

The role of civil society networks in catalyzing agroecological transitions in Uganda

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Abstract

Agroecology is increasingly recognized as a transformative pathway for building resilient and equitable food systems and addressing climate challenges. In Uganda, civil society organization (CSO) networks play a pivotal role in promoting agroecology

through training, advocacy, and the facilitation of farmer-led innovations. This study examined the role of the Participatory Ecological Land Use Management (PELUM) Uganda, a CSO network,

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in facilitating agroecological transitions through coordinated civil society action. A qualitative case study involved review of 27 internal organizational documents and four in-depth interviews with PELUM Secretariat staff members. The research focused on five key intervention domains of PELUM Uganda: (1) capacity building, (2) research and innovation, (3) networking and collaboration, (4) advocacy, and (5) climate change engagement. Findings indicate that PELUM Uganda employs a multi-approach strategy, combining grassroots farmer training with policy advocacy at regional and national levels. The Secretariat has fostered peer-to-peer learning platforms, promoted agroecology integration into climate policies, and supported leadership development within its member organizations. However, challenges persist, including inadequate documentation systems, limited post-training follow-up, underfunding, institutional fragmentation, and inconsistent member engagement.

The analysis shows that civil society networks play a central role in connecting farmers, researchers, and policymakers. Within this system, PELUM Uganda functions as a coordinating hub that facilitates knowledge exchange between farmers and research institutions while representing member organizations in policy discussions. Evidence from interviews and institutional documents indicates that these interactions have led to including agroecology in national climate and agriculture strategies and have strengthened district-level farmer training programs. The findings therefore highlight that

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Ethical Considerations

Ethical approval was granted by the Uganda Christian University Research Ethics Committee (number UCUREC-2024-772), and the research was registered by the lead author with the Uganda National Council for Science and Technology (UNCST) under registration number A409ES. Informed consent was obtained verbally from all participants before data collection. The draft methodology and initial findings were shared with the PELUM Uganda Secretariat staff for peer validation, ensuring factual accuracy and alignment with internal documentation.

scaling agroecology depends on sustained public investment in decentralized research, participatory extension, and structured collaboration with networks like PELUM to develop localized initiatives into national frameworks for climate adaptation and food systems transformation.

Keywords

agroecology, food systems, climate adaptation, advocacy, civil society organizations

Introduction

Uganda, like many countries in Sub-Saharan Africa (SSA), is grappling with intersecting ecological degradation and entrenched socio-political challenges that jeopardize the sustainability of smallholder farming systems (Chavula, 2021; Twinomuhangi, 2019). Persistent climate variability and land degradation undermine crop productivity and resource base resilience (Muir et al., 2023; Olarewaju et al., 2025). Insecure land tenure and weak governance of natural resources impose structural constraints on long-term investment and sustainable practices (Chagutah, 2013; Lovo, 2016). Together, these proximate problems reflect deeper institutional and political-economic barriers challenging rural livelihoods and agrarian relations in Sub-Saharan Africa (Azadi et al., 2021). These systemic pressures not only erode the viability of smallholder farming but also stifle long-term investments in sustainable land use, intensifying the urgency for contextually grounded, socially and ecologically sound agricultural alternatives.

Positionality and Reflectivity Statement

As a Ugandan agroecology practitioner and PhD researcher, the lead author's dual role positioned him both as an insider with deep contextual knowledge and an academic committed to critical inquiry. His affiliations with civil society networks, including past work with a PELUM member organization, offered trust and access but also required careful reflexivity to mitigate bias. He maintained a reflexive journal, conducted member validation through two meetings, and engaged peer debriefings with all co-authors to ensure that participants' voices remained central.

Conflict of Interest Statement

The authors declare that they have no known competing financial or personal relationships that could have appeared to influence the work reported in this paper.

Agroecology has gained global prominence as such a transformative framework, that responds to the interlinked climate, ecological, and social crises confronting contemporary food systems. International initiatives, such as the Food and Agriculture Organization of the United Nations' (FAO) Scaling Up Agroecology Initiative (FAO, 2018a) and the High-Level Panel of Experts of the Committee on World Food Security (CFS HLPE) report (2019) on food security and nutrition, position agroecology not merely as a technical fix but as a paradigm that reconfigures power relations in food systems through bottom-up, ecologically attuned, and socially just practices (Anderson et al., 2020). Beyond its ecological and agronomic merits, agroecology is increasingly recognized for its potential to democratize food systems, empower local communities, and redress structural inequities in access to land, knowledge, and decision making (Bezner Kerr et al., 2019; FAO, 2018b, 2025).

The experience of Latin America demonstrates that agroecology can be scaled effectively when embedded in enabling political environments and championed by strong grassroots movements. For instance, Brazil's Landless Workers' Movement (MST) (Landertinger, 2008) has played a pivotal role in institutionalizing agroecological practices through state-supported programs and progressive national policies (Giraldo & Rosset, 2018; Meek et al., 2019; Mier y Terán Giménez Cacho et al., 2018). Across Africa, agroecology has deep roots in traditional farming systems that have long focused on diversity, soil conservation, and community cooperation (Altieri, 2004). Contemporary regional alliances and national CSOs have helped reframe and promote these indigenous practices within modern policy and research agendas inspired by agroecology principles and elements (Gliessman et al., 2020). An example is the Alliance for Food Sovereignty in Africa (AFSA), a broad-based coalition comprising farmer organizations, NGOs, indigenous groups, CSOs, and consumer movements, which has been instrumental in consolidating a continental vision for agroecology and food sovereignty. Through coordinated campaigns, knowledge-sharing platforms, and strategic policy engagement, AFSA and its affiliates have enhanced the visibility and legitimacy of

agroecology as a viable alternative to industrial agriculture (Byaruhanga, 2024; Gliessman, 2020). For example, AFSA successfully advocated for the integration of agroecology into the African Union's Framework and Guidelines on Sustainable Agriculture, supported the development of national agroecology strategies in Uganda, Kenya and Ethiopia, and mobilized regional learning hubs that document and scale farmer-led innovations across 13 African countries (Byaruhanga, 2024).

In many sub-Saharan African regions agroecology has developed primarily through civil society initiatives rather than large-scale government programs or mass movements. Civil society organizations (CSOs) in Uganda such as PELUM Uganda, East and Southern Africa Farmers Forum (ESAFF), and the National Organic Agriculture Movement of Uganda (NOGAMU) have been central in piloting farmer training models, influencing sub-national policy dialogues, and integrating agroecology into district development plans (Byaruhanga, 2024; Isgren, 2018). These efforts have laid the groundwork for gradual state adoption of agroecological principles within formal agricultural frameworks. Members of the PELUM Association have been instrumental in shaping national agroecology strategies across Eastern and Southern Africa. In Kenya, PELUM Kenya's input in county and national agroecology policies and strategies led to adopting localized extension frameworks that promote farmer field schools and seed sovereignty initiatives (Chumba et al., 2024). PELUM Tanzania's work informed the development of the National Ecological Organic Agriculture Strategy, supporting the inclusion of small-holder-friendly certification systems (Biovision Foundation for Ecological Development, 2024).

In Uganda, PELUM Uganda has played a key role in coordinating stakeholder consultations for the National Agroecology Strategy, aligning it with the Nationally Determined Contributions and National Development Plan III (Sinyangwe et al., 2023). At the community level, PELUM member organizations have facilitated more than 10 community-managed seed banks, piloted the Climate Resilient Agro-Ecosystems Model (CRAEM), and documented from their interventions measurable increases in soil organic matter and household food

diversity outcomes (Akanmu et al., 2023; Debray et al., 2019; Gliessman, 2020). This bottom-up, knowledge-sharing approach, anchored in farmer field schools, peer learning networks, and community seed initiatives, has transformed agroecology from a set of technical practices into a broader movement for food system change. Through participatory exchanges, farmers have collectively organized to advocate for land rights, push for pesticide regulation reforms, and influence national dialogues on sustainable food systems (Anderson et al., 2020; Tibasiima et al., 2022).

Despite growing recognition of CSOs' strategic role in agroecological transitions, much of the literature remains focused on normative and technical accounts of agroecology's potential (Isgren, 2016; Martiniello, 2015). There is limited empirical analysis of how these organizations mobilize actors, disseminate agroecological knowledge, influence policy processes, and sustain systemic transitions over time. Thus the role of CSO networks in bridging grassroots innovation and national policymaking is under-documented and insufficiently theorized in current academic discourse in Africa. This study explores how CSO networks operationalize agroecological transitions through what we identify as networked transformation, a process by which locally rooted, horizontally organized initiatives interface with vertically oriented advocacy and policy engagement to drive systemic change (Loorbach et al., 2020). PELUM Uganda uses this hybrid model to provide an alternative to top-down state-led approaches, focusing on decentralized innovation, cross-scalar collaboration, and multi-actor governance (Anderson et al., 2019; Pimbert et al., 2021).

This study seeks to examine the role of PELUM Uganda as a central civil society actor catalyzing agroecological transitions in a resource-constrained and institutionally fragmented context. As the Ugandan chapter of a wider regional PELUM Association network present in 14 African countries (360 members), PELUM Uganda coordinates over 74 member organizations operating in 123 of the country's 146 districts. Its members include NGOs, farmer associations, and research institutions committed to promoting ecological land use, agroecological knowledge, and food sov-

ereignty. Since its inception in 1995, PELUM Uganda has positioned itself as a key facilitator of farmer-led innovation, capacity building, and policy engagement, with tangible outcomes that demonstrate its catalytic role in advancing agroecology. Between 2018 and 2023, the network organization supported its members in establishing 10 community-managed seed banks, training over 3,000 farmers in the CRAEM model, and documenting measurable improvements in soil fertility and crop diversity across pilot districts. PELUM Uganda also coordinated national consultations leading to the drafting of Uganda's National Agroecology Strategy and contributed to integrating agroecology principles into the country's Nationally Determined Contributions (PELUM Uganda Annual Report, 2023).

Drawing on a qualitative case study approach, this paper analyzes how PELUM Uganda operationalizes agroecology through five interlinked strategic domains: (1) capacity building, (2) research and innovation, (3) networking and collaboration, (4) policy advocacy, and (5) climate change engagement. In this paper, agroecology is understood as both a movement, a science and a practice system that applies ecological principles to agricultural production while integrating social, cultural, and economic dimensions (Gliessman, 2020). Agroecology's key principles, including diversity, co-creation of knowledge, recycling, synergies, human and social values, and responsible governance, form the analytical foundation for assessing how these five domains are implemented within PELUM Uganda's programming. By synthesizing data from organizational documents and key informant interviews with staff members of the PELUM Uganda Secretariat, the study explores the specific practices, challenges, and opportunities shaping agroecology transition work. Although the findings are not intended to be generalized beyond this case, they offer useful insights into how civil society organizations in similar contexts can facilitate agroecological transitions for sustainable food systems. In this paper, sustainable food systems refer to systems that ensure food and nutrition security for all in ways that are economically viable, socially just, and environmentally regenerative (FAO, 2021). This study therefore contributes

modestly to ongoing discussions on institutional pathways for agroecology within Uganda and comparable regions in the Global South.

