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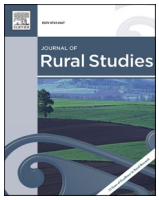

# What good is agroecology? Predominant narratives about agroecology in Africa

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A B S T R A C T

Agroecology is still a marginal approach to agricultural development in Africa when compared to industrial approaches, despite growing evidence of its potential to address core challenges of food insecurity, poverty, and soil degradation. This paper investigates one possible explanation for this discrepancy: the discursive landscape of African agriculture. Taking inspiration from narrative analysis, we document stories about agroecology as told by key actors in the food system: farmers, pastoralists, NGO workers, extension officers, government officials, and researchers. Based on 208 interviews with key informants (KIs) across nine African case studies, we identified three distinct narratives: Agroecology is: 1) a tool in a toolbox 2) for poor farmers 3) the better path. In addition to these narratives, we report KIs' perceptions of two narrative components, namely their definition of agroecology and the key challenges affecting agriculture in their case study site. We use these problem framings to evaluate how logically agroecology fits as a solution in this story, and thus its discursive potential as an approach to agricultural development. We find that many respondents do not consider agroecology to be an effective or relevant solution to major food system challenges, or that they have a limited understanding of the full breadth of agroecology. We suggest that organizations seeking to promote agroecology guide their efforts according to a key agroecological principle, knowledge co-creation, to better understand farmers' views and experiences with specific agroecological practices in the African context.

## 1. Introduction

There is consensus that existing global food systems are unable to guarantee food security worldwide and are making significant contributions to climate change, global biodiversity loss, and ecological degradation (Bezner Kerr et al., 2022; Campbell et al., 2017; Rockström et al., 2020; HLPE, 2019). Despite this consensus, there are stark divisions over how these compounding challenges ought to be addressed. Over the last century, narratives promoting industrial intensification have exerted enormous influence on agricultural practices and development programs throughout Africa, where limited voice has been given to counter-hegemonic alternatives like agroecology (Ajwang et al., 2023; Sumberg et al., 2013; Kremen, 2015). Agricultural development interventions continue to promote the industrialization of agriculture through the adoption of commercial hybrid or genetically modified seeds, synthetic fertilizers and pesticides, and large-scale irrigation infrastructure (Mutsvangwa-Sammie and Manzungu, 2021; Dawson et al., 2016). Yet, industrial technologies like synthetic pesticides and genetically modified seeds have been widely criticized for exacerbating the negative environmental impacts of global agriculture, not least by reducing regional biodiversity (IPBES et al., 2019). Similarly, social movements like La Via Campesina, the Alliance for Food Sovereignty in Africa and Movimento dos Trabalhadores Rurais Sem Terra (MST) have risen in opposition to the consolidation of large-scale industrialized agricultural systems and the broad trends of dispossession that they argue have been accelerated by corporate control of global food systems (Giraldo, 2025; Ody and Shattuck, 2023).

Within this context, agroecology has emerged as a holistic alternative to the dominant, industrial approach to agricultural development (Holt-Giménez and Altieri, 2013; Sampson, 2018). Agroecology is a polysemic concept that emphasizes the cultivation of ecological processes and synergies, the prioritization of indigenous and local knowledge, and the promotion of social justice (Barrios et al., 2020). Proponents of industrial intensification and agroecology use different discursive framings of the same core challenges: food insecurity, poverty and environmental degradation (Bernard and Lux, 2017; Kremen, 2015; Mugwanya, 2019). They also have fundamentally opposed views about knowledge, technology and the characteristics of successful

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development (Giraldo and Rosset, 2018; Holt-Giménez and Altieri, 2013). The relative prevalence of dominant narratives promoting the industrial intensification of agriculture can play a decisive role in whether agroecological systems of production are supported by policy-makers, local development workers, and farmers themselves (Pimbert, 2015). It is important, then, for those promoting agroecology to identify the specific beliefs and pre-conceptions that hinder the adoption of agroecological practices.

This paper contributes to efforts to document how key actors in the food systems are understanding agroecology. One form of discourse analysis is the identification of narratives, or stories commonly used to describe and analyze issues that require policy and other institutional action. Narratives are notable for their persistence, even after key tenets of their story are proven false. Roe (1994) has argued that narratives persist because they provide a consistent and stable framework that decision-makers can rely upon when operating under convoluted and contentious circumstances. The elements of a narrative include a starting point, a middle, and an end (Roe, 1994; Mockshell and Birner, 2020). In food system narratives, the starting point is often a problem (e.g., hunger, environmental unsustainability), the middle is the proposed solution (e.g., a policy, agricultural technology), and the end is the resolution of the problem. The elements of the story connect logically, giving them explanatory power that can legitimate decision-making "in the face of uncertainty, complexity, and polarization" (Roe, 1994).

This paper examines the narratives about agroecology that are influential among those working in African agriculture. We performed cross-case analysis of key informant interviews with practitioners (e.g., farmers, development and extension workers, researchers) in the agricultural sector from seven African countries (Malawi, Ethiopia, Kenya, Madagascar, Tunisia, Senegal, and Tanzania) to identify perspectives of agroecology that transcended differences between location and food system position. Within this diversity of perspectives, we identify three dominant, recurring narratives about agroecology. The first understands individual agroecological practices as potential complements to industrial ones, to be selected discretely based on farmers' needs and ecological context. The second assumes that agroecology is a less-preferred approach used by poor farmers when they are unable to afford or efficiently implement modern, industrial practices. In the third narrative, agroecology is seen to be a preferable alternative to industrial agricultural practices, which are in turn understood to compound and amplify the environmental and economic challenges that small-scale farmers face. While responses varied widely and some respondents referred to multiple narratives, we found that most respondents made reference to the second of these narratives, in which agroecology was understood to be a temporary and disadvantageous reprieve from the pressures of poverty. In many cases, respondents based their perspectives on narrow definitions of agroecology, for instance as a form of organic agriculture. Such definitions are quite different from the more radical and holistic interpretations promoted by many of the social movements and academic advocates of agroecological transitions.

It has historically been difficult to develop clear definitions of agroecology that resonate with all actors and institutions who lay claim to the term. In general, agroecology can describe: the scientific study of the ecological processes of local and global food systems; an approach to promoting synergies within agroecosystems that facilitate agricultural production without synthetic inputs; and a movement for transforming agri-food systems to be safer, more equitable and more democratic (Wezel et al., 2020). Rather than universally applicable practices and technologies, agroecologists promote a set of socio-ecological principles that inform a place-based approach where practitioners adapt practices to local ecosystems and sociocultural needs (FAO, 2018b; Wezel et al., 2020). Alexander Wezel and his colleagues have described 13 "consolidated agroecological principles"[1] that range from the biophysical (soil health, animal health, recycling, and biodiversity) to the sociocultural and the economic (social values and diets, economic diversification) (Wezel et al., 2020). This definition also includes principles like knowledge co-creation and participation, which emphasize the importance of deliberative and democratic approaches to determining land use and to organizing agricultural production. The FAO (2018a) has outlined a similar multi-faceted definition of agroecology based on 10 ecological, sociopolitical, and cultural elements.[2]

Agroecology has gained traction within international organizations in recent years and many agricultural development projects in Africa now integrate this concept to some extent (Bellwood-Howard and Ripoll, 2020; Pimbert, 2015; IPES-FOOD, 2018). This growing popularity has led to competing interpretations about the nature and boundaries of agroecology and to concerns that the political and sociocultural dimensions of agroecology will be abandoned as the term becomes more fashionable (Giraldo and Rosset, 2018). As Omar Felipe Giraldo (2025) has noted it remains to be seen whether the wide range of civil society projects and state policy instruments employed in the name of agroecology are contributing to the movement's "emancipatory project." Along similar lines, Rivera-Ferre (2018) has expressed concern that the concept has become fragmented and selectively incorporated into distinct political projects and policy approaches that emphasize some agroecological principles while jettisoning others. As she points out, concerns about this tendency have inspired several efforts to delineate a sharp distinction between an authentic ('radical,' 'transformative,' or 'strong') agroecology and a simplified ('reformist,' 'conforming,' or 'weak') agroecology (Levidow et al., 2014; Holt-Giménez and Altieri, 2013; López-i-Gelats et al., 2016). Similarly, Giraldo and Rosset (2018) have drawn a distinction between what they describe as a 'technocratic agroecology' and a 'people's agroecology.' Technocratic agroecology focuses on a set of scientifically assessed, ecologically suitable practices, while the people's agroecology emphasizes the need for a radical redistribution of power and resources within food systems. Furthermore, narratives that promote a people's agroecology center farmers and other food producers within the process of building agroecological knowledge, rather than conceptualizing the flow of agricultural expertise from non-farm actors toward producers.

Concerns that agroecology is being stripped of its radical dimensions are not unfounded, given the continued dominance of industrial approaches to agriculture and the practical challenges to operationalizing holistic versions of agroecology. In Africa, the industrial intensification of agriculture continues to receive widespread support both through state-led agricultural development programs (such as those subsidizing synthetic inputs) and through the coordinated efforts of international development agencies, such as the Alliance for a Green Revolution in Africa (Toenniessen et al., 2008; Moseley et al., 2015). Advocates of such programs argue that synthetic inputs and other intensive technologies increase productivity and thereby can improve smallholders' farm revenues and livelihoods, release labor to transition into other sectors, and initiate the structural transformation of African economies (AGRA, 2017; Jayne and Sanchez, 2021 Barrett et al., 2017; Collier and Dercon, 2014). Given the emerging consensus that the environmental impacts of agriculture need to be addressed, development researchers and

[1] These principles are: (1) recycling; (2) input reduction; (3) soil health; (4) animal health; (5) biodiversity; (6) synergy; (7) economic diversification; (8) co-creation of knowledge; (9) social values and diets; (10) fairness; (11) connectivity; (12) land and natural resource governance; and (13) participation.

