

Navigating the policy landscape in Uganda: problem representations and silences towards transitioning to Agroecology as a business

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1. Overview of the importance of agroecology in sustainable agriculture
 2. Theoretical and analytical framework
 - 2.1. Business perspective of AE principles
 - 2.2. Policy framework for AE in Uganda
 - 2.3. Policy analytical framework for AE in Uganda
 3. Materials and Methods
 4. Results of enablers for and silences against transitioning towards agro-ecological business systems
 5. Discussion
 6. Conclusions
 7. Policy recommendations
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Abstract. *This paper explores the application of ecological principles to enhance sustainability and resilience in agricultural systems. The aim is to*

analyse the policy landscape in Uganda that enables or hinders the transition to agroecological practices. Studied national policies and strategies included the: National Environment Management Policy; National Agriculture Policy; National Organic Agriculture Policy; Uganda National Grain trade policy; Uganda Vision; Uganda National Seed Strategy; Agriculture Sector Development Strategy and Investment Plan; as well as the Uganda Biodiversity Strategy and Action Plan. The theoretical framework outlines the principles of agroecology, showing how these are integrated or overlooked in national policies. Through a qualitative interpretive approach and documents review, I analyse the policy documents. The analytical framework applies Carol Bacchi's approach to policy analysis, to identify the problem representations, presuppositions that underlie the problem representations and silences within the problem representations that affect the transition to agroecological business systems. Results indicate that although the studied documents try to align agroecology principles, there are active silences such as promoting fragmented implementation which contradicts the principle of participation, failure of most of the policies and strategies to address soil health management, overlooking economic diversification and not integrating indigenous knowledge systems in sustainable land management. I conclude that it is crucial to take a comprehensive approach to policy planning and implementation that promotes agroecology as a business, while bringing about a more resilient, environmentally friendly, and economically sustainable agricultural sector in Uganda, and recommend a more inclusive policy process.

1. Overview of the importance of agroecology in sustainable agriculture

Agroecology (AE) aims at transforming food systems by applying ecological principles to agriculture, ensuring regenerative natural resources use, and ecosystem services, while also addressing the need for socially equitable food systems where people can exercise choice over what they eat and how and where it is produced. It presents a transdisciplinary field which includes all ecological,

social-cultural, technological, economic and political dimensions of food systems along the value chain (FAO-HLPE, 2019). As an approach to farming, AE emphasizes the ecological principles and practices that promote sustainable and resilient agricultural systems (Altieri, 2019, 2000; Wezel et al., 2020). It integrates traditional knowledge with modern science to co-create knowledge of farming methods that are environmentally friendly, socially just, and economically viable (Altieri et al, 2012; Caporali, 2010; Utter, 2021). This overview delves into AE's significance in sustainable agriculture, exploring its key principles, benefits, and implications for global food security and environmental conservation. The outcome is an assessment of the extent to which agriculture-related policies in Uganda enable transitioning to AE: a holistic approach that aims to create resilient, sustainable, and equitable food systems while preserving natural resources, promoting biodiversity, and maintaining profitability as a business. In business terms, AE involves applying ecological principles to agricultural systems to enhance sustainability, productivity, and resilience, maintaining economic viability and social responsibility. This approach focuses on promoting biodiversity, reducing reliance on external inputs like pesticides and fertilizers, and integrating natural processes to optimize resource use. AE may involve consulting services, the sale of eco-friendly agricultural inputs, implementation of sustainable farming practices, and marketing of organic or agro ecologically produced products to environmentally conscious consumers. Overall, it aims at creating profitable enterprises while fostering environmental stewardship and social equity within the agricultural sector.

On a global scale, adopting AE has significant implications for global agriculture and sustainable food systems (Barrios et al., 2020; Tomich et al., 2011) because when sustainability, resilience, and social equity are prioritized, AE offers a transformative path towards more sustainable, resilient, and equitable food production (Altieri et al., 2012) systems. Such systems like regenerative agriculture, diversified crops, efficient distribution networks, community engagement etc. prioritize practices that conserve natural resources, reduce waste, and promote biodiversity while also being adaptable to shocks and stresses such as climate change, pandemics or economic disruptions. However, widespread transitioning to such agroecological systems requires supportive policies, investments, and capacity-building efforts to overcome any barriers.

In Uganda, the agricultural landscape is diverse and characterized by various components including crops, livestock, farming systems, agricultural regions/zones, technology and practices, as well as challenges and opportunities (Kagorora et al., 2021).

The main crops cultivated in Uganda include bananas, cassava, sweet potatoes, beans, maize, millet, sorghum, coffee, tea, and a variety of fruits and vegetables. Livestock rearing is an essential component of Uganda's agriculture, with animals like cattle, goats, pigs, sheep, poultry and fish being raised for meat, milk, eggs and other products. Crops cultivation and livestock rearing are practiced in small scale subsistence, large scale commercial, agroforestry, or mixed farming systems. These practices also occur within different regions of Uganda, each having different agricultural landscapes influenced by factors such as climate, soil types and topography. The agricultural landscape utilizes various technologies and practices leading to traditional farming methods coexisting with modern agricultural practices and technologies. While some farmers still rely on manual labour and traditional tools, others apply modern irrigation systems, mechanized equipment, and improved crop varieties. There are various opportunities and challenges facing the agricultural landscape in Uganda (Magunda, 2020). The opportunities include increasing investment in agriculture, promoting agribusiness, improving value chains, and enhancing agricultural extension services. Some challenges exist including pests and diseases, limited access to both local and foreign markets, inadequate infrastructure, climate change impacts and land tenure systems. Uganda's policy arena is tasked with taking advantage of the opportunities and addressing challenges as a way of achieving sustainable resilient food systems.

The purpose of this paper is to navigate the policy landscape for AE in Uganda and analyse specific policies related to AE and sustainable agriculture and identify silences within specific policies that need attention to bring about resilient and sustainable food systems while ensuring profitability. I do this by applying an analytical and theoretical framework to understand AE principles within a business perspective, the agricultural policies in Uganda, and the extent to which the respective policies mainstream these principles.