Research Methods

Study Design

This study utilized a qualitative case study methodology to analyze the institutional role and strategic approaches employed by the PELUM Uganda Secretariat in advancing agroecology transitions. The case study design was selected for its capacity to yield in-depth insights into organizational processes within real-world institutional settings (Baxter & Jack, 2008; Creswell & Poth, 2023). PELUM Uganda was selected as the case study due to its extensive documentation of programs and outcomes over nearly three decades of operation and its coordination of 74 member organizations implementing agroecology initiatives. Examples of its work include facilitating the CRAEM model across multiple districts, supporting the establishment of community seed banks, and coordinating multi-stakeholder consultations for Uganda's National Agroecology Strategy (PELUM Uganda, 2023). These factors provided a sufficiently rich empirical basis for examining how a civil society network operationalizes agroecology within institutional structures. The research employed a Deductive Thematic Coding Matrix (Groenland, 2016) developed collaboratively by the authors and refined through consultations with PELUM Uganda Secretariat staff members to guide data organization and interpretation. The framework focused on five core domains structuring the work of PELUM Uganda: capacity building, research and innovation, networking and collaboration, policy advocacy, and climate change engagement. These domains, which align with the organization's stated "Benefits of Membership" (PELUM Uganda, 2024), provided an analytical lens for examining how institutional strategies contribute to agroecological scaling. Data were coded deductively, based on these predefined themes, and inductively, to capture emerging insights from documents and interviews. This approach allowed for a comprehensive understanding of how PELUM Uganda and its network mobilize resources and

partnerships to advance agroecology at multiple levels.

Positionality and Reflexivity

Positionality refers to the researcher's social and professional position in relation to the study situation and participants. Reflexivity involves continuous self-examination of how position influences the research process and interpretation of findings (Berger, 2015). In this study, acknowledging positionality and practicing reflexivity were essential for maintaining transparency and analytical rigor. The research team consisted of scholars familiar with agroecology and civil society networks in Uganda, which provided contextual insight but also required conscious efforts to avoid bias. To address this, the team developed the analytical framework collaboratively, validated it independently through document review, and triangulated data from multiple sources. A reflexive journal was maintained to record decisions, assumptions, and reflections throughout the analysis (Cadman et al., 2024). Draft findings were shared with PELUM Uganda Secretariat staff for factual verification, to ensure accuracy while maintaining critical distance. These practices enhanced the credibility and trustworthiness of the study.

Data Sources

Document Review

The primary data consisted of documents produced or co-produced by PELUM Uganda from 2010 to 2024. Due to archival limitations, materials predating 2010 were unavailable for analysis. All analyzed documents were publicly accessible through the PELUM Uganda website. Document selection criteria required that materials either address one or more of the five thematic domains under investigation or contribute to institutional planning, monitoring, or external communications. The review process identified 47 potentially relevant documents from the PELUM Uganda website. Following application of the predetermined inclusion/exclusion criteria (Supplemental Material 3A), 27 documents were selected for final analysis. The retained documents comprised eight national or regional strategy and planning documents, six

policy briefs, five advocacy statements, and eight event or activity reports.

The documents underwent rigorous qualitative analysis, which involved systematic reading, coding, and categorization to identify recurring themes, patterns, and shifts in institutional focus over time. The process began with open coding to capture key ideas related to agroecology, followed by axial coding to link the ideas to the five analytical domains. The analysis emphasized tracing how strategic priorities evolved across annual reports, policy briefs, and project evaluations, allowing the study to reconstruct the PELUM Uganda's institutional narrative and assess its changing role in promoting agroecology. The diversity of document types, including reports, strategic plans, and public communications, enabled methodological triangulation across both format and temporal dimensions. The multi-faceted approach provided comprehensive insights into the Secretariat's evolving agroecological strategies and implementation patterns.

Key Informant Interviews

To complement the document analysis, four semi-structured interviews were conducted with purposively selected PELUM Uganda Secretariat staff members during November and December 2024. Respondents included the country coordinator and three program officers who were chosen based on their direct engagement in key organizational functions, including program implementation, advocacy initiatives, and research coordination. To ensure targeted data collection, the interview protocol was structured around the five thematic domains: capacity building, research and innovation, networking and collaboration, policy advocacy, and climate change engagement. Questions under each domain were designed to extract specific examples and reflections from interviewees. For instance, participants were asked to describe successful capacity building initiatives, explain how research findings informed programming, outline networking mechanisms that enhanced collaboration, identify advocacy outcomes achieved through policy engagement, and discuss how climate change adaptation was integrated into agroecological practices. These domain-specific interviews provided

nuanced insights that contextualized organizational documents and deepened understanding of PELUM Uganda's internal strategies and challenges.

Data Extraction Process

A structured data extraction form was developed using Microsoft Excel to ensure systematic and consistent analysis of all reviewed documents (see Supplemental Material 1). The tool was organized into six analytical categories: general information, capacity building, research and innovation, networking and collaboration, advocacy and livelihoods, and climate change (see Supplemental Material 2). The research team conducted comprehensive document reviews through a three-stage process: (i) summarizing key content, (ii) categorizing information according to the predefined themes, and (iii) cross-verifying content relevance. Documents containing substantial content spanning multiple thematic domains were coded across all applicable categories. This methodological approach enabled both cross-sectional deductive thematic analysis and longitudinal comparison of institutional approaches over time (Groenland, 2016).

Data Analysis

The study employed a Deductive Thematic Coding Matrix (Gale et al., 2021) to systematically examine data derived both from institutional documents and key informant interviews. A structured Microsoft Excel matrix facilitated deductive coding (Groenland, 2016) according to the five predefined thematic domains. To ensure methodological rigor, we maintained (1) analytic memos in a reflexive journal to track emerging insights, conceptual connections, and interpretive reflections (Cadman et al., 2024), and (2) detailed field memos during interviews to record contextual observations, emotional dynamics, and interactional nuances, implementing the principle of thick description to preserve the rich textures of social relationships (Cadman et al., 2024; Sankofa, 2023). The dual documentation system, combined with consistent application of the thematic framework, strengthened methodological transparency while enhancing both the trustworthiness and

interpretive depth of the findings through systematic triangulation.

Qualitative Content Analysis

Organizational documents were analyzed using a structured qualitative content analysis approach (Richards & Hemphill, 2018), guided by the five predefined domains. The coding process began deductively, using domains as initial categories, and was refined inductively as new themes emerged from the data. Each document was reviewed line by line, and text segments relevant to the research questions were coded manually. To ensure analytical rigor, only excerpts that clearly illustrated institutional practices, outcomes, or learning processes were retained as representative quotations. These excerpts were triangulated with information from interviews and other documents to verify accuracy and contextual relevance. Quotations are therefore used as evidence that supports interpretive analysis of PELUM Uganda's strategies and contributions.

Data were managed using Microsoft Excel. The coding process followed a framework analysis approach (Dixon-Woods, 2011; Mason et al., 2018) structured around the five predefined thematic domains. Emergent subthemes such as "donor influence," "staff turnover," and "follow-up gaps," were added through iterative coding rounds. To enhance reliability, two researchers independently coded a sample of five documents and all four interviews. Coding consistency was assessed through intercoder comparison and discrepancies were resolved through discussion and consensus. Analytic memos and code annotations recorded reflections and emerging patterns, ensuring systematic interpretation while allowing space for contextual and unanticipated findings to surface.

Results

The study explored how PELUM Uganda facilitates agroecological transitions through its institutional strategies and multi-level engagements. The findings are presented across five interrelated domains mirroring the organization's operational structure: (1) Capacity Building, (2) Research and Innovation, (3) Networking and Collaboration, (4) Policy Advocacy, and (5) Climate Change Engagement. Each section highlights specific prac-

tices, achievements, and challenges that illustrate PELUM Uganda's role in advancing agroecology within Uganda's development.

Capacity Building

In this study, capacity building refers to strategic efforts to equip member organizations and their affiliated farmers, other CSOs, and government actors with technical skills, leadership abilities, and institutional support needed to advance agroecological transformation. It includes trainings, mentorships, and practical learning in agroecology.

Capacity building emerged as one of the most consistent and well-documented functions of the PELUM Uganda Secretariat across the reviewed documents (Supplemental Material 3B). According to one document:

PELUM Uganda ... empowers their affiliate smallholder farming communities in practicing agroecology through capacity building, research and innovation, networking, advocacy for equitable improvement in their livelihoods. (PELUM Uganda, n.d., p. 2)

A staff member confirmed PELUM's capacity building efforts among members:

We work to empower member organizations so that they can effectively work with the smallholder families.

The Secretariat supports agroecological transformation through a layered learning model, targeting farmers, CSOs, youth, and government actors. In the Ugandan agricultural context, this model refers to a multilevel capacity-building approach that intentionally targets different actors in the agroecology system. Such actors include the PELUM Uganda Secretariat, member organizations, community facilitators, government officials, and smallholder farmers. Rather than delivering training solely at the farm level, the Secretariat focuses on strengthening intermediary civil society organizations through training-of-trainers, mentorship, and institutional support, enabling them to translate agroecological principles into locally adapted practices. Learning is further reinforced

through farmer field schools, peer-to-peer exchanges, exposure visits, and demonstration sites such as the ELUM Centre. This approach is used because Uganda's agricultural extension landscape is fragmented and under-resourced, and because agroecological transitions require coordinated technical, social, and institutional learning across scales. Key capacity building activities include training workshops, mentorship programs such as African Women Leaders in Agroecology (AWOLA), farmer learning exchanges, and organizational development support. These efforts combine technical training with leadership development, often linking agroecological themes with land justice, gender equity, and climate resilience. Another staff member added:

In addition to agroecology, climate resilience, agroforestry, post-harvest handling, marketing, and value addition, we also build capacity in governance, knowledge management, and financial sustainability. These are generic institutional areas that strengthen our members' overall performance.

To emphasize their capacity building mandate, a PELUM staff member said, "our mandate is one, to build capacity of our member organizations in the different thematic areas." Another added that "[we] ... work with member organizations ... providing training and technical backstopping." Documents provided evidence that Secretariat delivered capacity building efforts directly to members and through member organizations with regional reach. Capacity building activities were frequent and diverse as noted in one document:

The [PELUM Uganda] network has ... grown in number and influence on currently 66 [now 74] member organizations operating in 122 districts in Uganda, reaching approximately three million farmers, 60% of whom are women. (PELUM Uganda, n.d., p. 2)

However, some documents, such as the PELUM Annual Report (2024), noted limited geographic reach and occasional gaps in post-training follow-up, particularly in under-sourced districts.

The role of regular monitoring and evaluation in tracking and improving agroecology programs is highlighted here:

PELUM Uganda conducted a biannual monitoring and evaluation exercise to assess programme implementation progress and generate learnings to inform future and ongoing implementation. Notably, during the monitoring visits, there are reported increases in the adoption of agroecological practices, with 70% of small-holder farmers having at least three agroecology practices integrated on their farms. (PELUM Uganda Annual Report 2022, p. 31)

The reported increase in farmers adopting agroecological practices shows meaningful uptake and behavioral change, indicating that program interventions are effective in promoting holistic, sustainable farming systems.

A staff member described capacity building as a core pillar of PELUM Uganda's work but acknowledged that the impact varied across member organizations, as the quote from PELUM staff below indicates. They pointed out that while training was frequent and well-intentioned, the real test was whether the knowledge was applied and shared. They stressed that the Secretariat needed to invest more in follow-up and assess how training was translated into organizational change at the farmer level.

Our findings also revealed some operational gaps in capacity building efforts. One challenge was a mismatch between the expertise of the nominated participants for training and the actual topic, leading to poor knowledge uptake. Another was the need to train at least two people per organization to avoid knowledge loss due to staff turnover and to improve internal learning within member organizations. A PELUM Uganda Secretariat staff member said:

... but also, [another challenge is] the representation. Because sometimes you might have an advocacy specific event, or an M&E related [capacity building] event but the representative sent to you is a finance person. So, you realize that the knowledge they are going to gain from

such an engagement is not going to spread because that is not their area [of specialization]. So that leads to a gap in adoption of practices that are got through capacity building. Two, we find also a challenge that some of the membership focal persons do not send out the information that is got from the secretariat to their respective organization. So, you realize it is only the focal person who is engaged. ... Then another one [problem] is the staff turnover, especially for the member organizations. You can build a lot of capacity in a certain staff member and when you return for a follow up visit [you find when] this person is not there [anymore]. [A] ... solution would be on training more members within the organization instead of training just one person ... to wide-spread the risk.