[2] These elements are: (1) diversity; (2) co-creation and sharing of knowledge; (3) synergies; (4) efficiency; (5) recycling; (6) resilience; (7) human and social values; (8) culture and food traditions; (9) responsible governance; and (10) circular and solidarity economy.

practitioners have begun to search for ways to adjust industrial agricultural practices to be more ecologically sustainable. This has led to proposals for sustainable forms of intensification (Pretty and Bharucha, 2018) or blended sustainability that strive to increase productivity while reducing environmental degradation or avoiding the conversion of more land to agriculture (Pretty et al., 2018; Godfray, 2015; Tittonell, 2014). Sustainable intensification projects often merge agroecological practices (such as the use of organic fertilizers or intercropping) with industrial ones (such as the use of genetically modified crops) (Levidow et al., 2014; Pimbert, 2015). In doing so, such projects have inspired continued debate over how to define the boundaries of agroecology, how to judge whether agroecological interventions are appropriate in a given instance, and how to evaluate the progress of agroecological transitions.

Our aim in this paper is not to hold practitioners' interpretations of agroecology in judgement against a singular, correct definition of the term. Such a definition would be difficult to specify, not least because many of the principles and elements outlined by Wezel et al. (2020) and the FAO (2018b) are themselves open to debate and interpretation. Instead, in this paper, we aim to examine the various narratives that recur throughout practitioners' discussions of agroecology, and the extent to which practitioners see themselves as working towards holistic understandings of agroecology as an alternative to industrialized agricultural development. A great deal of research has focused on how civil society actors, intergovernmental organizations, and government agencies (Rivera-Ferre, 2018), international researchers (Bellwood-Howard and Ripoll, 2020), or social movements (Giraldo, 2025; Ody and Shattuck, 2023) are interpreting agroecology. It is equally important to examine the narratives about agroecology that are most prevalent among those directly involved in agricultural production. Our research reveals how a broad range of food system actors (farmers, government employees, researchers, NGO staff) with varying levels of experience with agroecology understand the concept and its potential. Agroecological practices have been employed over generations but have only been referred to as 'agroecological' since the late twentieth century (Rivera-Ferre, 2018; Wezel et al., 2014). Many of the expert practitioners of agroecology may therefore not yet use the term 'agroecology' to describe their efforts. As agroecology is grounded in general principles, local socio-cultural and agroecosystem context and not universal standards, the lines between 'agroecological' and 'industrial' systems of production can often be blurred at the farm level by producers who are not necessarily committed to the holistic package of agroecological principles (Pimbert, 2015). Within this context, it is crucial to analyze how practitioners define and delimit agroecology, and what the dominant narratives are that shape practitioners' own assessments of the success or failure of agroecological practices. Ultimately, it is these direct practitioners who will need to choose, maintain, or adapt agroecological practices if broad-based food system transformation is going to be widespread and successful.

## 2. Research methodology

This study is based on 208 key informant interviews conducted with farmers, pastoralists, extension and community development workers, agricultural researchers, government representatives, and representatives of youth-led organizations. Interviews were conducted at nine sites across seven African countries (Malawi, Ethiopia, Kenya, Madagascar, Tunisia, Senegal, and Tanzania, Fig. 1). These interviews were organized as the second phase of a larger assessment of the socio-economic viability of agroecology at the household level. Case studies were selected based on the research expertise of partner organizations, their knowledge of agroecological practices, and their willingness to participate in a cross-case research project (F. Sinclair, *pers.comm*). All case study sites were the subject of research projects on specific agroecological practices or development interventions aiming to stimulate broader regional transformations. The case studies are briefly described in Table 1 and included both specific agroecological interventions (e.g. in Malawi), organizations working long-term in a region (e.g. the Agroecology Center in Tanzania) and cases where no intervention took place (e.g. agro-sylvo-pastoral system Burkina Faso). The cases represent a wide variety of agroecological practices, agroecosystem settings, and socio-political environments.

The overall project applied a common sequence of research methods across all eleven case studies, including surveys, interviews, focus groups and other research activities. Working under the assumption that farming systems cannot be categorized as purely 'agroecological' or 'non-agroecological,' the project gathered data on specific agroecological practices, understood as intentional actions taken to realize at least one of the agroecological principles identified by Wezel et al. (2020).[3] This study draws on 'key informant interviews' carried out under 'Step 2' of the overall project's research methods. The key informant interview guide was the same across all of the case studies. The initial aim of this step was to collect information on the context of the case study, recent and current agroecological practices, interventions promoting them, and perceptions of the social, economic and environmental viability of agroecological practices. Among the questions that provided responses most useful for narrative analysis were: *What are some of the main challenges of agriculture in your area?* and *how would you describe or define agroecology?*

Key informants were defined as people knowledgeable about the social and ecological context of the case study area, whether or not they have been involved in the case study intervention to date. Key informants were principally selected based on whether they worked directly in farming systems or had worked alongside farmers or pastoralists in the case study area within the last year. Beyond this initial requirement, key informants were selected based on their experience as: researchers with biophysical, economic or social science focus; extension or community development workers; representatives of farmers' organizations; representatives of NGOs or activist organizations; local government representatives; and experienced farmers. Each case study aimed to collect data from at least two key informants in each of the above categories, with a mix of men and women interviewed, in order to provide a range of perspectives, some replication and internal validation of findings. The total number of KIs by type are indicated in Table 1.

Respondents were interviewed using a semi-structured interview format, with informed consent obtained prior to the start of the interview, using requisite ethical guidelines of the country and institutions involved. Enumerators recorded their field notes in either French or English. In some cases, interviews were conducted in local languages and then transcribed into French or English. The structure for the semi-structured interview was based on the overall conceptual framework of the project and included questions about the agricultural context of the case study area, including farming systems and livelihood strategies, drivers of agricultural and rural change; interventions that have been promoting agroecology or alternatives; agroecological practices used and the factors that support and hinder use of these practices. A total of 208 interviews were conducted amongst the 9 case studies (Table 2). Two of the eleven initial case studies were removed from analysis, due to limited data quality from the key informant interviews.

Qualitative data analysis was carried out using an iterative approach by identifying core themes through reading, coding and comparison (Corbin and Strauss, 2008). The research team, composed of researchers fluent in French and English, divided case studies up for review. Each member reviewed all interviews and transcripts for a given case study. They analyzed each interview to identify narratives of agroecology's role in agricultural development, in which each element of the story connected logically (Roe, 1994; Mockshell and Birner, 2020). Only a

[3] Recycling; Input Reduction; Soil Health; Animal Health; Biodiversity; Synergy; Economic Diversification; Knowledge Co-Creation; Social Values and Diets; Fairness; Connectivity; Land and Natural Resource Governance; Participation.

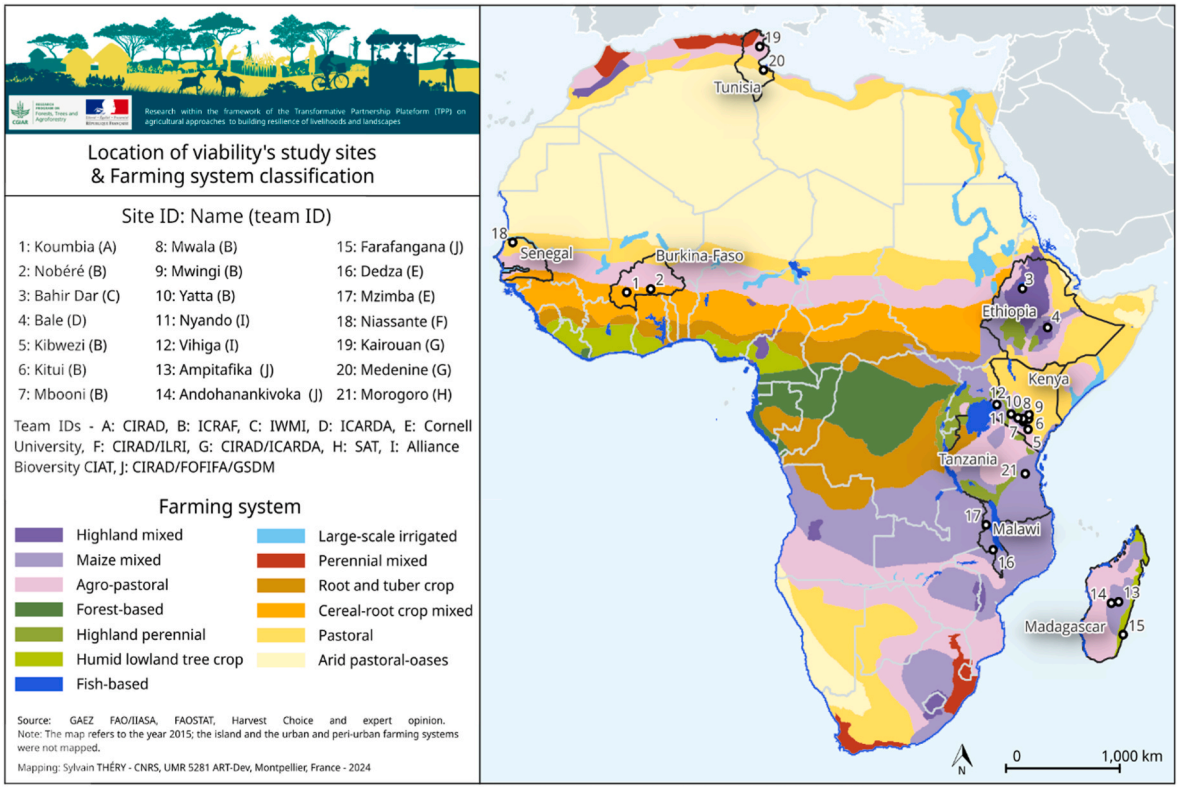


**Fig. 1.** Study sites of the Viability project and farming system classification (created by Sylvain Thery).

**Table 1**
Different criteria were used to select the key informants interviewed for this study.

| Key informant type | Number of respondents |
|---|---|
| Farmers who are considered knowledgeable or experienced | 46 |
| Representatives of farmers' organizations | 28 |
| Agricultural researchers with biophysical or economic focus | 29 |
| Agricultural researchers with social science focus | 9 |
| Representatives of youth-led organization | 11 |
| Agricultural extension and/or community development workers | 25 |
| Local government representative (e.g. district ag and env officers) | 25 |
| Representatives of NGOs or activist organizations | 35 |

*12 interviews were not assigned a KI type.

subset of narratives included a complete narrative, where the root causes and solutions were linked. In part, this lack of connection reflects the limitations of the data. Interviews were generally recorded in brief survey form, whereas full interview transcripts would have better suited the narrative analysis conducted here. The researcher synthesized all interviews from a case study into a memo, which summarized the context, key themes, and recurring sentiments. These memos were cross-checked and validated by another team member. The memo analysis included identification of those interviews that contained complete narratives, and a summary of each respective narrative. The research team compiled all complete narratives and analyzed them to identify cross-cutting stories. Through this review and initial analysis, the research team developed initial outlines of the major recurring narratives that were common across case studies.

