



**African  
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## Accelerating Silvopastoralism Agroecology and the Resolution of Conflict between Herders and Farmers in Africa

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Authors	Department and institution
Elizabeth Jeiyol (PhD in view)	Department of Geography, Benue State University, Nigeria
Mvuselelo Ngcoya	School of Development Studies and the Built Environment, University of KwaZulu-Natal, South Africa
Barry Clausen	Independent Development Consultant
Malik Dasoo (Editor)	African Climate Foundation
Florian Kroll (Editor)	DSTI-NRF Centre of Excellence in Food Security, University of the Western Cape, South Africa

Corresponding authors	Department and institution
Elizabeth N Jeiyol	Gender and Environmental Risk Reduction Initiative (GERI), Nigeria +234 8036137411 lizjeiyol@yahoo.com
Barry Clausen	Independent Development Consultant, South Africa +27 767078921 avobarry@gmail.com

Series editor	Department and institution
Florian Kroll	DSTI-NRF Centre of Excellence in Food Security, University of the Western Cape, South Africa

# SUMMARY

Africa is at the forefront of a critical environmental and socio-economic crisis. With 90% of the continent at risk of desertification by mid-century, climate change and resource scarcity are driving food insecurity and escalating violent conflicts between herders and crop farmers. But there is a solution. Silvopastoral Systems (SPS) is a transformative agroecological approach combining trees, forage and livestock to regenerate degraded lands while enhancing livelihoods.

SPS has already shown remarkable success across South Africa, Kenya, and Nigeria, delivering benefits like carbon sequestration, biodiversity restoration and improved soil health – all while fostering peace by addressing resource-driven conflicts. Projects like Herding for Health and Farmer-Managed Natural Regeneration demonstrate that SPS not only aligns with Sustainable Development Goals like climate action and poverty alleviation but also diversifies income, empowers women and youth, and promotes equitable resource sharing.

Scaling SPS in Africa requires overcoming challenges such as knowledge gaps, insecure land tenure and limited funding. This is where philanthropy can make a game-changing impact. By funding advocacy groups, philanthropies can influence policy reforms that integrate SPS into national agricultural and environmental frameworks, while strengthening community organisations, farmer cooperatives and grassroots initiatives that incorporate indigenous knowledge, gender equity and sustainable land management. Investing in research, training and scalable solutions such as technology and blended finance models can attract private sector participation and create sustainable markets.

Additionally, fostering knowledge-sharing platforms, capacity-building programmes and market-based incentives empowers local communities and pastoralist networks to lead SPS adoption. By replicating proven projects and providing the necessary resources, philanthropy serves as a catalyst for a resilient, inclusive and sustainable future for Africa.



# INTRODUCTION

## What is at stake?

Silvopastoralism sustains millions of African livelihoods, intertwining economic survival with deep-rooted cultural traditions (Raj et al. 2024). For pastoralist and agro-pastoralist communities, livestock is not merely an asset but a way of life, providing food, income and social identity. However, as desertification accelerates (Tofu et al. 2025; Scoones & Nori 2023) – expected to impact over 90% of the continent with just a 1.5°C rise in global temperatures – these communities face existential threats (IPCC 2018). Degraded land and dwindling water sources force herders into desperate migrations, heightening tensions with sedentary farmers and igniting violent conflicts over scarce resources (Duruji & Bella, 2024; Dlakwa 2023). Without urgent intervention, the erosion of these traditional systems will not only exacerbate poverty and displacement but also destabilise entire regions.

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This crisis underscores the fragile interdependence between people and the environment. Healthy ecosystems sustain agriculture and pastoralism, but unsustainable land use and climate change disrupt this balance, triggering a vicious cycle of land degradation, food insecurity and social unrest. The solution lies in rethinking land management through agroecological silvopastoralism – integrating trees, livestock and crops to restore soil fertility, conserve water and enhance resilience. By accelerating this approach, Africa can transform conflict-ridden landscapes into thriving, sustainable systems that support both livelihoods and ecological stability, ensuring a future where people and the planet coexist harmoniously.

## Key concepts

**I Agroforestry:** This is a collective term for land use systems across diverse ecoregions of the world. Its main feature is that it uses technologies that incorporate woody perennials such as trees, shrubs, palms, bamboo, etc. into the landscape together with agricultural crops and/or animals (FAO 2020).

Tree-livestock integration, a key component of silvopastoral agroecology, enhances land productivity, mitigates environmental degradation, and fosters harmony between herders and farmers in Africa. Unlike conventional agroforestry, which often emphasises crop-based systems, silvopastoralism integrates trees, shrubs and pasture with livestock to create a sustainable agricultural landscape (FAO 2020). This approach reduces pressure on grazing lands by providing fodder which improves soil fertility while offering shade and shelter for animals (Ngobeni & Muchopa 2022). Moreover, silvopastoral systems contribute to carbon sequestration, enhance biodiversity and improve resilience to climate change by maintaining ecosystem balance. In South Africa, integrating trees with livestock grazing has proven effective in restoring degraded rangelands and increasing forage availability, thereby reducing conflicts over land use (Mganga et al. 2015).

In Kenya and Nigeria, silvopastoralism is increasingly recognised for its role in conflict resolution between herders and farmers by providing sustainable fodder sources and reducing competition over arable land (Okon et al. 2021). In Nigeria, where conflicts over grazing land are prevalent, projects such as the Great Green Wall incorporate silvopastoral strategies to combat desertification while creating structured grazing corridors (Towolawi et al. 2023). These systems

improve livestock productivity, diversify incomes and reduce encroachment into farmlands, thus fostering coexistence between agricultural and pastoral communities. Furthermore, by promoting drought-resistant fodder trees and rotational grazing, silvopastoral agroecology enhances land use efficiency, ensuring long-term environmental and economic sustainability. This approach ultimately aligns with the broader goals of agroecology by balancing productivity with conservation, reducing conflict and strengthening rural livelihoods across Africa.

**I Silvopastoralism or silvopasture** systems (SPS) is agroforestry applied to pasture and rangeland. SPS acknowledges the interdependence of trees, shrubs, grasses, livestock and the humans that depend on them.

