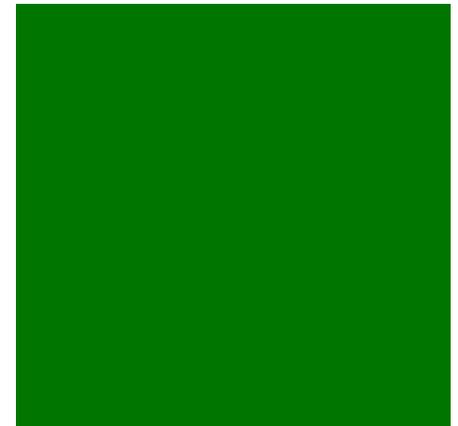
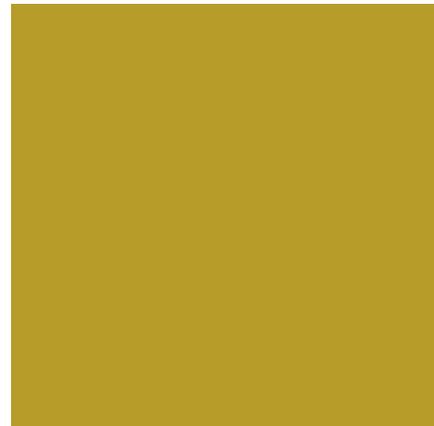
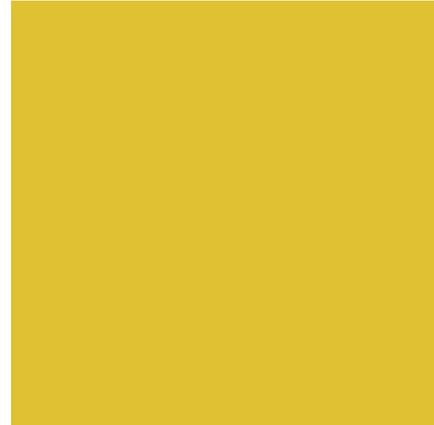


WEBINAR

# Climate Change and Smallholder Agriculture in Sub-Saharan Africa

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# Africa Agriculture Status Report 2014

## CLIMATE CHANGE AND SMALLHOLDER AGRICULTURE IN SUB SAHARAN AFRICA



# The Africa Agriculture Status Report

The series of the African Agriculture Status Report, seek to provide an in-depth and comprehensive analysis of emerging issues and challenges faced by African smallholder farmers, and allow scholars and professionals to contribute practical and evidence-based solutions.

It was inspired by the need to have an accessible and reliable resource depicting the status and trends of African agriculture.

Given the crucial role agriculture plays in African economic growth and development, it is critical to have such a resource—compiled with current and accurate information on key indicators—as a reference when designing policies and strategies that guide future growth and development of agriculture in Africa.

The publication also offers a platform to share relevant and current knowledge and experiences that can contribute to improving Africa's food security.

It is also an opportunity to promote an open access to Africa's agriculture data. It provides a common platform where national agricultural surveys/censuses, data from national and international research institutions, data from bilateral and multilateral funded projects and programs can be readily accessible to all the stakeholders interested in agriculture and food security in Africa

# 2014 AASR – Climate Change and Smallholder Productivity

The 2014 AASR documents the effects of climate change on smallholders Agriculture Productivity in Africa;

- The ongoing adaptation by farmers and livestock keepers, constraints to adoption of climate-smart technologies, and highlights areas where investments in African agriculture have the potential to be most productive.
- It seeks to help African agricultural policy makers and stakeholders identify climate change issues and challenges, as well as appropriate climate-smart agriculture practices and policies that can help smallholder farmers sustain and improve their livelihoods –
  - that can increase productivity and incomes,
  - enhance adaptation and build resilience to climate change,
  - and reduce GHG emissions by Africa's agricultural producers and processors.

