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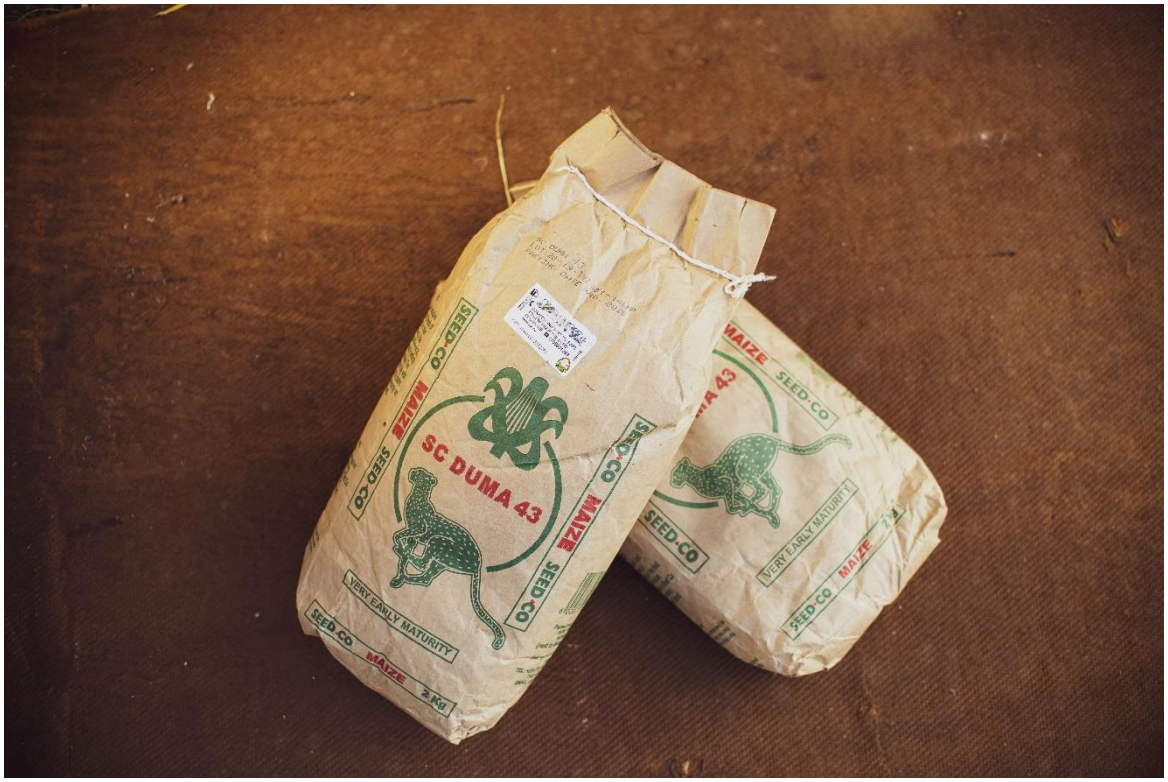

Enabling Climate Smart Agriculture across East Africa

Policy Brief

Open Capital

Key Messages

East Africa's agriculture sector is increasingly vulnerable to the effects of climate change, challenging farmer livelihoods and regional food security. Climate Smart Agriculture's (CSA) integrated approach will be critical to address this challenge by promoting increased agricultural productivity, resilience, and climate change mitigation.[1] CSA encompasses a wide array of practices, technologies, and approaches, necessitating the participation of a diverse range of stakeholders spanning the public, private and development spheres. Strengthening synergies between public agencies, development partners and private enterprises to address the challenge of agricultural productivity and food security in the region calls for the establishment of an enabling regulatory environment. This Policy Brief provides a general overview of the CSA landscape in East Africa, focusing on the enabling environment, to define a set of policy recommendations.