Modern silvopastoralism recognises that regenerative agriculture must be farmer-led, serving the food security, economic and environmental sustainability of the rural communities that own, depend on and manage the most brittle ecosystems on earth. As such, the adoption of SPS practices aligns with the 13 principles of agroecology, as defined by the Food and Agriculture Organisation (FAO) which emphasise the importance of diversity, co-creation of knowledge, synergies, efficiency, recycling and resilience all of which are inherent in silvopasture systems (Kumar et al. 2023). By integrating trees with pasture and livestock, these practices contribute to the creation of biodiverse and resilient agricultural landscapes. Thus, SPS aligns with agroecology by using complementarities and synergies combining crops, plants, trees and animals within diverse spatial and temporal settings (Altieri et al. 2015).



# THE STATE OF KNOWLEDGE ON ACCELERATING SPS IN AFRICA

Silvopasture presents significant potential in addressing various challenges faced by agricultural systems across many regions of the continent. We illustrate these variations by focusing on three countries: South Africa, Nigeria and Kenya.

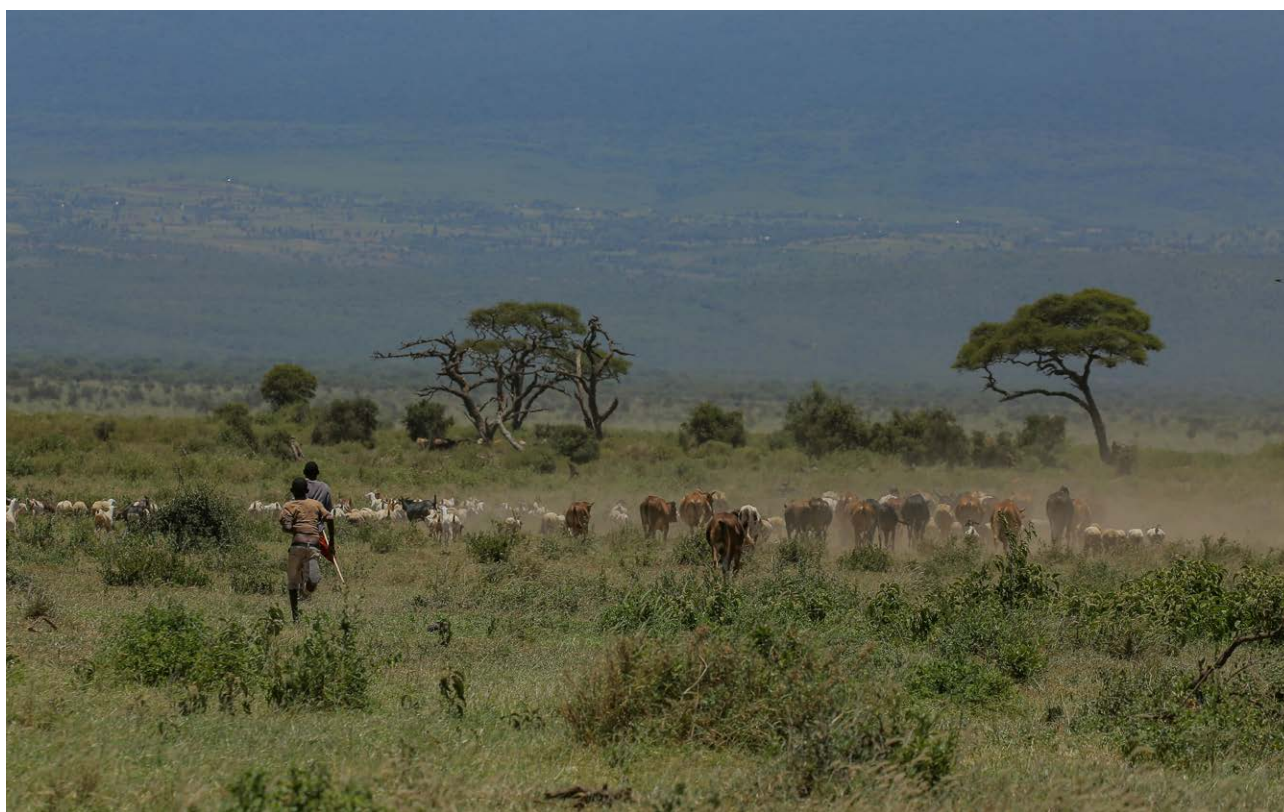
In South Africa, the state of knowledge on silvopasture in South Africa is still evolving but shows promise (Zeppetello et al. 2022). Studies indicate that silvopastoral systems can enhance soil fertility, reduce erosion, improve water retention and sequester carbon, contributing to climate change mitigation and adaptation (Ortiz et al. 2023). There is also evidence of increased biodiversity within silvopastoral systems compared to conventional pasture systems (Chará et al. 2019). However, more research is needed on optimal tree species selection, management techniques and economic viability within different contexts.

In Kenya, silvopasture offers promising benefits such as improved soil health, increased biodiversity, enhanced carbon sequestration and diversified income streams for

farmers, contributing to overall landscape resilience against climate shocks (Muthuri et al. 2023).

Silvopasture presents significant potential for sustainable agriculture in Nigeria (Adegbeye et al. 2024). In regions where resource competition fuels conflicts, silvopasture can act as a buffer against tensions. By improving land productivity and offering sustainable land-use options, it can reduce the intensity of disputes over grazing areas or deforestation, thereby promoting social stability and reducing the likelihood of conflict-induced migration (Dagar & Gupta 2021).

In this regard, silvopasture emerges as a conflict mitigation strategy by addressing the underlying causes of these conflicts (Adegbeye et al. 2024). Moreover, silvopasture promotes cooperative land management practices, fostering dialogue and collaboration between herders and farmers to jointly manage shared resources for mutual benefit (Mulubrhan et al. 2021).



# MOTIVATION

## Why silvopastoral systems?

The escalating threats of climate change, coupled with deep-rooted structural challenges, have severely compromised the sustainability of livelihoods across Africa. The vast rangelands, covering nearly half of the continent and supporting 53 million pastoralists, are increasingly vulnerable (Peace Parks Foundation 2023). Without urgent interventions, the intensification of environmental degradation, food insecurity, and socio-economic instability will persist. Silvopastoral systems (SPS) present a transformative solution, integrating trees, forage, and livestock to address these pressing issues. More than just a technical fix, SPS is a resilient agroecological approach that not only mitigates climate-related vulnerabilities but also fortifies the capacity of both people and ecosystems to adapt to a changing world (Dibala et al. 2021).

