Climate-smart agricultural development

Climate change is already harming agriculture and food production in sub-Saharan Africa. Without action to create resilient and sustainable food systems, crop failures and post-harvest losses will only increase.

To make agriculture sustainable, resilient and productive we need policies and practices to be based on robust evidence. Working with local organisations and governments in Malawi, South Africa, Tanzania and Zambia, the GCRF-AFRICAP programme has created that evidence base, to underpin country-specific policies in agriculture and food production and to inform food system policy and practice across the region.

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CLIMATE SMART AGRICULTURAL DEVELOPMENT

Evidence

Climate model simulations show that the chance of record-breaking hot conditions in sub-Saharan Africa has increased and this trend will continue as the climate continues to warm. Although rainfall trends are less clear, climate models show a trend towards both severe droughts and more intense rainfall, and this will result in increased flood risk and soil erosion. Without sufficient adaptation to these kinds of climatic changes, crop failure rates are likely to increase and average yields to decrease.

Our analysis shows:

Maize crop failure rates could increase by more than 50% by 2050 under the most optimistic future climate scenarios (RCP 2.6) and more than double under the worse-case scenarios (RCP 8.5). Average maize yields could fall by as much as a quarter under some scenarios.

Extreme temperatures and precipitation will increase the damage and disruption caused by pests and diseases.

Drought and high temperatures will increase the cyanide toxicity of cassava, making it harder to process into safe, edible forms.

Although the impacts of climatic changes will be felt differently by different communities, female smallholders – who make up the majority of agricultural producers – will be disproportionately affected.

Policy and Practice

Achieving food systems that are resilient and sustainable under a range of plausible futures requires holistic and integrated policymaking and implementation. The focus should be on food systems that are 'climate-smart': able to adapt to climate change, reduce emissions and increase production; and which support nutrition and livelihood security.

Our work in Malawi, South Africa, Tanzania and Zambia shows:

Investing in climate services, supporting climate-smart agriculture (CSA) practices, improving water management, and aligning and coordinating nutrition, agricultural, and economic development objectives are key. If policy processes are not integrated, incoherence could exacerbate land use conflicts, environmental degradation, and climate change.

Supporting long-term capacity building interventions at sub-national levels, including targeted support for the most vulnerable groups, can improve adoption of CSA practices and technologies.

Linking seed systems to long-term climate information will make them more resilient. Identifying future conditions can inform trade-offs in crop breeding, such as between shortening growing seasons and increasing temperatures.

Demographic and environmental pressures mean that achieving nutrition security in the coming decades requires both diversifying crop production and increasing imports of nutrient-dense foods, to diversify diets so that all nutrient needs are met.

Capacity

A transition towards climate-smart agriculture can be supported by strengthening tools, networks and capacities across a broad spectrum of stakeholders, to share knowledge and develop integrated solutions.

AFRICAP has:

- Developed tools such as iFEED (the integrated Future Estimator for Emissions and Diets), an analysis and engagement programme combining modelling of climate change, crop yields, food production and greenhouse gas emissions with analysis of international trade and nutrition. This process has served as a platform for bringing different decision makers together to integrate and discuss the implications of food system changes. An online resource provides numerical and descriptive summaries of results to make the insights accessible to a wide range of stakeholders.
- Supported the establishment of the Muheza Climate Smart Agriculture Alliance in Tanzania, which brings together a wide variety of stakeholders at local and district levels to autonomously share learning and promote climate smart practices in the Muheza District.
- Worked with policy advocacy organisations in Malawi, South Africa, Tanzania and Zambia to undertake Partner Institutional Viability Assessments (PIVA) and bespoke training to strengthen their capacities for translating evidence into policy.

Get in touch

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