



Policy Recommendations for Agroecology and Integrated Aqua-Agriculture Systems in East Africa

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Presentation outline

Background and context

Overview of design and activities in PrAEctiCe

Evidence of returns (economic and environmental)

Key barriers to scaling

Policy recommendations

Conclusion and the call to action



Background and context

- **Challenges faced by East Africa's agri-food systems**

- Climate change and water scarcity
- Declining soil fertility and land degradation
- Food insecurity and poor nutritional diversity
- High cost of external inputs
- Environmental degradation and biodiversity

- **Opportunity: Circular systems that enhance nutritious food production while enhancing climate resilience and environmental conservation**

- **Role of the PrAEctiCe Project: experimenting and providing evidence on the potential of agroecology and IAA in addressing agri-food systems challenges**



Overview of the PrAEctiCe Project

Four key objectives achieved

- Co-created with **smallholder farmers and other stakeholders**, the agroecological transition pathways.
- Documented the most promising **agroecological approaches for East African farms**.
- Provided **evidence that circular water-energy-nutrient systems of integrated aquaculture-agriculture are among the best practices for East Africa** to address climate change issues while increasing financial viability.
- Developed a **novel agroecology indicator set** focusing on circular water-energy-nutrient systems of IAA

How did PrAEctiCe achieve the objectives?



Co-creation activities



Living Labs



Training



Decision Support Tool



Evidence from stakeholder engagement



Agroecology Practices (AEPs)

Conclusions

- Traditional practices deployed for production – less in other elements of the value chain
- Traditional practices insufficient in fragmented land and climate shocks
- Gender equity - women's labor burden in production is a challenge

Recommendations

- Food systems approach to agroecology
- Science-tradition knowledge fusion
- Labour-saving technologies for women

Integrated Agriculture-Aquaculture (IAA)

Conclusions

- Efficient models exist e.g. Rice-fish, fish-sugarcane, aquaponics
- However, are high capital/technical needs intensive amidst weak extension support and financing gaps

Recommendations

- Downscale technologies to low-cost and low tech variants of IAA
- Provide microloans/grants for IAA start-ups
- Community led initiatives to support farmers

PrAECTiCe Indicator Framework (PIF)

Conclusions

- Comprehensive but complex for smallholders with less indigenous knowledge indicators
- Less measures for economic viability (e.g., income stability, cost reduction)

Recommendations

- Co-create farmer-friendly proxy indicators including socio-economic indicators (cost of production, income, and market access)
- Farmer capacity building to use the indicators
- Include data for national advocacy

Decision Support Tool (DST)

Conclusions

- Technically robust but inaccessible to users with unreliable/no English/internet/smart phones
- Concerns of data privacy
- Difficulty in addressing emergency system failures

Recommendations

- Integrate offline USSD/voice-based options for non-smartphone users
- Include multilingual support and feedback mechanism
- Provide options for local hosting in East Africa



Evidence of economic returns

Job creation for farmers just from demonstrations

- 38 Farmers started businesses in IAA

Increased farm productivity and diversification

- Crop yields increased by over 120% – LL3
- Fish survival rate improved to 89% - LL3

Reduced input costs (bio-inputs, circular feed systems)

- BSF production and processing on-farm
- Phytoplankton growth from chicken feed

Income diversification (fish, chicken, BSF, crops, waste valorization)



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Evidence of environmental returns

Improved soil health (biochar, organic inputs)

- Soil organic matter increased; nutrient savings achieved: N: 13.75 kg/ha, P: 2.75 kg/ha, K: 4.13 kg/ha.

Climate resilience and reduced emissions

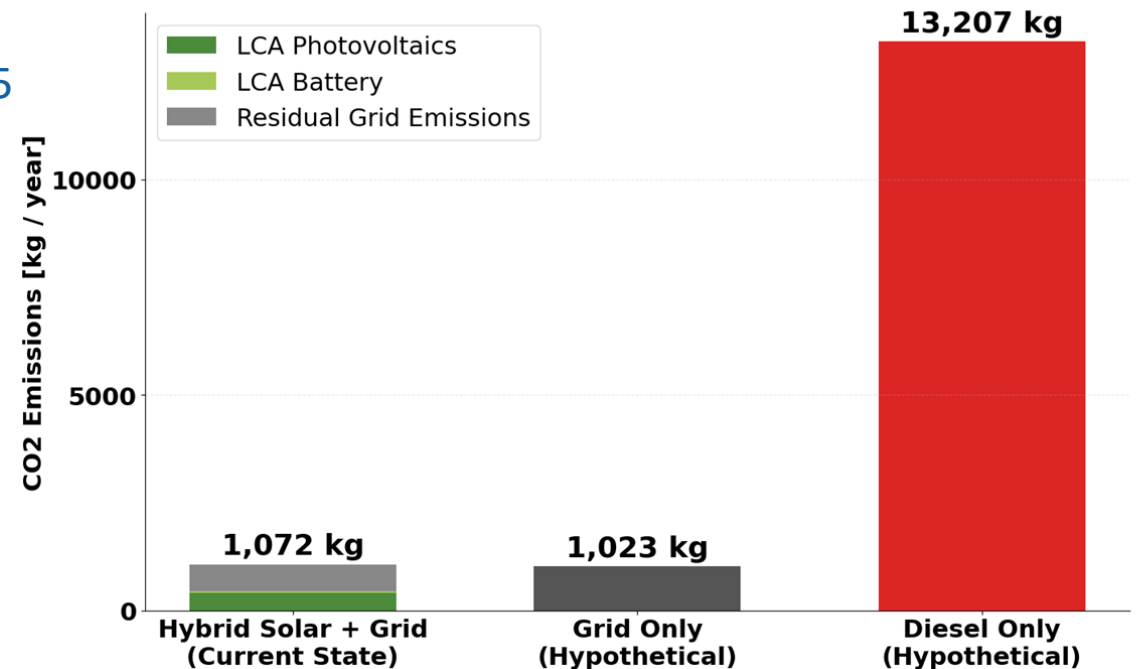
Reduced chemical use and pollution

- 45% reduction in external inputs – LL3

Water efficiency and reuse

- 10,000ltrs/day for 0.58ha- (100%) - LL1

Comparative Analysis of Annual CO₂ Emissions (LL2 Kajjansi)