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*The escalating threats of climate change, coupled with deep-rooted structural challenges, have severely compromised the sustainability of livelihoods across Africa*

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Beyond their environmental impact, SPS offer tangible benefits that strengthen rural economies and reduce farmer–herder conflicts. By restoring degraded rangelands, enhancing soil fertility and increasing biomass production, these systems significantly improve livestock productivity and agricultural yields (Ortiz et al. 2023). Furthermore, the integration of trees fosters carbon sequestration, biodiversity conservation and the provision of vital ecosystem services, ensuring long-term sustainability. Agroecology is ultimately about building resilience, and SPS directly contributes to this by promoting diversified, climate-smart agricultural practices that secure food supplies and livelihoods while reducing competition over shrinking natural resources.

The global momentum towards sustainability further underscores the necessity of SPS in achieving broader

development goals. According to the Food and Agriculture Organization (FAO), SPS can advance six Sustainable Development Goals (SDGs), including poverty reduction, food security, economic growth, climate action, ecosystem restoration, and multi-sectoral partnerships (Chará et al. 2019). This highlights the multifaceted value of SPS beyond agriculture: it is a holistic framework for fostering environmental integrity, socio-economic equity, and long-term peacebuilding. As Africa faces mounting crises, adopting silvopastoral systems is not just an option but an urgent imperative for securing the future of both people and the planet.

## Why should philanthropies be interested in SPS?

### 1. Catalytic impact on sustainable development and poverty alleviation

- **Beyond economics:** Poverty alleviation is not solely about financial upliftment; it also involves social stability, resilience, and empowerment. Silvopastoralism and agroecology improve livelihoods while fostering community cohesion (Sheppard et al. 2020).
- **High-impact, scalable solutions:** Philanthropic investments in silvopastoral systems facilitate long-term solutions to land degradation, food insecurity and economic instability, directly benefiting rural communities (Gupta et al. 2020).

### 2. De-risking the transition to agroecology

- **Governments' reluctance to fund the shift:** Most African governments continue subsidising conventional agriculture rather than supporting agroecological transitions. Philanthropies can step in to mitigate risks by providing initial funding for pilot projects and research.

- **Crowding in private sector investment:** Once the transition risks are minimised, philanthropy can attract private investors and other development finance actors to scale up successful models.

### 3. Advancing community resilience and sovereignty

- **Empowering rural communities:** Supporting silvopastoralism enables smallholder farmers and pastoralists to improve food security, income, and resilience against climate change (Chará et al. 2019).
- **Strengthening conflict resolution mechanisms:** By promoting sustainable land-use practices, philanthropy can reduce competition over resources, thus mitigating farmer–herder conflicts in Africa.
- **Enhancing local governance and coordination:** Philanthropies can facilitate multi-sectoral collaboration, fostering better coordination between government, civil society, and the private sector.

### 4. Promoting innovation, knowledge creation and movement building

- **Investing in research and evidence building:** Philanthropic funds can support the development of innovative silvopastoral techniques, new agroforestry species and market opportunities (Ntawuruhunga et al. 2023).

- **Scaling agroecological knowledge:** Funding farmer training, demonstration projects, and policy advocacy ensures that best practices reach grassroots communities and inform national agricultural policies.

- **Building strong advocacy networks:** Philanthropy should support the movement building of SPS practitioners, focusing on agropastoralist communities to drive multiple environmental, economic and social benefits. This will facilitate the adoption of SPS and generate catalytic impacts from local to global levels.

### 5. Strategic philanthropy: Unlocking systemic change

- **Filling gaps in government and multilateral efforts:** Philanthropy thrives where government and bilateral aid fall short, ensuring independent, transformative interventions.
- **Framing the economic and social Case for agroecology:** Making a compelling case for lower production costs, long-term economic gains, and environmental co-benefits attracts both policymakers and investors.
- **Subsidy reform advocacy and policy shift:** Philanthropic investments can push for policy shifts that align with sustainable farming models against the current agricultural subsidies favour chemical-intensive farming.



# CASE STUDIES

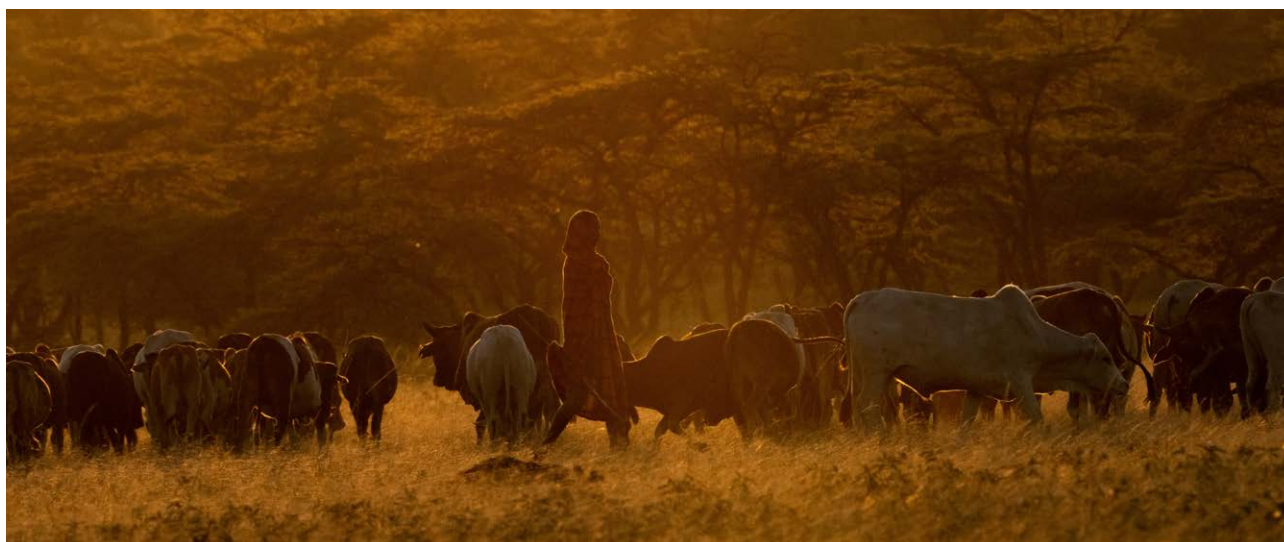
## Herding 4 Health: Sustainable pasture management in Southern Africa

The Herding for Health (H4H) initiative, developed under the International Climate Initiative (IKI), is a sustainable pasture management model implemented across 925 000 hectares in four Southern African countries. This approach integrates controlled rotational grazing to enhance soil quality and vegetation, ensuring long-term environmental sustainability. By utilising mobile livestock enclosures, H4H reduces the transmission of zoonotic diseases like foot-and-mouth disease while minimising conflicts with wildlife. These enclosures also improve herd nutrition and health, enabling livestock farmers to access higher-value markets, including wildlife-friendly product certification for the regional tourism industry. Furthermore, the model supports climate change mitigation by preserving intact soils capable of sequestering significant amounts of carbon (Peace Parks Foundation 2024).