To confirm the significance of these narratives, the team developed a qualitative coding system that included codes for a wide range of indicators: agricultural practices, definitions of agroecology, and respondent perceptions of the barriers and incentives for agroecology. The data were uploaded into Dedoose, a shared online platform that is used for qualitative data analysis. Research team members divided the cases once again, and coded each individual interview using the system that the team had developed. Additional thematic codes were developed iteratively. For the purposes of this study, the team primarily analyzed this coded data to identify recurring elements of narratives: the root causes of the challenges faced by regional agricultural sectors and the definitions of agroecology. The team identified 18 challenges and 7 definitions of agroecology that recurred across case sites and throughout respondent interviews. These challenges and definitions had not been identified through the initial summative memo writing process. The team reviewed all interviews to code for this new set of indicators in order to determine the prevalence of each. The team then grouped challenges into the broad categories of economic, biophysical, farm-level management, and governance issues. This coding process verified and complicated the narratives that the team had identified during the initial review stage.

## 3. Results

Narrative analysis focuses our attention on "the process of identifying and defining problems and the procedures towards their solutions" (Anderson and Rivera-Ferre, 2021). A complete narrative includes a starting point, a middle, and an end (Roe, 1994; Mockshell and Birner, 2020), with each element of the story connecting logically. In this study only a subset of respondents directly articulated a complete and detailed narrative about agroecology's role in agricultural development. However, all interviews contained pieces of the story, and in the following sections we summarize findings regarding two "narrative elements" of agricultural development: 1) regional agricultural challenges and 2) the definitions of agroecology. In the final section of results, we present three narratives of agroecology, identified through analysis of the subset of interviews in which key informants explicitly linked the challenges they identified and their conceptions of agroecology.

**Table 2**
Case Studies included in study (adapted from Andrieu et al., 2025; Table 1).

| | Location: Name of Case Study | Lead Research Institution and Research Partners | Summary of case | # of interviews |
|---|---|---|---|---|
| 1 | Kenya-1: Agroecology in Kenya | Alliance Bioversity International - CIAT Multidisciplinary team with expertise including agrobiodiversity, nutrition, rural institutions | Initiative was co-developed between farmers and scientists as part of a land restoration initiative. The intervention aimed to foster community empowerment through self-designed action plans, with emphasis on diversification and family nutrition. Agroecological practices promoted included traditional leafy vegetables (TLVS), compost use, kitchen gardens, poultry, market linkages, and community seed banks. | 20 |
| 2 | Kenya-2: Agroforestry and Soil and Water Conservation in Kenya | Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF) Multidisciplinary team with expertise including soils, land restoration, agroforestry, rural institutions. | Initiative was led by researchers and co-developed between farmers and scientists. Involved testing and promotion of soil and water conservation practices. Agroecological practices included agroforestry, planting basins where small pits are dug and crops are planted within them, application of composted farmyard manure, intercropping, crop rotation, and tree planting. | 32 |
| 3 | Tanzania: Agroecology Center in Morogoro, Tanzania | Sustainable Agriculture Tanzania (SAT) Non-governmental organization based in Tanzania. | Long-term development activities through a local agroecology center which provided training and support to farmers in the region. Agroecological practices include push-pull systems, compost, diversification and reduction of insect pests through a range of agroecological practices. | 22 |
| 4 | Malawi: Agroecology in Malawi | Cornell University and SFHC (NGO) Multidisciplinary team with expertise including social scientists, agronomy and nutrition and a non-governmental organization based in Malawi. | Co-developed between farmers and scientists, led by a local non-governmental organization that tested and promoted agroecological practices through farmer-to-farmer training methods. Agroecological practices included: legume intercrops, agroforestry with fruit trees and exotic and indigenous trees that improve soil fertility, crop diversification, soil fertility enhancement through adding compost or legume residue to their soils, mulching and soil conservation practices. | 15 |
| 5 | Ethiopia-1: Legumes and Agroecology | International Center for Agriculture Research in the Dry Areas (ICARDA) Quantitative economists | Co-developed between farmers and scientists, led by researchers, this intervention supported crop-livestock integration with legume diversification with high yielding and disease resistant food legumes and agroecological practices such as crop rotation, organic fertilization, and some traditional flood irrigation. | 39 |
| 6 | Ethiopia-2: Exclosures in Ethiopia | International Water Management Institute (IWMI) Multidisciplinary team, landscape management or restoration, socio-economist, anthropologist. | This initiative included the Government of Ethiopia, community watershed teams, NGOs and international researchers. In this intervention, exclosures were the focus, which involved communities identifying land to set aside (exclude livestock grazing) for improved soil and water conservation, while supporting mixed crop- | 16 |

(*continued on next page*)

**Table 2** (*continued*)

| | Location: Name of Case Study | Lead Research Institution and Research Partners | Summary of case | # of interviews |
|---|---|---|---|---|
| | | | livestock systems with fodder production and supporting biodiversity. | |
| 7 | Senegal: Agropastoral and pastoral systems | French Agricultural Research Centre for International Development (CIRAD) Multidisciplinary team with expertise in social science and animal science. | Indigenous practices. This case was an observational one of pastoralism, which is often described as an endogenous agroecological practice. Agroecological practices included seasonal and inter-annual livestock mobility, use of rangelands (dunes, lowlands, plains) according to species and season; grazing on natural vegetation, fodder crops, diverse species and local breeds and soil improvement with biomass recycling. | 26 |
| 8 | Tunisia: Compost, Livestock and Crop Production in Tunisia | CIRAD and ICARDA Multidisciplinary team with expertise in animal science and agronomy. | This case was more observational, in a region where various agroecological practices have increased, including territorial integration of animal rearing and crop production, plot-scale animal-crop integration in olive-based systems, use of local fodder, and local productive use of compost and manure in drip irrigation cropping systems. Local farmers' organizations have supported sustainable use of pastoral resources by management of grazing areas and sowing fodder crops. Several organizations are also involved in compost production using biomass from palm groves and urban areas. | 14 |
| 9 | Madagascar: Agroecology comparison in Midwestern, Highlands and South East Madagascar | CIRAD, National Center of Applied Research and Rural Development (FOFIFA), Groupement Semis Direct de Madagascar, (GSDM), Professionnels de l'Agroécologie, Multidisciplinary team with expertise in agronomy, economics | Regional and national organization, researcher-led initiative, co-developed between farmers and scientists. This case examined agroecological practices in three different regions of Madagascar (Midwestern, Highlands and South East). Agroecological practices included conservation agriculture, agroforestry systems, crop-livestock integration, organic fertilizers, and crop diversification. | 24 |
| **Total number:** | | | | **208** |

The narratives and narrative elements reported here are those that cut across different types of KIs from different countries. A KI's position, as a farmer, extension worker, or researcher, may influence which problem they perceive as most pressing in the agricultural sector and how they define agroecology. Likewise, the distinct political economic, environmental, and social contexts of the case studies no doubt create differences in narratives of agricultural development. We chose to analyze the dataset to identify commonalities, rather than difference, between KI types and case study context. Further research on the topic could explore how different positions and contexts produce varied perceptions of agroecology and its contribution to agricultural development.

### 3.1. Agricultural development in Africa: Narrative elements

A narrative often begins with a problem in need of resolution, and so we first describe key informants' perceptions of the most pressing challenges in the agricultural sector. Next, we summarize KIs' definitions of agroecology, which as a potential solution, could compose the middle of the narrative. How KIs define agroecology provides insights into both their familiarity with the concept and the types of challenges they consider it capable of addressing. In the discussion, we argue that, when combined, these narrative elements allow us to evaluate how logically agroecology fits as a solution to the problems in the agricultural sector, and thus its discursive potential as an approach to agricultural development. Notably, most recurrent themes in both narrative elements cut across location and KI type, although a few were more frequently identified by specific stakeholder groups or case studies.

#### 3.1.1. Challenges in the agricultural sector

The problem framing is a key narrative element, as how a problem is defined determines whether solutions, such as agroecology, are considered relevant or effective (Kimura, 2013; Mitchell, 2003). In this section we present respondent's perceptions of the main challenges affecting the agricultural sector in their region. Fig. 2 displays the most frequently mentioned challenges by KIs in agriculture across the nine case studies. The four main categories of challenges identified by respondents were: biophysical, production-level management, socio-economic, and governance. Biophysical challenges denote ecological conditions and trends at a regional and landscape level that threaten agricultural production. On the other hand, production-level

