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KEY FINDINGS

- Frameworks like TAPE and SAFA are the most suitable starting points.
- High-tech frameworks are impractical.
- Critical practices are being ignored.
- Contextualization is not optional.

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Choosing the right tools: A framework for measuring agroecology in East Africa

Executive Summary

East Africa's food systems face a critical challenge: transitioning from conventional, often unsustainable practices toward resilient agroecological models that ensure food security, especially for smallholder farmers. However, measuring progress in this transition is complex. Existing agroecological indicator frameworks are ill-suited to the region's realities, failing to capture key practices like integrated aqua-agriculture (IAA) and relying on data that is difficult to obtain. We recommend that policymakers and development partners adopt and adapt a hybrid approach, combining the participatory strengths of the Tool for Agroecology Performance Evaluation (TAPE) with the comprehensive, multi-dimensional scope of

the Sustainability Assessment of Food and Agriculture Systems (SAFA) framework. To make these tools truly effective, we must simplify data collection, invest in local capacity, and co-develop indicators with the farming communities they are meant to serve. This will provide the evidence needed to craft effective policies, target investments, and empower farmers on the path to sustainability.

1. Policy Context

East Africa's agriculture is at a crossroads. The region's food security, predominantly sustained by millions of smallholder farmers, is increasingly threatened by climate change, land degradation, and biodiversity loss.

While agroecology offers a viable, locally-grounded path to build resilient food systems, its adoption and impact remain difficult to measure. Without a reliable way to assess progress, policymakers cannot effectively design, fund, or evaluate initiatives aimed at supporting this transition.

Existing tools for measuring sustainability in agriculture are often developed in and for Global North contexts. Our research indicates that many of these frameworks are:

- **Data-Demanding:** They require technical data (e.g., detailed soil lab tests, complex governance indicators) that is costly and difficult to collect at scale in East Africa.
- **Context-Blind:** They overlook critical regional practices like integrated aqua-agriculture (IAA), which combines fish farming with crop production, and fail to fully capture the value of traditional knowledge.
- **Non-Participatory:** They are designed for researchers and agencies, not for farmers, limiting community ownership and on-the-ground relevance.

2. Policy Recommendations

To ensure that the assessment of agroecology drives real progress, we propose the following actionable recommendations for East African governments, regional bodies (like the EAC), and development partners:

- 1. Adopt a Hybrid Framework:** Do not rely on a single tool. Mandate or recommend a combined approach that leverages the strengths of two global frameworks:
 - o Use TAPE for Community-Level Engagement: Deploy the FAO's TAPE framework for participatory assessments with farmers. Its strength lies in its focus on biodiversity, soil management, and its ability to incorporate farmer knowledge, making it

ideal for smallholder contexts.

- o Use SAFA for Strategic Policy Planning: Employ the FAO's SAFA framework at national and regional levels to guide policy development. Its four pillars (Environmental Integrity, Economic Resilience, Social Well-being, Good Governance) provide a holistic structure for creating comprehensive sustainability strategies.
- 2. Simplify and Localize Indicators:** Mandate a process of "translation" for any adopted framework.
 - o Replace complex, technical indicators with simple, farmer-observable proxies (e.g., use soil color, earthworm presence, and crop vigor as proxies for soil health).
 - o Create co-designed indicator sets that explicitly include regionally important practices like IAA, push-pull technology, and agroforestry.
 - o Develop user-friendly guides and visual toolkits in local languages for farmers and extension officers.
 - 3 Invest in Participatory Capacity Building:** Shift investment from top-down data collection to bottom-up monitoring.
 - o Train a new cadre of "agroecology facilitators"—drawn from extension services and farmer organizations—to lead participatory assessments using tools like TAPE.
 - o Establish "learning labs" in climate-smart villages or demonstration farms where farmers, researchers, and policymakers can co-develop and test simplified indicators together.

3. Evidence and Analysis

Our review of nine existing agroecological frameworks reveals a clear gap between global tools and East African needs.

