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MINISTRY OF AGRICULTURE

National Regenerative Agriculture Strategy for Ethiopia (2026–2036)

May 2026
Addis Ababa, Ethiopia





Table of Contents

Message from the State Minister **6**

Executive summary **7**

Definition of key terms **9**

Abbreviation and Acronyms **11**

1. Introduction **13**

1.1. Background 14
1.2. Rationale for regenerative agriculture in Ethiopia 15
1.3. Operational definition of regenerative agriculture 16
1.4. What regenerative agriculture is not 17
1.5. Strategy formulation process 18

2. Situational analysis: Ethiopian context **19**

2.1. Crop production 20
2.2. Land degradation and soil nutrient depletion 21
2.3. Biodiversity loss 22
2.4. Livestock production 23
2.5. Population pressure 24
2.6. Climate change impacts and vulnerability 25
2.7. Policy and institutional landscape 26
2.8. SWOT analysis 30

3. Vision, strategic objectives and theory of change **33**

3.1. Vision and strategic objectives 34
3.1.1. Vision 34
3.1.2. Strategic objectives 34
3.2 Theory of change 34

4. Strategic framework and guiding principles for regenerative agriculture **36**

4.1. Strategic framework of regenerative agriculture 37
4.2. Guiding principles of regenerative agriculture 38
4.3. Strategic interventions 39
4.3.1. Promote regenerative crops and livestock production 40
4.3.2. Enhance soil fertility and health 40
4.3.3. Enhance sustainable agricultural water management 41
4.3.4. Enhance climate change adaptation and mitigation 42
4.3.5. Promote renewable and clean energy 42
4.3.6. Strengthen research and extension 43
4.3.7. Strengthen sociocultural innovation 43
4.3.8. Strengthen postharvest management systems 44
4.3.9. Establish sustainable market systems and linkages 45
4.3.10. Mainstream and institutionalise cross-cutting issues 46

5. Implementation modality 47
5.1. Phased approach 48
5.1.1. First phase: Foundation and activation 49
5.1.2. Second phase: Evidence building for regenerative investment 50
5.1.3. Third phase: Scaling and system integration 50
5.2. Landscape and farmers groups 51
5.3. Set of tailored RA practices for the diverse agricultural settings 51
5.3.1. Tailoring RA for farming systems and commercial-oriented agriculture 51
5.3.2. Structure of farming in Ethiopia 52
5.3.3. Transition towards commercialisation through regenerative agriculture 53
5.4. Agricultural commercialisation typology in Ethiopia and proposed transition 54
5.4.1. Farming system in Ethiopia 56
5.4.2. A set of practices for farming systems based on commercialisation orientation 59
5.5. Institutional arrangement and coordination 74
5.6. Role of the private sector, development partners, and financial institutions 75
5.6.1. Private sector engagement 75
5.6.2. Development partners 75
5.6.3. Financial institutions 76
5.7. Coordination and cross-sectoral alignment 76
5.7.1. Intra-ministry coordination within the Ministry of Agriculture 76
5.7.2. Inter-ministerial coordination across the government system 77
5.7.3. National and regional regenerative agriculture platforms 78
5.8. Support package 79

6. Monitoring, evaluation, and learning framework 80

7. Risks and mitigation measures 84
7.1. Strategic risks 85
7.2. Risk mitigation and enabling measures 86

8. Strategy implementation action plan 87

Annex: Maps of the farming systems in Ethiopia 93
1. Agropastoral farming system 94
2. Highland-barley-livestock mixed system 94
3. Highland coffee mixed system 95
4. Highland enset mixed system 95
5. Highland maize mixed system 96
6. Highland Mize-Livestock Mixed System 96
7. Highland Rice Mixed System 97
8. Highland sorghum-chat mixed system 97
9. Highland Teff Mixed System 98
10. Highland Wheat-Barely Mixed System 98
11. Lowland Maize Mixed System 99
12. Lowland Sesame Mixed System 99
13. Lowland Sorghum Mixed System 100
14. Pastoral system 100
15. Highland teff mixed system 101
16. Highland wheat-barley mixed system 101
17. Highland maize livestock mixed system 102

References 103

List of Tables

Table 1. Existing policies and initiatives alignment with regenerative agriculture 27
Table 2. SWOT analysis for advancing regenerative agriculture in Ethiopia 31
Table 3. Approximate distribution of farming systems in Ethiopia 53
Table 4. Set of regenerative practices for different commercial-oriented agricultural systems 55
Table 5. Major farming systems in Ethiopia 58
Table 6. Proposed typology of regenerative agriculture for farming systems through commercialisation orientation 60
Table 7. Institutional roles in supporting regenerative agriculture 77
Table 8. Regenerative agriculture indicator framework 81
Table 9. Promote crop and livestock regenerative agriculture practices 88
Table 10. Enhance soil fertility and health 88
Table 11. Enhance sustainable agricultural water management 89
Table 12. Enhance climate change adaptation and mitigation 89
Table 13. Promote renewable energy 89
Table 14. Strengthen research and extension 90
Table 15. Strengthen Sociocultural innovation 90
Table 16. Strengthen postharvest management systems 91
Table 17. Establish sustainable market systems and linkages 91
Table 18. Cross-cutting institutionalisation 92

List of Figures

Figure 1. Summary of conventional versus regenerative agriculture pathways for Ethiopia 16
Figure 2. Theory of change 35
Figure 3. Regenerative agriculture framework and its pillars 37
Figure 4. Phased approach 49
Figure 5. Commercial agriculture typology in Ethiopia 54
Figure 6. Farming systems 74

Message from the State Minister

It is with great pleasure and a deep sense of national responsibility that I present the National Regenerative Agriculture Strategy for Ethiopia. This strategy marks a significant milestone in our collective journey toward transforming Ethiopia's agricultural systems into ones that are more resilient, productive, inclusive, and environmentally sustainable. Regenerative agriculture is not merely an alternative production approach; it is a transformative pathway that restores soil health, strengthens ecosystem services, improves production and productivity, enhances farmer livelihoods, and builds resilience to climate change. Anchored in emerging scientific evidence and aligned with our national development priorities, this strategy reaffirms Ethiopia's firm commitment to sustainable agricultural transformation and long-term food system resilience.

The development of this strategy has been highly participatory and inclusive, reflecting strong national ownership and drawing upon diverse expertise, field experiences, and policy insights. