



Food and Agriculture Organization
of the United Nations

Adapting Agricultural Systems in a Changing Climate: *Climate-Smart Agriculture and Sustainable Agricultural Mechanization Strategy*

Presentation by

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CSAM



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Part 1. Climate Change, Agriculture and Food Security - the Vulnerability of Asia and the Pacific



Climate Change, Agriculture and Food Security

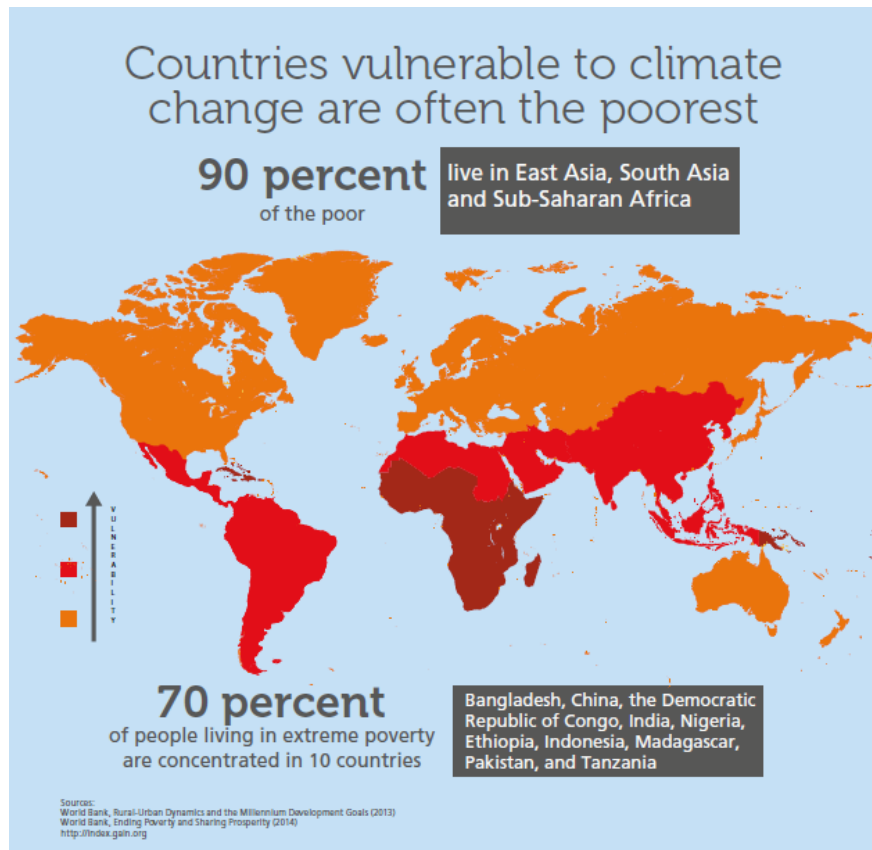
- **Climate Change already affects Agriculture and Food Security**
- **Without Urgent Actions, CC will put people at risk of hunger and poverty**

Climate change impacts people's health, safety and livelihoods, **with the poorest people in the poorest countries suffering the most.**

Modified from: FAO. 2016. The State of Food and Agriculture: Climate Change Agriculture and Food Security



Vulnerability of Asia and the Pacific



- **Rural women** are among the most **Vulnerable**-Closing Gender Gap is key.
- Global Poverty cannot be eradicated without increasing the resilience of smallholder agriculture to CC impacts.

Source: FAO. 2016. Leaving no one behind: addressing climate change for a world free of hunger and poverty

Part 2. Adapting to Climate Change and Paris Agreement- United Nations Framework Convention on Climate Change (UNFCCC)

Adapting to Climate Change

How Smallholder farmers adapt to CC?

- By Adopting Climate-Smart practices and technologies
- Diversifying agricultural systems and food systems
- Diversifying on and off farm income
- Sustainable Management of Natural Resources

- Improvements in **Infrastructure, Extension, climate information, market Access, Credit and Social Insurance**
- **The costs of inaction are greater than the costs of the interventions**

Modified from: FAO. 2016. The State of Food and Agriculture: Climate Change Agriculture and Food Security



Paris Agreement – UNFCCC

What is the Paris Agreement?