The Pesa Agro-Enterprise Marketing Model (PESA Model) developed by PELUM Uganda emphasizes that facilitators involved in capacity building must be well-versed in group dynamics, leadership, and participatory processes to ensure effectiveness and sustainability. The PESA Model supports this goal by encouraging grassroots groups to define their own development paths through visioning exercises that link climate risks with local solutions:

The group discusses where they are now and where they would like to be in five years, three years and one year... The approach is intended to build a common plan of action, based on aspirations. (PESA Model Guide, p. 18)

Capacity building focused on training member organization staff to transfer knowledge to farmers, although this relied on internal systems that were not always effective. PELUM staff noted that capacity building was often limited to one-off workshops, demonstrating need for sustained, tailored support that includes leadership and strategic planning for CSOs. In the two quotes below, PELUM Uganda staff highlighted the collaborative and capacity-building ethos of the network, emphasizing both peer learning and targeted technical training for members.

The strength of the network lies in the strength of its members. We do exposure visits, where members learn from each other.

PELUM Uganda ... with support ... is convening MOs [member organizations], Youth, Agroecological Entrepreneurs in a 3-days training on product development (quality assurance, value addition, packaging, branding) and certification processes. The training is hosted at MOS23 ... and majorly focusing on agroecological inputs.

To strengthen training, PELUM Uganda has established the Ecological Land Use Management (ELUM) Centre in Busuubizi Village, Mityana District, as a hub for demonstrating and promoting agroecological practices. The ELUM Centre serves as a practical learning ground for small-holder farmers, students, and development practitioners, offering hands-on training in sustainable farming methods, ecological land use, and natural resource management (PELUM Uganda Strategic Plan 2023–2026, pp. 30, 36, 45). Operating under the Agroecology and Sustainable Natural Resources Management (ASNRM) Department, the ELUM Centre contributes to PELUM Uganda's broader mission of improving livelihoods and environmental resilience through participatory ecological land use. It also functions as a site for research, innovation, community outreach, and policy influence, helping to build agroecological knowledge and food sovereignty across Uganda.

Gender, youth, and equity promotion were visibly embedded in capacity-building activities. The AWOLA mentorship program was a flagship example, targeting young women leaders across member organizations to strengthen their confidence, strategic leadership, and advocacy skills. This initiative explicitly addressed gender gaps in agroecological leadership by equipping women with technical knowledge and the tools to navigate decision making spaces:

PELUM Uganda, under the AWOLA program, has been pivotal in supporting and amplifying these efforts. PELUM Uganda, we are driven by a vision of "Empowered and

Resilient smallholder farming Communities Sustainably utilizing their natural resources.” This vision frames every initiative we undertake and guides our journey towards Agroecology. (Stories of Change, AWOLA 1st Cohort, 2024, p. 9)

However, staff interviews pointed out that achieving genuine gender transformation would require going beyond participation to meaningful follow-up support. Structural support was needed to ensure women are present and able to lead within organizations and communities.

Operational issues were also raised, including high staff turnover within member organizations, misaligned training participation, and weak internal communication structures.

A staff member reported: “Some members won’t even respond to our training invitations. The ones who are active keep getting selected, while those who ignore communications miss out entirely.” Low attendance at training sessions hindered the overall effectiveness of capacity building efforts. In some cases, participation was limited to a single individual, which led to failed knowledge dissemination efforts for some organizations. Other operational issues included some member organizations expecting funding rather than technical support, and weak documentation practices, both of which limited the scaling of promising innovations.

Research and Innovations

Research, innovation, and publication are framed in this study as participatory and community-driven processes, with PELUM Uganda facilitating farmer-led innovations rather than generating formal academic research. Research activities focused on practical solutions like seed banks, soil health, and local certification systems, documented qualitatively through case studies and reports. Research and innovation played a strategic but varied role in PELUM Uganda’s approach to agroecological transformation. Across the reviewed documents, PELUM Uganda was positioned more as a facilitator and mobilizer of farmer-led experimentation and participatory inquiry than a formal academic research generator (Supplemental Material 3C).

A staff member stated the organization prioritizes “documentation, success stories, online communication to share this information with the member organizations.” Another member, describing models such as the Climate Resilient Agro-Ecosystems Model (CRAEM), Community-Managed Seed Systems (CMSS), the PESA Agro-Enterprise Marketing Model, and the Gender Action Learning System (GALS), claimed that PELUM acts as a “breeding point for knowledge ... where innovations happen, and after developing these innovations, we take them to the member organizations.” Members are involved in participatory research: “we have a list of tools ... under the participatory assessment for climate disasters and risks ... to suggest the solutions ... then we come up with an action plan.” Other crucial innovations and research areas supported by PELUM Uganda included participatory guarantee systems (PGS) for organic certification, community seed banks, and experiments on biochar-based soil health practices. The Secretariat also promoted farmer-managed natural regeneration and documentation of local ecological knowledge. Additional research focused on market access barriers, policy gaps, and agroecological entrepreneurship to inform advocacy and capacity building initiatives.

While some reviewed documents contained summaries of findings or evidence-based recommendations, few presented formal research methodologies. Most innovations were documented through case studies, workshop reports, or evaluation narratives. The Secretariat often collaborated with local universities, farmers’ organizations, and regional networks such as the Knowledge Hub for Organic Agriculture (KCOA), but PELUM Uganda lacked a central repository for research outputs or a formal research agenda. Research and innovation activities were community embedded, often responding to community needs rather than externally driven research agendas. Despite limited formal peer-reviewed publication, the recorded participatory methods and grassroots innovations align with agroecological principles and climate resilience objectives. PELUM Uganda is not a conventional research institution but facilitates research through partnerships. Most innovations emerge from farmers and member organizations

via peer learning and experimentation. However, documentation of these grassroots practices remains inconsistent, limiting their scalability and use in advocacy. While the Secretariat excels in supporting farmer-led innovation and promoting knowledge exchange, weak technical capacity among some members and disconnect between donor agendas and farmers' needs hinder broader uptake and long-term impact.

Networking and Collaboration

In this study, networking and collaboration refer to the role of PELUM Uganda in cultivating and sustaining strategic relationships among diverse stakeholders, including member organizations, government bodies, regional platforms, and international advocacy networks, to collectively advance agroecology, food sovereignty, and climate justice. It encompasses peer learning, joint advocacy, knowledge exchange, and coordinated action through advocacy platforms. These collaborative efforts are participatory and decentralized, to enable grassroots voices to influence policy while building institutional credibility, expanding reach, and mobilizing resources.

PELUM Uganda played a central convening role in national, regional, and continental agroecology networks (Supplemental Material 3D). The Secretariat consistently positioned itself as a connector of actors engaged in agroecology, food sovereignty, and climate resilience. Its networking activities spanned peer learning, regional knowledge exchange, multi-stakeholder partnerships, and platform building. The collaborative approach of PELUM Uganda reflects its philosophy of participatory, decentralized change, using partnerships to build a shared ecosystem for agroecological learning and action. Collaborations reinforced its credibility, scaled its reach, and created opportunities for grassroots policy engagement, while the networks served as spaces for knowledge sharing and avenues for collective advocacy, resource mobilization, and peer accountability. Documents showed the focus on horizontal learning across PELUM Uganda's 70+ member organizations and its facilitation of joint submissions to policy consultations.

According to the PELUM Strategic Plan

(2022–2026), PELUM Uganda identifies as a “network of stakeholders acting together to promote agroecology among smallholder farming communities in Uganda.” The 2023 Annual Report further states, “PELUM Uganda, in collaboration with her member organizations, undertook several initiatives that were expanded to benefit their smallholder farmers. This occurred across five key areas: 1) Agroecology and Sustainable Natural Resource Management, 2) Agroecological Markets and Business Development, 3) Policy Advocacy, 4) Program Quality and Delivery, and 5) Organisational Functioning.”

PELUM Uganda engaged in several significant networks to promote agroecology, including leading the Uganda hub KCOA and contributing to AFSA's continental advocacy on agroecology and climate justice. It also facilitated Regional Agroecology Actors Platforms (RAAP) to coordinate local transformation efforts and organized collaborative seed and food fairs as learning and community engagement spaces (Figure 1). The PESA model encourages strategic engagement by guiding farmers and facilitators to build trust and collaboration with other value chain actors, laying the foundation for inclusive and effective partnerships.

Findings showed that PELUM Uganda's networking strength came from its member organizations' collective energy and expertise. The Secretariat acted as a connector, facilitating exposure visits and learning exchanges that allowed members to learn from one another in practical and contextually appropriate ways. Interview respondents stated that partnerships were increasingly becoming important, particularly with donor preferences. According to a PELUM staff member, “funders are more inclined to support consortia or alliances rather than individual organizations.” This made it necessary for PELUM to strengthen its coordination and joint proposal development processes. Another PELUM staff confirmed: “We provide a platform for networking ... when we notice [complementarity], then we are able to provide a network.” Collaboration also extended beyond the network to include external actors, such as government ministries, local governments, and regional civil society alliances. Such relationships were seen as highly

important to advancing agroecology on greater scales.

A staff member reported:

PELUM Uganda collaborates with other networks; for example, the ministry department and authorities like the ministry of agriculture, ministry of trade, ministry of gender, ministry of lands and for some we have even ongoing MOUs [memoranda of understanding] with government authorities like KCCA [Kampala Capital City Authority], ... UNBS [Uganda National Bureau of Standards] and all that. But also, with the local partners like the civil society organization, our donors, different networks and platforms like the ecological organic agriculture platforms.

However, aligning diverse stakeholder priorities requires ongoing negotiation and effort, according to another staff member:

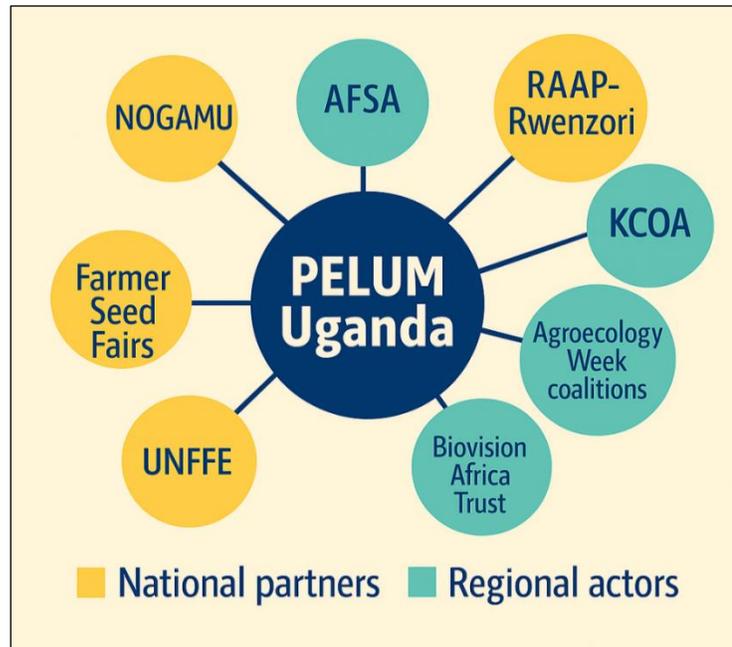
The strength of the network lies in the strength of its members. We do exposure visits, where members learn from each other. That's where real innovation spreads.