# The Report Outline



There are 6 chapters in the report focusing on climate variability and change, its impacts on agriculture, the need for adaptation to improve resilience, mitigation issues, and the factors influencing the adoption of climate-

Chapter 1 of the Report discusses the current status and importance of smallholder farmers to sub-Saharan agricultural productivity, and the significant impact and implications of climate change for these smallholders. It examines the importance and current variability and risk for smallholder farmers and the need to support them in coping with such risk.

Chapter 2 deals with land and water management practices and their effects on agricultural productivity, profitability and resilience to climate change. Agricultural practices that enhance adaptation to climate change are highlighted,

Chapter 3 examines climate-smart agriculture in more detail vis-à-vis the triple win of improved productivity, enhanced resilience, and improved GHG mitigation. This chapter stresses the need to recognize that many existing indigenous practices are inherently climate-smart, and support them beyond the dominant top-down technology transfer model that excludes farmers from the development, dissemination, and adoption of improved practices and technologies.

Chapter 4 presents a set of policy-related recommendations aimed at strengthening resilience to climate change. These relate to seed systems, the uptake of environmentally friendly soil management options, and improved access to agricultural input and output markets. Also of crucial importance is genuine reform and implementation of Africa's land tenure systems, which currently tend to discourage investment by farmers in a host of climate-smart agricultural practices.

In Chapter 5, the role of knowledge management systems and education is examined, along with how they contribute to building smallholder resilience to climate change. The chapter argues for the integration of indigenous and scientific knowledge systems to support sustainable agriculture production. It also stresses the need for co-learning and co-management of knowledge management systems through education and training.

Chapter 6 concludes with a concise summary of solution-oriented recommendations for

# Who Are the SSA Small Holder Farmers

In SSA, they are the primary producers of agriculture output

They account for about 80% of all the farms in sub-Saharan Africa.

They directly employ about 175 million people, and about 70% of all smallholders are women.

The smallholder farmers in SSA cultivate small parcels of land which are degraded and have no access to reliable irrigation.

They do not have access to sufficient labor and are sometimes classified as “resource poor”.

Most of them do not have access to affordable inputs and financial credit and do not participate in commercial markets for their produce.

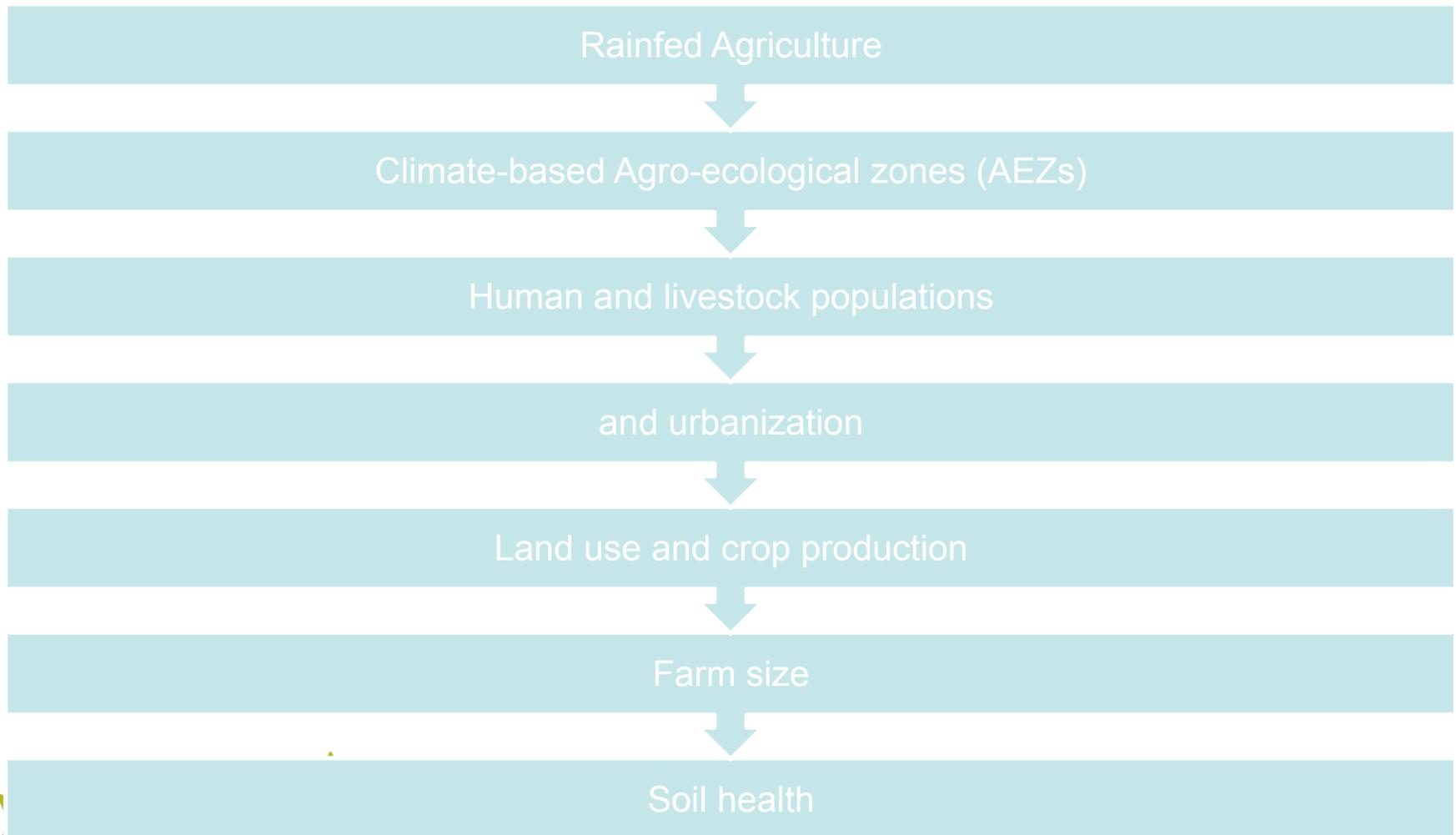
Most of them also practice low-input/low yield subsistence agriculture.