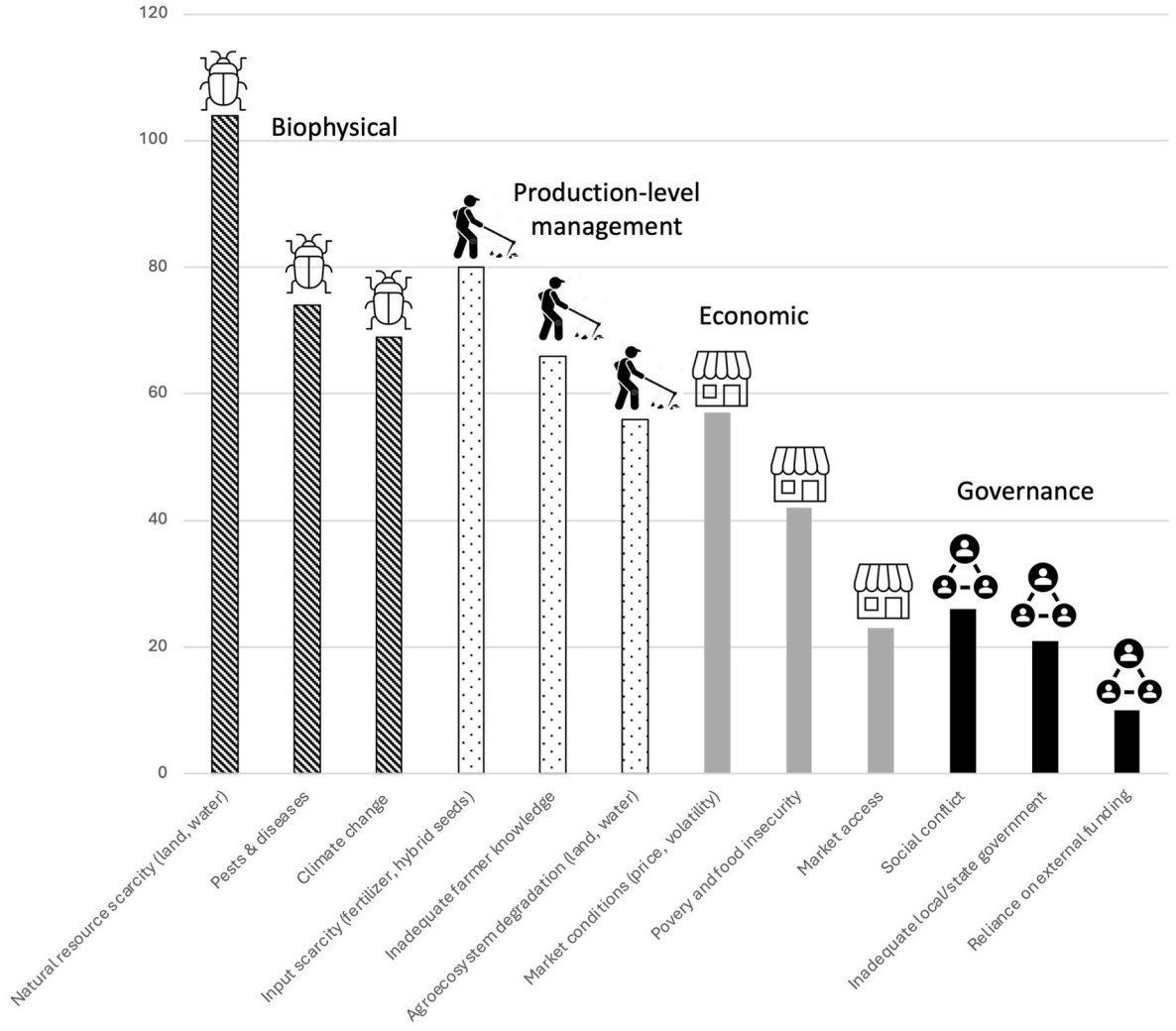


**Fig. 2.** Challenges mentioned across case-studies and number of KI out of 208 who mentioned the challenge. Challenges have been color-coded and categorized based on whether they are biophysical, production-oriented, socio-economic or related to governance. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

management problems are those attributed to farmers' technical approach to farming, such as their inputs, practices, and their impact on agroecosystem health. Economic challenges encompass market conditions and access at the household and regional level, whereas governance issues are those linked to improperly functioning institutions and laws. Fig. 3 shows the frequency of these four broader categories of challenges within each of the case study regions, which helps to highlight the diversity of issues across case studies.

Biophysical challenges were most commonly identified, with 75 % of respondents mentioning them across the case studies and more than 50 % of respondents in eight of the nine case studies reporting them. This was the most identified type of challenge for all KI types, with two-thirds or respondents from each KI type reporting at least one. These challenges were presented as naturally-given characteristics of agroecosystems or growing conditions in the area, or linked to broader regional/global trends (e.g., climate change, increasing pest pressure), which constrain agricultural production. This category included: natural resource scarcity (mentioned by 104 respondents), pests and diseases (mentioned by 74 respondents), and climate change (mentioned by 69 respondents). Natural resource scarcity, such as water, was the most commonly recurring challenge across case studies, reported by at least 50 % of respondents in five out of nine case studies. For four cases (Ethiopia-2, Kenya-1, Tanzania, Senegal), two of the top three challenges were biophysical. For example, respondents from Tanzania reported that access to water was difficult, and irrigation was too expensive for most farmers. Similarly, six respondents from Ethiopia described water shortages as an obstacle to growing irrigated crops, as well as maintaining livestock populations.

Production-level management challenges were commonly reported across case studies. These challenges were cited by an average of 30 % of respondents in each case study area, and the second most common type of challenge identified across KI types, as it was identified by at least 60 % or more of each KI type. More than 68 % of respondents referring to input scarcity, with over half of respondents in three case studies (Kenya-1, Ethiopia-2, and Malawi) specifically mentioned the scarcity of agrochemical inputs. This was one of the top three challenges in three case sites (Kenya-1, Ethiopia-2, and Malawi) and was reported by 30 % or more of respondents from all KI types. One respondent presented the challenge as follows: *"The main challenges of agriculture are lack of access for mechanization (when available, they are very expensive), lack of irrigation, shortage of improved technologies like seed and fertilizer and shortage of grazing land for livestock production"* (Participant 30, Farmer, Ethiopia-1). Another commonly given reason for low agricultural productivity was farmers' inadequate knowledge, which was mentioned by one-third of respondents. *"Very few farmers have sufficient knowhow in the field of agriculture"* (Participant 56, Extension worker, Kenya-2).

Economic issues were the third most mentioned type of challenge, with 42 % of respondents mentioning market conditions, poverty, food

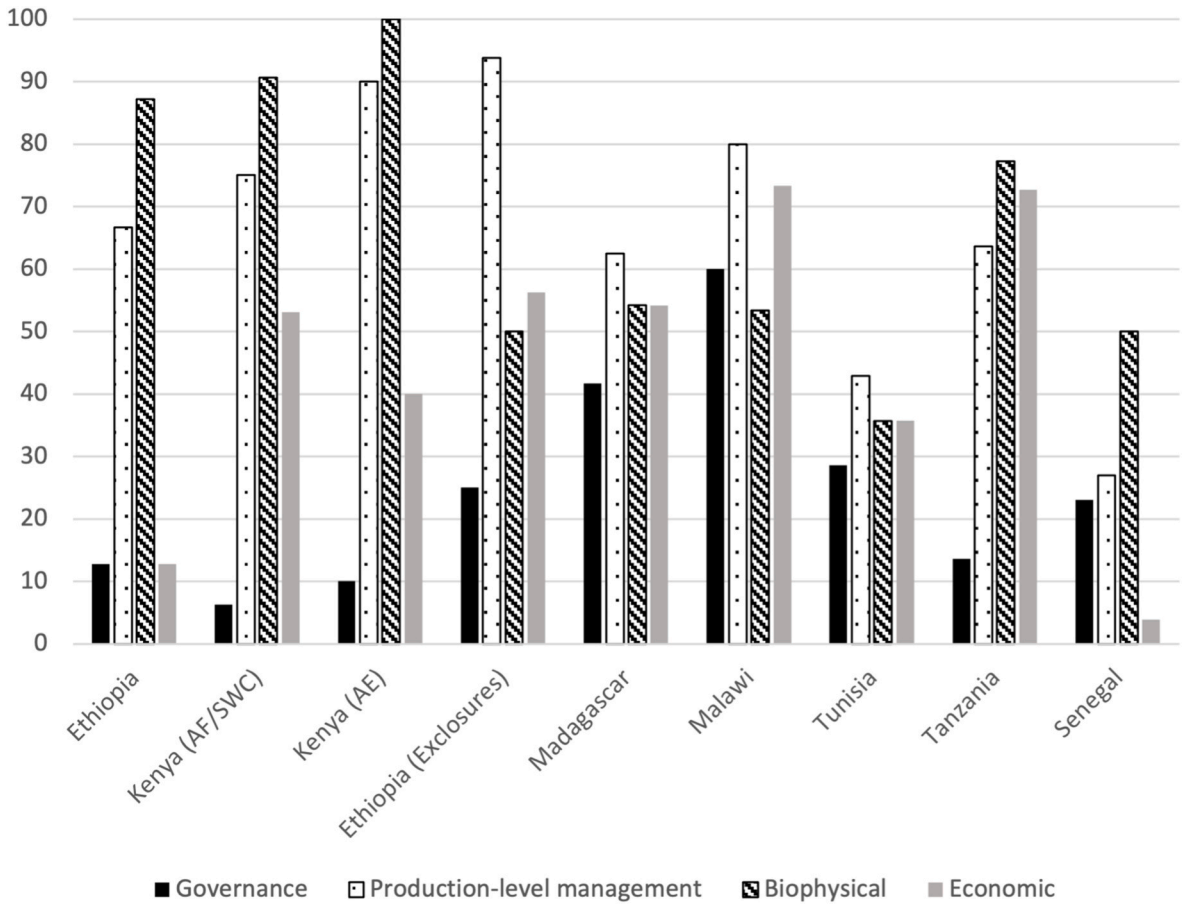


**Fig. 3.** Percentage of Key Informants mentioning challenge category per case study.

insecurity, and market access. Local government representatives and extension workers mentioned economic challenges more than other KI types. In five of the case studies, these issues were reported by more than 50 % of the respondents, although respondents from each site varied in how they defined these challenges. In Malawi, several respondents brought up the national economic instability that accompanied the decline of government institutions such as the state agricultural marketing board. Nearly half of respondents in Kenya-2 brought up obstacles to market access and low market prices as a significant local challenge. Only 22 % of respondents discussed governance issues. These issues included social conflict, inadequate local/state government, or reliance on external funding. Local government representatives reported this challenge more frequently than other KI types. Governance issues were brought up most frequently in the Malawi case study, although there was little consensus on the specific nature and cause of governance issues.

