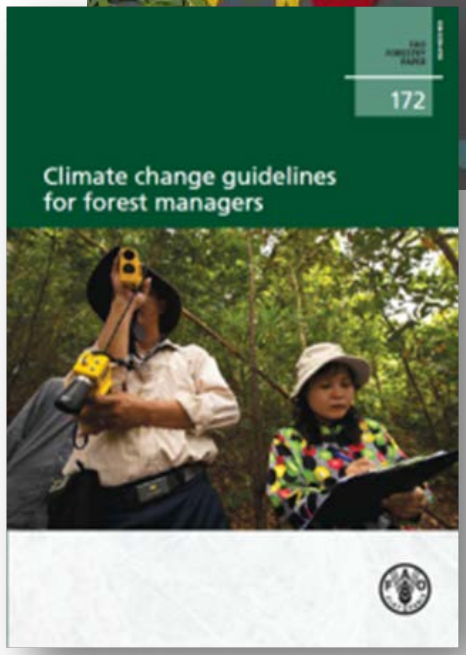
Publications and Guidelines

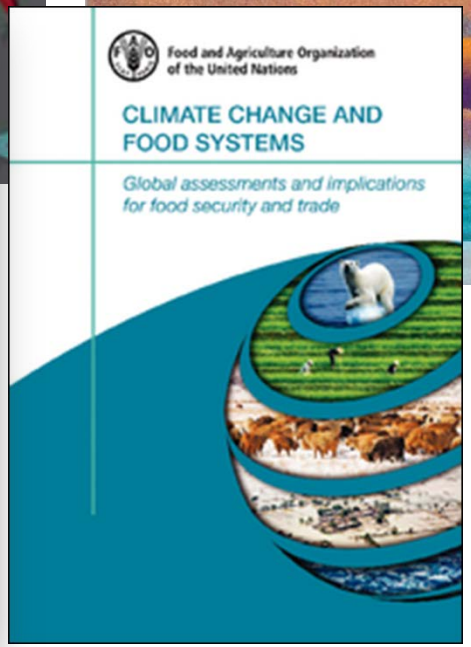


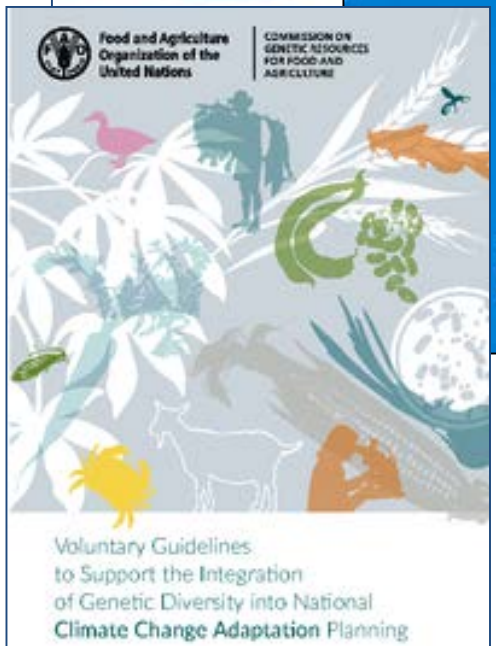










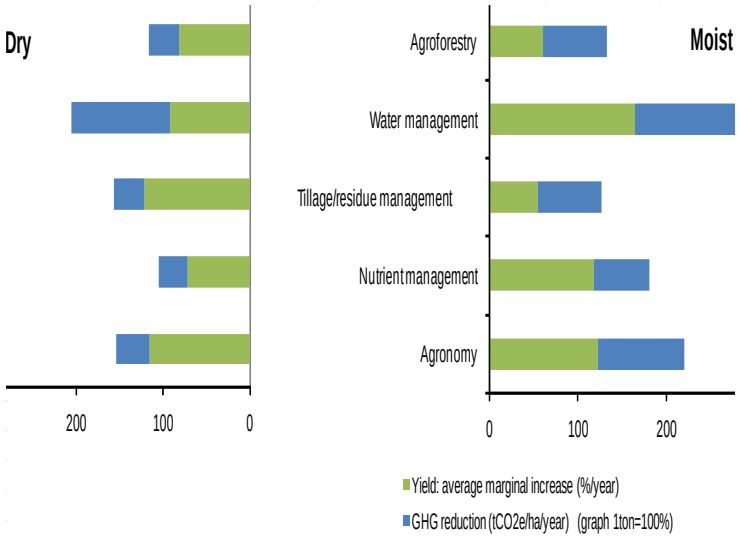


Promoting Alliances & collaboration

Piloting Sustainable Practices and Policy Innovations

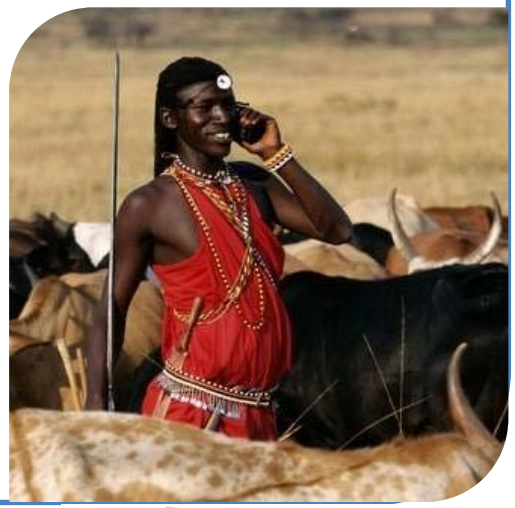
Build Evidence

- Analyze synergies and tradeoffs
- Cost-benefit analysis



Strengthen Policies and Institutions

- Coordination CC and AG policies
- Institutions to overcome barriers



FAO EPIC

Participating of International Fora and Promoting Regional Dialogues

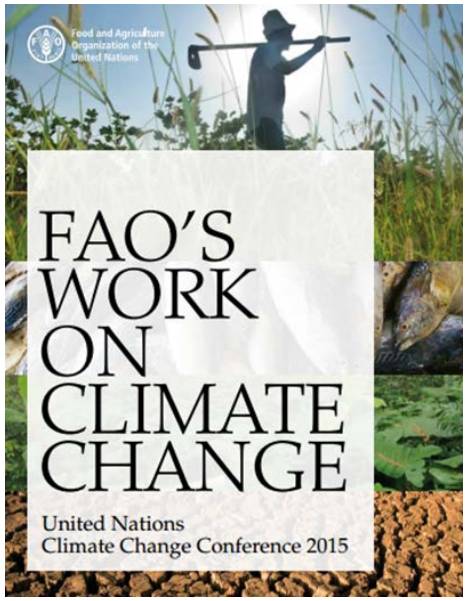
United Nations
Framework Convention on
Climate Change

MARRAKECH
COP22|2016|CMP12
UN CLIMATE CHANGE CONFERENCE

Leveraging Climate Finance

GEF

GREEN
CLIMATE
FUND


Food and Agriculture Organization of the United Nations
FAO'S WORK ON CLIMATE CHANGE
United Nations
Climate Change Conference 2015


Food and Agriculture Organization of the United Nations
FAO and the 17 Sustainable Development Goals


FOOD AND AGRICULTURE
1 NO POVERTY
Almost 80% of poor people live in rural areas
2 ZERO HUNGER
We produce food for everyone, yet almost 800 million go hungry
3 GOOD HEALTH AND WELL-BEING
Good health starts with nutrition
4 QUALITY EDUCATION
Nutritious food is critical to learning
5 GENDER EQUALITY
Women produce 1/2 the world's food but have much less access to land
6 CLEAN WATER AND SANITATION
Sustainable agriculture holds potential to address water scarcity
7 AFFORDABLE AND CLEAN ENERGY
Modern food systems are heavily dependent on fossil fuels
8 DECENT WORK AND ECONOMIC GROWTH
Agricultural growth in low-income economies can reduce poverty by half
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Agriculture accounts for 1/4 of GDP in developing countries
10 REDUCED INEQUALITIES
Land reforms can give fairer access to rural land
11 SUSTAINABLE CITIES AND COMMUNITIES
Rural investment can deter unmanageable urbanization
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1/3 of the food we produce is lost or wasted
13 CLIMATE ACTION
Agriculture is key in responding to climate change
14 LIFE BELOW WATER
Fish gives 3 bn people 20% of daily animal protein
15 LIFE ON LAND
Forests contain over 80% of the world's terrestrial biodiversity
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
Ending hunger can contribute greatly to peace and stability
17 PARTNERSHIPS FOR THE GOALS
Partnerships help raise the voice of the hungry

Thanks for your attention

For more information, please visit:
www.fao.org/climatechange