Their average yields fall well short of global average yields, almost irrespective of the crop being grown.

Labor productivity and incomes from agriculture are also very low relative to global averages – in the range of \$2.00 per day or less

and they typically spend about 60% of their incomes on food

# Characteristics of Smallholder Agriculture in sub-Saharan Africa



## Climate variability and climate change on smallholder agriculture in sub-Saharan Africa

It is now beyond reasonable doubt that the emissions of greenhouse gases (GHGs) resulting from many sectors of human activity are causing the world to warm at an unprecedented rate. This in turn will surely have long-term effects not only on rainfall amounts and distribution patterns, but also on all components of the climate system. Such changes in the climate system are already happening and have been reported at the global level in the recently released 5th Assessment Report (AR5) of the IPCC (Stocker *et al.*, 2013).

# Climate variability and climate change on smallholder agriculture in sub-Saharan Africa



**GHG emissions**



**Temperature changes**



**Rainfall changes**



**Sea level rise**



**Suitability of staple food crops**



# Addressing the Challenges of Climate variability and changes on Smallholder Agriculture in SSA

## Climate-Smart Agriculture in SSA: -

- FAO defines CSA as a three-pillar approach to agriculture that:
  - 1) sustainably and efficiently increases productivity and incomes (adaptation);
  - 2) reduces or removes greenhouse gases (mitigation); and
  - 3) Enhances achievement of national food security and development goals (development)

# Addressing the Challenges of Climate variability and changes on Smallholder Agriculture in SSA

The definition of CSA has been expanded to include the idea of building resilience to climate change. In the recently published sourcebook (FAO, 2013), the three pillars of the CSA concept are presented as:

Sustainably increasing agricultural productivity and incomes;

Adapting and building resilience to climate change; and

Reducing and/or removing greenhouse gases emissions, where possible.