1. Theoretical and analytical framework

2.1 *Business perspective on AE principles*

According to the High-Level Panel of Experts-HLPE (2019), the 13 principles of AE include Biodiversity, Recycling, Input reduction, Soil health, Animal health, Synergy, Economic diversification, Co-creation of Knowledge, Social values and diets, Fairness, Connectivity/networking, Land and natural resource governance, as well as Participation. All these principles are drivers towards sustainable and resilient food systems. In this article, we analyse the extent to

which Uganda's agricultural related policies embody these principles, as a way of transitioning to AE as a sustainable business pathway.

Biodiversity in agricultural systems implies the cultivation of a diversity of crops and incorporating agroforestry practices to enhance resilience, pest management, and soil fertility (Attwood et al., 2017). According to Dugupta (2021), Biodiversity is a multi-faceted feature of ecosystems, including species, genetic and functional traits variations. The business aspect of biodiversity is understood through the lens of the various economic principles that emphasize the value of diverse ecosystems in economies and agricultural systems (Van den Burg, 2014). Such economic principles include ecosystem services like pollination, pest control and soil fertility which are crucial for agricultural productivity and profitability, although most of these services are largely hidden in economic discourses (Dasgupta, 2021). In addition, diverse ecosystems promote sustainability because they are more resilient to environmental stresses and shocks, reducing the risk of crop failure and financial losses for farmers. Biodiversity also reduces the need for external inputs like pesticides and fertilizers by promoting natural pest control and nutrient cycling, thereby lowering production costs for farmers (Pretty, 2008). At the policy level, there is regulatory compliance by governments and international bodies to promote biodiversity conservation in agriculture, creating opportunities for businesses to align with these policies and access funding or markets.

Recycling involves utilizing organic waste materials, such as crop residues and manure, to enhance soil fertility and productivity (Pretty, 2008; Sarkaet al., 2020; Sharma et al., 2019). By recycling these resources on farm, agroecological businesses can reduce the need for external inputs like synthetic fertilizers, saving costs and minimizing environmental impact, and enhance long-term agricultural productivity and profitability. The recycling principle of AE is similar to the *input reduction* principle which emphasizes the minimization of non-renewable inputs (Pretty, 2008).

Soil health is crucial in that healthy soils are essential for sustainable agricultural production (Kibblewhite et al., 2008; Singh et al., 2011; Zuazo et al., 2011), and play a big role in ensuring resilience of food systems. This is in relation to the capacity of soil health to increase productivity through better nutrient availability and water retention, through reduced input costs due to practices like crop rotation and cover cropping, through enhanced resilience to environmental stresses such as drought and erosion, and through market differentiation as consumers increasingly value products grown in systems that prioritize soil health. Therefore, soil health principles have the potential to improve

productivity, reduce costly external inputs, reduce the risk of crop failure and financial losses to farmers, and offer opportunities for agroecological businesses to differentiate themselves in the market.

Animal health as an agroecological principle is envisaged in business terms as providing an enabling environment for ensuring product quality such as meat, milk, eggs, which can attract effective market demand. There are reductions in veterinary costs due to investing in preventive agroecological health measures like nutrition, sanitation, and access to pasture. Recently various animal related diseases have spread especially through animal movements (Fèvre, 2006) and consumers increasingly seek products from animals raised in systems that prioritize animal welfare and health (Spain et al., 2018; Ssekyewa et al., 2022). This provides sustainable opportunities for agroecological businesses to differentiate themselves in the market.

Synergy/crosscutting issues involve optimizing interactions between different components of the farming system to enhance overall productivity and profitability (Accatino et al., 2019; Power, 2010). This helps to maximize resource efficiency since there is a systemic approach (Namanji et al., 2022) to integrating diverse crops, animals and other elements, reducing input costs, and enhancing resilience. Diverse and interconnected farming systems reduce the risk of crop failure and financial losses to farmers. At the institutional level, synergy provides avenues for interaction among different stakeholders, to co-learn and co-create knowledge towards developing sustainable food systems (Kpienbaareh et al., 2020).

Economic diversification involves expanding revenue streams beyond traditional crop or livestock production, while specialization weakens the economic resilience of farms (De Roest, et al., 2018). Economies of scope emerge with diversified farming systems especially when farmers are able to use the same inputs to produce two or more products, thereby being more efficient (Paul & Nehring 2005). This practice helps to reduce risk, enhance resilience due to complementary benefits, availability of value-added products such as processed food and agro tourism, thus generating additional income. This also happens because farmers build complementary networks and work together in Farmer Research Networks (FRNs) to transition to AE.

Co-creation of knowledge involves collaborative learning and innovation between farmers, researchers, and other stakeholders (Utter, 2021). This enhances efficiency since it allows for identification and adoption of best practices and innovative solutions, improved adaptability to practices towards changing

environmental conditions and market demands, fosters innovation and development of novel solutions to complex agricultural challenges, builds social capital within farming communities, access to funding and markets, thus enabling AE businesses to thrive.

Social values and diets as a principle emphasizes the importance of cultural, social, economic, environmental, and political dimensions in food production and consumption (Barrios et al., 2020). It recognizes that food is not only about nutrition but also about cultural identity, social relationships, and ecological sustainability. In this way, it helps to meet consumer demand by producing food in alignment with social values and dietary preferences, as well as building consumer trust, with consumers who prioritize values such as environmental stewardship, animal welfare and fair labor practices. Overall, it aims to create a food system that is equitable, socially just, and environmentally sustainable, which enables AE businesses to enhance their market positioning, profitability and societal impact.

Fairness involves promoting equitable distribution of resources, opportunities, and benefits within the agricultural system. This can be done through ensuring fair prices, support to smallholders and marginalized groups, fostering social equity through fair labour practices such as fair wages and safe working conditions, promoting transparency and accountability such as fair-trade certifications and participatory decision-making processes, as well as transparent business practices, addressing issues of food insecurity and inequality, which supports new models of entrepreneurship (Dumont, et al., 2016).

Connectivity/networking involves fostering collaboration and cooperation among farmers, researchers, policymakers and other stakeholders. The High-level Panel of Experts (2019) shows that connectivity provides proximity and confidence between producers and consumers through promotion of fair and short distribution networks by re-embedding food systems into local communities. This helps to access knowledge and expertise, facilitates innovation by bringing together diverse perspectives and resources, enhances market access due to connections and partnerships along the value chain, thereby expanding sales opportunities, influencing policy and advocacy, since networks allow farmers to advocate for policies and regulations that support agroecological principles, creating a more sustainable environment for sustainable agriculture.