Key barriers to scaling

- Disintegrated stakeholder networks agroecology and IAA
 - Harmonising short term profit versus environmental sustenance
 - Interest and capacities of women and youth
- High initial establishment costs – at least Euro 5,000
 - It takes about 2 years to break even in agroecology and 4 years to break even in PrAectiCe designed IAA
- IAA and digital technologies tested are knowledge intensive excluding the less educated farmers
- The regulator environment does not in all cases provide for the unique needs of agroecology and IAA



Policy recommendations

1. Inclusive governance and stakeholder coordination for a just transition

Proposed policy actions

- Institutionalize multi-stakeholder platforms
- Embed gender, youth, and justice in agroecology policies
- Strengthen local government roles in agroecology transition

Target Policies, guidelines, and frameworks

- National Agricultural Policies & Strategies
- Agroecology/Organic Agriculture Policies (e.g., EAC Organic Products Standards)
- Land Use Policies & Gender/Equity Frameworks
- Decentralization and Local Government Acts



Policy recommendations

2. Mainstreaming agroecology and circularity into food systems for climate-resilience and resource conservation

Proposed policy actions

- Integrate agroecology and IAA into extension systems and curricula
- Align agroecology with climate policies (NDCs, NAPs)
- Provide incentives for adoption (subsidies, certification)

Target Policies, guidelines, and frameworks

- National Climate Change Acts and NDCs
- National Agricultural Extension Policies
- Food Security and Nutrition Policies
- National Adaptation Plans (NAPs)



Policy recommendations

3. Integrated aquaculture-agriculture (IAA) systems and circular production

Proposed policy actions

- Develop/implement IAA guidelines and standards
- Promote smallholder-friendly IAA models
- Incentivize renewable energy (solar) integration

Target Policies, guidelines, and frameworks

- Fisheries and Aquaculture Acts
- National Agricultural Investment Plans (NAIPs/CAADP compacts)
- Environmental Management Acts
- Renewable Energy Policies



Policy recommendations

4. Sustainable inputs, feed systems, and circular bioeconomy

Proposed policy actions

- Approve and regulate insect-based feeds (e.g., black soldier fly)
- Promote organic fertilizers (biochar, effluent reuse) at scale
- Promote circular waste-to-input systems at national level

Target Policies, guidelines, and frameworks

- Fertilizer Policies and Soil Health Strategies
- Animal Feed Policies and Standards
- Waste Management Regulations
- Bioeconomy and Circular Economy Strategies



Policy recommendations

5. Waste water treatment and environmental management

Proposed policy actions

- Operationalise wastewater reuse regulations for aquaculture and crop production – reduce environment
- Test and assess potential for scaling out Membrane Bioreactor technology
- Strengthen water governance for agriculture

Target Policies, guidelines, and frameworks

- Water Acts and Irrigation Policies
- Environmental Protection and Pollution Control Regulations
- Wastewater Treatment and Reuse Guidelines
- Aquaculture Environmental Guidelines



Policy recommendations

6. Digital agriculture, data governance and Decision Support Systems

Proposed policy actions

- Invest in digital advisory tools for farmers at national level
- Develop a quality assurance and regulatory framework for digital agriculture
- Establish data governance frameworks for agricultural data collection, use, and management

Target Policies, guidelines, and frameworks

- National ICT Policies and Digital Transformation Strategies
- Data Protection and Privacy Laws
- Open Data and e-Government Policies
- Agricultural Extension and Advisory Service Policies



Policy recommendations

7. Standards, monitoring indicators, and compliance systems

Proposed policy actions

- Integrate/use the PrAectiCe agroecology indicator framework into national guidelines and planning
- Strengthen national M&E systems to include agroecology indicator frameworks
- Use the indicator framework as part of compliance, certification and incentives

Target Policies, guidelines, and frameworks

- National Agricultural Sector Plans e.g. ASSP
- Standards Agencies (e.g., UNBS, KEBS, TBS)
- Certification Systems for Organic/Agroecology
- SDG and Climate Reporting Frameworks



Policy recommendations

8. Financing, investment, and scaling mechanisms

Proposed policy actions

- Develop tailored financing for agroecology and Integrated Aqua-Agriculture
- Promote blended finance and Public Private Partnerships for initial establishment of IAA entrepreneurs
- De-risk investments through subsidies and insurance

Target Policies, guidelines, and frameworks

- Agricultural Finance Policies and Credit Schemes
- Public–Private Partnership (PPP) Acts
- Microfinance and Cooperative Policies
- Green Finance and Climate Finance Frameworks



Conclusion and the call to action

- There is demonstrated value add in agroecology and IAA in terms of;
 - Economic viability in the longer term
 - Environmental sustainability
- Technology, data, and financing need critical attention at policy and regulatory level
- Government needs to provide the incentives and regulatory environment for all actors to engage in a mutually beneficial way





Thank you!