THE STATE OF FOOD AND AGRICULTURE

Climate change, agriculture and food security
Climate change is a growing threat to the agriculture sectors. The negative effects on agricultural production and livelihoods of farmers, foresters and fisher folk are already being felt in many places. They will only get worse overtime.

Unless climate change is addressed, agricultural productivity will decline with serious implications for food security. Millions of low-income people will be at risk of hunger and poverty.

The agriculture sectors also contribute to climate change due to their emissions of greenhouse gases.

In the Paris Agreement on climate change, concluded in December 2015, the international community has recognized the need for urgent action and the role of the agricultural sectors in addressing this challenge.

It is essential that the country pledges that formed the basis of the 2015 Paris Agreement on climate change are turned now into action.

These infographics are based on key findings in the FAO Report “State of Food and Agriculture 2016 – Climate change, agriculture and food security” available at www.fao.org/publications/sofa/sofa2016
How climate change affects food security?

Climate change

Agroecosystems

Agricultural production and post-harvest

Agricultural livelihoods

Other livelihoods

Food security and nutrition

Availability, Access, Utilization, Stability
Rising temperatures

Increased frequency of dry spells and drought

Changes in precipitations patterns

Rising sea levels

Increasing intensity of extreme weather events

Rising temperatures

Changes in precipitations patterns

Temperature variability

All these effects have negative impacts on the productivity of crops, livestock, fisheries and forestry

Climate change affects agriculture...
...and agriculture sectors are major contributors to climate change

Taken together, agriculture, forestry and land-use account for at least 20% of total emissions, mainly from the conversion of forests to farmland and from livestock and crop production.
Climate change impacts: who is paying the costs?

The effects of climate change on agricultural production will have negative effects on developing countries, mainly in sub-Saharan Africa and South and Southeast Asia.
Millions of low-income people who are already highly food insecure, are likely to be affected. Smallholder producers are amongst the most vulnerable.

Productivity declines could have serious implications for food security.
Responding to climate change: sustainable agricultural practices

- No-till
- Cultivating nitrogen-efficient crop varieties
- Precision agriculture
- Improved pasture management
- Integrated soil fertility management
- Improved fodder grasses or legumes
- Cultivating heat-tolerant crop varieties
- Water harvesting & sprinkler irrigation
- Natural predation of pests and reduction of pesticides
- Drip irrigation

Smallholders need support to access the right technologies and to implement them.
By 2050 less people could be at risk of hunger if improved agricultural technologies are adopted.

- Use of nitrogen-efficient crop varieties: -12%
- Zero-tillage: -9%
- Cultivation heat-tolerant crop varieties: -8%
- Precision agriculture: -7%
- Integrated soil fertility management: -4%
- Protection of crops from disease: -3%
Responding to climate change: mitigation

The agriculture sectors can substantially contribute to balancing the global carbon cycle.

**Agriculture**

- Resource use efficiency
- Soil regeneration

Agriculture can bind large amounts of atmospheric CO$_2$ and lower emissions of N$_2$O and CH$_4$.

**Forestry**

- Reducing deforestation
- Adopting sustained-yield management

Forestry can help mitigate the rise of atmospheric CO$_2$. 
Reducing food loss and waste

improves the efficiency of the food system, reduces both pressure on natural resources and the emission of greenhouse gases (GHGs)

Rebalancing diets towards less animal-sourced foods

Could help reduce GHGs and pressure on natural resources with co-benefits for human health

Mitigation is key for long-term food security of the world’s population
Challenges

Smallholder producers face major barriers when adopting practices that can make their production systems more resilient and efficient.

- Labour availability
- Tenure security
- Groups/social capital
- Risks and shocks
- Credit access and resource endowments
- Information
Addressing the challenges: aligning climate and development goals

- Managing natural resources
- Supporting and facilitating collective action
- Managing risks
- Building institutions and policies for more resilient systems with lower emissions
- Addressing transboundary issues
The way forward: strategic use of climate finance

- Addressing the capacity challenge
- Support the enabling environment for climate-smart agriculture
- Mainstreaming climate change in domestic budgets
- Unlocking private capital for climate-smart agricultural investment
Turning political will into action

*The Conference of the Parties (COP) is the supreme decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC).*