Key Findings

- Frameworks like TAPE and SAFA are the most suitable starting points. TAPE's participatory nature (FAO, 2019) is well-suited to community-based approaches in Kenya, Uganda, and Tanzania,

where farmer knowledge is central. SAFA's comprehensive structure (FAO, 2014) provides the holistic lens needed for sound national policy, addressing not just environmental metrics but also economic resilience and governance—factors critical for long-term success.

- High-tech frameworks are impractical. Tools like the Sustainable Intensification (SI) Assessment Framework or SAFE require data (e.g., from soil labs, detailed household expenditure surveys) that is often unavailable due to limited infrastructure and underfunded monitoring systems (Alawode, 2025; Kropff et al., 2023). For example, expecting a smallholder farmer to measure “soil health” via a chemical analysis is unrealistic; they assess it through crop yield and soil color (Entz et al., 2022).
- Critical practices are being ignored. Seven of the nine reviewed frameworks, including widely used ones, fail to include metrics for Integrated Aqua-Agriculture (IAA). In regions where fish farming is integrated with crops, this creates a massive blind spot, preventing us from understanding the full benefits of these circular, resource-efficient systems.
- Contextualization is not optional. European frameworks like IDEA (Zahm et al., 2008) require significant adaptation to assess subsistence and cash crop systems in East Africa. Indicators related to “ethics” or “governance” must be redefined to reflect local norms and realities, such

as communal land tenure and informal decision-making structures.

Methodology: This evidence is drawn from a systematic literature review of agroecological indicator frameworks, focusing on their applicability to East Africa's socio-economic and environmental context. The analysis prioritized studies and grey literature from the region to ground the findings in local realities.

4. Policy Implications

The evidence leads to a clear conclusion: there is no off-the-shelf solution. Blindly applying a global framework will yield misleading data and wasted resources. The policy implication is that East African institutions must become active participants in shaping the tools used to measure their progress. This means investing in the “software” of assessment—human capacity, local knowledge, and participatory processes—as much as in the “hardware” of data collection.

By adopting a flexible, hybrid approach, policymakers can generate credible evidence that justifies investment in agroecology, demonstrates its benefits to international partners, and, most importantly, provides farmers with practical feedback to improve their own practices. This creates a virtuous cycle where assessment leads to better policy, which in turn supports more resilient farming communities.

5. Policy Options

Recommendation	Lead Actors	Expected Impact
1. Pilot a Hybrid TAPE-SAFA Framework	Ministries of Agriculture; Research Institutions (e.g., universities)	Generates comparative data on the feasibility and policy-relevance of both frameworks; builds local expertise.
2. Develop a National "Simplified Indicator Toolkit"	National Statistics Offices; Agricultural Extension Services; Farmer Cooperatives	Creates a low-cost, scalable system for annual monitoring by farmers and extension agents, focused on key proxy indicators.
3. Integrate IAA into National Monitoring	Ministry of Livestock and Fisheries; Ministries of Agriculture	Ensures that policies promoting integrated farming systems are based on solid evidence; unlocks the potential of circular economy in agriculture.
4. Mandate Participatory Assessments in Public Programs	County/Local Governments; NGOs implementing food security projects	Ensures that publicly funded agroecology programs are accountable to and shaped by the communities they intend to serve.

6. Implementation Considerations

- **Capacity:** The shift to participatory methods requires significant training for extension officers. This is a multi-year investment, not a one-off workshop.
- **Costs:** While simplified tools reduce long-term costs, the initial phase of developing and piloting them requires dedicated funding. Development partners should be engaged to support this.
- **Coordination:** Different frameworks used by different projects (NGOs, research, government) will lead to fragmented data. A national coordination body should be tasked with harmonizing approaches.
- **Risk:** A key risk is “indicator fatigue” among farmers. This can be mitigated by ensuring that the data collection process provides immediate, tangible feedback to them (e.g., a simple visual assessment of their farm’s soil health trends).

7. Conclusion

The transition to agroecology in East Africa is not a question of “if,” but “how.” By choosing the right tools to measure our progress, we can ensure that this transition is effective, equitable, and evidence-based. We urge policymakers to move beyond the search for a perfect, pre-made framework and instead invest in building the local capacity and adaptive tools needed

to chart a sustainable course for the region’s food systems.

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