### *3.1.2. Definitions of agroecology*

The definition of agroecology is a core element of agroecology narratives, as it can indicate the respondent's perspective on the boundaries of the concept and its relevance to pressing problems in the agricultural sector. Fig. 4 presents the six most common definitions given by respondents: agriculture that doesn't harm the environment, agroecological practices, low synthetic input agriculture, practices adapted to the agroecological zone, characteristics of the agroecological zone, an agricultural approach to respond to social, economic, or environmental concerns, and a systems approach to agroecology. A total of 57 % of respondents across case studies and across respondent-types defined 'agroecology' as "agriculture that doesn't harm the environment." It was the most prevalent definition provided by the respondent, half of whom gave that as their only definition. Some explained that they meant avoiding natural resource degradation caused by agriculture, while others emphasized that agroecology maintains key agroecosystem services, such as soil health. This was the most common definition of agroecology given by all KI types, although given more by local government representatives (70 %), NGO or activist organization representatives (70 %), and agricultural extension workers (68 %).

When asked to define agroecology, almost a quarter of interviewees answered with a list of practices that they considered to be agroecological. While respondents of all KI types provided this definition, it was most common among farmers and farmers' organization representatives. In Kenya-2, for instance, eleven respondents mentioned agroforestry in their definition of agroecology; eight respondents referenced minimal soil disturbance with conservation agriculture and Zai pits; five respondents cited soil conservation with half-moons, terracing, or contour planting; and two highlighted efforts to conserve local and indigenous crops and tree species. Less commonly mentioned practices included the use of the push-pull method, paddocking with ecological succession, and poultry-crop integration. Roughly 16 % of respondents defined agroecology as a form of organic, or low-input, agriculture, with some specifying that agroecology required locally-sourced materials to replace purchased inputs.

While most respondents' definitions involved only technical or environmental aspects of agroecology, a few KIs mentioned the social dimensions of agroecology. Twenty-one respondents described agroecology as a form of agriculture that could respond both to social and environmental concerns, for instance, by improving farmers' yields and livelihoods. Seven respondents provided a definition that captured the multiple facets and dimensions (science, movement, practice) of agroecology, *"Agroecology is at the same time a scientific discipline, resulting*

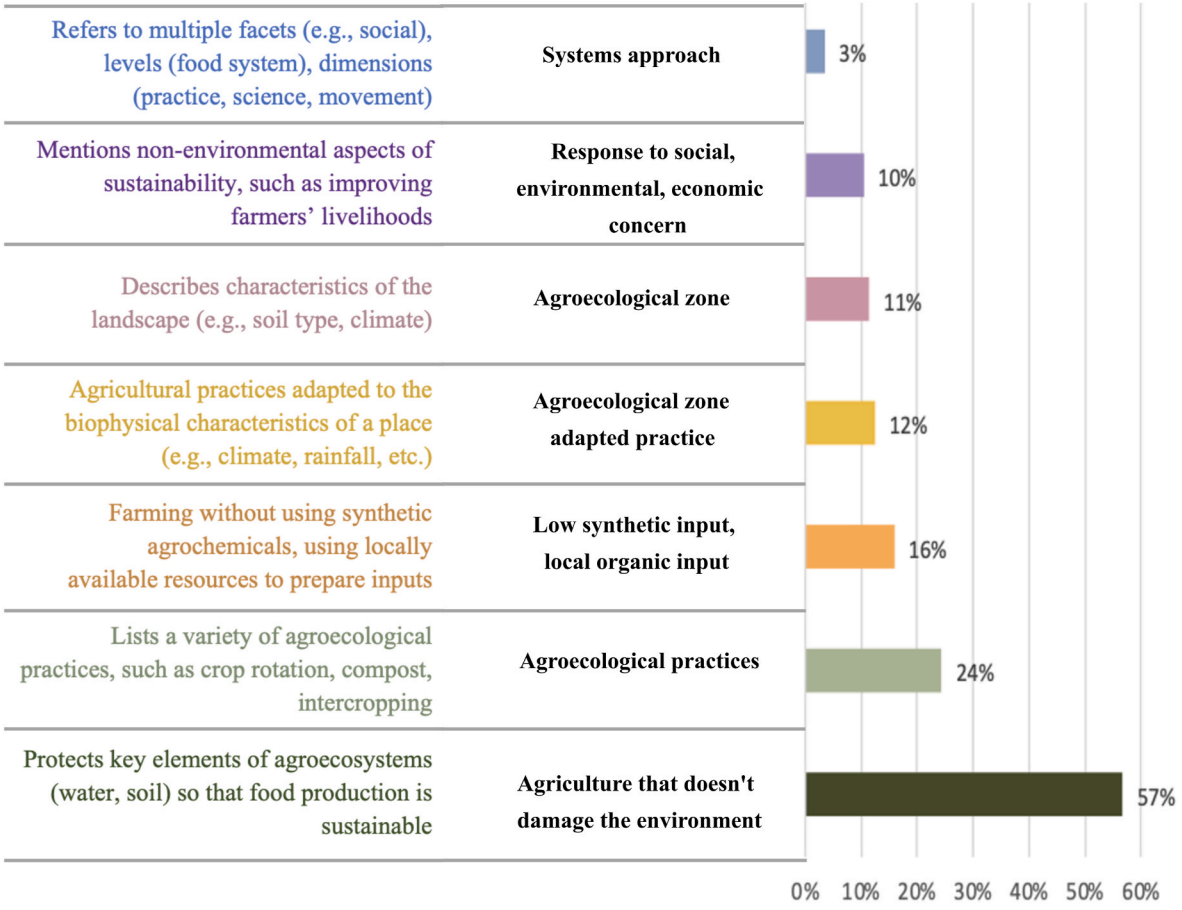


**Fig. 4.** Percentage of respondents who referenced each definition of agroecology.

*from the fusion of two disciplines: agronomy and ecology, a political and social movement and agricultural practices"* (Participant 47, Madagascar, biophysical researcher). These more holistic definitions were most frequently given by biophysical and social science researchers, and most were involved in the Madagascar case study, which could be related to the higher number of interventions specifically targeting agroecology in this case study. On the other hand, a subset of respondents (23 KIs) appeared to be entirely unfamiliar with the concept, outlining the environmental characteristics of their regional agroecosystem, such as soil type and climate, when asked to define 'agroecology.' Most of these respondents belonged to the Ethiopia-1 project.

The definitions provided by respondents in this study should be taken to be reflective of their perspectives on the agroecological interventions implemented in each case site. These projects were conducted by a variety of institutions, from local non-profits to international public research institutions, each of whom likely play an active role themselves in shaping how agroecology is defined locally. Those respondents directly involved in an agroecology research project may be influenced by the working definition of agroecology operating within that project. In the case of respondents who were unaffiliated with the case study project, influences might include academic sources, social movements or national policy discourses. Some respondents appeared to be unfamiliar with the term, indicating a lack of discourse, policies, or projects explicitly promoting agroecology, referred to as such, in their region.

### 3.2. Narratives of agroecology

While all KI interviews contained key narrative elements, most were missing the connective logic of a complete story specific to agroecology. In this section, we report findings from that subset of KI interviews in which respondents drew a clear connection between agroecology and its relevance as a solution for the agricultural sector. Our analysis uncovered three dominant narratives about agroecology that recurred throughout the interviews. Because the narratives have distinct 'endings', in terms of whether agroecology solves the problem in the agroecological sector, the narratives are mutually exclusive in their logic: a respondent could not draw on two narratives simultaneously without contradicting themselves. Within each narrative, we identified common variations, where the respondent elaborated on the same storyline with a more explicit, supporting argument (Table 3). These variants usually specified the problems or trends in the agricultural sector that justified the main story about agroecology. Notably, these narratives were expressed by KIs from different case studies and KI types, indicating that perceptions of agroecology cut across institutional, socio-political, and ecological contexts.

#### 3.2.1. Narrative 1: Agroecology is a tool in the toolbox

This narrative was identified in KI interviews from five different case studies. Within this narrative, agroecological practices are understood as neutral agricultural techniques, part of a basket that includes both industrial farming methods (use of improved seeds, chemical fertilizers, mechanization, and pesticides) and agroecological practices (crop rotations, organic compost, manure, and intercropping). Respondents tended to suggest that agroecological practices may be applied usefully by any range of farm types, not necessarily just poor smallholder farmers. They pointed to contextual differences that might lead a farmer, rich or poor, to prefer using an agroecological practice, such as personal inclination, market incentives, and the biophysical characteristics of their farm. For example, this extension worker from Malawi explained

**Table 3**
Description of the narratives identified in the case studies.

| Agroecology narrative | Case studies (n = 9) | Description | Variant |
|---|---|---|---|
| ***Narrative 1:*** **Agroecology is a tool in the toolbox** | **5:** Ethiopia-1, Ethiopia-2, Kenya-2, Malawi, Tanzania | Agroecological techniques can complement industrial practices used by a range of farm types, *adapted to individual needs and preferences*, to produce better outcomes for farmers and the environment. | Climate change and other biophysical challenges make agroecological practices increasingly appropriate. |
| ***Narrative 2:*** **Agroecology is for poor farmers** | **7:** Ethiopia-1, Kenya-1, Kenya-2, Malawi, Senegal, Tanzania, Tunisia | Agroecology is used by poor, subsistence-oriented smallholder farmers who are not *aware of* or *cannot afford to adopt 'modern' agriculture*. | ***Narrative 2a:*** **Agroecology is an adaptive response to poverty** Due to economic constraints smallholder farmers adopt agroecological practices *with some success.* ***Narrative 2b*****: Agroecology is a poverty trap** Traditional agroecological practice drives low productivity and poverty. |
| ***Narrative 3:*** **Agroecology is the better path** | **4:** Ethiopia-1, Kenya-2, Malawi, Tanzania | Agroecology is a superior alternative to industrial agriculture because of *its positive impact on local environment, consumers' health, producers' incomes, food and livelihood security, and market autonomy*. | Industrial agricultural practice is linked to negative health and environmental trends in the agricultural sector. |

his approach to agroecology, "Farmers should be able to choose based on full information. So he has to know how synthetic fertilizers are working, and what the composition is of organic vs. inorganic fertilizer, and he has to compare them-costs and benefits, so that he has a wide choice to choose, but bearing in mind the importance of those fertilizers and the status of the farmer. Is he capable of buying inorganic fertilizers? Will he be able at the time of need? We train both, tell them where they are found" (Participant 164, Malawi).