[1] FAO, "Climate-Smart" Agriculture - Policies, Practices and Financing for Food Security, Adaptation and Mitigation, 2010, link

Widespread recognition of CSA's relevance has catalyzed (to different extents) the development of public policy and regulatory frameworks to promote wider uptake across East Africa. While countries such as Kenya, Uganda and Tanzania have all taken initial steps to prioritize CSA within national agendas and recognizing their progress to date, much remains to be done across the region to ensure the successful implementation and monitoring of such initiatives, as well as to develop new, inclusive policies which contribute to a more enabling environment for CSA uptake. Accordingly, this Policy Brief suggests the following high-level policy recommendations to scale CSA across the region:

- Enhance input subsidy programs through new policies that increase their access and effectiveness, focusing on CSA solutions;
- Consider targeted tax incentives and direct product subsidies to promote the uptake of selected, high-potential CSA technologies;
- Leverage Payment for Ecosystem Services (PES) policies to drive CSA investment;
- Promote crop diversification through enabling policies which link farmers' produce to markets;
- Leverage policy interventions to strengthen Land Tenure and Property Rights (LTPR);
- Ensure streamlining, consistency, and transparency in the enforcement of CSA-related policies to reduce uncertainty;
- Emphasize 'economic viability' within the design of public CSA initiatives to promote their medium- to long-term sustainability, where possible; and
- Promote close coordination between the national and sub-national levels to ensure countries' CSA strategies are adequately implemented.

Background – Why Climate Smart Agriculture?

Agriculture, which employs ~63% of East Africa's labor force, is facing widespread challenges such as low productivity and high vulnerability to external shocks, exacerbated by climate change. Failing to adapt to rapidly changing climatic conditions could lead to material effects on East Africa's agricultural systems and farmer livelihoods. Moreover, as East Africa's population continues to rapidly grow and the effects of climate change compound, food security in the region will remain at high risk and prone to shocks, as evidenced by the current COVID-19 pandemic. Climate change could have severe effects on food insecurity - the World Bank (WB) estimates that Africa will surpass Asia as the world's most food insecure region by 2080 due to the increasing frequency of "extreme weather events", doubling the proportion of 'undernourished' people .[2]

Climate Smart Agriculture (CSA) is anticipated to play a key role in sustainably improving the productivity and boosting the resilience of the sector. To accomplish this, CSA pursues three objectives of (1) increased productivity, (2) enhanced resilience, and (3) climate change mitigation. CSA encompasses a wide array of practices, technologies, and support services prevalent to different extents across East Africa. CSA applications can be mapped into four broad categories (1) inputs (such as improved seeds), (2) approaches (diverse practices, both traditional and more recent such as Dynamic Agroforestry), (3) technologies (such as those leveraging solar equipment for irrigation, processing, and cooling), and (4) support services (including index-based insurance and information services), as illustrated in the figure below *"East African CSA Applications Taxonomy"*.

[2] FAO, Climate change in Africa: The threat to agriculture, link

East African CSA Applications Taxonomy

CSA applications exist at each stage of the agricultural value chain across both crops and livestock

CSA applications can be categorized in four key groups *(non-exhaustive)*

Inputs	Approaches	Technologies and value chain solutions	Support services
• Improved seed varieties • Manure application and composting • Mulching • Improved breeds of livestock • Organic agriculture	• Cropping systems • Regenerative agriculture • Agroforestry • Improved pasture & grazing management • Herd management • Terracing and contour bunds • On-farm crop storage • Vermiculture • Grazing management • Dynamic Agroforestry (DAF) • Hydroponics • Integrated aquaculture systems • Water harvesting techniques • Crop residue management	• Solar powered irrigation systems • On-farm solar cool and cold chain solutions • Solar agri-processing • On-farm solar processors • Solar water pumps • Water-efficient irrigation • Biogas production • Solar cool and cold chain solutions • Greenhouse farming • Solar driers	• Index-based insurance • Climate information services • Smart veterinary services • Sustainable crop certification

Source: Open Capital Advisors' research

These applications target a wide array of end users from smallholder farmers to large commercial agribusinesses, with many focused in the inputs and production stages of the agricultural value chain, but with others also covering food transportation, aggregation, processing, distribution and retail. To date, the uptake of CSA practices in East Africa has been supported by a diverse array of stakeholders, often working in coordination to build on each other's strengths. These include research centers and universities, government agencies, development partners (e.g. bilateral and multilateral agencies), Non-Governmental Organizations (NGOs), private businesses and investors, among others.

