



Organização das Nações Unidas
para a Alimentação e a Agricultura

MERCOSUL-EUROPEAN UNION DIALOGUES: *impacts of climate change on energy security and food security*

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REPRESENTANTE DA FAO NO BRASIL

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Food Security



The Four Dimensions of Food Security

Physical availability of food	Discusses the part corresponding to offers – production and trade of food
Physical and Economic Access to food	Adequate supply of food by itself does not guarantee food safety. Policies are needed to focus on income and expenses.
Use of food	It is necessary to combine the good use of biological food consumed to obtain the ideal nutritional condition of individuals.
Stability in each three dimensions	Ensure access to food on a regular basis. Climatic conditions (drought, floods, ect.), political instability, or economic factors influence food security.



Food Security and FAO's Role

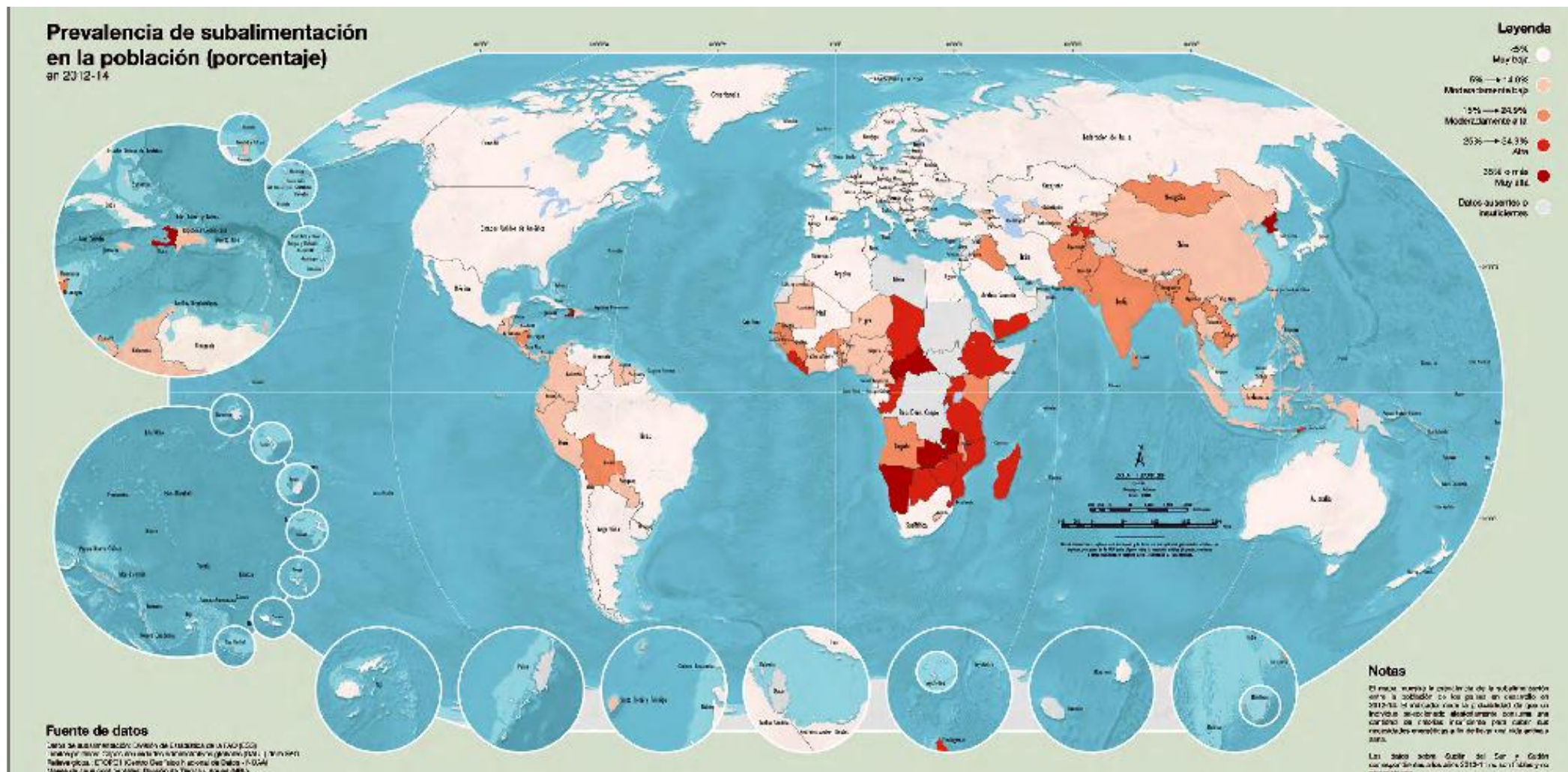
The essence of FAO's activities revolves around achieving food security for all and ensuring that people have access to quality food so they can lead an active and healthy life.

Three Main Objectives:

- Eradication of hunger, food insecurity and malnutrition;
- Elimination of poverty and boost social and economic development for all;
- Sustainable use of natural resources for the benefit of current and future generations.