A staff member stated:

We work with AFSA, Food Rights Alliance, and others ... donors now prefer to fund consortia and networks. There is a positive outlook on the working relationships with these partners.

Together, these reflections underscore how strong partnerships and peer learning drive innovation and attract collaborative funding. It should be noted, however, that although the Secretariat created spaces for collaboration, such as WhatsApp groups and thematic working committees, not all members participated consistently.

Figure 1. Network Map of Participatory Ecological Land Use Management (PELUM) Uganda Institutional Collaborations Highlighting National Partners



Legend: PELUM Uganda: Participatory Ecological Land Use Management Uganda; NOGAMU: National Organic Agricultural Movement of Uganda; UNFFE: Uganda National Farmers Federation; RAAP-Rwenzori: Rwenzori Advocacy Platform; AFSA: Alliance for Food Sovereignty in Africa; KCOA: Knowledge Centre for Organic Agriculture in Africa. Adapted from the 27 reviewed documents and interviews with PELUM staff.

Advocacy

In this study, advocacy means the strategic mobilization and policy engagement led by PELUM Uganda to advance equitable, agroecology-based food systems by influencing land rights, seed sovereignty, climate justice, and public financing, while ensuring the inclusion of marginalized groups such as women, youth, and smallholder farmers in both decision-making and implementation. The advocacy work of PELUM Uganda is rooted in its mission to promote equitable livelihoods for smallholder farmers, which is aligned with agroecology principles. The Secretariat has championed various issues through policy engagement, grassroots mobilization, and coalition building (Supplemental Material 3E), blending local legitimacy with national and continental reach.

The PELUM Strategic Plan 2022–2026 highlights a strategic objective to “focus on influencing

policy and practice change on agricultural and natural resource management issues.” Early efforts focused more on farmers’ rights and land. However, recent years have shown a stronger focus on climate resilience, territorial food systems, and rights-based approaches. Across all domains, PELUM highlighted equity, particularly gender and youth inclusion, as essential to livelihood improvement. For example, PELUM has advanced women’s leadership in agroecology through targeted initiatives: “During the first cohort of the [AWOLA] programme, we have enhanced leadership capacities of seven young women leaders in the agroecology sector across Uganda. Mentors and mentees engaged in meaningful exchanges that built their skills, knowledge, and networks necessary for leading agroecological initiatives” (AWOLA Stories of Change, p. 10).

PELUM advocacy efforts can be best understood by grouping them by focus area (see Supplemental Material 3F):

- (a) PELUM Uganda has consistently advocated for secure land tenure, especially for women and youth. Efforts have included supporting district-level by-laws that protect customary land ownership and arable land. In 2024, the organization played a key role in mobilizing communities during Land Awareness Week, which included the submission of district petitions to the Ministry of Lands.
- (b) In parallel, PELUM Uganda has remained a strong civil society voice against the commercialization of genetically modified organisms (GMOs), promoting Indigenous seed systems and food sovereignty as viable alternatives. It has co-organized regional seed fairs and forums, collaborated with AFSA and the East and Southern African Farmers Forum (ESAFF) in anti-GMO mobilization, and contributed to the development of local ordinances, such as Kikuube District’s food security bylaw.
- (c) Between 2019 and 2020, PELUM Uganda led budget advocacy campaigns targeting agricultural allocations in national and local government plans. This included sub-

mitting budget policy statements, lobbying for spending aligned with agroecological priorities, and participating in public dialogues and budget hearings. Although no direct climate framing was found in these earlier budget campaigns, later documents such as the Strategic Plan (2023–2027) reflected a shift toward climate-resilient financing.

- (d) Climate advocacy has become increasingly visible in recent years. PELUM Uganda’s activities included participation in Africa Climate Week 2023, contributions to national climate dialogues, and advocacy for polluter-pays principles, climate finance equity, and local adaptation planning.

PELUM Uganda’s strength lies in policy advocacy, especially for agroecology and land rights, often achieved through unified engagement with like-minded organizations.

PELUM Uganda has shaped national agroecology policy processes. In the 2022 Annual Report, the country coordinator wrote:

Critical to note is the integration of agroecology into the revised Uganda National Determined Contributions and initiating the process of the development of the Uganda National Agroecology Strategy for scaling up Agroecology, processes...done in close collaboration with the Ministry of Water and Environment and the Ministry of Agriculture, Animal Industry and Fisheries. (p. 6)

However, some member organizations struggle to see the value of advocacy without immediate financial returns.

Equity is central to PELUM Uganda’s work, particularly in land rights and seed sovereignty, with initiatives such as Land Awareness Week engaging marginalized communities to protect customary land rights and indigenous seed systems.

PELUM Uganda has supported community engagement on land rights and governance. Several quotes demonstrate PELUM Uganda’s longstanding commitment to safeguarding community rights

and natural resources through advocacy, awareness, and policy engagement. A 2024 PELUM Uganda Bulletin stated:

The 8th National Land Awareness Week ... engaged over 5,000 individuals, including small-scale farmers, local leaders, women, and Persons with Disabilities... Key outcomes include increased awareness of land policies, legal support for marginalized groups, and strengthened collaboration among stakeholders. (p. 4)

A PELUM Uganda (2010) report stated that:

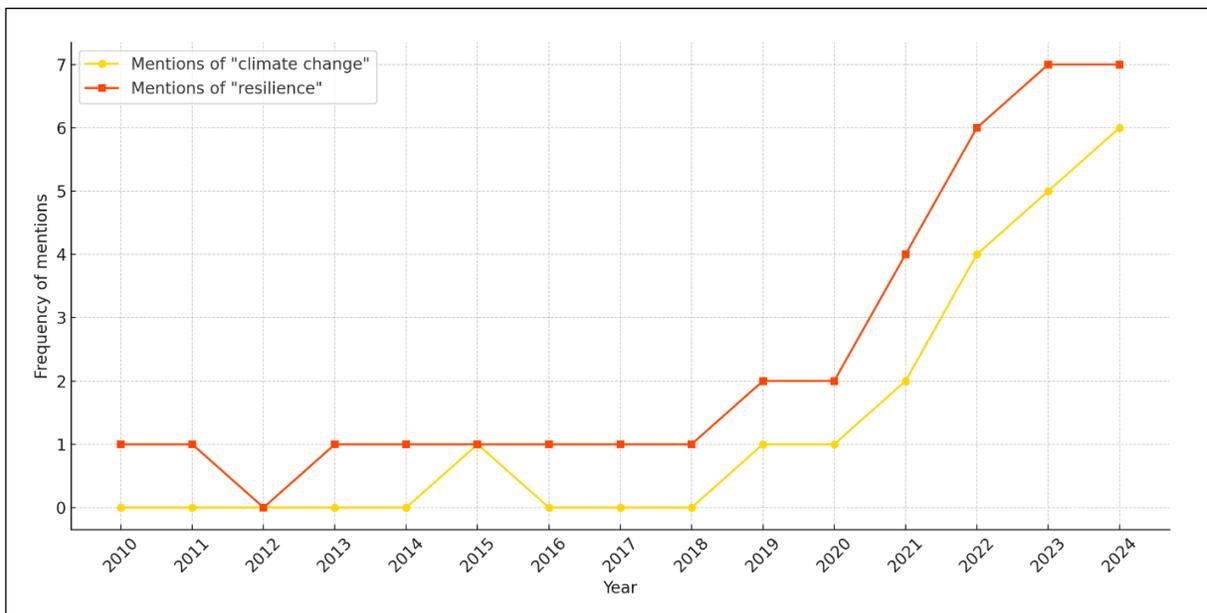
Workshops were conducted for MOs [member organizations] on seed security for food security; specifically ... as [awareness creation on] GMO seed, which increased members' knowledge of the concept. With the knowledge gained from the workshop, participants actively engaged in advocacy; analysing the sustainable agriculture study conducted by PELUM Uganda, the draft national seed policy, and the national biotechnology and biosafety policy for advocacy issues. (p. 11)

Despite strong equity messaging, disparities in institutional capacity limit some members' participation in advocacy, weakening representation of smallholder voices.

Climate Change Engagement

In this study, climate change engagement refers to PELUM Uganda's evolving efforts to position agroecology as a climate mitigation and adaptation strategy through advocacy, farmer-led innovations, and localized resilience programming. It involves integrating climate literacy, gender-responsive planning tools, and participatory risk assessments into practice, while navigating donor-driven agendas and internal challenges to ensure equitable, context-relevant climate action across its network. The engagement of PELUM Uganda with climate change has evolved significantly over the past decade. In earlier documents (2010–2015), references to climate change were either non-existent or framed only in indirect terms such as environmental sustainability or resilience. In contrast, documents from 2022 onwards consistently have presented climate change as a central thematic focus. Figure 2 shows the increased references to “climate change” and “resilience” across the reviewed documents, reflecting this growing emphasis. This focus

Figure 2. Trend of Climate Terms in Participatory Ecological Land Use Management (PELUM) Uganda Documents



has included explicit discussions of climate adaptation, locally led responses, and agroecology as a climate solution. This shift reflects a broader transition in institutional priorities: from promoting agroecology primarily as a sustainable alternative to conventional agriculture to positioning it as a critical climate mitigation and adaptation strategy.

Climate change awareness, mitigation, and adaptation emerge as some of the most prominent and deeply embedded themes across all four documents. One staff member highlights “climate resilience” as a core element of PELUM’s strategic domain of agroecology and sustainable natural resource management. This position emphasizes the organization’s commitment to helping member organizations and communities cope with and adapt to shifting environmental conditions. PELUM Uganda does not treat climate change as a standalone issue but as a cross-cutting concern integrated into broader efforts such as agroecological farming, land rights advocacy, and participatory governance.

Another staff member expands on this strategic focus by detailing several practical community-driven models employed by PELUM. The CRAEM model facilitates holistic community engagement, ensuring that all stakeholders collaborate on climate solutions. The CMSS model addresses seed sovereignty by enabling communities to produce and preserve their own locally adapted seeds. The GALS framework ensures that gender dimensions are considered in building climate resilience at the household and community levels. The PESA model links ecological practices to financial empowerment, helping communities turn sustainable practices into viable livelihoods.

Additional depth of climate programming is in the CRAEM Facilitator’s Guide (2016) developed by PELUM Uganda, which presents a modular, community model for building household and agricultural resilience to climate change. It clarifies:

This facilitators’ guide is intended to provide an application process of the CRAEM model by the facilitating organizations at community level while empowering the beneficiary communities to take lead role in building their own resilience to climate change. (p. III)

CRAEM offered a systematic framework for integrating climate adaptation and mitigation through ecologically sound practices such as agroforestry, greywater reuse, soil conservation, and early warning systems. Unlike climate-smart agriculture, CRAEM explicitly critiqued industrial inputs and focused on farmer agency, gender equity, and local innovation as central to climate resilience. The Guide also incorporated structured training on climate change literacy, gender-differentiated vulnerability assessments, and practical tools, including the Gender Action Learning System (GALS) methodology for climate responsive planning.

Climate change has become a thematic driver and a framing lens for PELUM Uganda’s work. Whether in advocacy, research, or grassroots mobilization, the Secretariat has increasingly used climate language and evidence to position agroecology as ecologically viable and socio-economically urgent. Its engagement is characterized by high level participation in policy spaces and localized strategies rooted in farmer knowledge.