Current State of CSA-related Policies in East Africa

Wide-spread recognition of CSA's critical role has catalyzed (to different extents) development of public policy and regulatory frameworks to promote wider uptake. East African policy makers acknowledge there is a need for harmonizing standards, improving transparency, and enhancing coordination among stakeholders, to support adoption of CSA. Country-specific trends include:

- **Kenya:** the regulatory environment has partially adapted to prioritize CSA, evidenced by policies such as the *Kenya Climate Smart Agriculture Strategy (KCSAS) (2017-2026)* aimed at catalyzing widespread adoption of CSA by strengthening the existing climate and agriculture regulatory framework, and the *National Adaptation Plan (2015-2030)* set to define a clear vision on climate adaptation, including targeted actions for key economic sectors.[3,4,5] However, policy gaps and the need for greater enforcement prevail in areas such as harmonizing customs and tariff procedures to address the

[3] Kenya Climate Smart Agriculture Strategy 2017-2026, link
[4] Ministry of Agriculture, Livestock and Fisheries, Kenya Climate Smart Agriculture Strategy, 2017-2026, link
[5] Power Agriculture, Navigating policy and regulation in the clean energy nexus, 2020, link

difficulties of cross-border trading, highlighted by players in the agricultural inputs and solar technology sectors, among others.

- **Uganda:** the national government has demonstrated commitment to climate change mitigation and environmental protection, through the *Uganda Climate Smart-Agriculture Country Program (2015-2025)*, and partnerships such as the *Climate Change Adaptation in Agriculture in Uganda project (2021-2022),* which aims to promote implementation of CSA practices, restore irrigation systems, and reduce GHG emissions.[6] Uganda's government also initiated efforts to pass legislation to promote renewable energy technologies such as cooling, processing and irrigation equipment by establishing a fiscal policy framework, increasing public awareness, and promoting research and development (R&D). There are however opportunities to further strengthen tariffs setting and develop new policies that improve transparency of CSA benefits to promote participation and inclusion, among others.

- **Tanzania:** the national government has made efforts to integrate climate change adaptation into the national agriculture agenda. For example, the *National Climate Smart Agriculture Programme (2015-2025)*, aims to make the agricultural sector 'climate smart' by 2030 by describing the practices and technologies best suited for the different agricultural zones in the country.[7] Targeted policy developments include the *Solar Water Pumping Policy Dialogue Project*, among others.[8] Adequate implementation and scaling of such efforts will require closer coordination between policy makers and implementing agencies.[9] Moreover, platforms such as the *Tanzania Climate Smart Agriculture Alliance (TCSAA)* will play a critical role in guiding the formulation of targeted policy interventions.[10]

Policy Recommendations

This brief focuses on defining a set of broad **policy recommendations** to enhance the uptake and scaling of CSA applications across East Africa, as follows:

- **Enhance input subsidy programs through new policies that increase their reach and effectiveness, focusing on CSA solutions**. Inputs such as improved seed varieties play an integral role in delivering CSA's adaptation agenda by improving productivity even within the context of East Africa's increasingly more frequent extreme weather events. Historically input subsidy programs have had only limited impact on vulnerable smallholder farmers, being dismantled as input markets liberalized in the region. However, in recent years subsidy programs have re-emerged, explicitly targeting smallholder farmers. For example, Kenya recently launched an electronic voucher subsidy program which leverages agro-dealer networks as a more efficient distribution mechanism. Governments should particularly target improved seeds and other agricultural inputs with a clear CSA linkage, and guard against counter-productive practices such as the over-application of harmful

[6] Ministry of Foreign Affairs Denmark (MFA), Climate Change Adaptation in Agriculture in Uganda, 2020, link
[7] Tanzania Climate Smart Agriculture Alliance, National Climate Smart Agriculture Programme, (2015-2025), link
[8] Ministerie van Landbouw, Natuur en Voedselkwaliteit, Increasing the use of solar powered pumps for irrigation in Tanzania, link
[9] CGIAR -Climate Smart Agriculture in Tanzania; link
[10] Tanzania Climate Smart Agriculture Alliance; link

fertilizers due to subsidies.[11] Moreover, policy makers should be wary of potential market distortions caused by subsidies, and define clear exit strategies towards sustainable models.[12,13]

- **Consider targeted fiscal incentives and direct product subsidies to promote the uptake of selected CSA technologies.** Nascent CSA technology providers, for example in the solar equipment space, face market challenges such as high costs of production, which directly affect their serviceable market. Cost-based fiscal incentives such as VAT and import duty exemptions can catalyze investment and enable technology providers to keep growing. For example, in its *2021 Finance Bill*, the Kenyan government proposed the reinstatement of tax exemptions on solar equipment to support uptake.[14,15] Similarly, time-bound supply-side subsidy schemes that gradually phase out could encourage uptake of these technologies, while also avoiding significant market distortions. As an example, the Kenya Off-grid Solar Energy Access Project (KOSAP) established three Results-Based Financing (RBF) and debt facilities designed to support private companies, while minimizing market price distortions.[16] A coordinated approach that harmonizes these incentives across sectors will be key for implementation.

- **Leverage Payment for Ecosystems Services (PES) policies to drive CSA investment.** The formulation of policy frameworks which compensate stakeholders for positive externalities such as carbon sequestration and watershed protection can be instrumental in mitigating against the shortfall in public financing for natural resource management, and thus drive adoption of CSA practices. For example, in Kenya and Tanzania there have been calls to mainstream PES into forestry planning and conservation while in Uganda PES could significantly improve sustainable land management practices. These calls are especially relevant in the East African context where Uganda for example lost half of its forest cover between 1990 and 2015, while in Tanzania forest cover declined by 19% between 1990 and 2010 - one of the highest net losses of forest area globally.[18,19] There is an opportunity for East African governments to formally acknowledge PES through appropriate legal and incentive structures. As an example, this could involve a framework in which providers of ecosystem services (e.g. owners of tree assets) are compensated for their sustainable practices in forest conservation, with clearly defined agreements and payments terms to ensure long-term sustainability.[20,21]

- **Promote crop diversification through enabling policies which educate farmers and link farmers' produce to local and regional markets.** Historically, public sector support extended to staple and select cash crops has in part contributed to farmers de-prioritizing adoption of secondary crops, resulting in prevalent mono-cropping.[22,23] Recognizing the importance of market linkages to address the risk perceptions of adopting secondary crops, East African governments are now increasingly supporting crop diversification by investing in extension services, sensitizing farmers on

[11] Feed the Future, Policy brief increasing CSA investment through fiscal incentives, link
[12] International Food Policy Research Institute, 'Can better targeting improve the effectiveness of Ghana's Fertilizer Subsidies Program', 2017, link
[13] Africa Clean Energy, Demand-side subsidies in Off-grid solar, 2020, link
[14] GOGLA, Impact of VAT and import duty on the Stand-Alone Solar sector in Kenya, 2021, link
[15] Business Daily, VAT exemptions on solar key to universal electrification by 2022, 2021, link
[16] Powering Agriculture: Navigating policy and regulation in the renewable energy agriculture nexus, 2020, link
[17] ClimateLinks, "Experiences and lessons learned in payments for ecosystem services (PES) in East Africa", 2018, link

[18] The Current State of East Africa's Forest, link
[19] World Bank blogs, "Please use -but don't abuse- Tanzania's forests", 2013, link
[20] AFDB, A promising tool for natural resources management in Africa, 2015, link
[21] Department for Environment Food and Rural Affairs(UK); Payments for Ecosystem Services- Best practice link
[22] FAO, Is crop diversification a panacea for climate resilience in Africa, 2017, link
[23] Ministry of Natural Resources Energy and mining, Malawi National adaptation Programmes of Action, 2015, link

their economic benefits, and improving infrastructure and linkages (such as roads and telecommunications) to input and output markets. Although not yet fully incorporated into national policies, African governments are now starting to recognize the integral role of diversification in achieving resilience outcomes as seen in Malawi and Zambia.[25] Formulation is currently underway of policies aimed at improving access to markets for farmers, which include predictable terms of cross-border agricultural trade, among others.[26]

- **Develop policy interventions to strengthen land tenure and property rights (LTPR).** Farmers' ability to realize the economic benefits of CSA adoption are closely linked to their land tenure rights and the predictability with which they can be enforced. Where CSA investments are long-term in nature (e.g. agroforestry), farmers are more likely to participate if they feel secure in their land ownership and transfer rights. It will be critical to develop policies which strengthen land tenure rights, for example through cost-effective and participatory land registration processes which allow for greater flexibility in the transfer of land rights. The Land Tenure Regularization (LTR) program in Rwanda, for example, has significantly improved processing of land titles, by formalizing land registration and transfer processes, and providing equal rights to men and women. [27,29] Where customary land laws and formal national laws overlap such as in pastoral communities, flexible policies accommodating the two parties need to be developed. For example, USAID's Land Administration to Nature Development (LAND) project in Ethiopia has strengthened land rights of pastoral communities.[30]
- **Ensure streamlining, consistency, and transparency in the enforcement of CSA-related policies to reduce uncertainty.** CSA providers across East Africa grapple with inconsistent application and interpretation of regulation, especially on items such as customs and tariffs at the border, which discourage private sector participation and increase the perceived riskiness of the sector. Governments are increasingly aware of the need for policy coherence and will need to streamline the functions of the different regulatory agencies to address the spiraling costs of doing business attributable to multiple regulatory layers.[32,33] For example, Kenya developed the "One Window" importation framework, which includes a streamlined system of codes for solar water pumps and refrigerators.[34]
- **Emphasize 'economic viability' within the design of public CSA initiatives to ensure their medium- to long-term sustainability, where possible.** East African governments have recently developed and launched multiple CSA initiatives and programs, which detail resource mobilization procedures ranging from public funding, donor funding, direct private investments and Public Private Partnerships (PPPs).[35] For example, the implementing the *Kenya Climate Smart Agriculture Strategy (2017-2026)* is expected to require approximately USD 5 billion in public funding allocated to

[24] FAO, "Is crop diversification a panacea for climate resilience in Africa?", link
[25] SpringerLink, "Diversification as Part of a CSA Strategy: The Cases of Zambia and Malawi", 2017, link
[26] FAO, Cropping system diversification in Eastern and Southern Africa; Identifying policy options to enhance productivity and build resilience, 2018, link
[27] USAID, Land tenure & Climate Smart Agriculture, 2015, link
[28] DAI, "Rwanda—Support for Land Tenure Regularization", link
[29] BCG Foundation, Center for Public Impact, 2017, link
[30] USAID, Formally recognizing pastoral community land rights in Ethiopia, 2018, link

[31] Stakeholder consultations
[32] Policy coherence refers to the promotion of policy actions and creation of synergies achieve mutual goals and objectives, across government departments and agencies link
[33] Ibid
[34] Powering Agriculture; Navigating policy and regulation in the clean energy- Agriculture nexus, 2020, link
[35] Feed the Future, Policy Brief- Increasing CSA investments through fiscal incentives, link

relevant ministry departments and agencies, supplemented by the private sector and development partners.[36] To ensure the sustainability of such interventions, integration of economic viability as a cornerstone of program design and implementation is preferred, clearly defining pathways towards achieving sustainable outcomes and incorporating relevant metrics as part of the Monitoring and Evaluation (M&E) process, among others. For example, the West African Initiative for Climate Smart Agriculture (WIACSA) mandates that CSA projects will qualify for fiscal incentives based on their economic, social and environmental sustainability.[37]

- **Promote close coordination between the national and sub-national levels to ensure countries' CSA strategies are adequately executed.** East African governments have in recent years launched national CSA strategies - for example, Kenya formulated a strategy to be carried out between 2017 – 2026, Tanzania launched its *National Climate Smart Agriculture Guidelines* in 2017 and Uganda is implementing a national *Climate Smart Agriculture Program (2015-2025).*[38,39,40] Policy makers will need to ensure that sufficient public financing is available for the successful implementation of these national frameworks as well as the necessary capacity building initiatives.[41] Moreover, governments should leverage these frameworks to develop CSA-related medium-term policies and targets.[42] Policies to establish intra-governmental coordination and monitoring will be critical, and are already underway, for example in Kenya, with the Multi-Stakeholder Platform for Climate Smart Agriculture, which brings together national and subnational actors from public, private and development sectors.[43]

[36] Kenya Climate Smart Strategy 2017-2026, link
[37] The West African Initiative for Climate Smart Agriculture (WAICSA), link
[38] Feed the Future, Climate Smart Agriculture in Uganda, 2019, link
[39] UNDP, Kenya Climate Smart Agriculture Strategy (2017-2026), link
[40] CGIAR, Tanzania CSA Program, link
[41] Feed the Future, Climate Smart Agriculture in Uganda, 2019, link
[42] FAO, Climate Smart Agriculture Source Book, link
[43] Multi-stakeholder platform for CSA, Thematic working group 2: Monitoring and Evaluation of CSA, 2021, link

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