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

Presentation by

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Content

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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
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.

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: http://unfccc.int/paris_agreement/items/9485.php (As at 18 Nov 2016)
Source: FAO. 2016. The State of Food and Agriculture: Climate Change Agriculture and Food Security
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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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

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

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<tr>
<td>2. Adaptation to Climate Change</td>
<td>+ Allow perform planting/harvest in a timely manner and cope with erratic rainy pattern</td>
<td>Labour-saving technologies (e.g. Rice and vegetables transplanter)</td>
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<td>+ Efficient water management and water conservation</td>
<td>Land leveler, Tool and Machine use for Conservation Agriculture</td>
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<tr>
<td></td>
<td>+ Value addition to food produce</td>
<td>Processing center (off farm jobs)</td>
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<td>3. Mitigation of GHGs</td>
<td>+ Reduce GHGs</td>
<td>Rice straw baler (for animal feeding or mushroom cultivation)</td>
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<td>By reducing post-harvest losses (that together with food waste account for (4.4 Gt CO$_2$e))</td>
<td>Tool and Machine use for Conservation Agriculture</td>
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<td>By providing alternative use of crop residues instead of burning (CH$_4$ and N$_2$O)</td>
<td>Land leveler</td>
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<td>By Alternate Wetting and Drying (reduction methane rice fields)</td>
<td>4-Wheel tractor, 2-wheel tractor. Alternative – Alternative: Renewable source of energy</td>
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<td>- Emit GHGs by using engine and machinery power by fossil fuel</td>
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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/
FAO´s Resources


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

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