H4H integrates holistic management techniques with farmer-managed natural regeneration (FMNR), addressing pastoralist conflicts with wildlife while promoting sustainable grazing practices. The programme's benefits are multifaceted, enhancing both economic and ecological outcomes. Socioeconomic advantages include increased market access, improved cattle record-keeping, and

reduced incidences of zoonotic disease transmission, theft and predation (Van Rooyen 2016). Ecologically, the model aids rangeland restoration, strengthens habitat connectivity outside protected areas, and discourages illegal wildlife trade through better land stewardship and inter-agency collaboration (Berkes 2007). Additionally, in wildlife-dense regions, H4H contributes to lowering bushmeat poaching while fostering healthier livestock management practices (Alexander et al. 2012).

FMNR, a key component of H4H, is a low-cost, sustainable land regeneration practice that empowers communities to restore degraded landscapes and enhance resilience. This tree management approach involves systematic pruning, selection and protection of indigenous trees and shrubs, ultimately increasing vegetation cover and biomass. By improving ecological functionality, FMNR enhances both economic and social well-being, reinforcing sustainable development interventions such as disaster risk reduction, climate change adaptation and water management (Binam et al. 2015). Together, H4H and FMNR offer a scalable, integrated solution for resolving herder-farmer conflicts, ensuring ecological restoration and strengthening rural livelihoods in Africa.



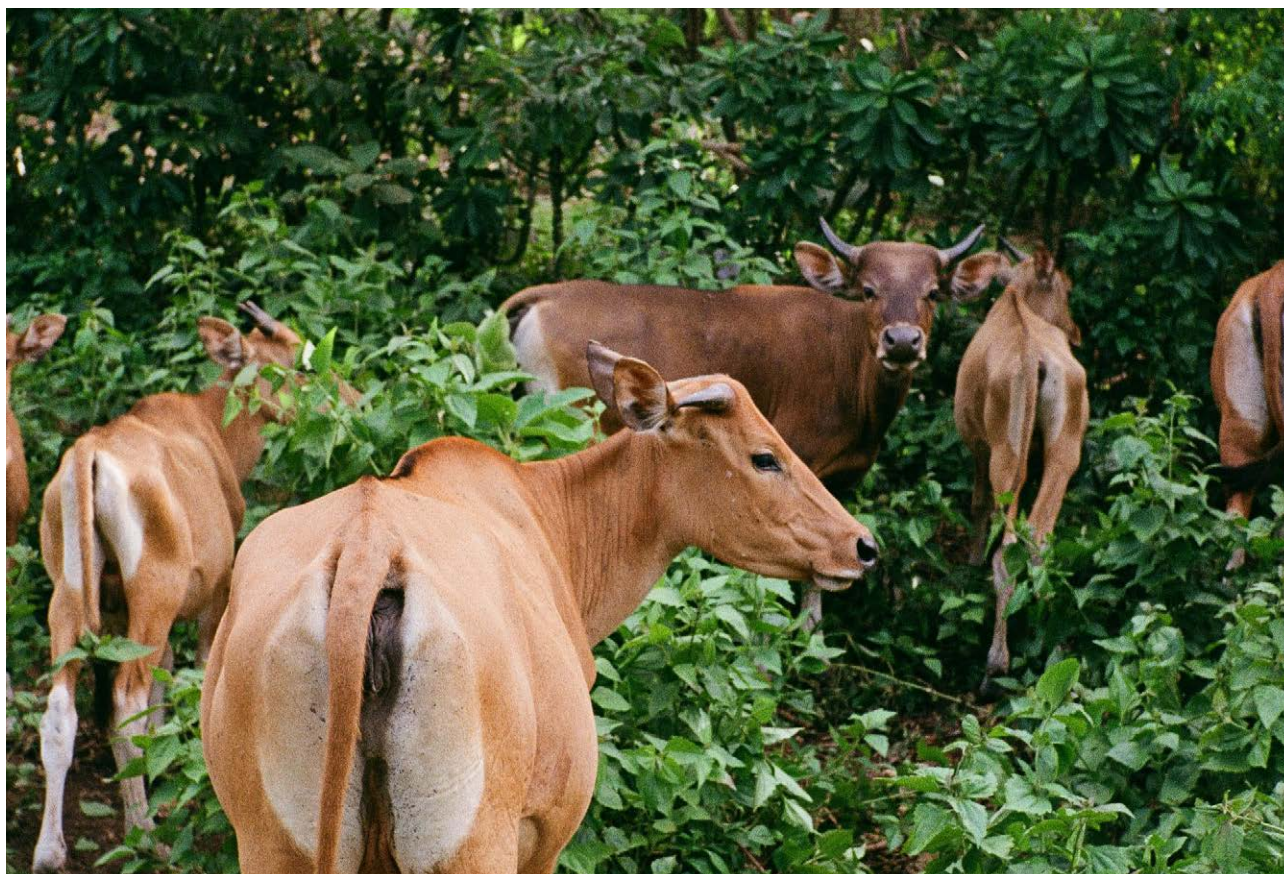
## Farm-managed natural regeneration in Niger

Farmer-managed natural regeneration (FMNR), originally developed in Niger, has expanded to at least 24 countries, offering a low-cost, scalable solution to environmental degradation and food insecurity. By restoring woody vegetation on deforested and degraded lands, FMNR counteracts soil erosion, biodiversity loss and climate instability while boosting agricultural productivity and incomes (Abasse et al. 2023). Beyond its environmental impact, FMNR has catalysed a farmer-led movement that has re-greened over 5 million hectares in Niger alone. The method's success lies in its simplicity and effectiveness – leveraging existing root systems to regenerate trees rather than relying on costly tree-planting programmes, making it an accessible and sustainable agroecological practice.