This narrative was popular among respondents concerned with biophysical challenges to agriculture, such as water scarcity and climate change, and those issues caused by poor agroecosystem management, such as soil degradation. A Malawi government representative, when asked whether or not agroecology is commonly practiced, responded that it is common "because of land degradation most farmers have come to realize that when they use manure and agroforestry they are able to produce more food because they improve soil health and moisture" (Participant 190, Government representative). In Tunisia, for example, a KI explained that agroecology was an adaptation to recent recurrent droughts, with water scarcity exerting pressure on farmers to use more soil and water conservation practices. In the Kenya-2 case study, a respondent made the case that agroecology was farmers' rational response to environmental problems, and it was adopted more frequently as farmers became educated. A local government environmental officer from the same case study said that agroecology was now commonly practiced, since it was a response to "climate change leading to decreased production" (Participant 113, Kenya-2). Within this narrative, agroecology was defined as either environmentally-friendly agriculture, or a set of practices well-adapted to a particular agroecosystem. Both definitions positioned agroecology as an adaptive response to biophysical challenges.

Many KIs expressing this narrative simultaneously argued for the importance of industrial agricultural approaches and technologies, while also acknowledging the benefits of agroecology for ecosystem health. For example, lead farmers from the Kenya-1 case praised the benefits of planting basins and manure while also remarking on the need to increase use of hybrid seeds and pesticides (Participants 110, 117). In the Ethiopia-2 case, a development worker described one benefit of soil and water conservation technologies as expanding monoculture production of Khat, a cash crop, through increasing water availability needed for irrigation. Respondents remarked no tension between combining agroecological practices, such as compost or crop rotation, with the goal to improve ecosystem health, and applying industrial practices with the goal to improve productivity. Unlike Narrative 3, this narrative does not argue that regional agricultural problems, such as soil degradation and pest pressure, are caused by industrial practices or the policies and governance structures that support industrial intensification. Instead, industrial and agroecological practices are considered complementary, and often inextricable from one another: one delivers productivity, the other maintains agroecosystem health. In Ethiopia-1, several respondents believed crop rotations helped to reduce outbreaks of orobanche weed, although they generally maintained that other industrial agricultural practices, such as herbicide application, were also necessary for crop performance. This stance is characteristic of Narrative 1: agroecological practices must be used in concert with industrial agricultural technologies because, if used alone, they will be insufficient to support productive farming.

### *3.2.2. Narrative 2: Agroecology is for poor farmers*

Respondents who voiced this narrative presented agroecological practices as those used by poor producers who are not aware of or cannot afford to adopt modern, advanced agricultural technologies (such as mechanization, improved seed varieties, and chemical fertilizers and pesticides). The most cross-cutting narrative, this position on agroecology was expressed by KIs from seven out of the nine case studies. Responses that fit this narrative tended to hold, either implicitly or explicitly, that agroecological practices perform poorly compared to industrial alternatives. Respondents who held to this narrative could be grouped into two broad categories. According to the first, agroecological practices could be useful, even if they were inferior compared to industrial methods. According to the second, agroecology functioned as a poverty trap, limiting farmers' ability to increase their yields and render their farms profitable. The former was more frequently expressed, whereas only a few respondents explicitly critiqued agroecology, which might be expected given the orientation of the research project. Both variants limited agroecology's relevance to poor farmers, who are driven to use agroecological practices because they are unable to access industrial agricultural technologies.

*3.2.2.1. Narrative 2a: Agroecology is an adaptive response to poverty.* Many respondents understood agroecological practices to be practical alternatives for poor smallholder farmers who cannot afford industrial agricultural technologies. These respondents generally understood the term 'agroecology' to refer to environmentally-minded agricultural practices that employ low levels of synthetic inputs. Respondents asserted that NGO- introduced, improved agroecological practices could improve land and labor productivity and address food insecurity in an environmentally friendly way, particularly for farmers excluded from an "agricultural modernization" path. They specified that these farmers are poor, have small landholdings, and live in places with scarce opportunities for rural non-farm employment. Although respondents acknowledged that agroecology could deliver benefits to these populations, they

considered agroecological practices less effective than industrial agriculture approaches. An extension officer in Malawi, for example, explained that the utility-maximizing, resource-constrained farmer may choose agroecology, although often as a last resort (Participant 135, Malawi). A respondent associated with the Ethiopia-1 project argued that those practicing agroecology were either low-income farmers unable to afford inputs or land-constrained farmers who used crop rotations and diversification to get the most out of their small holdings. A researcher from the same case study explained how economic status affected farming practice: *"Well-off farmers do not practice compost preparation and application … The practice is highly labor intensive, involves bulky transportation and is not appropriate for large farm size. And rich farmers can afford fertilizer and it is easier for them"* (Participant 21, Ethiopia-1). In such cases, the use of agroecological practices is understood to be forced by circumstances, implying that, if farmers increased their incomes or had access to more resources, they would (and ought to) abandon agroecological practices in favor of more productive, industrial ones.

*3.2.2.2. Narrative 2b: Agroecology is a poverty trap.* According to respondents that held to this narrative, agroecology is a remnant of older, traditional forms of agriculture practiced "unconsciously" by poor farmers, who lack the knowledge and financial ability to shift to more desirable and effective industrial practices and technologies. *"I can say agroecology is somewhat common because there are some farmers who are practicing agroecology without knowing. For example, she/he doesn't have money to purchase fertilizers or pesticides, they cultivate their farm(s) and do not apply any pesticides or fertilizers. By doing this, they are practicing agroecology" (Participant 157, Tanzania, researcher)*. Here, agroecology is not understood as an active, intentional approach to farming, but rather farming without inputs when farmers can't afford these technologies. Accordingly, the main challenges that agricultural sectors face today are the constraints that prevent farmers from being able to afford or efficiently incorporate these technologies. Such constraints include poorly functioning agriculture extension systems, endemic poverty, rural land fragmentation, and commodity markets. In particular, many KIs mentioned the rising cost of inputs as a reason that farmers used agroecological practices, such as seed-saving, instead of synthetic fertilizer and hybrid seeds. *"People are still hanging on to the local varieties. Not because they want to do so but because of the pocket"* (Participant 137, Malawi). In these circumstances, respondents viewed the use of agroecological practices as perpetuating a cycle of poverty, since they led to low yields and thus low returns. This researcher explained how reduced fertilizer levels, resulting from recent increases in fertilizer prices, had reduced productivity, even for larger farmers because *"we know that when we put in more nutrient inputs we get more output"* (Participant 137, Malawi). In some cases, agroecological practices, such as shifting cultivation,[4] were blamed for agroecosystem degradation that perpetuated farmers' poor productivity (Participant 55, Kenya-2).

*3.2.3. Narrative 3: Agroecology is the better path*

According to this narrative, agroecology is understood as an alternative path to development for a range of farm types because of its environmental and economic advantages over industrial intensification. This narrative was represented in less than half (4) of the case studies. Respondents argued that agroecological farming methods have a positive impact on local environments, consumers' health, producers' incomes and yields. Respondents expressing this narrative sometimes argued that agroecological practices are not widespread because many farmers are not aware of the positive outcomes associated with these practices. This NGO representative from the Malawi case study explained his perspective for why, despite the need for agroecology to address poor soil fertility, most farmers did not use it. *"Our soils are fractured-so poor in so many ways, like soil fertility. So to reverse that it will take a long time, while the other conventional farming deals with soil fertility by encouraging fertilizer. If someone gives you a quick drug to ease pain of fracture, you will feel better quickly but it will not heal you. Because the farmer feels better in that short time period, he likes it. With agroecology, the practices take a long time to fix soil fertility-for farmers it takes too long, they don't see the benefit immediately. As a result, there are few farmers practicing agroecology, but those who want a quick thing-they try it in the first year, don't see immediate results and stop. It's becoming more common here though because there are several NGOs encouraging it in this area" (Participant 133)*.

Similarly, respondents argued that farmers implementing agroecological practices into their routines typically do not see these individual practices as part of a 'systemic' approach that links them synergistically. One NGO representative in Malawi, for instance, argued that different individual agroecological practices were accessible to different farmers (Participant 134). While input substitution worked well for poor farmers, residue incorporation might make sense only for farmers wealthy enough to purchase animal feed. Respondents who held to this narrative tended to believe that agroecological practices needed to be introduced and supported by external actors. *"Agroecology is common to many farmers though they are not following all elements of agroecology. They need to be motivated by seminars and practical training for them to practice full agroecology" (Participant 163, Tanzania, Researcher)*. They argued or implied that NGOs, government officials, and other external actors are needed to raise farmer awareness about advanced agroecological methods, valorize and link existing practices, and introduce new ones. They often mentioned that this support was particularly needed because of historical and contemporary policy that had entrenched industrial agricultural intensification.

Unlike Narratives 1 and 2, agroecology was not seen as either complementary or second best to industrial practices. Rather, respondents saw industrial agricultural technologies as causing several key challenges in the agricultural sector, such as loss of soil fertility, health issues, and poor economic conditions. For example, a respondent in Tanzania noted that food production was in decline due to soil degradation caused by excessive agrochemical use. The respondent went on to argue that, when adopted, agroecological practices gradually improved productivity. In a similar vein, a respondent from the Kenya-Agroforestry case study argued that environmental challenges partly resulted from modern technologies of hybrid seeds and fertilizers, and that agroecology could provide a solution to these challenges. *"People used to do it before, then chemical companies came and provided easy farming solutions without considering environment, soil health and quality of food harvested. Currently, enlightening on embracing agro-ecological practices is being done and already some farmers are starting to embrace it"* (Participant 83, Kenya-2, NGO representative) A social scientist in the Malawi case study saw agroecological practices that increase farmers' self-reliance as the best approach to support endogenous economic growth in the country. He blamed the country's current and historical emphasis on imported technologies and argued that reliance on synthetic inputs exacerbated Malawi's weak geopolitical position and trade deficit (Participant 192). This diagnosis was shared by another NGO representative in Malawi: "*The affordable inputs program may seem on paper like it's working because farmers are getting access to cheaper inputs but it's only about 10 % of the population are getting a benefit. I think that if you want true sustainable development you have sustainable systems because if you see Malawi – we don't make our own fertilizers. That's a lot of forex going out of the country. That's a big deal because then money is leaving the country and not helping us develop. I think we should teach farmers the best ways to be more sustainable and self-reliant rather than relying on*

[4] A traditional form of extensive agriculture used in many parts of the world, in which a portion of land is cultivated for a number of years and then left in fallow, and the farmer shifts to a new portion of land. The farmer may cut and burn the forest to prepare the land, hence the term 'slash and burn' has also been used for this type of agriculture, although that term has more negative connotations (Moore and Vaughan, 1994).