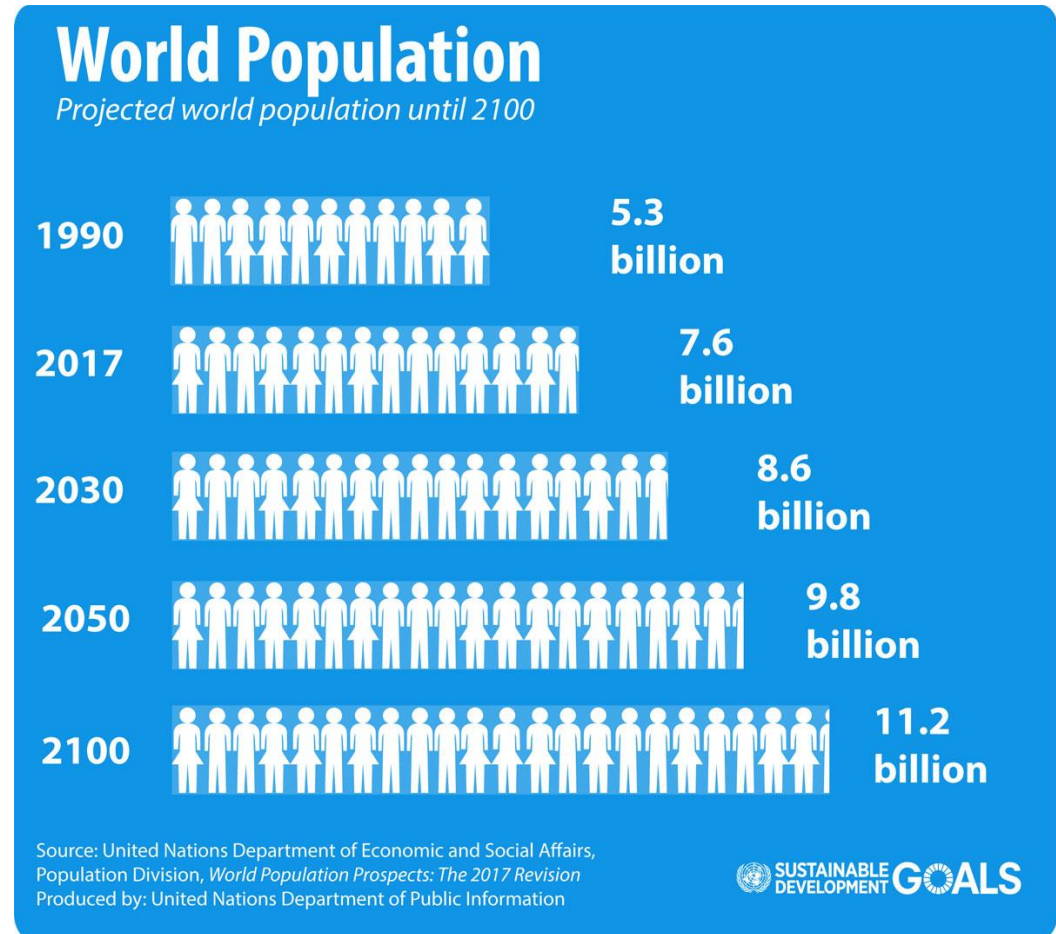
FAO Hunger Map



GROWTH OF THE WORLD POPULATION

Estimates indicate that in 2050 the world population will surpass **9.8 billion** people.

New studies indicate that this number may reach **11 billion** people in 2100.



PANORAMA - FOOD PRODUCTION IN THE WORLD



In 2015 more than 2.5 billion tons of grains and more than 300 million tons of meat were produced in the world;

FAO: setembro de 2016



The 2050 Challenge for Food Security

- In 2050 the population will be **9.8 billion**, **29%** more than current number; the biggest growth will be in *developing countries*; 70% of the population will be urban. Income levels will be higher than the current.
- To feed this larger population, urban and wealthy, food production must increase by **70%**.
- Cereal production will have to increase **to 3 billion tons/year** compared to **2.5 billion** produced currently. Meat production will need to increase by more than **200 million tons**.





The future of food and agriculture

The global trends and **challenges** that are shaping our future





By the year

2050

the world population is expected to grow to

9.7 billion

2/3 will live in urban areas



Demand for food will grow



1 Sustainably improve agricultural productivity to meet increasing demand

Increasing food demand is worsening competition for natural resources, deforestation and land degradation



The number of **15-24 year olds** will dramatically increase in Sub-Saharan Africa and South Asia

2 Ensure a sustainable natural resource base



3 Address climate change and intensification of natural hazards



Climate change is jeopardizing crop and livestock production, fish stocks and fisheries

