UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

EfD Policy Day October 15, 2025 — Concept Note

Building Resilient and Sustainable Agriculture for the Future

Introduction

The Environment for Development (EfD) Policy Day 2025 brings together policymakers, researchers, and practitioners to explore pathways for building resilient and sustainable agriculture. This concept note provides background to guide the group discussions, which will each run for 2 hours. The focus areas for discussion are Climate-Smart Agriculture and Environmental Stewardship, Carbon Markets and Green Finance, and Inclusive Agri-Economies and Livelihoods. Each theme will provide a platform to share evidence, policy experiences, and practical lessons, with the aim of developing actionable recommendations that ensure agricultural transformation is both climate-resilient and socially inclusive.

Theme 1: Climate-Smart Agriculture and Environmental Stewardship

Background Agriculture is both highly vulnerable to climate change and a major contributor to it, accounting for roughly a fifth to a quarter of global anthropogenic greenhouse gas emissions (Vermeulen et al., 2012). Climate-Smart Agriculture (CSA) has emerged as a holistic approach to address this dual challenge by **simultaneously increasing agricultural productivity, enhancing resilience, and reducing emissions** (FAO, 2025). CSA encompasses a range of practices: from agroforestry, conservation agriculture, and sustainable land management to improved irrigation and digital advisory services for farmers (Komarek et al., 2019; Van de Zande, 2024; Zecca, 2019), which together aim to achieve "triple-win" outcomes in productivity, adaptation, and mitigation (World Bank, 2024). However, the adoption of CSA practices across Africa remains suboptimal. Many promising initiatives are still **small-scale or pilot programs**, and widespread uptake is hindered by limited awareness, insufficient financing, and policy or capacity gaps (FAO, 2025). For example, in Tanzania numerous CSA projects (e.g. promoting reduced tillage, crop rotation, drought-tolerant seeds) have been introduced, yet their usage by farmers is not yet broad due to such constraints (Bongole et al., 2022).

This sub-theme highlights the need for a multifaceted strategy to build resilience and food security in agriculture while curbing its environmental footprint. The region's rapidly growing population – with some countries' populations projected to **double in the next three decades** – adds urgency to transforming agri-food systems to meet future food demand in a sustainable way (United Nations, 2024). Climate-smart and inclusive agricultural transformation is seen as critical for achieving the Paris Agreement targets and feeding the expanding population (Komarek et al., 2019). At the same time, agriculture remains the backbone of most Emerging Market and Developing Economies (EMDEs), providing livelihoods to the majority and generating positive spillovers (nutrition, jobs, rural development, export earnings). Yet climate change threatens these gains through more erratic rainfall, droughts, and extreme events that directly impact yields and livelihoods. Ensuring **environmental stewardship** in agriculture is therefore paramount – unsustainable farming is currently the leading driver of biodiversity loss and deforestation (Benton et al., 2021). Policies must balance immediate food and income needs with the long-

term health of soils, water, and ecosystems. Notably, although agriculture contributes heavily to climate change, it receives only a fraction of climate finance (about 4%), and even less reaches smallholders (Chiriac et al., 2023). Bridging this investment gap is essential to support the adoption of CSA innovations and sustainable land management (FAO, 2025; World Bank, 2024).

Against this backdrop, this sub-theme will foster evidence-based dialogue on climate-smart agriculture and environmental management strategies. It will explore forward-looking solutions to overcome adoption barriers, including building technical capacity, mobilising funding, and strengthening institutions, to enable equitable scaling up of CSA best practices. Specific examples, such as climate-smart villages and agroforestry initiatives in Kenya or the Tanzania Climate-Smart Agriculture Programme (2015–2025), illustrate both the potential and challenges of CSA implementation on the ground (FAO, 2025; World Bank, 2024). Research from Tanzania's Southern Highlands further demonstrates the benefits: combining CSA practices, for instance using drought-tolerant maize varieties together with irrigation, significantly improved household food security compared to implementing single practices (Bongole et al., 2022). These insights underscore that integrating multiple CSA approaches and scaling them up can enhance resilience and productivity for farming communities. Ultimately, this session aims to generate knowledge and policy guidance on how countries can mainstream climate-smart, environmentally sustainable agriculture, ensuring that the region's agricultural future is **resilient, low-carbon, and inclusive**.

Objective: To identify and prioritise actionable policy and financing solutions that enable East African countries to scale up climate-smart and environmentally sustainable agriculture at national and local levels, with a focus on overcoming adoption barriers, safeguarding ecosystems, and improving smallholder resilience and productivity.