The innovation behind FMNR lies in its farmer-led approach, cost-effectiveness and rapid impact. It empowers farmers by demonstrating tangible economic and social benefits, ensuring long-term adoption and success. With a focus on rejuvenating 'underground forests', FMNR accelerates tree growth without the high failure rates associated with conventional reforestation (Reij & Garrity 2016). Its affordability – estimated at just US\$20 per hectare – allows even resource-limited rural farmers to implement it using

basic tools. The technique spreads organically through training and community advocacy, reinforcing land access rights and market opportunities. Its adaptability enables integration with other agroecological methods, such as the Herding for Health Project in Southern Africa, which incorporates FMNR while mitigating conflicts with wildlife.

FMNR's impact is evident in its contribution to soil health, crop yields, incomes and overall livelihoods. In the Sahel, it has improved soil organic content by 25–46% (Bayala et al. 2019) and increased millet yields by 41% in Senegal (Camara et al. 2017). Economic benefits include increased household earnings, with FMNR firewood alone generating an annual value of US\$127–154 per household in Niger (Reij & Garrity 2016). Additionally, it enhances groundwater recharge, biodiversity, and carbon sequestration, playing a critical role in climate resilience (Chomba et al. 2020). Socioeconomic advantages, such as improved access to wild resources and better health outcomes, were documented in Ghana, where FMNR led to asset creation and psychosocial benefits for farming households (Weston et al. 2015). As a holistic and scalable approach, FMNR continues to drive sustainable agricultural transformation across Africa.



# CROSS-CUTTING ISSUES

## 1. Gender and social inclusion

Silvopastoral systems (SPS) have the potential to alleviate poverty among women and marginalised groups by diversifying income sources through tree-based products alongside livestock rearing (Pancholi et al. 2023; Sileshi et al. 2023; Singh & Singh 2023).

- *Cultural barriers:* Women's access to land, credit, and decision-making power remains restricted due to traditional gender roles and discriminatory legal frameworks.
- *Labour and roles:* Women are often responsible for tasks such as fodder collection, animal care and food processing, but they have limited authority over land use decisions.
- *Access to extension services and training:* Limited opportunities exist for women in agricultural education, restricting their ability to adopt and benefit from SPS.
- *Financial inclusion:* Lack of access to credit and microfinance initiatives further limits women's participation in SPS.

## 2. Local and indigenous knowledge systems

- Integrating traditional knowledge with scientific research can enhance the effectiveness of SPS and improve local acceptance.
- Indigenous agroforestry practices, rotational grazing and native tree species selection can optimise system resilience.

## 3. Youth engagement and technology adoption

SPS can create new employment opportunities for young people who may not be inclined toward traditional farming (Leni-Konig 2020).

- *Technology integration:* Digital platforms, precision agriculture, and climate-smart innovations can make silvopasture more attractive to youth.
- *Education and training:* Tailored programs on SPS techniques can equip young people with necessary skills for sustainable agriculture.

## 4. Power, governance and land tenure

Secure land tenure is essential for long-term silvopasture investment and adoption (Dibala et al. 2021).

- *Policy gaps:* Many policies do not explicitly support SPS, limiting its expansion.
- *Community rights:* Strengthening communal land rights can promote equitable access and reduce farmer-herder conflicts.

## 5. Migration and conflict resolution

- ▮ *Resource scarcity:* Environmental degradation forces communities to abandon farmlands, leading to urban migration.
- ▮ *Regional conflict:* Competition over land and water intensifies tensions between herders and farmers, exacerbating displacement and instability.

## 6. Research, development and market access

- ▮ *Region-specific research:* Adapting SPS models to local ecological and socio-economic contexts is crucial.
- ▮ *Extension services:* Providing farmers with training on SPS best practices enhances adoption rates.
- ▮ *Market incentives:* Expanding access to markets for silvopasture-based products (organic milk, grass-fed beef, timber) encourages participation.
- ▮ *Financial support:* Microloans, grants and subsidies can help farmers overcome initial investment barriers.

## 7. Policy and institutional support

- ▮ Integrating SPS into national agricultural policies can provide a framework for widespread adoption.
- ▮ Governments should facilitate incentives, such as tax breaks or financial support, to promote silvopasture practices.

## 5. Migration and conflict resolution

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- ▮ *Regional conflict:* Competition over land and water intensifies tensions between herders and farmers, exacerbating displacement and instability.



# REGIONAL DIFFERENCES AND TRANSITION NEEDS IN ACCELERATING SILVOPASTORALISM

Africa's vast linguistic, cultural, geographic and ecological diversity necessitates region-specific approaches to silvopastoralism (Ortiz et al. 2023). The successful adoption of silvopastoral systems depends on recognising these regional variations and implementing tailored strategies to support the transition. South Africa, Kenya and Nigeria illustrate the need for differentiated approaches based on their unique environmental and socio-economic conditions.

In South Africa, where diverse biomes range from arid regions to temperate grasslands, silvopastoral strategies must be adapted accordingly. In drier areas, the introduction of drought-resistant tree species can provide fodder, enhance soil fertility and offer shade for livestock, contributing to improved resilience against climate variability. Conversely, more temperate regions can benefit from integrating fast-growing, nitrogen-fixing tree species to enhance pasture productivity and soil health.

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*Understanding regional dynamics enables the design of context-specific solutions that enhance food security, strengthen livelihoods, and contribute to climate resilience*

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Kenya, characterised by a mix of arid, semi-arid and highland zones, requires a focus on multipurpose tree species that serve various functions. Integrating trees that provide both fodder and additional resources such as firewood and fruit can support smallholder farmers who rely on diversified livelihoods. This approach ensures that silvopastoral systems remain both economically viable and ecologically sustainable.

In Nigeria, silvopasture can serve as a crucial tool in addressing regional land-use challenges. The semi-arid northern region suffers from land degradation, exacerbated by overgrazing and desertification. Here, incorporating hardy, nitrogen-fixing trees can help restore soil quality while providing sustainable grazing options. In contrast, the humid southern region presents opportunities for agroforestry-based silvopastoral systems that integrate tree crops like cocoa and oil palm with livestock, fostering diversified income streams and ecological benefits.

To facilitate the transition to silvopastoral systems, targeted research, extension services, market development and policy support are essential. Understanding regional dynamics enables the design of context-specific solutions that enhance food security, strengthen livelihoods, and contribute to climate resilience. By acknowledging regional differences and implementing appropriate transition strategies, countries like South Africa, Kenya and Nigeria can harness the full potential of silvopastoralism to foster sustainable agricultural practices across the continent.