It was noted that despite climate change becoming more integrated into Secretariat programming, some member organizations continued to perceive it primarily as a donor-driven agenda. This perception did not reflect a denial of climate-related risks, but rather a concern that climate change was often framed through externally defined project language, reporting requirements, and funding priorities, rather than through locally articulated livelihood challenges. In several cases, agroecological practices that farmers already associated with food security, soil fertility, and water management were not necessarily recognized by members as “climate action,” contributing to the view that climate programming was externally imposed rather than locally owned. Local actors in Uganda and across Africa often view climate change as driven mainly by major industrial economies in the West who significantly contribute to greenhouse gas emissions. They see climate funds, channeled through donors, as coming from these same external powers. While climate adaptation efforts are seen as relevant, mitigation is viewed as largely irrelevant. In response, the Secretariat made efforts to frame climate action in more practical

livelihood terms fostering adaption, highlighting the contribution of agroecology to food preservation, efficient water use, and drought resilience. It was also observed that although climate change was positioned as one of the Secretariat's four core advocacy themes, its practical implementation across the network remained inconsistent. In many cases, whether climate considerations were integrated into programming depended heavily on donor requirements or the focus of specific projects.

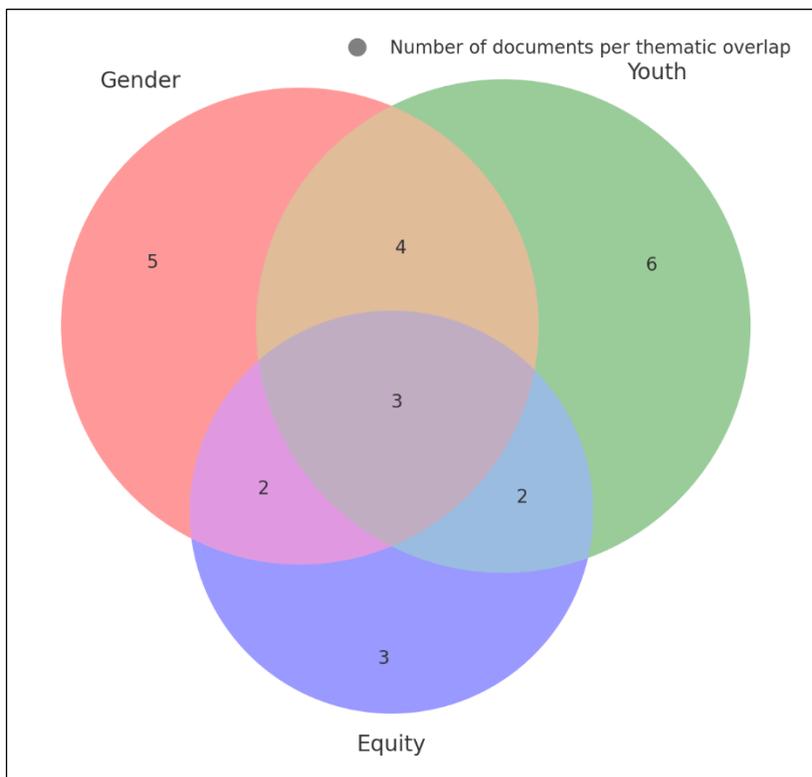
One respondent described agroecology as inherently aligned with climate adaptation, citing examples such as crop diversification, agroforestry, greywater reuse, and food preservation as practices already in use by farmers. The Secretariat's role was seen as strengthening and systematizing these approaches to help scale resilience in the face of increasing climate stress:

Agroecology helps address drought through agroforestry, crop diversification, grey water reuse, and food preservation during bumper harvests. (PELUM staff)

Climate resilience programming within PELUM Uganda is intentionally linked to gender, youth, and equity considerations as part of the organization's broader institutionalization of agroecology. These dimensions reflect agroecology's social principles, emphasizing inclusivity, participation, and justice. Integrating gender and youth perspectives ensures that capacity building and livelihood programs address the structural inequalities that shape access to land, inputs, and decision-making. Equity, in this context, refers to fair distribution of resources and opportunities across different social groups. Recognizing these linkages demonstrates how PELUM

operationalizes agroecology not only as an ecological approach but also as a socially transformative process (Figure 3). The CRAEM model, for instance, included gender-sensitive planning tools such as the Gender Action Learning System (GALS) and explicitly addressed the differentiated impacts of climate change on men and women. In the Ugandan context, these differences commonly manifest in women experiencing increased labor burdens related to water collection, food provisioning, and caregiving during periods of drought or erratic rainfall, alongside more limited control over land and productive resources. Men, by contrast, are often more directly affected through climate-related losses in crop production, livestock assets, and market income. Such can increase economic pressure and labor migration. The incorporation of participatory tools that surface these gendered vulnerabilities and responsibilities allows CRAEM to ensure that climate adaptation strategies respond to distinct household and community-level realities

Figure 3. Venn Diagram Visualizing the Intersection of Gender, Youth, and Equity in Participatory Ecological Land Use Management (PELUM) Uganda's Programming 2010–2024



rather than assuming uniform impacts. Through CRAEM, adaptation strategies were promoted that reflected the priorities of women and marginalized groups through emphasis on participatory climate risk assessments and inclusive action planning. However, despite firm commitments in strategic plans, staff reported inconsistent mainstreaming of gender and equity across climate-focused projects. In many cases, donor interests more than vulnerable populations' needs and realities shaped climate programming'. This concern is consistent with critiques raised in PELUM Uganda's 2017 policy recommendations for Uganda's draft Climate Change Bill. The document noted that directive policy processes often overlook the lived realities of farming communities. It advocated for inclusive legal frameworks prioritizing local adaptation strategies and equitable access to climate change mitigation finance. It also noted need for legislation to recognize and embed indigenous knowledge as a valid and essential part of the climate response in Uganda.

Across the reviewed documents and staff reflections, recurring institutional and systemic challenges affect PELUM Uganda's ability to scale agroecology, build capacity, and influence policy (Supplemental Material 3G). Nevertheless, the Secretariat has demonstrated adaptive learning by investing in internal systems, partnerships, and grassroots alliances. Continued focus on implementation, equity, documentation, and climate-responsive planning remains key for future progress.

As previously noted, some member organizations viewed climate programming as donor driven, creating challenges in aligning external priorities with local needs. It was also observed that despite increased engagement in policy spaces, a significant gap remained in translating agroecological strategies into widespread practice. Uptake was described as uneven, and without stronger buy-in, particularly at district levels, agroecology risked being perceived as a niche rather than a mainstream development pathway.

Discussion

PELUM Uganda's integrated strategy mirrors global agroecological transition models in its

emphasis on systems thinking, participatory learning, and policy engagement. However, achieving a balance between programmatic breadth (working across multiple domains) and depth (ensuring measurable impact within each domain) remains a continuing challenge (Anderson et al., 2019; HLPE, 2019). The Secretariat excels at convening actors and influencing policy, and study findings highlight their strengths in promoting farmer-led learning and research. However, challenges persist, particularly in internal documentation, uneven member engagement, and inconsistent post-training support.

Capacity Building: Strengths and Gaps in Training Models

As a core strategy for agroecological transition, capacity building enables CSOs such as PELUM Uganda to translate principles into practice. Among the five domains, this was the most consistently documented function. Training workshops, leadership mentoring, and farmer exchange visits were found to be frequently deployed to strengthen agroecological skills across CSO staff, youth, and smallholder farmers. These efforts reflect the "training of trainers" model and echo the ethos of agroecology's *campesino-a-campesino* [farmer-to-farmer] approach (Rosset et al., 2019). However, the findings also revealed limitations. Although 70% of farmers reportedly adopted at least three agroecological practices post-training, weak post-training follow-up often undermined long-term knowledge retention (PELUM Annual Report 2022, 2023). This is consistent with observations in Kenya, where up to 40% of trainees reverted to conventional practices without mentorship (Kaguongo et al., 2014). This confirms that iterative learning cycles, involving follow-up coaching and adaptive feedback, are essential for agroecological transformation (Friis-Hansen & Duveskog, 2012; Pimbert et al., 2021; Waddington et al., 2014).

Gender equity and youth inclusion were central to PELUM Uganda's capacity building, notably through programs such as AWOLA, which align with feminist agroecology and leadership-building goals (Bezner et al., 2022; Zaremba et al., 2021). However, interviews pointed to persistent barriers,

such as land tenure inequities, sociocultural norms, and limited access to credit, that constrain transformative gender outcomes. Training alone may be insufficient because structural barriers including discriminatory legal frameworks, sociocultural norms, and limited access to resources continue to impede gender equality in governance structures. These findings align with studies in Uganda showing that gender inequalities persist in agricultural and environmental sectors despite policies promoting women's participation (Aganyira et al., 2020). Unequal access to land, credit, and leadership positions continue to constrain women's agency within agroecological initiatives. This mirrors broader African research showing how formal representation alone does not dismantle entrenched gendered power relations (Makulilo & Bakari, 2021). Transformative approaches including education, empowerment, advocacy, and collaboration as employed by the Tanzania Gender Networking Programme (TGNP) have shown promise in promoting women's empowerment and political participation (Makulilo & Bakari, 2021).

Research and Innovation: Facilitating Farmer-Led Knowledge

In the domain of research and innovation, PELUM Uganda plays a facilitative role rather than acting as a formal research body. It supports community-based innovations such as seed banking and PGS (HLPE CFS 2019; Greenberg et al., 2023), which reflect a territorialized model of innovation. These grassroots experiments align with the principles of agroecology, but our review found limited systematization and formal documentation. This challenge aligns with broader observations about the under-recognition of informal innovation within agrifood systems, as discussed by FAO (May et al., 2023), particularly in the context of rural transformation.

Drawing from Malawi's experience, integrating participatory action research (PAR) with long-term impact assessments strengthens policy advocacy (Snapp et al., 2023). In Tanzania, universities are enhancing the sustainability of their outreach activities through PAR, as demonstrated by Sokoine University of Agriculture's fostering of community transformation and researcher-farmer and

researcher-CSO collaborations (Busindeli et al., 2024). Our findings suggest that collaboration with universities could support PAR and help systematize learning. However, attention must be given to power collaboration challenges that persist around asymmetries in research partnerships (Ozano et al., 2020).

Networking and Collaboration: Building a Civil Society Ecosystem

Networking and collaboration are strategic strengths of PELUM Uganda, demonstrated through its leadership in national and continental platforms such as AFSA and KCOA. The network's "meshwork" governance structure (Figure 1) facilitates exposure visits, horizontal learning, and collective advocacy. Nevertheless, our findings point to uneven participation among members and dependency on donor-driven projects, which are common coordination challenges in CSO networks (Nicholls et al., 2016).

To improve resilience, a tiered membership model or pooled funding mechanism could help diversify resources and strengthen internal cohesion. In the Ugandan context, where civil society organizations vary widely in size, capacity, and access to donor funding, a tiered membership model would allow differentiated levels of participation and contribution, rather than assuming uniform engagement across the network. Similarly, a pooled funding mechanism that draws on modest contributions from multiple donors, partners, or membership fees, could support shared functions such as coordination, capacity building follow-up, and documentation, while reducing competition among member organizations. For instance, Uganda has recently discussed an agrochemical levy, a small tax on imported synthetic fertilizers and pesticides, intended to support sustainable agriculture initiatives. Such a mechanism could provide a public revenue stream for ecological agriculture programs and partnerships that align with PELUM Uganda's mission, thereby creating opportunities for collaborative financing rather than direct organizational funding. Despite challenges, PELUM has influenced national policies on agroecology, seeds, climate, and nutrition, although sustaining member engagement demands that the

Secretariat provide clearer communication about long-term advocacy benefits (Anderson et al., 2020), as they take time to manifest.

