

The adoption of climate-smart agriculture is often a product of local context, with institutional dimensions playing significant roles in how technology and management practices are taken up.

WHAT WAS DONE, AND WHAT WAS NOVEL?

Climate-smart agriculture is increasingly seen as a promising approach to feed the growing world population under climate change.

We conducted a systematic review of 137 peer-reviewed climate-smart agriculture publications, to evaluate whether promising farm-level technological management practices were able to achieve the intended benefits of climate-smart agriculture, and to inform discourse on food, agriculture, and climate change.

We expanded on previous syntheses of climate-smart agriculture practices, and argued that institutional dimensions are paramount as they embody political agency, historical contexts, and locally-specific dynamics of power that play out in the adoption and the scaling of climate-smart agriculture.

We explored specifically whether and how institutional perspectives are reflected in the existing climate-smart agriculture literature.

KEY FINDINGS

Our study highlights that interest in institutional aspects of climate-smart agriculture has increased, particularly around knowledge infrastructure, market structure, and hard institutional (policy) aspects. However, less attention has been given to understanding whether investments in physical infrastructure, engagement of the private sector in agricultural development, or how historical, political, and social contexts may influence the uptake of climate-smart agriculture options.

We also found that while the climate-smart agriculture concept encompasses three pillars (productivity, adaptation, and mitigation), the literature hardly addresses these pillars in an integrated way. The development status of study sites also appears to influence which pillars are promoted. For instance, in developed countries, more research efforts were underway to support the reduction of greenhouse gas emissions. On the other hand, developing countries focused more on increasing crop productivity and improving resilience to climate change. These differences highlight the context-specific nature of climate-smart agriculture.

KEY IMPLICATIONS FOR POLICY, PRACTICE AND RESEARCH

With a growing world population, the response to the increasing demand for food is becoming more and more of a global concern. According to established scenarios, intensifying croplands with available climate-smart agriculture technologies is likely to be a more promising option for meeting the demand for food, than clearing a greater area of land to expand production areas.

However, technology-oriented interventions alone may not be enough to achieve sustainable agricultural transformation, especially in sub-Saharan Africa. This is because of the complexity of the institutional context within which the actors of the agricultural system operate. Farming systems also comprise a range of institutional aspects, including policy, market, and political components.



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