Land and natural resource governance involves responsible management and stewardship of land, water, and other resources, recognizing and supporting the needs and interests of family farmers, smallholders and peasant food producers

as sustainable managers and guardians of natural and genetic resources (HLPE, 2019; Agroecology Europe, 2024). This helps to ensure sustainable land use, optimizing resource efficiency, mitigating environmental impacts such as soil erosion or water pollution (Thomas, 1993), as well as promoting social equity through equitable access to land, water and other resources supporting smallholder livelihoods.

Participation involves engaging stakeholders, including farmers, communities and consumers in decision-making processes and project implementation (HLPE, 2019). This practice enhances local knowledge and expertise in farming practices, leading to more contextually appropriate and effective solutions. It builds social capital and collective action for sustainable development, increases ownership and buy-in, leading to higher adoption rates and greater impact. Importantly, engaging consumers and value chain actors in participatory processes enhances market responsiveness due to a better understanding of market preferences and trends.

In relation to the highlighted principles of AE, this research assessed the level of support provided by Ugandan agricultural policies to AE as a viable business venture. This was achieved through the identification of policy clauses that either facilitate or hinder the adoption of agroecological practices. To this, we need to understand the policy framework for AE in Uganda.

2.2 Policy framework for AE in Uganda

Uganda is in East Africa and known for its rich agricultural heritage, contributing to employment, income generation, and food security for most of its population. However, over the years, Uganda has faced significant challenges in its agricultural sector, including soil degradation, low crop yields, vulnerability to climate change, and institutional challenges (Bategeka et al., 2013; Kagorora, 2021; Magunda, 2020). In response to these challenges, the government of Uganda has implemented various policies and strategies aiming at enhancing agricultural productivity, environmental sustainability and social equity. We studied the extent to which these policies enhance or disable a transitioning to AE as a business, by identifying within the policy documents the enabling clauses and silences. the Uganda Biodiversity Strategy and Action Plan (UBSAPII; NEMA, 2016), the National Environment Management Policy (NEMP, 1994), the National Agriculture Policy (NAP, 2013), the National Organic Agriculture Policy (NOAP, 2018), the Uganda National Grain trade policy (2015), the Uganda Agriculture Sector Development Strategy and Investment Plan (2010/2011-2014-15), the Uganda Vision (2040), Uganda National Seed Strategy

(2014/2015-2019/2020) (Republic of Uganda, 1995; 2013; 2019; 2015; 2010; 2024; 2015) are among the policy and strategic frameworks that guide the implementation of AE practices in the country.

2.2.1 The National Environment Management Policy (NEMP) was formulated in 1994 and its revision has been ongoing since 2019. This policy is the umbrella of all policies, and it takes a broader approach by addressing all sectors that impact the environment, including agriculture. Chapters 3, 4, and 5 of the policy recognize the need for environmentally sustainable practices in agriculture and encourage the adoption of agroecological approaches to achieve this. They also emphasize Agriculture and Farming Systems, Forest Conservation and Management, Wildlife Conservation and Management, Livestock and Rangelands Management, Fisheries and Other Aquatic Resources Conservation and Management. The NEMP principles also emphasize the promotion of biodiversity conservation and sustainable use of natural resources, the integration of environmental considerations into agricultural planning, and the development of innovative farming techniques that minimize negative environmental impacts. However, the NEMP presents some silences or gaps that undermine agroecological practices and are hindering the transition to AE in Uganda.

2.2.2 The National Agriculture Policy (NAP) was formulated in 2013, and it recognizes the importance of sustainable agriculture practices, promoting the adoption of AE to achieve increased productivity, resilience, and food security. The policy emphasizes the integration of traditional knowledge and indigenous farming practices with modern scientific techniques. It also emphasizes the importance of empowering small-scale farmers, especially women and youth, by providing them the necessary skills and resources to implement sound agricultural practices. Just like the NEMP, the NAP has gaps that need scrutiny if Uganda is to achieve profitable and sustainable food systems through AE.

2.2.3 The National Organic Agriculture Policy (NOAP, 2020-2025) is among Uganda's efforts to promote organic farming through various initiatives and programs aimed at enhancing sustainable agricultural practices, improving soil fertility, reducing synthetic chemical use, and supporting small-scale farmers. The focus is also on encouraging organic certification, promoting organic farming techniques, and supporting organic agriculture through research, extension services and market development. The policy presents Uganda's efforts as aligned with broader global trends towards sustainable and environmentally friendly agricultural practices.

2.2.4 The Uganda National Grain trade policy (2015) aims to enhance the competitiveness, efficiency, and inclusiveness of the grain sector. It focuses on improving market access, promoting private sector investment, enhancing value addition, ensuring food security, and fostering sustainable production and trade practices. The policy seeks to create an enabling environment for all stakeholders involved in the grain trade, including farmers, traders, processors, and consumers, to thrive and contribute to Uganda's economic development.

2.2.5 The Uganda Biodiversity Strategy and Action Plan (UBSAPII) is a national framework designed to conserve and sustainably manage Uganda's rich biodiversity. The strategy outlines measures to conserve Uganda's diverse ecosystems including forests, wetlands, savanna and freshwater bodies as well as its rich flora and fauna. Other measures include promoting sustainable utilization of biodiversity resources, balancing conservational goals with social-economic development needs. The strategy includes provisions for raising public awareness about the importance of biodiversity conservation and building the capacity of stakeholders involved in biodiversity management. To achieve its objectives, the strategy emphasizes effective governance structures and collaboration among government agencies, civil society organizations, local communities and other stakeholders. It identifies and addresses key threats to biodiversity such as habitat loss, deforestation, pollution, invasive species and climate change. Overall, Uganda's biodiversity strategy and action plan provides a comprehensive framework for safeguarding Uganda's natural heritage while promoting sustainable development and human well-being. It serves as a guiding document for biodiversity conservation efforts across the country.