Increasing fossil energy GHG emissions are exacerbating climate change



~ 700 million

people living in rural areas, are still extremely poor today

4 Eradicate extreme poverty and reduce inequality

~ 800 million

people are chronically hungry



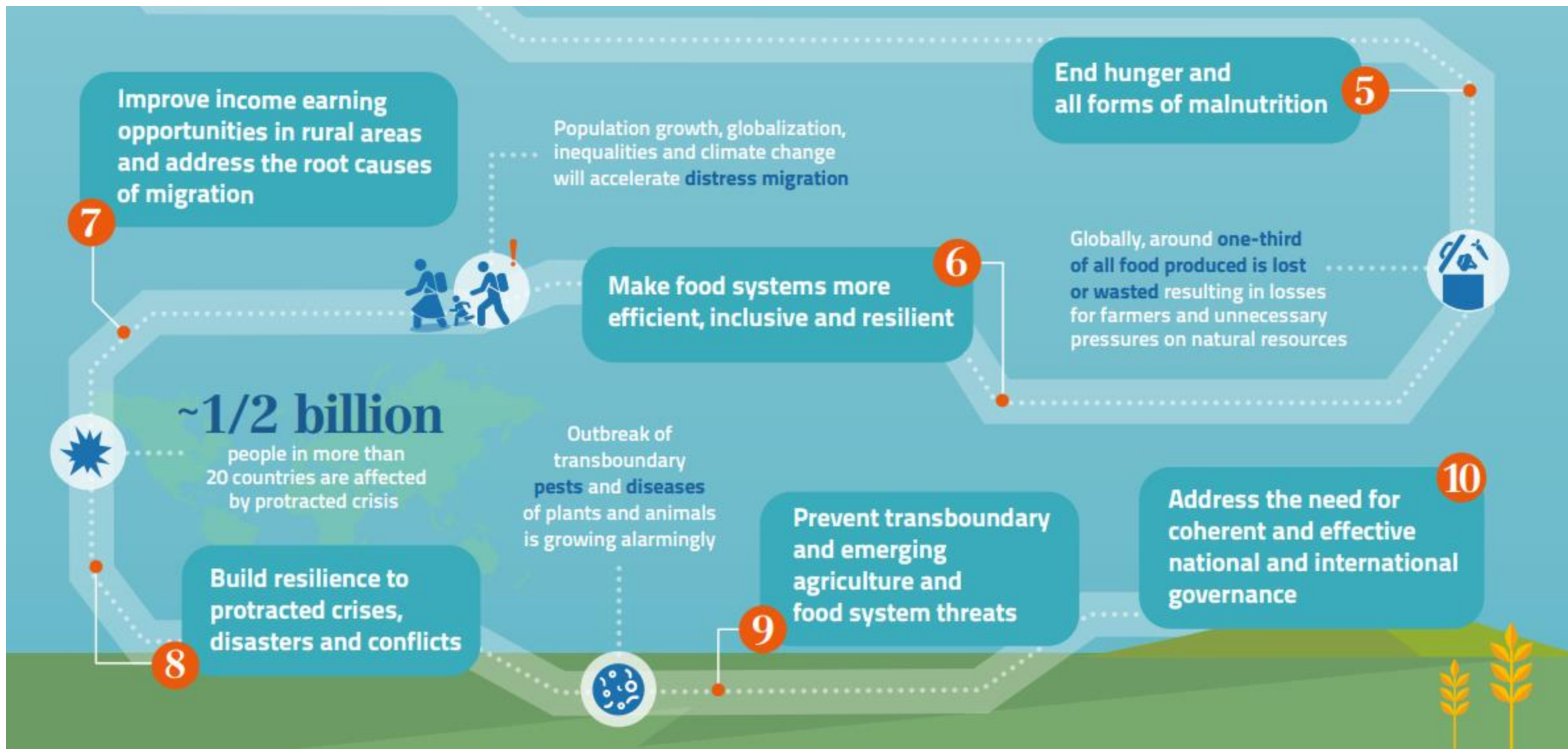
2 billion

suffer micronutrient deficiencies



Overweight and obesity are increasing worldwide

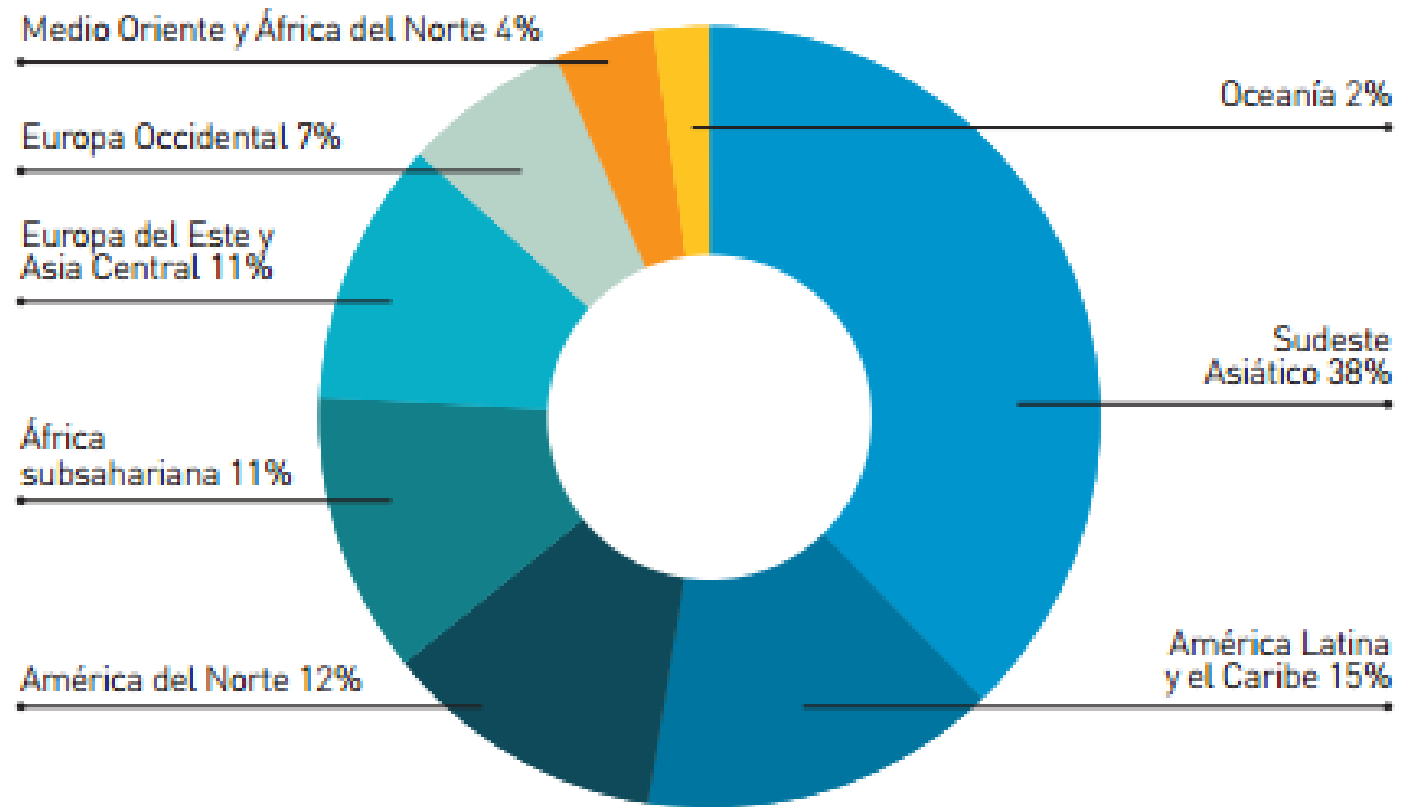
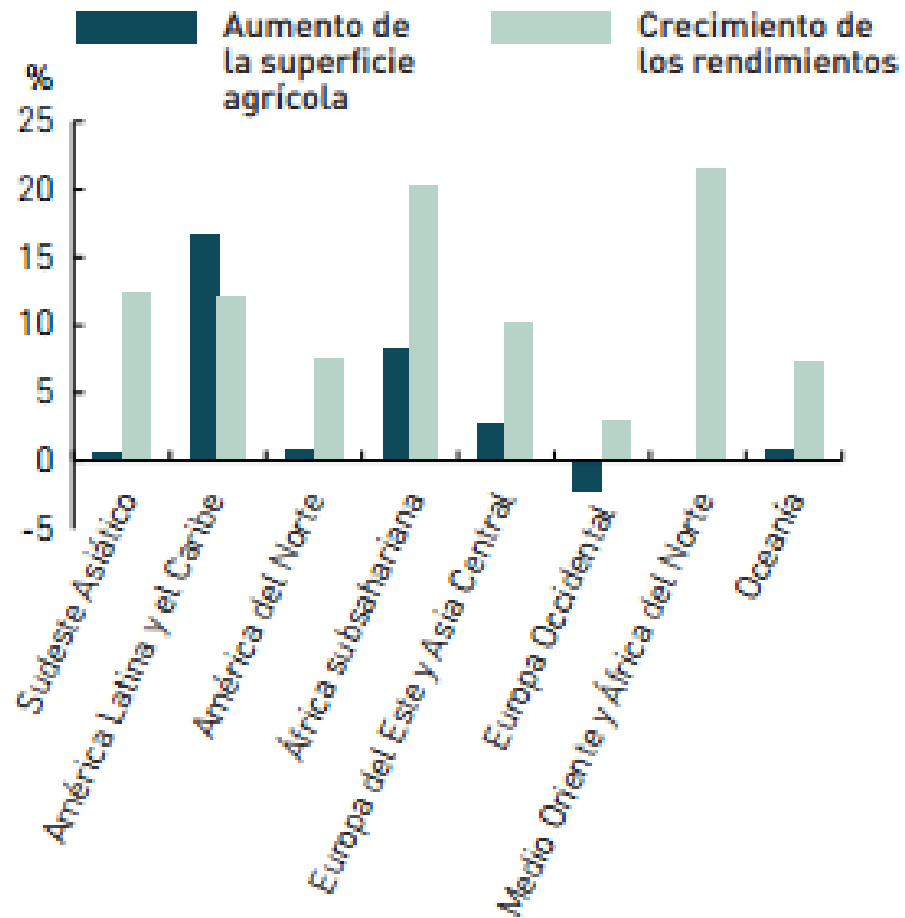




Agricultural Trade



Increase of Areas and Incomes



FAO/OCDE 2016



PANORAMA - GLOBAL LEADERS

Maiores Exportadores		Maiores Importadores	
Europa*	842,2	Europa*	858,3
EUA	182,2	China	170,1
Brasil	87,9	EUA	156,9
China	74,5	Japão	81,9
Canadá	68,1	Hong Kong	48,9
Indonésia	44,1	Rússia	41,2
Índia	43,5	Canadá	40,1
Tailândia	39,7	Coreia do Sul	35,0
Austrália	38,6	México	30,0
Argentina	37,9	Índia	27,3