# HURDLES TO TRANSITION

## Resource and capability gaps challenging transitions

The transition to silvopastoral agroecology faces significant resource and capability gaps that hinder widespread adoption.

### 1. Knowledge and technical capacity deficits

- Many pastoral and farming communities lack awareness and training in SPS. The absence of region-specific research and extension services limits the dissemination of best practices (Zeppetello et al. 2022).
- Traditional extension models focus on conventional agriculture rather than integrating agroforestry and livestock management, creating a disconnect between policy recommendations and on-the-ground implementation (Adegbeye et al. 2024).

### 2. Land tenure and governance issues

- Insecure land tenure presents a major barrier to SPS adoption. Pastoralists often lack formal land rights, leading to disputes with sedentary farmers and reducing incentives to invest in long-term land restoration (Dibala et al. 2021).
- Governance gaps and weak policy frameworks fail to integrate silvopastoralism into national agricultural strategies, leaving farmers and herders without legal or institutional support (Duruji & Bella 2024).

### 3. Financial and market constraints

- Establishing silvopastoral systems requires initial investment in seedlings, fencing, water infrastructure and training. Many smallholder farmers and herders lack access to credit and microfinance options to support this transition (FAO 2020).
- Market incentives for silvopasture-based products, such as organic dairy, grass-fed meat, and sustainable timber, remain underdeveloped. Without reliable supply chains and price premiums, farmers may be reluctant to adopt SPS practices (Mulubrhan et al. 2021).

### 4. Environmental and climatic barriers

- Climate variability, desertification, and prolonged droughts make it difficult for farmers and herders to establish tree-based grazing systems, particularly in arid and semi-arid regions (Tofu et al. 2025).
- The degradation of soil and water resources reduces the viability of SPS in areas where regenerative practices are most needed, creating a paradoxical situation where investment is crucial but risk levels remain high (Scoones & Nori 2023).

## The state of transition funding

While there is increasing interest in funding silvopastoral agroecology, financial commitments remain inadequate to drive widespread adoption.

### 1. Limited philanthropic and governmental investment

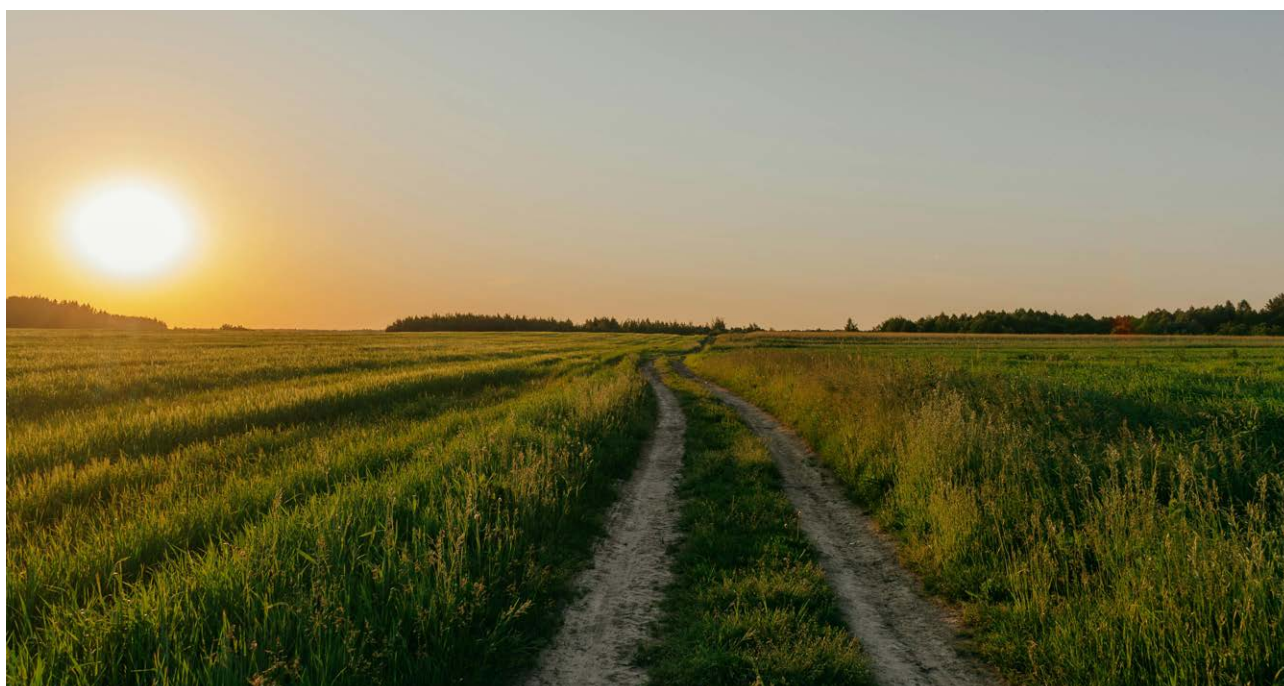
- Despite its alignment with multiple Sustainable Development Goals (SDGs), SPS has not received the same level of funding as conventional agricultural projects. Many governments continue to subsidise chemical-intensive farming rather than investing in agroecological alternatives (Chará et al. 2019).
- Philanthropic funding for SPS is growing but remains fragmented. Most support is directed toward research and pilot projects rather than scaling up proven models. Large-scale funding for extension services, infrastructure and policy advocacy is still lacking (Ntawuruhunga et al. 2023).

### 2. Mismatched funding strategies

- Many philanthropic investments prioritise short-term project cycles, which do not align with the long-term nature of silvopastoral systems that require sustained support over decades (Sheppard et al. 2020).
- Grant-based funding often fails to address structural barriers such as land tenure reform, policy change, and institutional capacity building, leading to limited systemic impact (Gupta et al. 2020).

### 3. Exacerbation of problematic trends

- Some philanthropic and development funding mechanisms inadvertently reinforce inequities. For example, projects that introduce silvopastoral systems without considering local land tenure complexities may exacerbate conflicts rather than resolve them (Dlakwa 2023).
- The focus on market-driven solutions sometimes marginalises small-scale farmers and herders who cannot afford the initial investment required to participate in certified sustainable supply chains (Reij & Garrity 2016).



## The way forward: Enhancing transition support

### 1. Strengthening knowledge and training networks

- Increased funding for research institutions, farmer field schools, and community-based extension services can bridge knowledge gaps and enhance local expertise (Ortiz et al. 2023).
- Integrating indigenous knowledge with scientific research can improve the cultural and ecological relevance of SPS models (Muthuri et al. 2023).