- A total of 112* Parties of the UNFCCC have ratified. It entered into force the 4 Nov 2016.

What does the Paris Agreement aimed?

- To strengthen the global response to the threat of climate change (by keeping a global temp. rise below 2 °C above pre-industrial levels)
- To strengthen the ability of countries to deal with the impacts of climate change.

How the aims will be achieved?

- Through “nationally determined contributions” (NDCs)

Source: http://unfccc.int/paris_agreement/items/9485.php
(As at 18 Nov 2016)



Paris Agreement – NDCs

- **Why NDCs are important?**

The NDCs will guide country-level actions on Climate change for the following years

- **How many countries in Asia and the Pacific submitted INDCs?**

All countries in Asia and the Pacific have submitted the INDCs

Source http://unfccc.int/paris_agreement/items/9485.php (As at 18 Nov 2016)

- **Agriculture is expected to provide opportunities for adaptation-mitigation, socio-economic and environmental co-benefits.**

- **ASEAN Member States to present a united voice at COP22 on shared vision to adapt agriculture to climate change**

Source FAO. 2016. The State of Food and Agriculture: Climate Change Agriculture and Food Security
<http://www.fao.org/asiapacific/news/detail-events/en/c/451030/>



Part 3. Climate-Smart Agriculture (CSA) and Sustainable Agriculture Mechanization Strategy (SAMS)



Key definitions:

Climate-Smart Agriculture (CSA)

FAO definition

An **approach** that helps to guide actions needed **to transform and reorient agricultural systems** to effectively support development and **ensure food security in a changing climate.**

CSA pillars are:

- Sustainably increasing agricultural productivity and incomes **(Food and income)**
- Adapting and building resilience to climate change **(Adaptation)**
- Reducing and/or removing greenhouse gas emissions, where possible **(Mitigation)**

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Source: <http://www.fao.org/climate-smart-agriculture/en/>

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Key definitions:

Sustainable Agricultural Mechanization Strategy (SAMS)

FAO definition

SAMS is a planning strategy that takes a **holistic approach** to addressing the **sustainable use of mechanization across the entire agri-food chain**



SAMS goal:

To assure that the use of sustainable agricultural mechanization (SAM) **contributes to food security, economic development and ecological balance in Asia and the Pacific Region.**

Synergies between CSA and SAMS

- **Holistic Approach (Socio-economic and environmental dimension)**
- **Address the needs of smallholder farmers and small-medium entrepreneurs (SMEs)**
- **Address different agricultural and food systems (across the value chain)**
- **Adapted to local conditions**

Contribution of SAMS to CSA

CSA pillars	SAMS Contribution	Examples of Agricultural Mechanization
1. Food and Income	+ Increase land and labour productivity	Labour-saving technologies (e.g. drums seeders)
	+ Increase the efficiency in the use of inputs and other resources	Tool for fertilizer deep placement Pumps for dripping irrigation systems
	+ Reduction of post-harvest losses (increase food shelf life)	Dryers, efficient transport systems
	+ Value addition to food produce	Packing machine, milk separator

Contribution of SAMS to CSA (cont...)

CSA pillars	SAMS Contribution	Examples of Agricultural Mechanization
<p>2. Adaptation to Climate Change</p>	<ul style="list-style-type: none"> + Allow perform planting/harvest in a timely manner and cope with erratic rainy pattern +Efficient water management and water conservation + Value addition to food produce 	<ul style="list-style-type: none"> Labour-saving technologies (e.g. Rice and vegetables transplanter) Land leveler, Tool and Machine use for Conservation Agriculture Processing center (off farm jobs)

Contribution of SAMS to CSA (cont...)