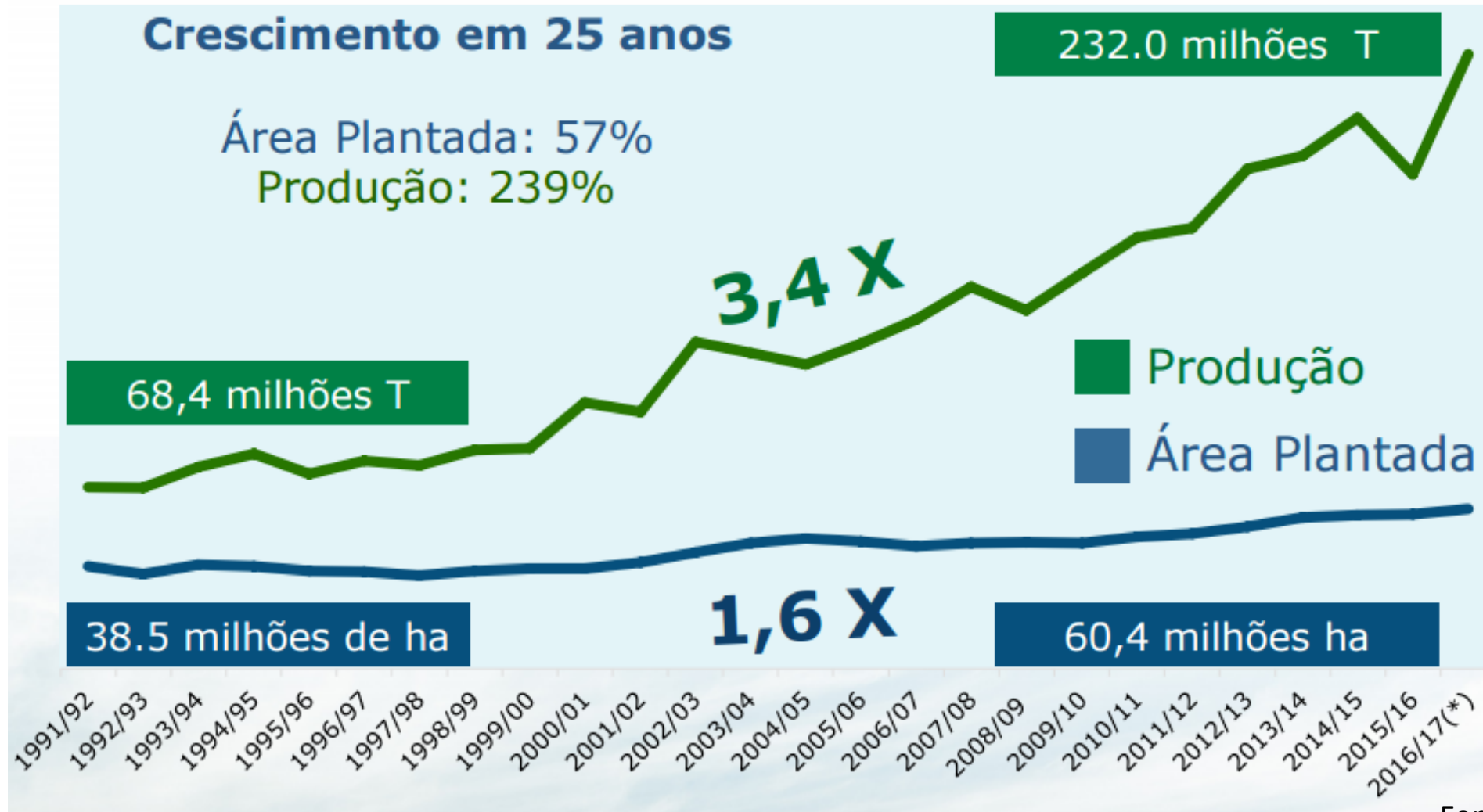
Fonte: OMC 2014. *Inclui os 28 países da UE e os países que não fazem parte do bloco



Agricultural Production in Brazil



BRAZILIAN SAFRA 2017/2018



Fonte: MAPA junho 2017



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Brazil's Trends

- Increasing demands for products in which Brazil has comparative advantage (meat and cereals);
- Growing importance of the Asian market and, potentially, the African market;
- Change in the economics of biofuel production;
- Depreciation of the exchange rate between the Real and the Dollar will benefit farmers.



Perspectives on Brazilian Agriculture - 2015-2024

Rapid Development in the Agricultural Sector

- Agricultural production more than doubled since 1990;
- The main driver was the rapid *productivity growth*, with small increase in surface used.
 - Technological change
 - Capital replacing labor
- Changes in export destinations: the Asian market has become more important than the European;
- Decrease in deforestation rates - debate on the direct and indirect contribution of agriculture;
- Agriculture is a significant source of GHG emissions, but the total emissions are falling;
- Fast reduction of poverty and hunger, with improved access to food.