Discussion Questions:

1. **Scaling up CSA:** How can countries effectively scale up the adoption of CSA; taking successful community-led initiatives or pilot projects and expanding them into national programmes and policies? What institutional support and innovations are needed to broaden uptake among smallholder farmers?
2. **Integrating Environmental Stewardship:** In the drive to increase agricultural production and food security, how can policies ensure that environmental stewardship (such as biodiversity conservation, sustainable land and water use) is not sidelined but rather incorporated as a core priority? What strategies would help farmers balance improved productivity with the restoration of soils, forests, and ecosystems on which long-term resilience depends?
3. **Financing and Incentives:** What financing mechanisms or incentive structures (public or private) can be put in place to encourage the transition to climate-smart practices? For instance, how could governments and development partners mobilise climate finance or green funds to support smallholders in adopting CSA technologies?

Theme 2: Carbon Markets, Green Finance, and Fiscal Incentives

Background: Carbon pricing and trading mechanisms have gained global momentum as essential tools for the transition to a low-carbon economy (World Bank, 2025). Carbon markets (whether through cap-and-trade systems or the scale of carbon offsets) present an opportunity to mobilise climate finance while cutting greenhouse gas emissions by incentivising investments in renewable energy, sustainable agriculture, and biodiversity conservation; thereby supporting green jobs and reducing energy poverty (World Bank, 2025).

Carbon projects are commonly classified both by **how** they reduce emissions, **avoidance** (preventing emissions at source) versus **removal** (drawing carbon from the atmosphere), and by the **nature** of the intervention, namely **nature-based** (protecting, restoring, or managing ecosystems) and **technology-based** (leveraging technologies to avoid or remove emissions) (ACMI, 2024; World Bank, 2025). Africa's extensive forests, wildlife reserves, and expanding renewable energy capacity make the continent an attractive player in carbon markets; yet the region still captures a small share of global value. Although the value of global carbon markets reached approximately USD 949 billion in 2023, African markets accounted for only about 17% of the voluntary carbon credit value by 2024 (Dev, 2024). Credit prices remain modest, averaging around USD 3 for renewable energy credits and up to USD 13 for avoided deforestation and forest management (REDD+), and the supply is heavily concentrated: **forestry and household energy projects** (e.g., improved cookstoves) comprise nearly 90% of Africa's carbon credit supply (ACMI, 2024).

Globally, more than 80 emissions trading systems and carbon taxes are in force, yet **African adoption of explicit carbon pricing remains limited** (World Bank, 2025). At the same time, Africa's potential for nature-based solutions is significant, but only about 2% has thus far been transformed into carbon credits (ACMI, 2024). Agriculture is notably under-represented: agri-food credits constitute roughly 1% of all voluntary carbon market projects and 11% of all VCM projects as of 2023 (Wollenberg et al., 2025). This gap is striking given that agricultural emissions exceed 12% of global emissions and are largely outside existing Emission Trading Schemes or carbon tax coverage (World Bank, 2025).

These patterns underscore two imperatives for Emerging Market and Developing Economies (EMDEs). First, deepen participation in high-integrity, high-co-benefit crediting, particularly nature-based and agricultural pathways, while addressing price, quality, and measurement challenges (ACMI, 2024; Wollenberg et al., 2025). Second, strengthen domestic policy frameworks to leverage carbon pricing and fiscal instruments, coupled with **transparent revenue recycling** for social protection and green investment (Keane et al., 2025; World Bank, 2025). Doing so can align carbon finance with national development priorities, protect vulnerable households, and expand climate-smart investments in agriculture and land use.

This sub-theme will examine how countries can expand their participation in carbon markets and access climate finance to support sustainable agriculture and land-use practices. It will explore opportunities for leveraging nature-based and agricultural crediting pathways, the design of equitable revenue recycling mechanisms, and governance measures that build trust and ensure local communities benefit directly.

Objective: To identify concrete policy and financing pathways for African countries to leverage carbon markets, carbon pricing, and complementary fiscal incentives to scale climate-smart agriculture and nature-based solutions, while ensuring transparent revenue use and equitable benefits for local communities.

Discussion Questions:

1. **Making carbon markets work for land use and agriculture:** Which specific project types (such as REDD+, soil carbon, or enteric methane reduction) are most feasible in Africa's agri-food systems, and what institutional and Monitoring, Reporting and Verification (MRV) requirements are needed to scale them with high integrity?
2. **Revenue recycling and equity:** If countries introduce or expand carbon pricing, what **revenue-recycling** designs would best support social protection and catalyse green investment in smallholder agriculture? For example, targeted transfers, input subsidies for low-emission practices, or concessional finance blended with the **Green Climate Fund** and similar facilities.
3. **Transparency and trust:** What governance measures (benefit-sharing agreements, local participation, and public disclosure) are necessary to ensure that carbon credit revenues from projects such as REDD+ and clean cooking demonstrably reach communities and build durable support for carbon market participation?