### 2. Improving land governance and policy support

- Secure land tenure policies and legal frameworks that recognise communal land rights are essential for SPS adoption (Dibala et al. 2021).
- Governments and donors should support multi-stakeholder platforms where pastoralists, farmers, policymakers, and investors can collaboratively develop silvopastoral strategies (Okon et al. 2021).

### 3. Innovative financing mechanisms

- Blended finance models, combining philanthropic funding, public sector support, and private investment, can help de-risk silvopastoral transitions and encourage broader adoption (Van Rooyen 2016).
- Expanding access to microloans, climate adaptation funds, and carbon credit programs can provide financial incentives for smallholders to adopt silvopastoral practices (Abasse et al. 2023).

### 4. Scaling market opportunities

- Creating structured value chains for silvopastoral products and linking them to premium markets will make SPS more attractive for adoption (Pancholi et al. 2023).
- Investing in certification schemes for climate-smart livestock products can enhance consumer demand and reward sustainable practices (Singh & Singh 2023).



# RECOMMENDATIONS TO PHILANTHROPY

Philanthropic organisations can play a transformative role in scaling up silvopastoral systems (SPS) by providing catalytic funding, fostering policy shifts, supporting local implementation and strengthening knowledge-sharing networks. To maximise impact, the following principles and mechanisms should guide donor funding, while specific initiatives requiring greater recognition and support should be prioritised.

## Principles and mechanisms for donor funding

### 1. Prioritise community-led and inclusive approaches

- Fund projects that empower local communities, ensuring pastoralists and smallholder farmers play a central role in SPS adoption.
- Support initiatives that integrate gender equity by enhancing women's access to land, finance, and SPS training.
- Invest in participatory approaches that combine indigenous knowledge with scientific research.

### 2. Support long-term and scalable solutions

- Support research and policy advocacy efforts to integrate SPS into national agricultural, environmental, and land tenure policies.
- Engage in subsidy reform advocacy to redirect public and private agricultural investments toward agroecological transitions, including SPS.
- Strengthen land rights for pastoralists through legal support and policy engagement.

### 3. Strengthen policy and advocacy for SPS adoption

- Support research and policy advocacy efforts to integrate SPS into national agricultural, environmental, and land tenure policies.
- Engage in subsidy reform advocacy to redirect public and private agricultural investments toward agroecological transitions, including SPS.
- Strengthen land rights for pastoralists through legal support and policy engagement.

### 4. Leverage blended finance and market-based approaches

- Use philanthropic funding to de-risk SPS investments and crowd in private sector participation.
- Provide funding for microfinance, grants, and subsidies that help small-scale farmers and herders transition to SPS.
- Develop market incentives for SPS products, such as certified organic meat, dairy, and sustainably harvested timber.

#### 5. Enhance research, data and technological innovation

- Fund region-specific research to refine SPS models for diverse African landscapes and socio-economic contexts.
- Support the use of technology in land monitoring, pasture management, and livestock tracking to improve SPS efficiency.
- Strengthen partnerships between African universities, research institutions and international organisations to drive innovation.

## Current initiatives requiring greater recognition and support

#### 1. Expand the Great Green Wall Initiative (GGWI) through SPS

- The GGWI's focus on combatting desertification can be reinforced with SPS by incorporating structured grazing corridors and agroforestry elements.
- Philanthropy can support localised implementation of SPS within GGWI regions, ensuring both environmental and socio-economic benefits.

#### 2. Scale up farmer-managed natural regeneration (FMNR) in drylands

- FMNR's success in restoring degraded lands in Niger and other countries aligns with SPS principles.
- Philanthropy can support the integration of SPS with FMNR to create a more holistic approach to rangeland restoration and conflict resolution.

#### 3. Strengthen and expand the Herding 4 Health (H4H) Model

- The H4H programme's controlled rotational grazing and wildlife-friendly certification can be expanded to additional regions.
- Philanthropic funding can enhance community training, policy advocacy, and market linkages for H4H farmers.

#### 4. Support regional pastoral networks and agroecology movements

- National and regional pastoralist networks play a key role in advocacy and SPS promotion.
- Supporting these networks ensures the voices of herders are included in policymaking and implementation efforts.

#### 5. Advance youth engagement and digital innovations in SPS

- Encourage youth participation in SPS by funding training programmes, mentorship initiatives, and digital solutions for pasture management.
- Develop technology-driven platforms that connect SPS farmers and herders with markets, financial services and knowledge resources.

# Recommendations for philanthropies to promote transition

- Identify climate vulnerable farming and pastoralist communities and link them to proven SPS projects.
- Support proven SPS projects to extend their activities and knowledge to vulnerable communities in Africa.
- Advocacy to governments and international structures for the following transitions:

## 1. Policy and institutional support

- Governments should develop and implement policies that integrate silvopastoral agroecology into national agricultural and environmental strategies.
- Establish clear land tenure laws to define and secure grazing, farming and forest lands.
- Strengthen conflict resolution institutions by involving traditional and local governance structures in decision-making.

## 2. Sustainable land use and resource management

- Promote land-use planning that designates specific zones for grazing, farming and conservation to minimise land disputes.
- Encourage rotational grazing and agroforestry practices to enhance soil fertility and reduce overgrazing.
- Implement water harvesting techniques to ensure year-round access to water for both crops and livestock.

## 3. Education and capacity building

- Provide training programmes for herders and farmers on sustainable land use, conflict resolution and agroecological practices.
- Support farmer–herder dialogue forums to foster understanding and cooperation.
- Encourage research and innovation in silvopastoral systems to develop climate-resilient and productive farming techniques.

## 4. Economic incentives and livelihood diversification

- Offer subsidies or financial incentives for farmers and herders adopting agroecological and silvopastoral practices.
- Develop alternative livelihood programmes such as beekeeping, agroforestry and eco-tourism to reduce competition over land.
- Facilitate access to markets for sustainably produced livestock and agricultural products.

## 5. Strengthening security and conflict-resolution mechanisms

- Establish community-led peace committees to mediate conflicts between farmers and herders.
- Increase security presence in conflict-prone areas while ensuring fair and unbiased law enforcement.
- Encourage regional cooperation for transboundary grazing agreements and resource-sharing frameworks.