Policy Advocacy: Strategic Influence and Long-Term Impact

PELUM Uganda's advocacy track record is notable. It has shaped key national policies, including the National Organic Agriculture Policy and the draft agroecology strategy (Biovision, 2024). It has also mobilized seed sovereignty and land rights actors, and is positioned to lead on legal frameworks such as a seed sovereignty bill. Climate engagement is growing, with policy actors positioning agroecology as a climate solution. However, the value of advocacy is not always evident to grassroots members, especially when financial benefits are indirect or delayed. Our interviews suggest that clearer communication about long-term policy successes is needed to maintain momentum (Anderson et al., 2020).

Despite growing international recognition of agroecology as a climate adaptation strategy, the framing of agroecology around climate goals remains contentious among some stakeholders, particularly where it is seen as donor driven. This tension is partly geopolitical. In Europe, agroecology has been increasingly institutionalized through academic, policy, and farmer networks that emphasize climate resilience, soil carbon sequestration, and diversified agroecosystems as central objectives (Bellon et al., 2018). Research and training institutions across Western Europe actively promote agroecology as a transformative response to climate change, often embedded in national policy (Bellon et al., 2018). In contrast, the U.S. demonstrates more resistance. Whereas agroecological practices are gaining traction among grassroots movements and researchers, the broader climate framing is often met with political skepticism or mistrust of federal agendas (Wills et al., 2024). This 'divide' shapes how donors, particularly from the Global North, frame project goals. U.S.-based funders are therefore more likely to adopt a technocratic or productivity lens, potentially clashing with the more holistic and politicized visions held by European and Global South actors (Wills et al., 2024). This tension is

salient in Latin America, where stakeholders recognize agroecology's role in climate adaptation but express concerns about top-down, often foreign-based donor narratives that can misalign with local priorities (Carolina et al., 2023). This divergence has implications for African initiatives such as PELUM Uganda. Members may perceive climate-oriented funding as externally imposed, which highlights broader concerns about agroecology's depoliticization when filtered through donor logics (Nicot et al., 2018). Therefore, when major donors originate from regions where climate action is politically polarized, this dynamic can influence PELUM Uganda's funding model and implementation choices. For example, donor preferences may shape the framing of resilience programs, either reinforcing locally grounded approaches such as CRAEM and CMSS or steering resources toward externally defined climate priorities. This affects funding predictability as well as how PELUM balances accountability to donors with its commitment to farmer-led agroecological models.

Climate change engagement has evolved from peripheral to a core theme in PELUM Uganda's strategy. The study's document review shows increasing use of climate framing to promote agroecology as both an adaptation and mitigation strategy (Intergovernmental Panel on Climate Change, 2022). The CRAEM model, for example, embodies locally led adaptation by incorporating traditional knowledge, agroforestry, and greywater reuse (Barbato & Strong, 2023). However, tensions persist between farmer-defined resilience and donor-driven metrics such as carbon sequestration and carbon markets (Levidow, 2018). Study interviews revealed that some members still perceive climate action as donor imposed. This risks reducing agroecology to a mitigation toolkit, sidelining food sovereignty principles (Levidow, 2018).

Embedding agroecology in livelihood programs, such as water conservation, can boost relevance of climate adaptation strategies by aligning ecological practices with local development priorities (Isaac et al., 2021). PELUM Uganda and other CSOs assist farmers to adopt agroecological practices that improve soil fertility, biodiversity and climate adaptation, reducing dependence on chemical

inputs, and conserving natural resources (FAO, 2025). PELUM's approach addresses technical, social, and political agroecological dimensions (Wezel et al., 2020), but scaling impact requires stronger documentation, equitable member engagement, and post-training follow-up.

Comparative insights show that PELUM Uganda occupies a hybrid niche within the region. Whereas Kenya's KOAN focused on organic certification and decentralized support through Counties Agroecology Hubs, PELUM Uganda takes a more assertive, policy-focused approach. Its collaboration with the MAAIF and ties to AFSA offer regional influence and reflects adaptive pragmatism, enabling institutional access. However, it also raises the risk of co-optation, as seen in Ethiopia's top-down agroecology programs (Mier y Terán Giménez Cacho et al., 2018). To remain effective, PELUM must offer evidence-based, farmer-driven models that promote food sovereignty, ecological restoration, and chemical-free farming. Lessons from West African networks, such as Burkina Faso's CNABio (Sib et al., 2023) and Mali's CNOP (Coulibaly et al., 2021), suggest that scaling agroecology requires strong farmer organizations, decentralized governance, and flexible funding arrangements. In these contexts, funding flexibility refers to access to core or pooled resources that are not narrowly earmarked to short-term project outputs. This allows farmer organizations to allocate resources across training, peer learning, coordination, and follow-up support. Such funding enables longer time horizons, adaptive responses to local priorities, and sustained farmer-to-farmer exchange. These conditions are essential for scaling agroecological practices that rely on social learning, ecological adaptation, and collective action rather than standardized technological inputs.

While PELUM is viewed as a civil society network leader, critics argue grassroots networks often lack scalability in fragile institutional settings (Isgren & Ness, 2017). There is also tension between strong capacity-building efforts and weak post-training follow-up, echoing concerns that short-term interventions lack lasting impact (Lussier, 2016). Similarly, PELUM's stance on markets appears contradictory, resisting market-driven agroecology while integrating tools such as

the PGS to empower farmers through localized certification (Bouagnimbeck, 2014). Leveraging the Africa Continental free trade area (AfCFTA), Uganda could promote the PGS as a Pan-African standard, reducing certification costs and expanding smallholder market access (Ezeonu, 2021). PELUM's nuanced strategy must therefore balance grassroots principles with policy engagement to scale agroecological transformation.

Taken together, these five domains reveal how civil society organizations operate as multi-level brokers of agroecological change: facilitating learning, building credibility, and navigating complex donor and policy landscapes. The case of PELUM Uganda illustrates both the opportunities and tensions involved in scaling agroecology through networked, resource-constrained systems.

Navigating Donor Dynamics and Internal Constraints

Our study also confirms broader tensions facing civil society. Although organizations such as PELUM are central to agroecology as a "modernization from below," their policy influence is often shaped by relationships with the state and with donor priorities (Isgren, 2018). Some members view advocacy as disconnected from local realities (Bottazzi & Boillat, 2021), exposing a gap between national-level influence and perceived grassroots benefits. Moreover, civil society's policy impact in Uganda remains limited, often shaped by internal governance and by relationships with the state and political actors raising questions about the long-term effectiveness of advocacy without deeper local engagement and institutional reform (Njoku, 2022; Robinson & Friedman, 2007).

This paper provides an account of how networked CSOs drive transitions to agroecology through diverse initiatives. Further studies could analyze how PELUM Uganda navigates its engagements with the state. Agroecology does not operate in a vacuum; it is shaped by state-civil society relations, competing interests from agribusiness, and international development agendas. As the literature has noted, the impact of civil society in Uganda depends heavily on state receptivity and internal governance, with technocratic state priorities having the potential to

marginalize agroecological initiatives (Isgren, 2016, 2018).

Scaling Agroecology: Horizontal and Vertical Approaches

PELUM Uganda's efforts illustrate both horizontal and vertical scaling of agroecology. Horizontal scaling initiatives such as peer learning, exposure visits, and community exchanges align with horizontal diffusion, akin to the Latin America campesino-a-campesino model (Rosset et al., 2019). In contrast, PELUM's integration into Uganda's national agroecology strategy and its influence on the National Organic Agriculture Policy is a promising example of vertical scaling, but questions remain about consistency and depth of implementation. Comparative experiences from Latin America, such as Brazil's agroecology policies, and West Africa, such as Senegal's National Agroecology Program, show that vertical scaling often hinges on sustained civil society pressure and political will (Mier y Terán Giménez Cacho et al., 2018). PELUM Uganda offers legitimacy, localized knowledge, and flexible organizing, which generally contrast with the top-down, technocratic approaches of state agencies (Anderson et al., 2019). However, PELUM's reliance on donor funding and uneven capacity across member organizations can constrain reach and depth. This study's findings show that balancing these approaches is difficult. Horizontal scaling promotes localized relevance but can be sidelined without institutional support; vertical scaling brings policy traction but risks diluting grassroots values. A hybrid model that anchors vertical legitimacy in farmer agency may be key to systemic agroecological change.

Although recognizing PELUM's push to institutionalize agroecology, this study does not fully engage with the potential risks to agroecology's emancipatory ethos. It is acknowledged that institutionalization can dilute agroecology's radical potential by aligning it with technocratic metrics, donor agendas, and elite co-optation (Giraldo & Rosset, 2018, 2023). To preserve the transformative ethos, PELUM must maintain a strong grassroots anchor, resist elite capture, and elevate local priorities over external metrics.

Equity and Institutionalization: Safeguarding Agroecology's Ethos

Enforcing equity must become a central pillar of the agroecological initiatives PELUM supports. This involves working closely with the Ministry of Gender, Labour and Social Development to expand successful programs such as AWOLA into broader women's funds such as the Uganda Women Entrepreneurship Programme. Such funds could provide female farmers with targeted grants and land titles, addressing systemic gender disparities. Burkina Faso's Femmes et Agroécologie demonstrates how land security and financial support can empower women and strengthen agroecological leadership at the community level (Diendéré & Wadio, 2023). PELUM's advocacy initiatives, including its annual Land Awareness Week and its work addressing land tenure insecurity and large-scale land acquisitions, are among the tools the network seeks to scale up to advance equity. Land Awareness Week focuses on community sensitization, legal literacy, and dialogue with local authorities on land rights, with particular emphasis on women, youth, and smallholder farmers. Complementary advocacy efforts engage cases of land dispossession linked to large-scale investments or contested land transactions, supporting community mobilization and policy engagement to strengthen tenure security and protect customary land rights..

Conclusion and Recommendations

This study contributes original insights into how CSOs can drive agroecological transformation within low-resource communities, where financial, technical, and institutional capacities are often limited. By coordinating capacity building, research, advocacy, and climate engagement, PELUM acts as a key link between farmers, policymakers, and regional networks. PELUM Uganda employs a hybrid model that involves linking grassroots innovation with policy advocacy. The model offers a compelling case of "networked transformation." However, this potential is constrained by weak documentation systems, unequal member engagement, limited follow-up mechanisms, and donor dependence, hindering long-term impact. Despite these issues, PELUM's experience offers valuable lessons. Strengthening internal systems,

equity, and alignment with national strategies is crucial for civil society to remain an effective driver of agroecological transformation. Moving forward, PELUM's impact could be amplified by embracing a dual strategy that integrates the relational depth of horizontal learning ("out-scaling") with the institutional leverage of vertical advocacy ("up-scaling") (Mier y Terán Giménez Cacho et al., 2018). Anchoring the strategy in a more participatory governance framework would help reconcile tensions between donor demands and grassroots priorities and solidify PELUM's role as a catalyst for food sovereignty in Uganda and beyond. Achieving deeper institutionalization of agroecology can be achieved through addressing documentation gaps, centering intersectional equity to ensure fair participation and benefit sharing across gender, age, and socioeconomic lines, and forging bolder alliances. For PELUM Uganda, equity involves responding to the different ways social categories such as gender, youth status, and resource access shape engagement in agroecological initiatives. Integrating this perspective strengthens networked transformation by making collective action more inclusive of diverse farming constituencies. These lessons resonate across East Africa, offering a roadmap for other networked institutions like PELUM Kenya seeking to align ecological resilience with social justice. PELUM Uganda exemplifies the potential of civil society networks to drive agroecological transitions through hybrid strategies, blending grassroots mobilization with policy pragmatism. As climate shocks and agribusiness encroachment intensify, however, the PELUM Uganda Secretariat must navigate tensions between adaptation and transformation, collaboration and resistance.