Outlook Implications for Brazilian Agriculture

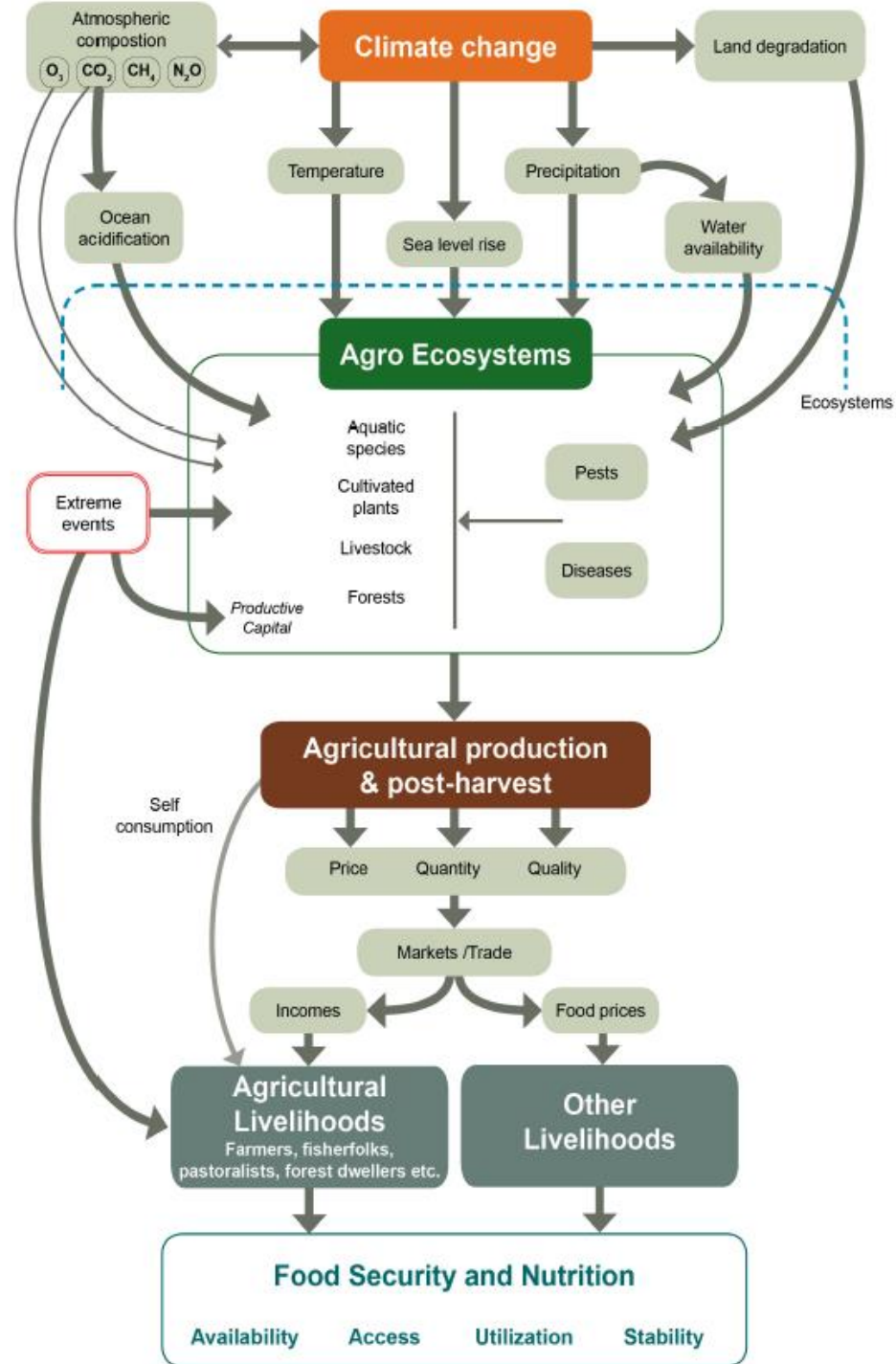
- Brazil will become the main provider responding to increased global demand for imports of commodities;
- However, for many products, a large part of production supplies the domestic demand;
- Increased production will continue to come mainly from gains in productivity, and it is possible to achieve this increase in *a sustainable* way;
- Opportunities are high for family farmers in key products such as coffee, tropical fruits, pigs and poultry.



Climate Change and Food Security



Effects of Climate Change Impacts on Food Security and Nutrition.



Challenges For Food Security – SOFA 2016

Number of people who live in conditions of extreme poverty in 2030 with and w/o climate changes, in diverse climatic and socioeconomic situations

		Hipótesis de cambio climático				
		Sin cambio climático	Pocos efectos		Grandes efectos	
		Número de personas en la pobreza extrema	Número adicional de personas en la pobreza extrema debido al cambio climático			
Hipótesis socio-económica	Prosperidad	142 millones	+3 millones		+16 millones	
			Minimo	Máximo	Minimo	Máximo
			+3 millones	+6 millones	+16 millones	+25 millones
	Pobreza	900 millones	+35 millones		+122 millones	
Minimo			Máximo	Minimo	Máximo	
		-25 millones	+97 millones	+33 millones	+165 millones	

Notas: En los principales resultados se utilizan las dos hipótesis representativas de la prosperidad y la pobreza. Los rangos se basan en las 60 hipótesis alternativas para cada categoría. Las RCP y las SSC se explican en el Recuadro 7.

FUENTE: Adaptado de Rozenberg y Hallegatte (2015).

FAO Strategy on Climate Change 2017



Climate change impacts food security



THE GREATEST VULNERABILITIES

are in sub-Saharan Africa and South and South-east Asia



PRODUCTIVITY OF CROPS, LIVESTOCK, FISHERIES AND FORESTRY

are seriously threatened



DROUGHT, FLOODS AND OTHER EXTREME WEATHER EVENTS

impact every dimension of food security



THE MOST EXPOSED

are millions of low-income smallholder producers in developing countries



UNDERNUTRITION IS A SERIOUS THREAT IN POOR REGIONS

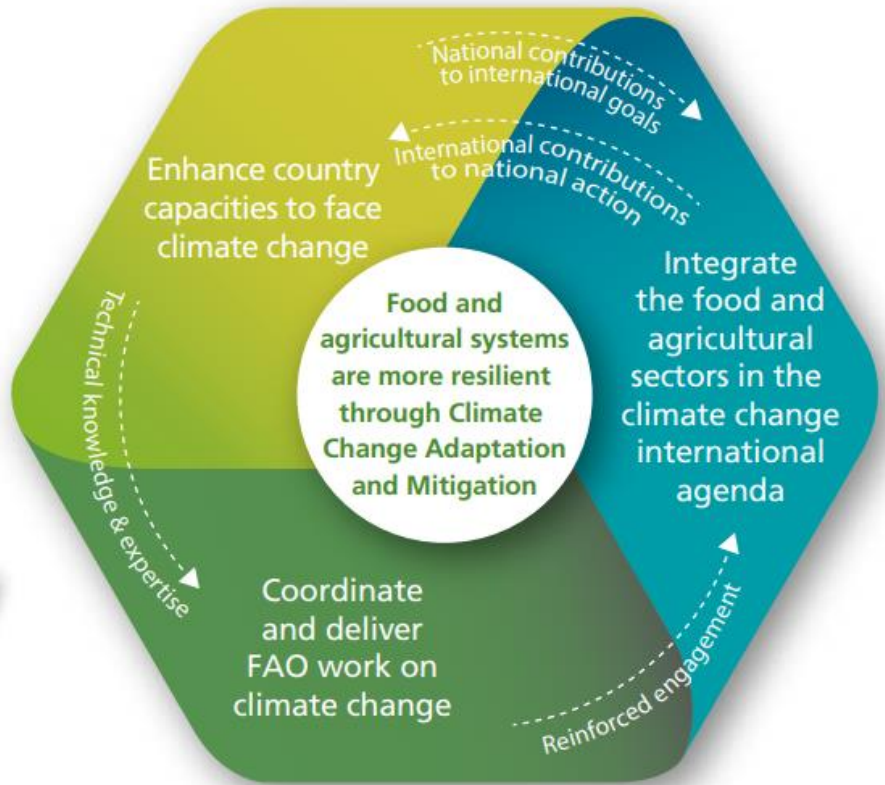
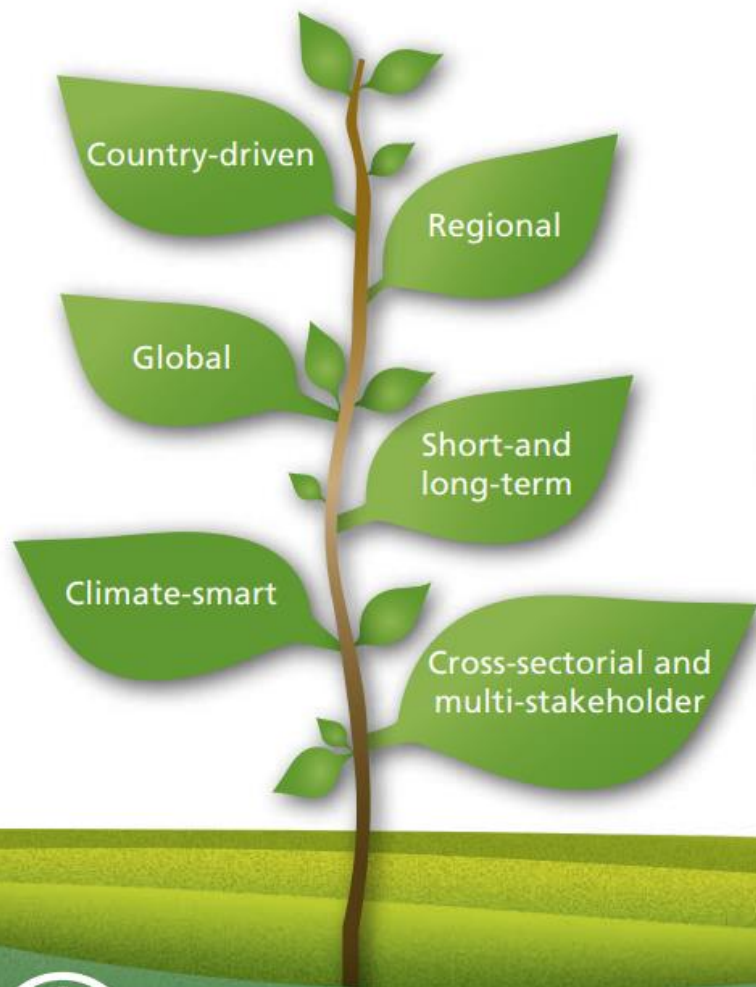
where productivity has been affected