2.2.6 The Uganda Vision (2040) is a long-term development framework that outlines Uganda's aspirations and goals for social-economic transformation over the next few decades. Key elements of the vision include achieving a middle-income status and becoming a prosperous nation with high quality of life for all citizens by 2040, inclusive economic growth that benefits for all segments of society, including marginalized groups through job creation, poverty reduction, and equitable access to basic services. The country seeks to transform its economy by promoting industrialization, diversifying into higher value-added sectors and embracing modern technologies and innovation. The vision also emphasizes infrastructural development including roads, railways, energy, water supply and ICT to support economic growth, regional integration and improved living standards. Investing in education, health care, skills development and social protection to build productive workforce, enhance human capital development and ensure social well-being. In all that is envisioned, there is recognition of the

importance of environmental sustainability and natural resource management to ensure long-term resilience, ecological balance, and sustainable development. It shows the importance of strengthening governance institutions, promoting transparency, accountability, and the rule of law to foster a conducive environment for development and citizen participation.

2.2.7 The Uganda National Seed Strategy (2014/2015-2019/2020) aimed at improving the seed sector in Uganda to enhance agricultural productivity and food security. Key elements of the strategy include strengthening seed quality assurance mechanisms to ensure that farmers have access to high quality seeds that are genetically pure, viable and adapted to local ecological conditions; increasing the production and distribution of improved seeds, including high yielding varieties of staple crops to small-holder farmers across the country; supporting research and development efforts to breed new crop varieties that are resistant to pests, diseases and environmental stresses, as well as improving the nutritional content and yield of potential crops; building the capacity of seed producers, extension workers, and farmers in seed production techniques, seed quality management and seed system governance; strengthening the regulatory framework for the seed sector to ensure compliance with quality standards, intellectual property rights, and seed certification procedures; promoting partnerships between government institutions, research organizations, private seed companies, farmer organizations and other stakeholders to enhance the efficiency and effectiveness of seed value chain; integrating gender considerations into seed sector interventions to ensure that women farmers have equal access to improved seeds, training and resources. Overall, the Uganda National Seed Strategy aimed at transforming the seed sector into a vibrant and efficient system that meets the diverse needs of Ugandan farmers, enhances agricultural productivity, and contributes to food security and rural development.

2.2.8 The Uganda Agriculture Sector Development Strategy and Investment Plan (2010/2011-2014-15) was a comprehensive framework aimed at promoting sustainable agricultural development and rural transformation in Uganda. The key elements of the strategy and investment plan included increasing agricultural productivity through the adoption of improved technologies, practices, and inputs including high-yielding crop varieties, mechanization, and irrigation; improving access to markets for agricultural produce and promoting value addition along agricultural value chains to increase farmers' incomes and competitiveness; supporting the development of the livestock sector through improved animal health services, breed improvement, and value chain development to enhance food security and rural livelihoods; promoting

sustainable natural resource management practices, including soil conservation, water management, and agroforestry, to enhance environmental sustainability and resilience to climate change; rural infrastructural development, including roads, storage facilities, and market infrastructure, to reduce post-harvest losses, improve market access, and stimulate economic growth in rural areas; strengthening institutional capacity and coordination mechanisms within the agricultural sector to improve policy formulation, implementation, and monitoring and evaluation; promoting private sector investment and entrepreneurship in agriculture through policy reforms, incentives, and public-private partnerships to unlock the sector's potential for growth and job creation; social inclusion and gender equality through mainstreaming gender considerations and ensuring the inclusion of marginalized groups, such as women and youth, in agricultural development interventions to promote equitable and inclusive growth. Overall, the Uganda Agriculture Sector Development Strategy and Investment Plan provided a strategic framework for guiding public and private investments in agriculture, with the aim of transforming the sector into a modern, efficient, and sustainable engine of economic development and poverty reduction.

It is crucial to analyse the extent to which the selected policies harness AE as a business while maintaining environmental health and sustainable food systems. Therefore, to undertake the policy analysis, this research engaged with different approaches across social and natural sciences. The theoretical underpinning is tagged to systems theory, which provides a multidisciplinary perspective. Systems theory encourages us to integrate insights from multiple disciplines such as Economics, Ecology, Biology, Psychology, Physics, to tackle agricultural development issues instead of controlling nature with a single-minded Anthropocentric goal (Namanji et al., 2022; Ricket, 2004). Therefore, systems thinking in agricultural development calls for acknowledging the importance of interrelations of all components within the agriculture systems as they support each other. A breakdown in one component of that ecosystem results in the whole ecosystem being at standstill and in disequilibrium.

This theoretical framework was supported by clear paradigms that involved the application of interpretivism (Guba and Lincoln, 1994; Rehman & Alharthi, 2016; Tubey et al., 2015) with respective ontological, epistemological and methodological assumptions. The interpretive policy analysis helped to examine the selected policy documents, processes and outcomes through self-reflexivity, where the researcher had the capacity to read policy documents and reflect upon

what is happening in Uganda's policy arena for the purpose of commentary and critique, as shown in the policy analytical framework.

2.3 Policy analytical framework for AE in Uganda

The policy analytical framework involved applying an interpretive policy analysis of the selected policies, by using Carol Bacchi's "What is the Problem Represented to be?" (WPR) approach to policy analysis (Bacchi, 1999; 2009; 2012). The aim was to critically interrogate how the selected policies defined the principles of AE and identify the policy articles that promote and those limiting transitioning towards AE, as well as policy silences (principles not mentioned).

The WPR approach is a Foucauldian influenced poststructuralist approach to policy analysis (Fischer et al., 2015; Yanow, 2015) which interrogates critically how the policy issue is problematized, the premises that representations of the problem rest upon, its effects, as well as problems that could be nested or hidden in the policy problem itself. According to Bacchi: "Poststructuralism...creates a space for questioning taken for granted concepts and categories" (2016, p.8). This approach provided space to unveil silent challenges, as it "encourages us to think about the interconnections between policy areas, and to reflect upon which issues remain unaddressed or undiscussed because of the ways certain problems are represented" (Bacchi, 1999, p. 2). Thus the policy analysis framework by Bacchi allows policy analysts to tackle any relevant of the six questions including; i) identifying the problem representations, ii) presuppositions that underlie those problem representations, iii) how the problem representations came to be, iv) silences within the problem representations, v) effects of the problem representations, vi) how the problem representations are reproduced, disseminated and defended, or how they are being questioned, disrupted and replaced.

In the context of this analysis, I critically examine how the selected policies construct problems (identifying the problem representations), the presuppositions that underlie the problem representations and the silences within those problem representations that enable or disable AE and sustainable food systems. This was done for the selected policies and strategies related to agriculture.