*government, meanwhile the government keeps raising taxes without really developing the country (Participant 191).*" Notably, Malawi was one of the few case studies where more than 50 % of respondents pointed to inadequate local or national government policies as a key challenge to the agricultural sector. Finally, in the Tanzania case study, a respondent asserted that agroecological practices were needed to protect consumers from the negative health effects of products grown with chemical inputs *(Participant 158, Tanzania, researcher*). While respondents judged food insecurity, poverty, and economic conditions to be major problems in agriculture, the use of agroecological practices was understood to be a solution to these issues rather than a result of them (as in Narrative 2).

## 4. Discussion

We identified three distinct narratives of agroecology held in common by respondents from different case study sites, and distinct roles in the food system. Agroecology is: a tool in a toolbox (Narrative 1), for poor farmers (Narrative 2), the better path (Narrative 3). Within two of these narratives (Narrative 1 and Narrative 3), agroecology was understood to be an agricultural approach with the potential to address food system challenges. In Narrative 1, which was the expressed by KIs from five case studies, these solutions were achieved through fruitfully combining agroecology with industrial agricultural practices, not through farming with purely agroecological techniques. In Narrative 3, the least common of the narratives (4 out of 9 case studies), KIs juxtaposed agroecology's potential to industrial agriculture's, with several explicitly stating that agroecology solved ecological and social challenges stemming from industrial intensification. The other narrative (Narrative 2) reflected pessimistic views on agroecology and similar alternatives to industrial intensification. This narrative asserted that the predominant practitioners of agroecology are poor farmers, because they do not have the resources or capacity to use industrial agricultural practices and technologies. Whereas one variant explained agroecology as an adaptive response to poverty, the other named it as a poverty trap, in part responsible for farmers' poverty in the first place. In both variants, agroecology was considered to produce inferior results to industrial agriculture. Agroecology was seen as compelled by resource scarcity, implying that, with improved incomes, farmers would and should shift from agroecological practices to more productive, industrial ones. Narrative 2 (Agroecology is for poor farmers) was the most common of the three, represented in seven of nine case studies.

The narratives identified in this study correspond approximately to those documented in other analysis of the discourse of food system transformation. The tension between the two positive narratives-Narrative 1 (tool in a toolbox) and Narrative 3 (agroecology is the better path) calls to mind that identified by Bernard and Lux (2017) in their discourse analysis of the debate between agroecology and sustainable intensification. Narrative 1 resonates with the discourse of sustainable intensification, which calls for "an equally great diversity of agricultural approaches, ranging from conventional and organic agriculture to new technologies and agroecology" (Foresight, 2011; Garnett et al., 2013; in Bernard and Lux, 2017, pp. 1285). Although inclusive of agroecological practices, proponents are skeptical of the ability of their ability alone, without the application of conventional or new GM or precision agriculture technologies, to support productivity (Bernard and Lux, 2017; The Montpellier Panel, 2013).

On the other side of the debate, proponents of agroecology often accuse projects that bundle of agroecology with industrial agricultural practices of 'co-optation' (Bernard and Lux, 2017). In particular, the food sovereignty movement rejects the compatibility of agroecology with 'climate smart varieties,' fertilizer, pesticides, and export-oriented agriculture. La Via Campesina (LVC) holds that the this approach creates dependency on liberalized markets that undermine the viability of smallholder livelihoods (LVC, 2014). This stance echoes Narrative 3 in this study, which asserted that agroecology was the better path because, in contrast to industrial agricultural approaches, it increased farmers' autonomy from volatile input, food, and output markets. Narrative 3 diagnoses industrial agriculture as the cause of major issues in the agricultural sector, such as loss of soil fertility, health issues, and poor economic conditions, reflecting further congruence with LVC's argument that industrial agricultural technologies contribute to these challenges (LVC, 2015). A key point of departure between Narrative 3 and LVC's narratives is the role of social movements: few KIs in this study identified civil society mobilization in their conception of agroecology, but it is a defining feature of agroecological transitions for LVC and agroecologists around the world (LVC, 2014; Giraldo and Rosset, 2018; Giraldo, 2025).

The prevalence of Narrative 2 (Agroecology is for poor farmers) confirms that the story of 'agricultural modernization' continues to dominate the discourse of food system transformation in African contexts (Boafo and Lyons, 2022; Mockshell and Birner, 2020; Mutsvangwa-Sammie and Manzungu, 2021; Ajwang et al., 2023). This narrative holds that economic development is achieved through transitioning unproductive smallholder agriculture to an industrial agriculture model. The Green Revolution policies and projects legitimated by this narrative continue to receive the bulk of investment in Africa (Biovision Foundation for Ecological Development & IPES-Food, 2020). This story explains the persistence of high rates of poverty and low productivity in rural areas, despite decades of GR policies, as a result of low rates of technology adoption (Wise, 2020). Consistent with Narrative 2, poor farmers are seen as lacking the knowledge or the resources, due to market imperfections or failures, to access industrial agricultural practices and technologies (Bassett and Munro, 2022; Mutsvangwa-Sammie and Manzungu, 2021; Wise, 2021). If these impediments are overcome, farmers – as economically rational agents-will transition from less productive (agroecological) practices to productivity-enhancing modern technologies (van Etten, 2022). The more negative variant of Narrative 2 (Agroecology is a poverty trap) has been invoked by critics, such as the U.S. Ambassador to the FAO, who described agroecology as an "endless cycle of back-breaking labor and low-yield production [which] keeps so much of the world mired in underdevelopment" (in Wise, 2021). The narrative 'Agroecology is for poor farmers' thus aligns with a common stance in debates about agricultural development in Africa.

### 4.1. Putting the pieces together: situating narrative elements

Although this study aimed to identify cross-cutting narratives of agroecology in African case studies, due to data limitations, only a subset of KIs contained a narrative specifically about agroecology and its role in the agricultural sector. However, all KI interviews contained key narrative elements, namely 1) the primary challenges in the agricultural sector, and 2) a definition of agroecology. In the remainder of this discussion, we hypothesize how these narrative elements predict or preclude more complete narratives of agroecology. These elements, which correspond to the beginning (problem framing) and, potentially, the middle (agroecology as solution) of the story, serve as clues about which agroecology narratives KIs might favor. We evaluate how logically agroecology, as defined by KIs, fits as a solution to the perceived problems in the agricultural sector, and thus its discursive potential as an approach to agricultural development. We argue that our findings related to the two narrative components suggests that many respondents had a limited understanding of the full breadth of agroecology (and evidence of its potential) and consequently did not consider agroecology to be an effective or relevant solution to major food system challenges. Their definitions and problem framings fit better into Narrative 1 (tool in a toolbox) and Narrative 2 (for poor farmers), both of which present a limited or negative view of agroecology's potential to address the challenges they see as most pressing. These narratives position agroecology as either less effective than industrial agricultural approaches (Narrative 2), or insufficient without them (Narrative 3). On the other hand, few of the common narrative elements fit logically into Narrative 3, or agroecology as a better path to achieve social, economic, and

environmental outcomes in their case study context (Narrative 3).

KIs' responses suggest that many did not consider agroecology to be relevant to the agricultural challenges that they believed were most pressing. In particular, respondents' emphasis, across case studies and KI types, on input scarcity as a top problem in the agricultural sector signals that most KIs do not support a key premise of Narrative 3 ('Agroecology is the Better Path'): that dependency on synthetic inputs can negatively impact rural livelihoods and agroecosystems. Instead, this concern for input scarcity aligns much better with the Narrative "Agroecology is for Poor farmers", as it implies that conventional agricultural methods and technologies are critical for increasing yields and, thereby, income. In this problem framing, low agricultural productivity is attributed to improper production-level management of individual farmers, who lack the will, capital, or knowledge to properly implement industrial agricultural technologies. KIs' consensus that improved seeds and agrochemical inputs are required for agricultural productivity is unsurprising, given that the research, extension and educational systems in the case study countries have historically promoted industrial agricultural approaches. This position is challenged by recent research that shows the positive impacts agroecological methods can have on yields (see, for instance, Tamburini et al., 2020), income (Mouratiadou et al., 2024), food security (Bezner Kerr et al., 2023), and other sustainable development goals in Africa (Madsen et al., 2025). This discrepancy points to the need to reach these audiences with the results of the research cited above.

Three-quarters of respondents, bridging case study location and KI type, identified biophysical threats as main issues affecting the agricultural sector. This problem framing aligns most closely with the starting point of the 'Tool in Toolbox' narrative, in which farmers must adapt their practices to trends of pests and disease pressure, climate change, and natural resource scarcity. As a 'tool in the toolbox', agroecology, in its technical form as a set of practices, is considered one option within a range of potential responses to these biophysical threats. Indeed, this was the main variant of Narrative 1: climate change and other biophysical challenges make agroecological practices increasingly appropriate. Biophysical problems in agriculture could also fit as the starting point of Narrative 3 (agroecology is the better path), as this narrative argues that agroecology can address environmental challenges. However, Narrative 3 primarily focused on the issue of agroecosystem degradation, primarily soil degradation, caused by improper "production-level management," rather than biophysical challenges, which KIs presented as external, natural forces largely beyond the individual farmer's control. Although increasing pests and disease pressure and climate change has been linked to industrial agriculture (Rasmussen et al., 2018), no KIs in this study attributed these trends to production-level management.