Theme 3: Inclusive Agri-Economies and Livelihoods

Background: Agriculture is the engine of economic growth in many African countries and the foundation of livelihoods for the majority of the population. Yet the sector's resilience and sustainability are undermined by **deep-rooted inequalities** in access to resources and opportunities. Smallholders (especially women and youth) face disproportionate barriers in accessing land, credit, modern technology, and markets (Meinzen-Dick et al., 2019). These structural inequalities limit farmers' ability to benefit from agricultural growth and to adopt climate-resilient practices, thereby constraining inclusive innovation and transformation (World Bank, 2021).

Demographics add both urgency and opportunity: with close to 60 percent of the region's population under 25, youth unemployment and underemployment remain pressing challenges (AGRA, 2023). Making agriculture a viable and attractive livelihood for youth requires targeted measures in agribusiness entrepreneurship, skills development, and the strategic use of technology and innovation (AGRA, 2023). Empowering women farmers and entrepreneurs is equally crucial; evidence shows that strengthening women's agency and access to productive resources raises agricultural productivity and returns on investment (Meinzen-Dick et al., 2019).

A genuinely inclusive agricultural transformation must therefore tackle barriers head-on. Closing gaps in access to resources calls for reforms to strengthen women's land rights, policies that facilitate youth access to land and finance, and gender-responsive services (World Bank, 2021). Encouraging steps are under way: in 2023, the Tanzania Agricultural Development Bank launched a dedicated agri-finance programme targeting women and young farmers (TADB, 2023). Financial inclusion can help overcome liquidity constraints that have historically limited women and youth in scaling production or ventures (TADB, 2023). Beyond finance, inclusion also depends on **knowledge, skills, and organisation**: youth agripreneurship programmes, mentorship, and cooperatives can unlock the energy and creativity of younger cohorts (AGRA, 2023).

Social protection is another vital pillar of inclusive and resilient agri-economies. Rural households are highly exposed to climate shocks, price volatility, and health crises, which can trigger poverty traps. Expanding safety nets – including weather-indexed insurance, social insurance schemes, and well-designed public works or cash-for-work programmes – can buffer shocks and enable longer-term investment in productivity and climate resilience (Devereux and Sabates-Wheeler, 2004). Community-led and indigenous approaches, such as savings groups or traditional drought-coping mechanisms, can complement formal instruments and should be recognised and supported (Devereux and Sabates-Wheeler, 2004).

Finally, building **inclusive value chains and market linkages** is essential for improving livelihoods. The African Continental Free Trade Area (AfCFTA) is expected to boost intra-African agricultural trade and open broader market opportunities for farmers and agro-enterprises, provided smallholders and agro-SMEs can meet standards, access information, and connect to logistics (UNECA, 2021). Targeted policies that promote fair farming, strengthen cooperatives, and leverage digital platforms can integrate small producers into higher-value markets on equitable terms so that gains from regional integration are shared rather than captured by a few large actors (UNECA, 2021). Inclusion also means voice: bringing women, youth, and grassroots organisations into policy dialogues typically yields more responsive and equitable outcomes (AGRA, 2023).

This sub-theme will delve into **practical and policy-oriented strategies to promote inclusivity** in African agriculture. The discussion will aim to generate actionable insights on how governments, civil society, researchers, and the private sector can collaborate to create an enabling environment for **inclusive agri-economies**.

Objective: To identify actionable policy and financing measures that build inclusive agri-economies by expanding equitable access to resources and markets for women and youth, strengthening social protection for shock resilience, and enabling participation in climate-smart, sustainable agricultural growth.

Discussion Questions:

1. **Closing structural gaps:** What concrete policy or institutional reforms are most urgent to secure women's and youth's equitable access to land, finance, and extension services, and how can governments ensure these reforms translate into measurable gains for smallholders within the next five years?
2. **Linking Inclusion and Resilience:** How can social protection mechanisms – such as weather-indexed insurance, cash transfers, or public works – be designed to simultaneously strengthen household resilience to shocks and enable long-term investment in climate-smart, sustainable agriculture?
3. **Inclusive Market Integration:** With AfCFTA opening new opportunities for regional trade, what policies and partnership models are needed to ensure smallholders and agro-SMEs are effectively integrated into value chains, and what safeguards are necessary to prevent benefits from accruing only to larger commercial actors?

About Environment for Development (EfD):
Environment for Development (EfD) is an international network focusing on the application of environmental economics in the Global South. The overall objective of EfD is to support poverty alleviation and sustainable development in the Global South through academic programs, research, and policy interaction. One of our initiatives is the Inclusive Green Economy in Practice program for civil servants in East Africa on economic policy instruments for achieving a just green transition. EfD is generously supported by the Swedish International Development Cooperation Agency (Sida). Learn more about our work at www.efdinitiative.org.

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