Accordingly, Bacchi (2012) shows problem representations as what someone proposes to do about a particular issue, and this reveals what they consider to be problematic and needs change. Thus, policy proposals implicitly contain representations of what is considered the "problem" and therefore needs change.

Presuppositions or assumptions that underpin these problem representations are the beliefs or ideas that inform how the problem is defined, and these can be normative, epistemological, ontological or in a historical context. For instance, normative assumptions refer to value judgements about what is desirable or undesirable, right or wrong. When defining a problem, policy makers and analysts often rely on implicit normative assumptions such as economic growth is inherently positive, equality is a fundamental goal, sustainability is crucial for long-term development, etc. Here I examine the policy discourses in ongoing debates around the value of AE and its related principles, and the extent to which the selected policies understood and or tried to address this aspect. Silences are what remains apparently unproblematic or unspoken about. The absence of some issues from problem representations reveals underlying assumptions.

From an interpretive analytical point of view, a close reading of the relevant policy documents and other related literature was instrumental in reaching findings. This analytical and theoretical framework provided answers to the research problem using the following materials and methods.

3. Materials and Methods

The application of a case study approach involved a purposive sample of eight pertinent documents including policies and strategies in line with AE. There were other related documents like the draft Agroecology strategy, the draft National Bio economy and Biosafety strategy, but these were excluded because they were still in draft form and not yet implemented. Following a qualitative interpretive approach (Guba & Lincoln, 1994), I identified relevant resources, utilizing the documents review method (Bowen, 2009) and following the principle of interpretivism as the nature of knowledge building to understand the studied phenomenon. Following Carol Bacchi's policy analysis guiding questions, I selected three: i) What is the problem represented to be? ii) What presuppositions underlie the problem representations, and iii) where are the silences in the problem representations? All questions were addressed in relation to the principles of AE. To add to the body of existing knowledge, I utilized stakeholder engagements by applying the soft systems methodology to obtain their opinions. All data sources formed the basis for drawing policy recommendations.

Results were analysed by applying a content analysis (Lal Das, 2008), where I created themes and flexibly decided how many concepts to include in the analysis. Thus, I identified the key words or statements to achieve the stated objectives. Levels of mainstreaming AE principles in policies were based on the

extent and times a principle was directly or indirectly referred to in the policy. Data were presented in tables and figures.

4. Results

4.1 Results of enablers for and silences against transitioning towards agro-ecological business systems

There are policies that provide space in transitioning to AE although, within these policies there are silences/limitations that require attention. In this research, a random sample of 8 documents was made including Uganda Vision (2040), National Organic Agriculture policy (2020-2025), National Environment Management policy (1995), The National Agriculture Policy (2013), The National Grain trade policy (2015), the Uganda Biodiversity Strategy and Action Plan II (UBSAPII), Uganda National Seed Strategy (2014/2015-2019/2020), as well as the Agriculture Sector Development Strategy and Investment Plan (2010/2011-2014-15).

With reference to the AE principles, each policy document was analysed to identify the extent to which they promote AE as a business (number of times a specific policy addresses respective principles), mention of a specific position (enabling article towards transitioning to AE), the limiting article or silences in each policy document that need to be addressed to create space towards agroecological systems that ensure profitability and sustainable farming systems (Table 1).

The results shown in Table 1 and Figures 1 to 8 indicate the extent to which each policy document tackled respective AE principles, and Annex 1 goes further to show what was left as unproblematic within policy documents. A summary of those findings indicates the policy, the number of principles addressed and the respective times the principles were related to or mentioned.

In Figure 1, only six principles are mentioned or relatedly referred to in the NEMP. Of these, the Biodiversity and Participation principles were mostly presented in one form or another. Soil health, input reduction, economic diversification, co-creation of knowledge, networking, fairness, and building synergies were left silent.

In the case of the National Agriculture Policy (Figure 2), five principles were represented and mainstreamed by referring to them or mentioning a related subject. Those most mentioned are land and natural resources as well as participation. The policy also refers to aspects of animal health, inputs reduction

and economic diversification. It remained silent about other principles which include biodiversity, soil health, recycling, co-creation of knowledge, networking, social values and diets, fairness and synergies. For Figure 3, the streaming of AE principles in the National Organic Agriculture Policy is presented. Nine AE principles are represented here, while four remained silent. Biodiversity was the most mainstreamed principle, whereas nothing was found about economic diversification, co-creation of knowledge, networking and social values and diets.

The National Grain Trade Policy only presents some 4 principles, Biodiversity, land and natural resources, participation and synergies, while it remains silent about other principles (Figure 4). The National Seeds Strategy is closely related to the grain trade policy, with the exception of it considering networking instead of synergies (Figure 5). Further analysis involved the Agriculture Sector Development strategy and investment plan. This plan was most aligned to AE with all principles addressed to some extent, except the Soil health and Recycling principles (Figure 6). It focused most on land and natural resources as well as participation.

Table 1. Problem presuppositions/AE Principles and the extent to which they are mainstreamed in selected policies and strategies: National Environment policy (NEMP), National Agriculture policy (NAP), National Organic Agriculture Policy (NOAP), National Grain trade policy (NGTP), Uganda National Seeds Strategy (UNSS), Agriculture sector Development strategy and investment plan (ASDIP), The National Biodiversity Strategy and Action Plan (NBSAP II), Uganda Vision 2040 (UV2040).