Finally, as climate stress intensifies and food systems face increased privatization, civil society organizations such as PELUM must not only facilitate adaptation but also assert a bold vision for transformation. Strengthening documentation, amplifying farmer agency, and fostering cross-regional alliances will be critical for building an agroecological future rooted in justice, equity, and resilience. To address persistent gaps in agroecological transformation in Uganda, we call on the

government to support PELUM Uganda in designing and implementing context-specific actions on community-led climate adaptation and resilience strategies, multi-stakeholder collaboration, and innovation for inclusive development that are aligned with Uganda's National Development Plan IV (NDP IV) [FY 2025/26–2029/30]. We also call on the Uganda government to support CSOs such as PELUM Uganda in realizing priorities of the African Union Agenda 2063 (2015), specifically Aspiration 1, Goal 5 of Agenda 2063, on sustainable and climate-adaptive agriculture through promotion of agroecology

In parallel, PELUM Uganda and its partner networks, such as ACSA, AFSA, and ESAFF, in order to amplify their impact should advance the following initiatives. First, strengthening documentation systems within CSOs is essential to enhance knowledge sharing, institutional learning, and evidence-based advocacy. A more systematic approach would ensure that successful practices are captured, preserved, and disseminated across member organizations. Second, mobilize like-minded partners to launch a national Agroecology Innovation Fund to retain and share local innovations more effectively. This fund could support the digitization of farmer knowledge by facilitating credit access to small-scale farmers. Third, pressure their national governments to deepen the integration of climate change considerations into agroecological policies and integrate agroecological approaches into climate policies; for example, advocating for amendments to Uganda's Climate Change Act (2023). Fourth, advance benchmark comparison of different conceptual frameworks across the continent. For instance, in Senegal since 2019 multiple stakeholders have coalesced under the DyTAES initiative (Dynamique pour une Transition Agro-écologique au Sénégal) to contribute to government policy deliberations on developing a national agroecological transition policy (Bottazzi & Boillat, 2021; United Nations Development Programme, 2025). Future studies should explore how CSOs could balance pragmatic collaboration with state actors while safeguarding the transformative rights-based foundation of agroecology. 

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References

- African Union. (2015). *Agenda 2063: The Africa we want*. <https://au.int/en/agenda2063/overview>
- Aganyira, K., Kabumbuli, R., Muwanika, V. B., Tabuti, J. R. S., & Sheil, D. (2020). *Determinants of participation in state and private PES projects in Uganda*. *Scientific African*, 8, Article e00370. <https://doi.org/10.1016/j.sciaf.2020.e00370>
- Akanmu, A. O., Akol, A. M., Ndolo, D. O., Kutu, F. R., & Babalola, O. O. (2023). Agroecological techniques: Adoption of safe and sustainable agricultural practices among the smallholder farmers in Africa. *Frontiers in Sustainable Food Systems*, 7, Article 1143061. <https://doi.org/10.3389/fsufs.2023.1143061>
- Altieri, M. A. (2004). Linking ecologists and traditional farmers in the search for sustainable agriculture. *Frontiers in Ecology and the Environment*, 2(1), 35–42. [https://doi.org/10.1890/1540-9295\(2004\)002\[0035:LEATFI\]2.0.CO;2](https://doi.org/10.1890/1540-9295(2004)002[0035:LEATFI]2.0.CO;2)
- Anderson, C. R., Bruil, J., Chappell, M. J., Kiss, C., & Pimbert, M. P. (2019). From transition to domains of transformation: Getting to sustainable and just food systems through agroecology. *Sustainability*, 11(19), Article 5272. <https://doi.org/10.3390/su11195272>
- Anderson, C. R., Bruil, J., Chappell, M. J., Kiss, C., & Pimbert, M. P. (2020). *Agroecology now! Transformations towards more just and sustainable food systems*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-030-61315-0>
- Azadi, H., Moghaddam, S. M., Burkart, S., Mahmoudi, H., Passel, S. V., Kurban, A., & Lopez-Carr, D. (2021). Rethinking resilient agriculture: From climate-smart agriculture to vulnerable-smart agriculture. *Journal of Cleaner Production*, 319, Article 128602. <https://doi.org/10.1016/j.jclepro.2021.128602>
- Barbato, C.T., & Strong, A.L. (2023). Farmer perspectives on carbon markets incentivizing agricultural soil carbon sequestration. *npj Climate Action*, 2, Article 26. <https://doi.org/10.1038/s44168-023-00055-4>
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544–559. <https://doi.org/10.46743/2160-3715/2008.1573>
- Bellon, S., Nicot, R., Loconto, A., & Ollivier, G. (2018). The European networks of research, education and training stakeholders in agroecology. *Open Agriculture*, 3(1), 537–552. <https://doi.org/10.1515/opag-2018-0058>
- Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, 15(2), 219–234. <https://doi.org/10.1177/1468794112468475>
- Bezner Kerr, R. B., Kangmennaang, J., Dakishoni, L., Nyantakyi-Frimpong, H., Lupafya, E., Shumba, L., Msachi, R., Boateng, G. O., Snapp, S. S., Chitaya, A., Maona, E., Gondwe, T., Nkhonjera, P., & Luginaah, I. (2019). Participatory agroecological research on climate change adaptation improves smallholder farmer household food security and dietary diversity in Malawi. *Agriculture, Ecosystems & Environment*, 279, 109–121. <https://doi.org/10.1016/j.agee.2019.04.004>
- Bezner Kerr, R. B., Liebert, J., Kansanga, M., & Kpienbaareh, D. (2022). Human and social values in agroecology: A review. *Elementa: Science of the Anthropocene*, 10(1), Article 90. <https://doi.org/10.1525/elementa.2021.00090>
- Biovision Foundation for Ecological Development. (2024). *National agroecology strategies in eastern and southern Africa*. https://www.biovision.ch/wp-content/uploads/2024/08/Infopool_NAS-Brief.pdf
- Bottazzi, P., & Boillat, S. (2021). Political agroecology in Senegal: Historicity and repertoires of collective actions of an emerging social movement. *Sustainability*, 13(11), Article 6352. <https://doi.org/10.3390/su13116352>
- Bouagnimbeck, H. (Ed.). (2014). *Global comparative study on interactions between social processes and participatory guarantee systems: A brief of the best practice study for learning and development with case studies from Africa, Asia, Europe and Latin America*. International Federation of Organic Agriculture Movements (IFOAM). <https://www.ifoam.bio/global-comparative-pgs-study>
- Busindeli, I. M., Martin, R., & Kalungwizi, V. J. (2024). Enhancing sustainability of university-based outreach activities through participatory action research: The case of Sokoine University of Agriculture. *International Journal of Agricultural Extension*, 12(2), 307–318. <https://doi.org/10.33687/ijae.012.002.5153>

- Byaruhanga, R. (2024). NGOisation and foodsovereignty: Unearthing the intricacies of NGO-driven food sovereignty efforts. Insights from Uganda. *Agriculture and Human Values*, 42(2), 905–922. <https://doi.org/10.1007/s10460-024-10645-5>
- Cadman, R., Denniston, M., Bailey, M., Syliboy, A., Saunders, M., Denny, S., Barry, E., Bishop, B., & Landovskis, S. (2024). Using positionality and reflexivity to support equity in partnership-driven research. *Conservation Biology*, 38(6), Article e14396. <https://doi.org/10.1111/cobi.14396>
- Carolina, Q., Alejandra, A., & Nadine, A. (2023). Evidence of agroecology's contribution to mitigation, adaptation, and resilience under climate variability and change in Latin America. *Agroecology and Sustainable Food Systems*, 48(2), 228–252. <https://doi.org/10.1080/21683565.2023.2273835>
- Chagutah, T. (2013). Land tenure insecurity, vulnerability to climate-induced disaster and opportunities for redress in southern Africa. *Jambá: Journal of Disaster Risk Studies*, 5(2), Article 79. <https://doi.org/10.4102/jamba.v5i2.79>
- Chavula, P. (2021). Land tenurial system influence among smallholder farmers' climate smart agriculture technologies adoption: Sub-Sahara Africa. A review paper. *Journal of Biology, Agriculture and Healthcare*, 11(23), 12–21. <https://doi.org/10.7176/JBAH/11-23-03>
- Coulibaly, M., Claeys, P., & Berson, A. (2021). The right to seeds and legal mobilization for the protection of peasant seed systems in Mali. *Journal of Human Rights Practice*, 12(3), 479–500. <https://doi.org/10.1093/jhuman/huaa039>
- Creswell, J. W., & Poth, C. N. (2023). *Qualitative inquiry and research design: Choosing among five traditions* (5th ed.). Sage.
- Debray, V., Wezel, A., Lambert-Derkimba, A., Roesch, K., Lieblein, G., & Francis, C. A. (2019). Agroecological practices for climate change adaptation in semiarid and subhumid Africa. *Agroecology and Sustainable Food Systems*, 43(4) 429–456. <https://doi.org/10.1080/21683565.2018.1509166>
- Diendéré, A. A., & Wadio, J.-P. (2023). Land tenure rights and short- and long-term agricultural practices: Empirical evidence from Burkina Faso. *Journal of Agricultural and Applied Economics*, 55(2), 238–255. <https://doi.org/10.1017/aac.2023.10>
- Dixon-Woods, M. (2011). Using framework-based synthesis for conducting reviews of qualitative studies. *BMC Medicine*, 9, Article 39. <https://doi.org/10.1186/1741-7015-9-39>
- Ezeonu, I. (2021). African continental free-trade area: Key challenges. *Perspectives on Global Development and Technology*, 20(1–2), 57–76. <https://doi.org/10.1163/15691497-12341582>
- Food and Agriculture Organization of the United Nations [FAO]. (2018a, April 3–5). *Scaling up agroecology initiative. Transforming food and agricultural systems in support of the SDGs. A proposal prepared for the International Symposium on Agroecology*. <https://openknowledge.fao.org/server/api/core/bitstreams/a21f0e9e-7cc4-4975-ad0a-36aac7a35c5fb/content>
- FAO. (2018b). *The 10 elements of agroecology: Guiding the transition to sustainable food and agricultural systems*. <http://www.fao.org/3/I9037EN/i9037en.pdf>
- FAO. (2021). *The state of food and agriculture 2021: Making agrifood systems more resilient to shocks and stresses*. <https://openknowledge.fao.org/items/437c1215-556b-4161-9af6-68163f5a1f84>
- FAO. (2025). *Overview: What is agroecology?* Agroecology Knowledge Hub. <https://www.fao.org/agroecology/overview/en/>
- Friis-Hansen, E., & Duveskog, D. (2012). The empowerment route to well-being: An analysis of farmer field schools in East Africa. *World Development*, 40(2), 414–427. <https://doi.org/10.1016/j.worlddev.2011.05.005>
- Gale, N. K., Heath, G., Cameron, E., Rashid, S., & Redwood, S. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*, 13, Article 117. <https://doi.org/10.1186/1471-2288-13-117>
- Giraldo, O. F., & Rosset, P. M. (2018). Agroecology as a territory in dispute: Between institutionality and social movements. *Journal of Peasant Studies*, 45(3), 545–564. <https://doi.org/10.1080/03066150.2017.1353496>
- Giraldo, O. F., & Rosset, P. M. (2023). Emancipatory agroecologies: Social and political principles. *Journal of Peasant Studies*, 50(3), 820–850. <https://doi.org/10.1080/03066150.2022.2120808>
- Gliessman, S. R. (2020). Transforming food and agricultural systems with agroecology. *Agriculture and Human Values*, 37(3), 547–548. <https://doi.org/10.1007/s10460-020-10058-0>