Approach

Strategy in action



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Food and Agriculture Organization of the United Nations

fao.org/climate-change

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HUNGER, POVERTY AND CLIMATE CHANGE: THE CHALLENGES TODAY AND TOMORROW

KEY MESSAGES

1 CLIMATE CHANGE ALREADY AFFECTS AGRICULTURE AND FOOD SECURITY and, without urgent action, will put millions of people at risk of hunger and poverty.

2 While **IMPACTS ON AGRICULTURAL YIELDS AND LIVELIHOODS** will vary across countries and regions, they will become increasingly adverse over time and potentially catastrophic in some areas.

3 LIMITING GLOBAL TEMPERATURE INCREASES TO 1.5 °C ABOVE PRE-INDUSTRIAL LEVELS would significantly reduce the risks and impacts of climate change.

4 DEEP TRANSFORMATIONS IN AGRICULTURE AND FOOD SYSTEMS, from pre-production to consumption, are needed in order to maximize the co-benefits of climate change adaptation and mitigation efforts.

5 THE AGRICULTURE SECTORS HAVE POTENTIAL TO LIMIT THEIR GREENHOUSE GAS EMISSIONS, but ensuring future food security requires a primary focus on adaptation.



Selected Potential Impacts of Climate Change in Latin America & The Caribbean

FORESTRY

- ▶ Tropical forests are affected more by changes in the water availability and CO₂ fertilization than by temperature changes
- ▶ In Amazonia, increased risk of frequent fires, forest loss and “savannization”
- ▶ In Central America, 40 percent of mangrove species are threatened with extinction



CROPS AND LIVESTOCK

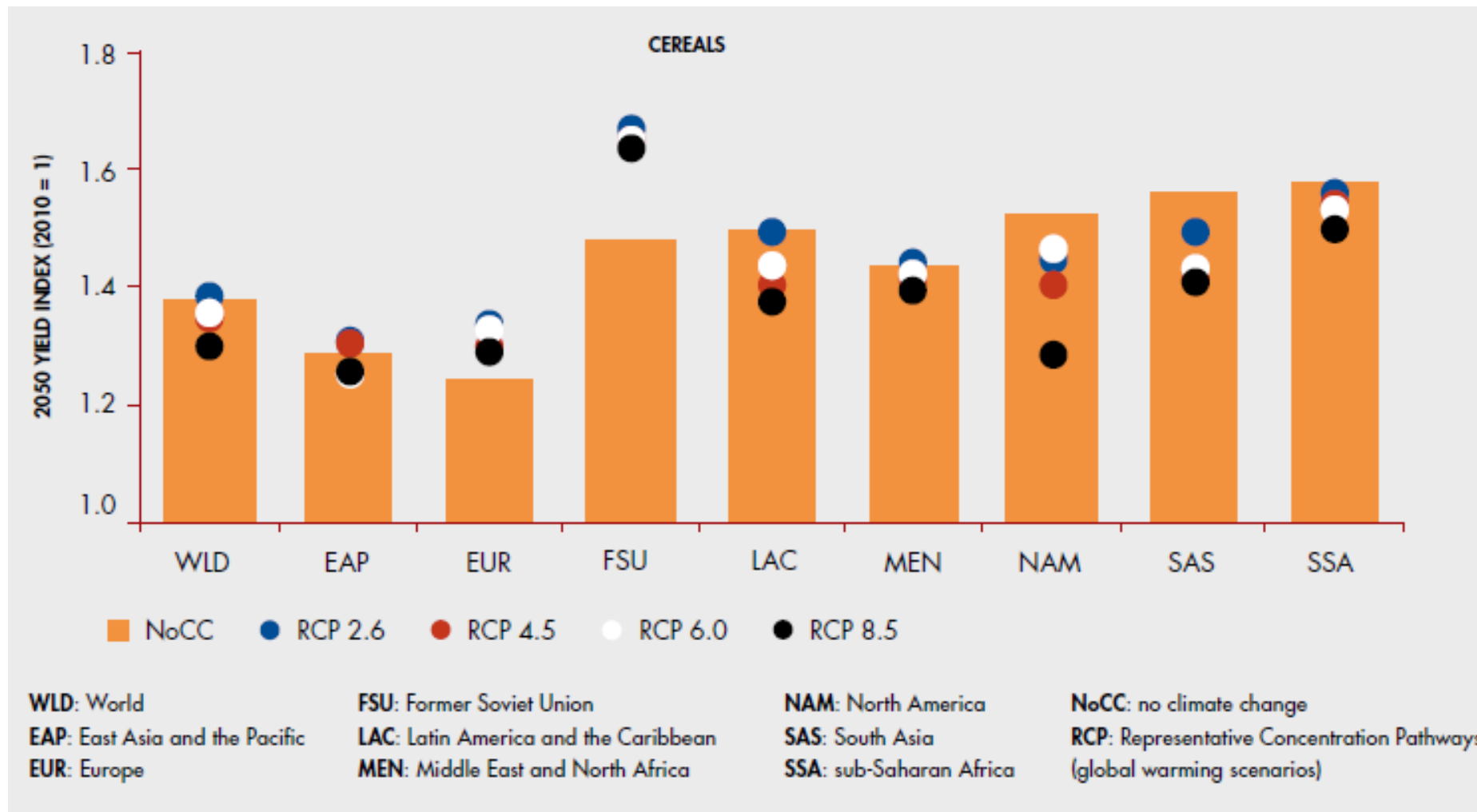
- ▶ In temperate areas, soybean, wheat and pasture productivity increases
- ▶ Drier soils and heat stress reduce productivity in tropical and subtropical regions
- ▶ Increased salinization and desertification in arid zones of Chile and Brazil
- ▶ Rainfed agriculture in semi-arid zones faces higher crop losses