PRESUPPOSITIONS/AE PRINCIPLES	EXTENT AE PRINCIPLES ARE STREAMLINED IN SELECTED POLICIES							
	NE MP	NA P	NOA P	NGT P	UN SS	ASDS IP	NBSA P II	UV2040
Biodiversity	27	0	20	1	12	6	770	4
Soil health	0	0	2	0	0	0	0	0
Animal health	3	1	2	0	0	7	1	0
Input reduction	0	1	6	0	0	1	0	0
Recycling	4	0	2	0	0	0	3	1
Economic diversification	0	1	0	0	0	2	0	1
Co-creation of knowledge	0	0	0	0	0	4	0	1
Connectivity/networking	0	0	0	0	1	4	5	2
Social values and diets	1	0	0	0	0	2	5	0
Fairness	0	0	2	0	0	1	2	6
Land and natural resource governance/sustainable resource management	4	3	4	2	1	15	4	5
Participation	26	2	7	1	7	15	16	32
Synergy	0	0	2	2	0	9	2	0

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The National Environment Management Policy (1995)	Biodiversity	27
	Soil health	0
	Animal health	3
	Input reduction	0
	Recycling	4
	Economic diversification	0
	Co-creation of knowledge	0
	Connectivity / Networking	0
	Social values and diets	1
	Fairness	0
	Land and natural resources governance (sustainable resource management)	4
	Participation	26
	Synergy	0

Figure 1. Mainstreaming of AE principles in the National Environment Management Policy.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The National Agriculture Policy (2013)	Biodiversity	0
	Soil health	0
	Animal health	1
	Input reduction	1
	Recycling	0
	Economic diversification	1
	Co-creation of knowledge	0
	Connectivity / Networking	0
	Social values and diets	0
	Fairness	0
	Land and natural resources governance (sustainable resource management)	3
	Participation	2
	Synergy	0

Figure 2. Mainstreaming of AE principles in the National Agriculture Policy.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The National Organic Agriculture Policy (2020-2025)	Biodiversity	20
	Soil health	2
	Animal health	2
	Input reduction	6
	Recycling	2
	Economic diversification	0
	Co-creation of knowledge	0
	Connectivity / Networking	0
	Social values and diets	0
	Fairness	2
	Land and natural resources governance (sustainable resource management)	4
	Participation	7
	Synergy	2

Figure 3. Mainstreaming of AE principles in the National Organic Agriculture Policy.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The National Grain Trade Policy (2015)	Biodiversity	1
	Soil health	0
	Animal health	0
	Input reduction	0
	Recycling	0
	Economic diversification	0
	Co-creation of knowledge	0
	Connectivity / Networking	0
	Social values and diets	0
	Fairness	0
	Land and natural resources governance (sustainable resource management)	2
	Participation	1
	Synergy	2

Figure 4. Mainstreaming of AE principles in the National Grain Trade Policy.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The Uganda National Seed Strategy (2014/2015) (2019/2020)	Biodiversity	12
	Soil health	0
	Animal health	0
	Input reduction	0
	Recycling	0
	Economic diversification	0
	Co-creation of knowledge	0
	Connectivity / Networking	1
	Social values and diets	0
	Fairness	0
	Land and natural resources governance (sustainable resource management)	1
	Participation	7
Synergy	0	

Figure 5. Mainstreaming of AE principles in the Uganda National Seed Strategy.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The Agriculture Sector Development Strategy and Investment Plan (2010/2011) (2014/2015)	Biodiversity	6
	Soil health	0
	Animal health	7
	Input reduction	1
	Recycling	0
	Economic diversification	2
	Co-creation of knowledge	4
	Connectivity / Networking	4
	Social values and diets	2
	Fairness	1
	Land and natural resources governance (sustainable resource management)	15
	Participation	15
Synergy	9	

Figure 6. Presentation AE principles in the Agriculture Sector Development Strategy and Investment Plan.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The National Biodiversity Strategy and Action Plan (NBSAPII)	Biodiversity	770
	Soil health	0
	Animal health	1
	Input reduction	0
	Recycling	3
	Economic diversification	0
	Co-creation of knowledge	0
	Connectivity / Networking	5
	Social values and diets	5
	Fairness	2
	Land and natural resources governance (sustainable resource management)	4
	Participation	16
	Synergy	2

Figure 7. Mainstreaming of AE principles in the National Biodiversity Strategy and Action Plan.

POLICY	PRESUPPOSITIONES (AE PRINCIPLES)	EXTENT OF STREAMING
The Uganda Vision (2040)	Biodiversity	4
	Soil health	0
	Animal health	0
	Input reduction	0
	Recycling	1
	Economic diversification	1
	Co-creation of knowledge	1
	Connectivity / Networking	2
	Social values and diets	0
	Fairness	6
	Land and natural resources governance (sustainable resource management)	5
	Participation	32
	Synergy	0

Figure 8. Status of AE principles mainstreaming in the Uganda Vision.

The National Biodiversity Strategy and Action Plan II are only about Biodiversity, with scant reference to animal health, recycling, networking, social values and diets, fairness, land and natural resources, plus participation (Figure 7).

The last analysis was of the Uganda Vision 2040. This policy document has some aspects related to AE principles especially regarding participation. Other represented principles include land and natural resources, fairness, biodiversity, networking and somehow economic diversification, recycling and co-creation of knowledge (Figure 8).

Table 2 shows percentage reference to the AE principles to give another dimension on visualizing the extent to which selected policies align with these principles. It is clear that the most aligned with Agroecology principles is the Agriculture Sector Development Strategy and Investment Plan (85%), followed by the National Organic Agriculture Policy (69) and the National Biodiversity Strategy and Action plan II (69%), as well as the Uganda Vision 2040 (62%). Others fall below 50% of alignment, including the National Environment Management policy (46%).

Table 2. Percentage score of each policy or strategy in relation to addressing Agroecological Principles

Policy	Number of AE principles addressed	Percentage score	Ranking
NEMP	6	46	4
NAP	5	38	5
NOAP	9	69	2
Grain Trade Policy	4	31	6
National Seed Strategy	4	31	6
Agriculture Sector Development Strategy and Investment Plan	11	85	1
NBSAPII	9	69	2
Uganda Vision	8	62	3

Results show that all policies and strategies remained completely silent about certain AE principles. The Agriculture Sector Development Strategy and Action Plan (ASDSAP) presents more principles although it remains silent about soil health and recycling principles. On the one hand, like the ASDSAP, NOAP also presents pertinent silences, by not explicitly mentioning the principle of economic diversification, remaining completely silent about knowledge co-creation even when it talks about knowledge in the broader sense, silent about

connectivity as well as social values and diets, even though it tries to address the social aspect but not from an AE business perspective. On the other hand, the NBSAPII does not explicitly mention soil health, completely silent about input reduction, economic diversification and co-creation of knowledge.

The National Environment Management Policy (NEMP) is equally silent about such AE principles as soil health, input reduction, economic diversification, co-creation of knowledge, connectivity, fairness, and synergy. The Uganda Vision 2040 remains silent about AE principles such as soil health, animal health, input reduction, synergy and social values and diets.