- Greenberg, S., Drimie, S., Losch, B., & May, J. (2023). From local initiatives to coalitions for an effective agroecology strategy: Lessons from South Africa. *Sustainability*, 15(21), Article 15521. <https://doi.org/10.3390/su152115521>
- Groenland, E. A. G. (2016). Using the matrix method for the analysis of deductive, qualitative research data. An introduction with an annotated illustration. SSRN. <https://doi.org/10.2139/ssrn.2769834>
- High-Level Panel of Experts [HLPE] of the Committee on World Food Security [CFS]. (2019). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition* (HLPE Report No. 14). <https://www.fao.org/agroecology/database/detail/en/c/1242141/>
- Intergovernmental Panel on Climate Change. (2022). *IPCC sixth assessment report: Impacts, adaptation and vulnerability*. <https://www.ipcc.ch/report/ar6/wg2/>
- Isaac, M. E., Nyantakyi-Frimpong, H., Matous, P., Dawoe, E., & Anglaaere, L. C. N. (2021). Farmer networks and agrobiodiversity interventions: The unintended outcomes of intended change. *Ecology and Society*, 26(4), Article 12. <https://doi.org/10.5751/ES-12734-260412>
- Isgren, E. (2016). No quick fixes: Four interacting constraints to advancing agroecology in Uganda. *International Journal of Agricultural Sustainability*, 14(4), 428–447. <https://doi.org/10.1080/14735903.2016.1144699>
- Isgren, E. (2018). *Between nature and modernity. Agroecology as an alternative development pathway: the case of Uganda*. [Doctoral dissertation, Lund University Centre for Sustainability Studies.] Research Portal, Lund University. <https://www.lu.se/ellinor-isgren/publication/c6b51b12-60ad-434c-9232-3bb4034515e7>
- Kaguongo, W., Maungi, G., Barker, I., Ng'ang'a, N., & Guenther, J. (2014). The value of seed potatoes from four systems in Kenya. *American Journal of Potato Research*, 91(1), 109–118. <https://doi.org/10.1007/s12230-013-9342-z>
- Landertinger, L. (2008). *Brazil's Landless Workers Movement (MST)*. Centre for Research on Latin America and the Caribbean, York University. <https://www.yorku.ca/ceclac/wp-content/uploads/sites/259/2016/06/Landertinger.pdf>
- Levidow, L. (2018). Sustainable intensification: Agroecological appropriation or contestation? In D. H. Constance, J. T. Konefai, & M. Hatanaka (Eds.), *Contested sustainability: Discourses in the agrifood system* (pp. 19–41). Routledge. <https://doi.org/10.4324/9781315161297>
- Lovo, S. (2016). Tenure insecurity and investment in soil conservation. Evidence from Malawi. *World Development*, 78, 219–229. <https://doi.org/10.1016/j.worlddev.2015.10.023>
- Lussier, K. (2016). The quest for capacity development. *International Journal of Learning and Development*, 6(1), Article 149. <https://doi.org/10.5296/ijld.v6i1.9283>
- Makulilo, A. B., & Bakari, M. (2021). Building a transformative feminist movement for women empowerment in Tanzania: the role of the Tanzania Gender Networking Programme (TGNP-Mtandao). *Africa Review*, 13(2), 155–174. <https://doi.org/10.1080/09744053.2021.1936998>
- Martiniello, G. (2015). Food sovereignty as praxis: Rethinking the food question in Uganda. *Third World Quarterly*, 36(3), 508–525. <https://doi.org/10.1080/01436597.2015.1029233>
- Mason, W., Mirza, N., & Webb, C. (2018). *Using the framework method to analyze mixed-methods case studies*. Sage. <https://doi.org/10.4135/9781526438683>
- May, J., Velia, M. & Benammour, O. (2023). *The role of social protection in strengthening agrifood systems and inclusive rural transformation: A case of the Bangladesh enhanced coastal fisheries project*. Food and Agriculture Organization of the United Nations (FAO). <https://doi.org/10.4060/cc8127en>
- Meek, D., Bradley, K., Ferguson, B., Hoey, L., Morales, H., Rosset, P., & Tarlau, R. (2019). Food sovereignty education across the Americas: Multiple origins, converging movements. *Agriculture and Human Values*, 36(3), 611–626. <https://doi.org/10.1007/s10460-017-9780-1>
- Mier y Terán Giménez Cacho, G., Giraldo, O. F., Aldasoro, M., Morales, H., Ferguson, B. G., Rosset, P., Khadse, A., & Campos, C. (2018). Bringing agroecology to scale: Key drivers and emblematic cases. *Agroecology and Sustainable Food Systems*, 42(6), 637–665. <https://doi.org/10.1080/21683565.2018.1443313>
- Muir, C., Smith, A. C., & Agrawal, A. (2023). Climate change, degradation, and land acquisitions: Evaluating inequalities among competing interests for suitable cropland in Ethiopia. *Ecology and Society*, 28(1), Article 46. <https://doi.org/10.5751/ES-13934-280146>

- Nicholls, C. I., Altieri, M. A., & Vazquez, L. (2016). Agroecology: Principles for the conversion and redesign of farming systems. *Journal of Ecosystem & Ecography*, 55, 1–8. <https://www.omicsonline.org/open-access/agroecology-principles-for-the-conversion-and-redesign-of-farming-systems-2157-7625-S5-010.pdf>
- Njoku, E. T. (2022). Strategic exclusion, co-option and containment: Towards an integrative theory of state-CSOs relations. *Critical Studies on Terrorism*, 15(4), 917–944. <https://doi.org/10.1080/17539153.2022.2111776>
- Ozano, K., Dean, L., Adekeye, O., Bettee, A. K., Dixon, R., Gideon, N. U., Gwani, N., Isiyaku, S., Kollie, K., Lar, L., Oluwole, A., Piotrowski, H., Siakeh, A., Thomson, R., Yashiyi, J., Zawolo, G., & Theobald, S. (2020). Guiding principles for quality, ethical standards and ongoing learning in implementation research: Multicountry learnings from participatory action research to strengthen health systems. *Health Policy and Planning*, 35(Suppl. 2), ii137–ii149. <https://doi.org/10.1093/HEAPOL/CZAA123>
- Participatory Ecological Land Use Management [PELUM] Uganda. (n.d.). 2022-2026 PELUM Uganda strategic plan. <https://pelumuganda.org/download/2022-2026-pelum-uganda-strategic-plan/>
- PELUM Uganda. (2010). *PELUM Uganda 2009–2010 report: Networking for a greener Africa*. <https://pelumuganda.org/download/2009-2010-pelum-uganda-annual-report/>
- PELUM Uganda. (2022). *2022 annual report*. <https://pelumassociationrs.org/wp-content/uploads/2024/06/PELUM-Association-Annual-Report-2022.pdf>
- PELUM Uganda. (2023). *2023 annual report*. <https://pelumuganda.org/download/2023-pelum-uganda-annual-report/>
- PELUM Uganda. (2024). *Membership information. Benefits of membership to PELUM*. <https://pelumuganda.org/membership-information/>
- Pimbert, M., Moeller, N., Singh, J., & Anderson, C. R. (2021). Agroecology. *Oxford Research Encyclopedia of Anthropology*. <https://subsistencematters.net/publication/oxford-research-encyclopedia-of-anthropology/>
- Richards, A. R. K., & Hemphill, M. (2018). A practical guide to collaborative qualitative data analysis. *Journal of Teaching in Physical Education*, 37(2), 225–231. <https://doi.org/10.1123/jtpe.2017-0084>
- Robinson, M., & Friedman, S. (2007). Civil society, democratization, and foreign aid: Civic engagement and public policy in South Africa and Uganda. *Democratization*, 14(4), 643–668. <https://doi.org/10.1080/13510340701398329>
- Rosset, P., Val, V., Barbosa, L. P., & McCune, N. (2019). Agroecology and La Via Campesina II. Peasant agroecology schools and the formation of a sociohistorical and political subject. *Agroecology and Sustainable Food Systems*, 43(7–8), 895–914. <https://doi.org/10.1080/21683565.2019.1617222>
- Sankofa, N. (2023). Participatory thick descriptions: A collaborative and reflective approach. *Qualitative Research in Psychology*, 20(1), 100–120. <https://doi.org/10.1080/14780887.2022.2090469>
- Sib, O., Vall, E., Tionyéfé, F., Kouakou, P., Sanogo, S., & Sodre, E. (2023). *Stakeholder mapping of Burkina Faso agroecological living landscape* [Work Package 1]. <https://cgspace.cgiar.org/bitstreams/ff7bc04f-3c2a-4287-a92d-3387bea62de0/download>
- Sinyangwe, S., Mwamakamba, S., Mkandawire, R., & Madzivhandila, T. (2023). Opportunities and challenges for the promotion of transitions to agroecological practices for sustainable food production in Sub-Saharan Africa. *Preprints.org* <https://doi.org/10.20944/preprints202305.0009.v1>
- Snapp, S. S., Bezner Kerr, R., Bybee-Finley, A., Chikowo, R., Dakishoni, L., Grabowski, P., Lupafya, E., Mhango, W., Morrone, V. L., Shumba, L., & Kanyama-Phiri, G. (2023). Participatory action research generates knowledge for Sustainable Development Goals. *Frontiers in Ecology and the Environment*, 21(7), 341–349. <https://doi.org/10.1002/fee.2591>
- Tibasiima, T. K., Ekyaligonza, M., Bwambale, B. (2022). Can agroecology provide a panacea for sustaining the adoption of soil erosion control measures? A case of smallholder *Coffea arabica* production in the Rwenzori Mountain region, Uganda. *Sustainability*, 14(20), Article 13461. <https://doi.org/10.3390/su142013461>
- Twinomuhangi, R. (2019). Role of local policies in facilitating adaptation of smallholder farming to climate change in Uganda. *Journal of Environment and Earth Science*, 9(11), 88–100. <https://www.iiste.org/Journals/index.php/JEES/article/viewFile/50476/52133>
- United Nations Development Programme [UNDP]. (2025). *SCALA Senegal. Country climate plans*. <https://www.adaptation-undp.org/projects/scala-senegal>

- Waddington, H., Snilstveit, B., Hombrados, J., Vojtkova, M., Phillips, D., Davies, P., & White, H. (2014). Farmer field schools for improving farming practices and farmer outcomes: A systematic review. *Campbell Systematic Reviews*, 10(1), 1–336. <https://doi.org/10.4073/csr.2014.6>
- Wezel, A., Herren, B. G., Kerr, R. B., Barrios, E., Gonçalves, A. L. R., & Sinclair, F. (2020). Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. *Agronomy for Sustainable Development*, 40(6), Article 40. <https://doi.org/10.1007/s13593-020-00646-z>
- Wills, M., Tovar-Aguilar, J. A., & Naylor, P. (2024). Grassroots agroecology advocates challenge funding objectives focused on U.S. Department of Agriculture. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 19–21. <https://doi.org/10.5304/jafscd.2024.133.015>
- Zaremba, H., Elias, M., Rietveld, A., & Bergamini, N. (2021). Toward a feminist agroecology. *Sustainability*, 13(20), Article 11244. <https://doi.org/10.3390/su132011244>