Research suggests that agroecological principles and practices can do a great deal to address the biophysical challenges mentioned by KIs, that is, pest and disease pressure (Bellone et al., 2023; Deguine et al., 2021), climate change (Altieri et al., 2015; Debray et al., 2019), and a limited land and resource base (Knezevic et al., 2023; Holt-Giménez et al., 2021; Gliessman, 2013). Yet KIs' definitions of agroecology indicate that few viewed agroecology as a solution to these biophysical challenges of concern. The most common definition of agroecology, as a form of agriculture that does no overt damage to the surrounding environment, value its potential to address agroecosystem degradation caused by improper production-level management. This stance is supported by scientific evidence that agroecological practices and principles (e.g. crop diversification, green manure, or vermicomposting) can restore soil health that has been degraded by mechanization, overapplication of agrochemical fertilizers and other synthetic inputs (Baldwin-Kordick et al., 2022; Lessmann et al., 2022; Davila, 2020; Lucantoni, 2020). However, compared to biophysical challenges, which were considered an issue by 75 % of KIs, only 53 (26 %) considered agroecosystem degradation a pressing issue. When analyzed in combination with definitions of agroecology, these problem framings suggest that many saw agroecology as having limited relevance to the biophysical challenges that they felt were the biggest challenge to the agricultural sector.

Defining agroecology as "agriculture that does not damage the environment" underestimates its potential to tackle external, biophysical threats to agriculture. In treating agroecology as an approach that avoids environmental damage associated with agriculture, rather than one that actively builds resilience to climate change, water scarcity, and pest pressure, KIs position the approach as irrelevant to the most pressing issues agricultural development. This observation highlights another key finding from this study: the limited interest in agroecology as a solution for dominant agricultural challenges can be linked to respondents' narrow definitions of agroecology. Only seven KIs defined agroecology comprehensively as a set of social and ecological principles or a science, movement, and practice. Those respondents who used this more complete definition of agroecology, all of whom were researchers, presented agroecology either as a preferable alternative to industrial agriculture ('Agroecology as a better path') or as useful complements to industrial ones under certain circumstances ('Tool in a toolbox'). In such cases, respondents emphasized the ways that certain agroecological practices could counteract negative effects of industrial, intensive agriculture by rebuilding ecosystem functions or providing autonomy from commodity markets that undermine food and livelihood security.

The role of institutions in shaping agroecology narratives is another explanation for why few respondents saw agroecology as a holistic or systemic alternative to industrial systems. Respondents' definitions of agroecology may be closely related to those used by local civil society organizations, coalitions, state agencies, international development organizations, or research groups. Respondents could be expected to draw on their interactions with these organizations when asked to define agroecology and discuss its relevance to regional challenges. This relationship may also account for why, even in cases where agroecology was seen as preferable to industrial agriculture, respondents so frequently believed that its success depended on interventions led by external actors. The terminology of 'agroecology' may itself be understood by respondents as an external language refined by experts in academia, civil society, and international development (e.g. Marfurt et al., 2023). Such perspectives may be the case even in regions where practices in line with agroecological principles (though not referred to by practitioners as 'agroecological') have endured for decades without being instigated or sustained through the intentional interventions of external institutions. Many of the recent international debates that have clarified the terminology and boundaries of agroecology have taken place in academic and intergovernmental spaces.

Of the various dimensions of agroecology that were not addressed or mentioned in interviews, the most conspicuous missing element was the co-creation of knowledge, arguably one of agroecology's most transformative aspects. Scholars and activists have argued that agroecology's basis in a combination of scientific and practitioner knowledge distinguishes it from conventional approaches to agriculture that center expert-led research and technology (Pimbert, 2018; Giraldo and Rosset, 2018; Brock et al., 2024). Knowledge co-creation and other "constructivist teaching-learning processes'' can help to ensure that agricultural transformations are adapted to the concrete needs and desires of local stakeholders while encouraging real commitment and sustained participation from direct producers (Giménez Cacho et al., 2018). In Malawi, for instance, Bezner Kerr et al. (2018) found that participatory research methods, particularly those that encouraged the co-production of agricultural knowledge, helped to encourage farmers' confidence in their own expertise and in that of their networks, granting them greater resiliency when state extension services proved unreliable.

Despite their transformative potential, the agroecological principles of knowledge co-creation and participation were not mentioned in any of the narratives reviewed here. On the contrary, most KIs, regardless of whether their position on agroecology was positive or negative, treated external expertise as a necessary means of correcting and overcoming farmers' own, inadequate knowledge. Indeed, farmers' "lack of

knowledge" was a problem identified by nearly one-third of respondents, representing substantial proportions of all KI types (including almost one-quarter of all farmer representatives). The negative narrative of agroecology ('Agroecology is for Poor Farmers'), assumes that the agroecological techniques that poor farmers employ on their own necessarily are inferior to the more advanced and modern techniques that these farmers are not aware of or able to afford. Even in the positive narratives of agroecology, respondents assumed that agroecology was a branch of scientific, expert knowledge which needed to be introduced and explained by external researchers. In the case of the first narrative ('Tool in Toolbox'), the adaptive manner in which farmers were understood to adopt and combine agricultural practices is compatible with ideas of knowledge co-creation, but this was not explicitly emphasized by respondents. In the case of the third narrative ('Agroecology as a Better Path'), which was generally the most supportive of agroecology, respondents argued that the local success of agroecology depended on the ongoing support and intervention of external government agencies, civil society actors and scientific institutions. Few KIs discussed the possibility of farmers themselves becoming experts in agroecological practice and coequal collaborators with external researchers through their own efforts and experimentation.

KIs' lack of emphasis on processes of knowledge co-creation may reflect the legacy of 'agricultural modernization' narratives that have historically ignored and undermined the knowledge systems of farmers and indigenous communities throughout Africa (Ajl and Sharma, 2022; Moseley et al., 2015). Although there is civil society mobilization in Africa around agroecology (see for example Wise and Bellay, 2021), the dominance of international organizations in setting African development agendas shapes the way that the concept of agroecology is viewed by practitioners in Africa (Marfurt et al., 2023). In this study, this reality likely explains a common caveat of Narrative 3: that agroecology's success depended on internationally funded NGO projects. KIs' emphasis on the condition of external support also reflects the national agricultural policy landscape, where the vast majority of the limited funding and resources available is allocated to industrial agriculture. In this context, collaboration with external researchers and development institutions can be one of the only means of accessing funds that encourage and support transitioning to agroecological systems of production. These conditions help to explain why study participants did not center the role of indigenous practice and agrobiodiversity in their definitions and narratives of agroecology.

## 5. Conclusion

This study identified narratives of agroecology that cut across differences between stakeholders and geographies in African agriculture. Within two of these narratives, agroecology was understood to be an agricultural approach with the potential to address food system challenges. The most common narrative, however, told a pessimistic story about agroecology's potential, as an alternative to industrial intensification, to contribute meaningfully to agricultural development. Narrative components also cut across contexts, with KIs from distinct case studies sharing common definitions of agroecology and diagnoses of the primary challenges in the agricultural sector. Their responses suggest that many had a limited understanding of the full breadth of agroecology (and evidence of its potential) and consequently did not consider agroecology to be an effective or relevant solution to major food system challenges. Respondents generally did not acknowledge agroecology's ability to increase farmer autonomy from external economic pressures, and, relatedly, respondents generally did not see agroecological practices as viable alternatives to increased fertilizer and pesticide application. This is perhaps to be expected given the prevalence of narratives promoting industrial intensification and how difficult knowledge dissemination can be in the best of circumstances. The dominance of these narratives may present a challenge to agroecological transitions in African contexts.

As we have argued above, embracing agroecology's emphasis on knowledge co-creation represents a potential pathway for traversing the boundary between academic debate and practitioner experience. Yet, in this study, many respondents identified lack of knowledge among farmers as a key challenge to the agricultural sector. In any given place, the extent and character of farmer knowledge is an empirical question that requires careful exploration and cannot be presupposed. Respondents' perspectives on low levels of farmer knowledge about sustainable agricultural techniques may reflect an accurate assessment of the character of average farmer knowledge in their region. At the same time, it may be the case that, as has been suggested above, these perspectives on agroecology and farmer knowledge reflect an acceptance of prevailing narratives which emphasize the inherent superiority of expert, academic knowledge about agriculture. Parsing this difference out requires empirical verification of claims about local knowledge systems and an understanding of the regional history of agrarian production systems. Farmers working in regions that have been heavily transformed by the adoption of industrial agriculture over decades can be expected to have different perspectives and knowledge than those working in regions which have retained systems of production that subsist without heavy reliance on industrial techniques.

This paper sought to identify narratives that cut across differences between case study sites in eight different African countries and six distinct stakeholder positions. This focus on commonalities between contexts and KI groups responds to a dearth of literature that synthesizes how agroecology is perceived in the food and agricultural sector in Africa. Yet this analytical approach left many questions unanswered, and future research might explain differences between stakeholder groups and case study contexts, probing why KIs from some places and institutions favor certain narratives or narrative elements. Given that agroecology involves adaptation to local agroecosystem and socio-political context, it is important to understand the extent to which actual practitioners identify with, adopt, and sustain agroecological principles and practices (Bené et al., 2019). Studying practitioner perspectives requires a careful and deliberate approach since respondents may not see a natural unity in the full range of principles that academics and policymakers have identified as part of a holistic understanding of agroecology. Future assessments might benefit from focusing on the narratives concerning local or historically prevalent agroecological practices, rather than perspectives on 'agroecology' itself. What are the histories of these practices, what institutions support them, what determines their success? Along similar lines, what are the regional histories of land use and agrarian transformation that have influenced and continue to exert pressure on farmers' choices of agricultural methods? In cases where agroecological practices are employed, what narratives, institutional networks and material conditions encourage and support these practices? The answers to these questions, which must be explored through in-depth, ethnographic studies, will deepen understandings of where stories of agroecology come from and their significance for food system transformation.

## CRediT authorship contribution statement

**Sidney Madsen:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Conceptualization. **Esther Laske:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Jarvis Fisher:** Writing – review & editing, Writing – original draft, Validation, Methodology, Formal analysis, Conceptualization. **Aïssa Ndiereby Sall:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Stephanie Enloe:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Rachel Bezner Kerr:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Conceptualization.

## Declaration of interest statement

We have no conflicts of interest to disclose.

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## Data availability

Data will be made available on request.

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