The NAP is silent about soil health, biodiversity, recycling, co-creation of knowledge, connectivity, social values and diets, fairness, and synergy, whereas the National Grain Trade Policy is silent about soil health, animal health, input reduction, recycling, economic diversification, co-creation of knowledge, connectivity, social values and diets, as well as fairness. Finally, the National Seed Strategy is silent about principles such as soil health, animal health, input reduction, recycling, economic diversification, co-creation of knowledge, social values and diets, as well as synergy.

5. Discussion

Results indicate that of the thirteen AE principles, land and natural resources governance/sustainable resource management and participation were cited in all policy and strategic documents. On the one hand, it should be noted that, although all policies tackle the principle of sustainable resources management, there are contradictions. For instance, in the Uganda Vision 2040, in chapter four on strengthening fundamentals for harnessing opportunities, agriculture is considered an important opportunity to achieve social-economic transformation. Although the chapter proposes efforts to attain a green and clean environment, while conserving the flora and fauna, there are contradictions in achieving this goal proposing to increase land for mechanization, investment in technology for improved seeds, breeds and stocking materials.

Moreover, the NEMP is silent about robust enforcement mechanisms to ensure compliance with regulations related to sustainable resource management, while the NAP promotes large scale farming enterprises, block farming and out grower schemes which lead to deforestation, habitat loss and soil degradation. In its implementation framework, the NAP does not provide strategies for sustainable resource use. There is more emphasis on sustainable use (e.g. for the NOAP) rather than sustainable management. While sustainable use focuses on the

consumption aspect, sustainable management encompasses broader strategies for maintaining the health and productivity of a resource over time (Bansard and Schroder, 2024; Muller, 2023; Thomas, 1993; Zuazo et al., 2011) and goes beyond consumption to encompass the entire lifecycle of resources to balance social, economic and environmental aspects. Although the DSIP prioritizes Sustainable Land Management, there are inadequate resources allocated for it. It still ignores the role of indigenous knowledge in sustainable land management practices, and it promotes large scale mechanized agriculture which does not favour sustainable land management. Equally, the NBSAPII is silent about unequal land distribution which undermines sustainable land management.

On the other hand, participatory approaches are necessary for creating avenues to engage value chain actors because they enhance market responsiveness due to a better understanding of market preferences and trends¹; Guijt, 2014; Mayanja et al., 2012) and building collective action for sustainable development. Although value chains may create mistrust among actors, participatory approaches promote trust-building, information sharing and cooperation leading to improved responsiveness. Therefore, it is a plus for policies and strategies to embrace participatory approaches. However, there are active silences within respective policy statements and strategies regarding participation. For example, in the NEMP, NBSAPII, and Uganda Vision there is lack of meaningful participation from all relevant stakeholders, including marginalized groups such as women, youth, indigenous communities, and small-scale farmers. This is evident for instance in the NEMP which emphasizes the formulation of the overall environmental management policy at the highest level of government-hence not prioritizing the bottom-up approach (5.2). Superficial consultation of stakeholders without their input being genuinely considered in the decision-making processes does not reflect effective participation. In addition, in the NAP, none of the guiding principles explicitly focuses on participation, and in section 3.2 both Vision and mission of the policy do not provide for participation as an objective or strategy, implying that participation is not prioritized. The National Grain Trade Policy is silent about stakeholders' access to decision-making forums at various levels of governance from local to national level. This implies no genuine efforts to promote participation. The Development Strategy and Investment Plan Section 7.1 promotes fragmented implementation which contradicts participation.

In terms of performance, the Agriculture Sector Development Strategy and Investment Plan (2010/2011-2014-15) has emerged with the highest score of 85 percent being in position to acknowledge a range of AE principles and cross-

cutting concerns that must be addressed in the investment portfolio. Among the aspects there are reducing land degradation, agrochemical pollution, loss of biodiversity through deforestation and wetlands, loss of biodiversity in agricultural landscapes through introduction of non-native varieties. However, in the document, component 1.6.8: emphasizes the promotion of mechanization for increased rice production. It should be noted that mechanized rice production is not environment friendly. While the strategy and investment plan embrace many AE principles, it remains silent about soil health and recycling principles.

Likewise, apart from the National Organic Agriculture Policy, all other policies are silent about soil health management which is crucial for sustainable agriculture and resilient food systems. Soil health impacts crop productivity, nutrient cycling, and water retention. Thus, sustainable soil management practices are essential for long-term agricultural resilience and holistic sustainability. Other than soil health, some studied policies and strategies like the NEMP, the NGTP, the UNSS, NBSAPII, and the UV do not explicitly address reducing excessive use of chemical inputs (such as synthetic fertilizers and pesticides), while overreliance on synthetic chemical inputs can harm soil quality, water systems and human health (Horrigan,2002; Pretty, 2008; Nadarajan, & Sukumaranm, 2021). Promoting judicious use of inputs is necessary for environmental conservation. Apart from the NAP and the UV, other policies and strategies are silent about the AE principle of economic diversification. The lack of emphasis on diversifying agricultural activities is critical because diverse agricultural practices reduce vulnerability to market fluctuations and climate shocks yet, income diversification enhances livelihoods due to production efficiency exhibited by using the same inputs to produce more than one item (Paul & Nehring, 2005). Results show that although the NOAP does not explicitly mention economic diversification, it presents various aspects that could contribute to economic diversification, such as enhancing research, technology development, dissemination, promoting organic agriculture education and training, and market development and promotion. These elements can lead to a more diverse and resilient economy by supporting different sectors and creating new opportunities within the organic industry.

However, for a more complete policy, policymakers ought to explicitly tackle all such aspects instead of leaving them ambiguous and in danger of being lost. In the case of grain policy, the lack of emphasis on creating diverse grain markets underscores the aspect of diverse markets enhancing resilience and income opportunities for grain traders. Likewise, for seed strategy, diverse seed varieties

are not explicitly promoted yet they enhance resilience and adaptability. The importance of knowledge co-creation cannot be underestimated yet it is noted that other than the Agriculture Sector Development Strategy and Investment Plan as well as the Uganda Vision, other policies and strategies did not explicitly tackle this aspect, which undermines involvement of local communities and stakeholders in decision-making, and collaborative learning. Engaging farmers, researchers, and policymakers in inclusive decision-making ensures, relevant policies, context-specific solutions and effective implementation towards transformative governance (Razzaque, 2019) as well as collaborative learning (Utter, 2021).