CSA pillars	SAMS Contribution	Examples of Agricultural Mechanization
<p>3. Mitigation of GHGs</p>	<p>+ Reduce GHGs</p> <p>By reducing post-harvest losses (that together with food waste account for (4.4 Gt CO₂e)</p> <p>By providing alternative use of crop residues instead of burning (CH₄ and N₂O)</p> <p>By Alternate Wetting and Drying (reduction methane rice fields)</p> <p>- Emit GHGs by using engine and machinery power by fossil fuel</p>	<p>Rice straw baler (for animal feeding or mushroom cultivation)</p> <p>Tool and Machine use for Conservation Agriculture</p> <p>Land leveler</p> <p>4-Wheel tractor, 2-wheel tractor. Alternative – Alternative: Renewable source of energy</p>

Part 4. FAO's Role and Resources



FAO's Role in support of the Changing Climate

- Support National governments in the implementation of NDCs actions and adoption efficient and sustainable agricultural and food systems
- Support National governments in gaining access to International Financing Schemes (FAO main programmes Climate Change and One Health)
- Provide technical assistance for the implementation of projects and programmes in the field related to Climate Change, agriculture and food security
- Support in the formulation of multi-sectoral pro-poor policies, programmes and strategies addressing climate change, agriculture and food security
- Support National governments in reducing the gender gap
- Generate sound data, resources on climate-smart practices and technologies and tools to evaluate GHGs



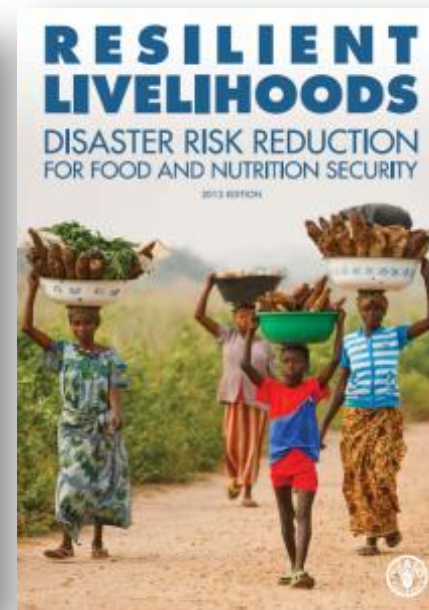
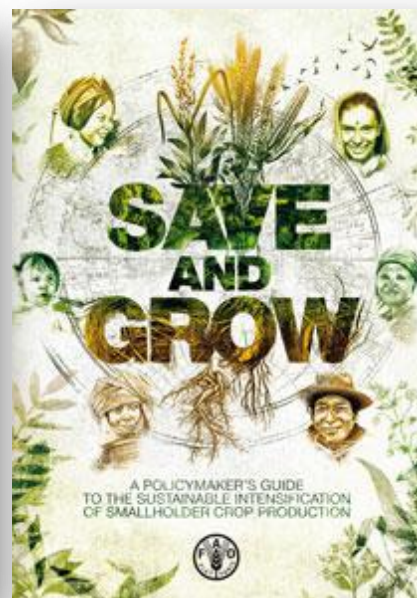
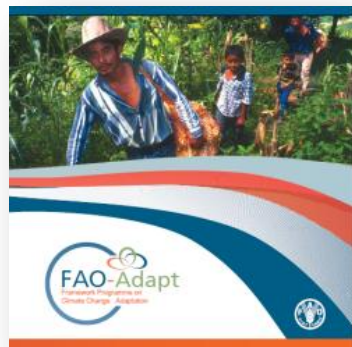
FAO's Role in support of the Changing Climate

To evaluate GHGs from Agriculture

- FAOSTAT faostat.fao.org/
- GLEAM <http://www.fao.org/gleam/en/>
- EX-ACT <http://www.fao.org/tc/exact/carbon-balance-tool-ex-act/en/>
- COLLECT-EARTH <http://www.fao.org/forestry/nfms-for-redd/85262/en/>

FAO's Resources

Publications (<http://www.fao.org/climate-change/resources/publications/en/>)



Global CA-CoP CONSERVATION AGRICULTURE COMMUNITY OF PRACTICE
for sustainable production intensification and land management
CA-Cop-L@LISTSERV.FAO.ORG



**Food and Agriculture Organization
of the United Nations**

Thank you.

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CSAM