FISHERIES AND AQUACULTURE

- ▶ Primary production in the tropical Pacific declines and some species move southwards
- ▶ More frequent storms, hurricanes and cyclones harm Caribbean aquaculture and fishing
- ▶ Changes in freshwater fish species physiology, collapse of coral reef systems



Impacts of Climate Change on Cereal Yields Among Regions



Source: FAO – SOFA '16



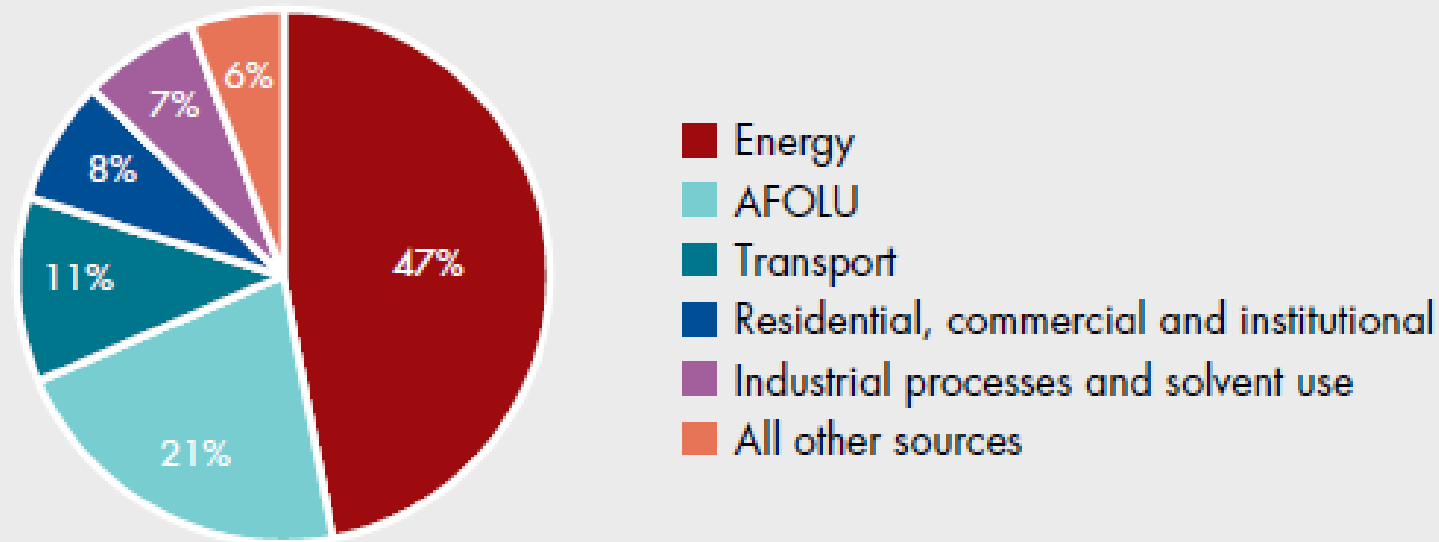
SUMMARY OF CLIMATE CHANGE IMPACTS ON AGRICULTURE

- ▶ Increased frequency and intensity of extreme climate events such as heat waves, droughts and floods, leading to loss of agricultural infrastructure and livelihoods
- ▶ Decrease in fresh water resources, leading to water scarcity in arable areas
- ▶ Sea-level rise and coastal flooding, leading to salinization of land and water, and risks to fisheries and aquaculture
- ▶ Water and food hygiene and sanitation problems
- ▶ Changes in water flows impacting inland fisheries and aquaculture
- ▶ Temperature increase and water scarcity affecting plant and animal physiology and productivity
- ▶ Beneficial effects on crop production through carbon dioxide “fertilization”
- ▶ Detrimental effects of elevated tropospheric ozone on crop yields
- ▶ Changes in plant, livestock and fish diseases and in pest species
- ▶ Damage to forestry, livestock, fisheries and aquaculture
- ▶ Acidification of the oceans, with extinction of fish species

SOURCES: Adapted from Tirado *et al.* (2010) and updated using Porter *et al.* (2014), HLPE (2012) and IPCC (2014).



Shares of Greenhouse Gas Emissions From Economic Sectors In 2010



Notes: Emissions from energy include industries, manufacturing and fugitive emissions. AFOLU means "Agriculture, forestry and other land use". "All other sources" includes international bunkers, waste and other sources.

SOURCE: FAO, forthcoming.

FORESTS AND ENERGY

Forests are nature's powerhouse and a vital resource for meeting the world's renewable-energy demand.



Final Considerations





SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



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SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

1 NO POVERTY

2 NO HUNGER

3 GOOD HEALTH

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 RENEWABLE ENERGY

8 GOOD JOBS AND ECONOMIC GROWTH

9 INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE AND JUSTICE

17 PARTNERSHIPS FOR THE GOALS

THE GLOBAL GOALS
For Sustainable Development



TARGETS

2.1

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

2.2

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

2.3

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

2.4

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

2.5

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

2.a

Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries

2.b

Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.c

Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility



GLOBAL CHALLENGES FOR THE FUTURE

FOOD LOSSES AND WASTE

% LOSS PER PRODUCT



**30%
CEREALS
FOOD LOSSES**


In industrialized countries, consumers throw away 286 million tonnes of cereal products.

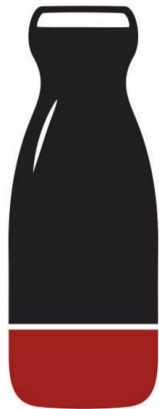
 763 billion boxes of pasta



**45%
FRUIT & VEGETABLES
FOOD LOSSES**

Along with roots and tubers, fruit and vegetables have the highest wastage rates of any food products; almost half of all the fruit and vegetables produced are wasted.

 3.7 trillion apples



**20%
DAIRY
FOOD LOSSES**

In Europe alone, 29 million tonnes of dairy products are lost or wasted every year.

 This is the same as 574 billion eggs.