## 6. Climate change adaptation strategies

- Support reforestation and afforestation projects to restore degraded grazing lands.
- Promote drought-resistant fodder crops and resilient livestock breeds.
- Enhance early warning systems for climate-related disasters affecting pastoral and farming communities.

## 7. Infrastructure development

- Invest in infrastructure such as grazing corridors, watering points, and veterinary services to support livestock mobility and health.
- Improve road networks to facilitate market access and reduce resource-based conflicts.
- Expand access to renewable energy sources to reduce deforestation and competition for fuelwood.

# Recommendations for further research

## 1. Optimising silvopastoral models for conflict resolution

- Research should explore how different silvopastoral models (e.g., rotational grazing, fodder banks, mixed tree-livestock systems) can be tailored to reduce resource-based conflicts between herders and farmers. Comparative studies across diverse ecological zones in Africa will help identify best practices.
- Understanding the socio-political dimensions of silvopastoral adoption is crucial. Studies should assess how traditional land tenure systems, legal frameworks and governance structures impact the effectiveness of silvopastoral interventions in mitigating disputes.

## 2. Economic viability and incentive structures

- More research is needed on the economic incentives that can encourage both herders and farmers to adopt silvopastoral systems. This includes evaluating subsidy models, payment for ecosystem services (PES), and market-based mechanisms that can make sustainable land use profitable.
- Cost-benefit analyses should compare silvopastoral systems with conventional livestock and crop farming practices, focusing on long-term gains in productivity, environmental sustainability and conflict mitigation.

## 3. Land tenure, policy and institutional frameworks

- Investigate how land tenure security influences the willingness of herders and farmers to engage in cooperative land management through silvopastoral practices. Research should focus on policy reforms that can provide equitable access to land and protect communal grazing rights.
- Studies should assess the role of traditional authorities and local governance structures in managing land conflicts and promoting the adoption of sustainable agroecological models.

## 4. Silvopastoralism and climate resilience

- Further research is needed on how silvopastoral systems contribute to climate change adaptation and mitigation, particularly in dryland regions where resource scarcity fuels farmer-herder conflicts.
- Studies should focus on the role of silvopastoral landscapes in carbon sequestration, water retention and biodiversity conservation, providing evidence to support national climate action strategies.

## 5. Gender and social inclusion in silvopastoral systems

- Research should examine how gender dynamics influence the adoption and benefits of silvopastoral practices. Identifying ways to enhance women's participation in agroecological initiatives is critical for equitable resource distribution and conflict reduction.
- Studies should explore how youth engagement in silvopastoral systems can provide alternative livelihoods, reducing migration pressures and the risk of youth involvement in conflict.

## 6. Technological innovations and knowledge exchange

- Research should assess the role of digital technologies (e.g. remote sensing, mobile applications, precision agriculture) in improving pasture management, land monitoring and conflict early-warning systems.
- Developing scalable knowledge-sharing platforms that integrate indigenous pastoral knowledge with scientific research will enhance the adoption and effectiveness of silvopastoral systems.

## 7. Cross-border collaboration and regional integration

- Studies should investigate how regional cooperation mechanisms (e.g. AU-IBAR, ECOWAS, IGAD) can facilitate transboundary silvopastoral systems that reduce conflicts across national borders.
- Research should evaluate the effectiveness of existing policies on transhumance and propose harmonised frameworks that promote peacebuilding and sustainable livestock management.



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# ANNEX

## Key stakeholders

### 1. Livestock farmers and farming communities

- **Transhumant livestock farmers:** These are nomadic or semi-nomadic pastoralists who move seasonally in search of pasture and water. Their traditional grazing routes and land access rights must be integrated into SPS strategies.
- **Sedentary livestock farmers:** These farmers maintain permanent ranches or grazing lands and are more likely to adopt silvopastoral systems as long-term investments.
- **Neighbouring farming communities:** Crop farmers who share land and resources with pastoralists are crucial stakeholders as they often experience direct interactions – cooperative or conflictual – with herders.
- **Landowners:** Both private and communal landowners influence land access and tenure policies that affect SPS adoption.

### 2. Community-based organisations (CBOs) and non-governmental organisations (NGOs)

- Act as intermediaries between farmers, herders, and policymakers.
- Provide advocacy, training and financial support for SPS initiatives.
- Promote conflict resolution strategies between herders and farmers.
- Examples include national pastoralist networks and agroecology advocacy groups.

### 3. Conservationists and environmental organisations

- Organisations promoting sustainable land management and biodiversity conservation are critical to ensuring SPS is aligned with broader environmental goals.
- Examples include the African Wildlife Foundation (AWF) and national environmental agencies.

### 4. Government ministries and traditional authorities

- **Ministries of Agriculture and Natural Resources/Food Security:** Develop policies, provide funding, and oversee SPS implementation.
- **Ministries of Environment:** Ensure SPS aligns with land use planning and conservation strategies.
- **Traditional authorities and local leaders:** Mediate land tenure disputes and promote community-driven adoption of SPS.

## 5. Regional and multilateral organisations

- African Union – Inter-African Bureau for Animal Resources (AU-IBAR): Provides technical and policy guidance on livestock systems.
- International Livestock Research Institute (ILRI): Conducts research and promotes evidence-based policies for livestock sustainability.
- Intergovernmental Authority on Development (IGAD): Plays a crucial role in conflict resolution and policy harmonisation among East African nations.
- Economic Community of West African States (ECOWAS) & Southern African Development Community (SADC): Facilitate cross-border SPS strategies.

## 6. International organisations

- Food and Agriculture Organization (FAO): Provides technical expertise and funding for SPS projects.
- World Food Programme (WFP): Supports food security initiatives that intersect with sustainable livestock farming.
- United Nations Environment Programme (UNEP): Advocates for sustainable land management practices.

## 7. Research institutions and universities

- Conduct studies on SPS impact, including longitudinal research on productivity, sustainability and conflict resolution. For example, University of Nairobi (Kenya), Ahmadu Bello University (Nigeria), and CIRAD (France, working in Africa).

## 8. Private sector and investors

- Agribusiness companies investing in sustainable livestock production.
- Financial institutions funding SPS projects and climate-smart agriculture initiatives.
- Technology providers offering solutions for land monitoring, pasture management, and livestock tracking.



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This network of researchers and food systems development experts collaborates to inform philanthropies, governments and development finance organisations on funding strategies to promote transitions to sustainable, equitable and resilient food systems across Africa.

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