# Climate-Smart Agricultural Initiatives in Africa

- Heat stress/heat wave management (avoidance/ tolerance);
- Improved natural resource management (land, water, biodiversity, terrain);
- Integrated soil fertility management with fertilizer tree technologies;
- New ways of pest/parasite/vector and disease management;
- Lifestyle management and attitude change (i.e., changing consumer tastes and preferences
- Technology development and transfer (adaptable technologies);
- Response farming;
- Conservation tillage;
- Incorporation of trees into cropping systems through EverGreen Agriculture;
- Reducing CO<sub>2</sub> emissions from the soil;
- Soil and water conservation;
- Reducing fossil fuel usage in field operations;
- Measures that capture and efficiently use water, especially in current rainfed areas and areas where scaled-up irrigation is environmentally unsustainable or economically not feasible;
- Techniques for drainage and watershed management, especially in areas with increasing precipitation;
- Use of organic matter to protect field surfaces and to preserve soil moisture;
- Diversification of crops, types of production, and of agricultural activities; and
- Agroforestry practice

# The Objectives of Africa CSA

For the most part, the objectives of these interventions have been to:

- intensify the resilience of production systems and rural livelihoods (adaptation);
- sustainably reinforce production systems to attain productivity growth, thereby supporting the realization of national food security and development goals; and
- lessen agriculture's GHG emissions (including through increased production efficiency) and intensify carbon sequestration (mitigation).

# Barriers to adoption of CSA



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Fear that expected investment costs could exceed the expected benefits;

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Uncertainty about future manifestations of climate change makes it difficult to know what to do or when to do it;

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Uncertainty regarding irreversible consequences of some actions;

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Incentives may be distorted in ways that discourage adoption or encourage risky choices;

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Actions/inactions of other stakeholders can be an obstacle to adoption;

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Generally weak local institutions for providing community services;

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Treatment of a resource as an open access 'commons' has contributed to its degradation and created disincentives for investing in protection of the resource; and

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Lack of knowledge and information regarding options for managing climate-related risks.

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Other Social Barriers



# Enabling Adaptation to Climate Variability and Change Across Sub-Saharan Africa

Improving Soil Health by Scaling Up Integrated Soil Fertility Management Technologies

Effective Seed Systems to Combat Climate Change

Climate Change and Food Markets

Climate Change and Land Tenure Systems

Policy and Governance – Agricultural Policy Frameworks and Processes for Climate Change Adaptation



# Enabling Adaptation to Climate Variability and Change Across Sub-Saharan Africa

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Policy and Governance – Agricultural Policy Frameworks and Processes for Climate Change Adaptation

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# Priority Adaptation Actions in the Agriculture and Food Sectors

1. Urgency – since climate change is affecting food and farming now, we need to speed up the pace of adaptation to achieve mitigation co-benefits wherever possible.

2. Investment – we need to increase the proportion of climate finance going into adaptation, and to secure a flow of resources to locations and populations where adaptation needs are greatest.

3. Private finance – we need creative finance and insurance products to improve both risk management and access to capital for adaptation actions, especially among smallholder producers.

4. Value chains – we need to pay more attention to how food value chains are managed to deal with climate risks, secure affordable and nutritious food supplies for poor consumers, and improve links between small-scale producers and processors to stable markets, whether local or distant.

5. Knowledge – since climate change is not static, we will continually need to generate and share new knowledge, extending the information revolution into fields, forests and fisheries in remote localities.

6. Breeding – we need to invest now in farmer- and science-led breeding, as it is demonstrably one of the most effective climate change adaptation measures, and requires 8-20 year lead times for the release of new varieties of crops and livestock.

7. Nutrition – we need to focus development interventions that ensure not just maintained calorie supplies under climate change, but also enable access to diverse food baskets as well as to fortified or biofortified food staples. This is especially important in more remote rural areas where changes in dietary preferences, and hence food diversity, are likely to be slower.

# Conclusion and Way Forward

Urgent, solution-oriented actions proposed by this report are summarized here under five major domains:

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Promote climate-smart, context-driven agro-ecological approaches and solutions

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Strengthen national and local institutions to implement climate-smart agriculture

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Build technical capacity and improve knowledge management systems

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Raise the level of national investments in agriculture

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Create innovative financing mechanisms



# Thank You





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Q&A