In the analysis, it was observed that knowledge sharing, and knowledge co-creation can be misunderstood. Knowledge sharing involves the exchange of existing knowledge between individuals or groups in an organization or setting (Cabrera & Cabrera, 2002; Yang & Wu, 2008) while co-creation of knowledge involves collaborative efforts to generate new knowledge or insights through shared experiences, ideas and contributions from multiple parties and differs from passive knowledge sharing (Utter, 2021). Thus, while knowledge sharing focuses on disseminating what is already known, co-creation of knowledge goes beyond by involving all stakeholders to actively produce new knowledge together and is crucial for advancing sustainable food systems and AE businesses.

Failure to integrate environmental management across sectors (connectivity) complicates addressing environmental challenges like water scarcity and pollution which require cross-sectoral collaboration and holistic planning for effective solutions. In addition, for the NOAP, linking organic practices with broader sustainable goals is not explicitly tackled, although organic practices lead to overall environmental health and addressing these gaps represent opportunities for policy enhancement, and more comprehensive approaches to sustainable agriculture in Uganda (United Nations, 2023; World Bank, 2021; Ndejjo et al., 2019). Four of the eight studied policies and strategies tried to tackle the fairness AE principle, while the rest including the NEMP, the NAP, the NGTP, and the UNSS did not explicitly focus on ensuring equitable access to resources and benefits. Various studies help us understand how fairness contributes to social justice, reduce disparities, and prevents marginalization of vulnerable groups (Craig et al., 2011; Hart, 2019; Pranis, 2001). All policies and strategies ought to highlight the importance of promoting synergies between environmental conservation and agricultural development because coordinated efforts can achieve both ecological and economic goals thus maximizing positive outcomes. Among all policies and strategies, the NAP remains silent about

biodiversity and the role of a biodiverse ecosystem in resilient agriculture systems. It should be noted that biodiversity supports pollination, pest control and diverse ecosystem services critical for farming (Van den Burg, 2014). Yet in the economic sense, a biodiverse agroecosystem supports farmers in diversifying their income streams, thus protecting them against market shocks.

Recycling is equally important, although the NAP, the NGTP, and the UNSS are completely silent about it. Recycling organic materials like crop residues enriches soil and reduces waste (Sarka et al., 2020; Sharma et al., 2019; Pretty, 2008). In the case of the seed strategy, seed recycling conserves genetic diversity and reduces costs. Other than the NBSAPII, the NEMP, and the DSIP, other documents are either completely silent about social values and diets or do not explicitly prioritize them. Considering cultural and dietary preferences is a crucial policy aspect since food choices are influenced by cultural norms and impacts health due to their influence on food security and nutrition. The Grain Trade Policy, the Seed Strategy and the Uganda Vision do not emphasize animal health. Ensuring healthy livestock for grain production is crucial, while healthy animals contribute to grain and seed production through manure for soil fertility, traction and general soil productivity (Duncan et al., 2016; Spain et al., 2018; Ssekyewa et al., 2022).

6. Conclusions

Findings from the analysis of policy and strategic documents highlight the importance of sustainable resource management and participation in the context of AE. These principles were consistently cited across all the studied documents. However, a closer examination reveals contradictions within these policies and strategies. While they address sustainable resource management, there are instances where conflicting goals emerge. First, the Uganda Vision 2040 recognizes agriculture as a crucial avenue for socioeconomic transformation, and it emphasizes achieving a green and clean environment while conserving flora and fauna. Yet, proposals to increase land for mechanization and invest in technology for improved seeds and breeds seem at odds with these conservation goals. Second, while the National Environment Management Policy (NEMP) acknowledges sustainable resource management, robust enforcement mechanisms for compliance with related regulations remain unaddressed. Third, while promoting large-scale farming enterprises, block farming, and out-grower schemes, the National Agricultural Policy (NAP) inadvertently contributes to deforestation, habitat loss, and soil degradation. Additionally, its implementation framework lacks specific strategies for sustainable resource use. Fourth, despite

the Development Strategy and Investment Plan (DSIP) prioritizing Sustainable Land Management, inadequate resource allocation and oversight of indigenous knowledge hinder effective practices. Furthermore, the promotion of large-scale mechanized agriculture may not align with sustainable land management goals. Fifth, the National Biodiversity Strategy and Action Plan (NBSPII) remains silent on addressing unsustainable practices related to land use and resource management. In the same vein, when policies indicate emphasis on participatory approaches, there should be prioritization of meaningful participation. Lack of meaningful participation can easily cause tokenistic engagement, where stakeholders are consulted superficially without their input being genuinely considered in decision-making processes. There is room for improvement in addressing soil health, recycling and all other agroecology principles that were not explicitly tackled or those that remained completely silent in the studied policy and strategic documents. A comprehensive approach that integrates all these aspects will promote AE as a business, while bringing about a more resilient, environmentally friendly, and economically sustainable agricultural sector in Uganda.

7. Policy recommendations

Harmonize Goals. Policymakers ought to ensure coherence between agricultural development goals and environmental conservation. Mechanization and technological advancements must align with agroecological principles and sustainability objectives.

Enforcement Mechanisms. Policy statements ought to out rightly indicate strong enforcement mechanisms to ensure compliance with sustainable resource management regulations. Robust monitoring and penalties for violations are essential.

Holistic Approach. While designing policies, there should be a shift of focus from mere sustainable use to comprehensive sustainable resource management. Consider long-term health and productivity of resources, including indigenous knowledge.

Resources Allocation. Policy statements should emphasize the adequate allocation of resources to Sustainable Land Management initiatives. Recognize the value of indigenous practices and integrate them into policy frameworks.

Awareness and Education. Promote awareness among stakeholders about sustainable practices. Encourage capacity-building programs and knowledge-sharing platforms.

Agroecology Knowledge co-creation and sharing. It is necessary to involve agro-ecologists in the process of co-creating all government plans and strategies because these groups can bring on board the expertise necessary to guide and monitor effective and efficient land use to ensure sustainable productivity.

In summary, while AE principles are acknowledged, effective implementation requires addressing contradictions, enhancing enforcement, and adopting a landscape or systemic or holistic approach to resource management.

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