**45%
ROOTS & TUBERS
FOOD LOSSES**

In North America & Oceania alone 5.814.000 tonnes of roots and tubers are wasted at the consumption stage alone.

 This equates to just over 1 billion bags of potatoes.



**35%
FISH & SEAFOOD
FOOD LOSSES**


8% of fish caught globally is thrown back into the sea. In most cases they are dead, dying or badly damaged.

 This is equal to almost 3 billion Atlantic salmon.



**20%
OILSEEDS & PULSES
FOOD LOSSES**

Every year, 22% of the global production of oilseeds and pulses is lost or wasted.

 This is the same as the olives needed to produce enough olive oil to fill nearly 11 000 Olympic-sized swimming pools.



**20%
MEAT
FOOD LOSSES**

Of the 263 million tonnes of meat produced globally, over 20% is lost or wasted.

 This is equivalent to 75 million cows.

Eradicating Hunger is Possible

- **ERADICATING HUNGER IS POSSIBLE**
- The eradication of hunger is approaching: we can reach it within the next decade.
- It is possible to brake the rise of overweight and obesity cases from large food and nutritional security agreements.
- This requires changes in production, consumption and supply, demand for healthy and nutritious foods.
- It is essential to develop healthy and sustainable food systems that combine agriculture, food and nutrition and health, with a multisectoral approach.



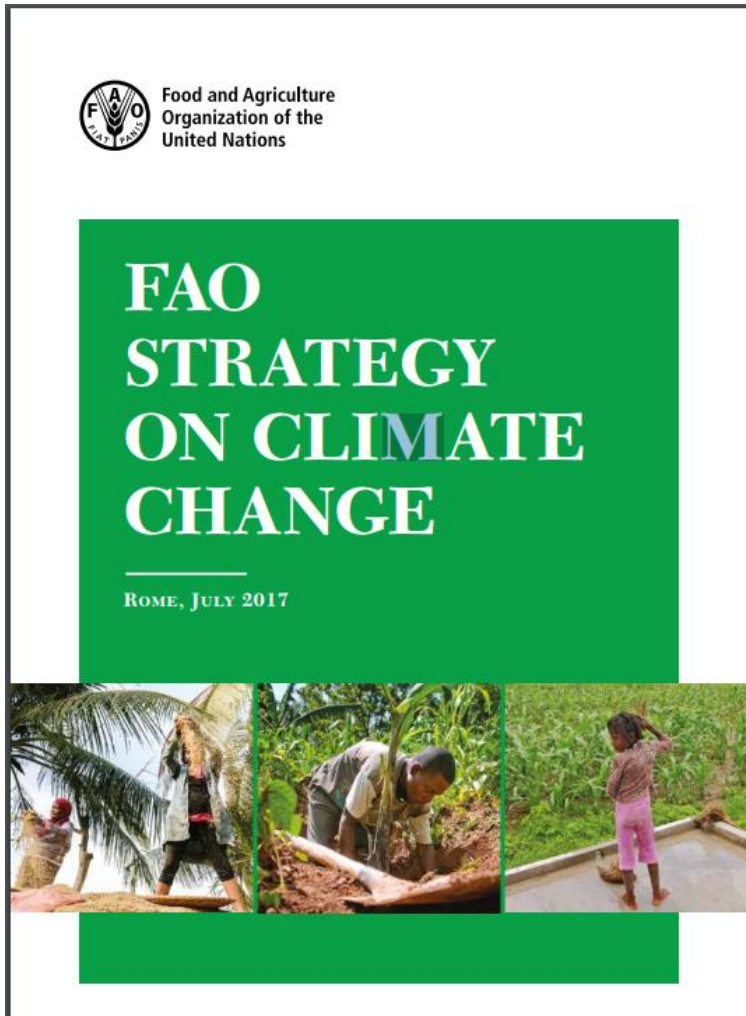
NEW PATTERNS OF CONSUMPTION

- In recent years interest in healthier eating habits has been growing worldwide.
- Consumer exigencies have increased in relation to the type of food that arrives on the table.
- In Brazil it's no different. Despite its timid trend, Brazilians have been increasingly aware of the importance of healthy eating as it reflects health and also improvement in life expectancy.
- Diversification in food, particularly: **chia, quinoa, flaxseed.**
- **Less waste, packaging, on the plate, etc.**

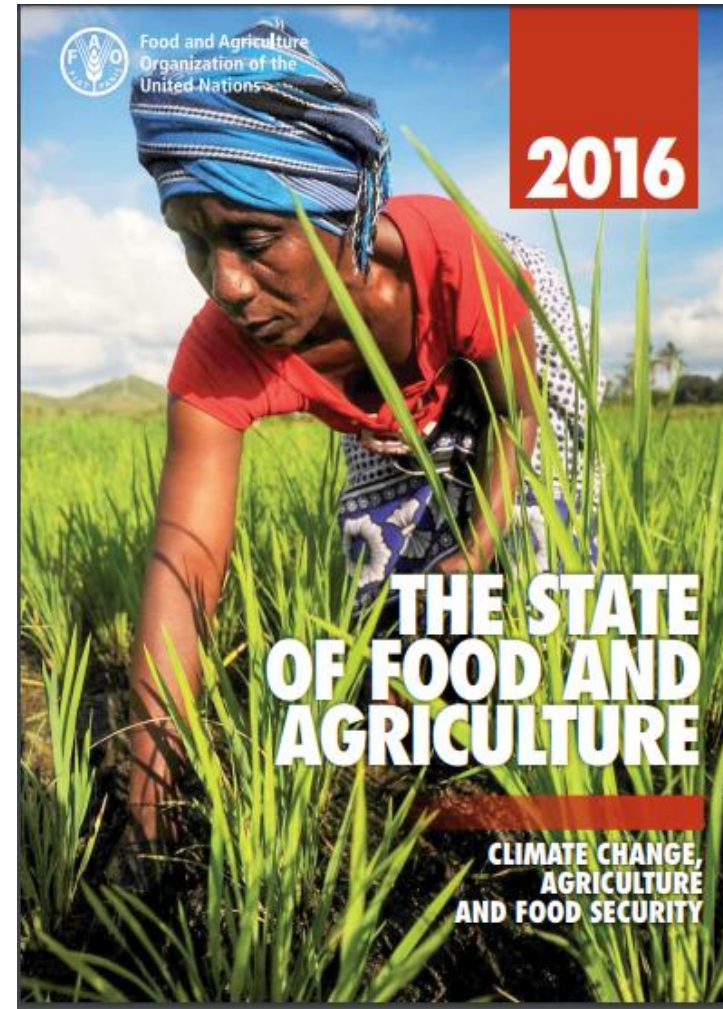


**FOR THE FUTURE
WE NEED:**





<http://www.fao.org/3/a-i7175e.pdf>



<http://www.fao.org/3/a-i6030e.pdf>



THANK YOU!

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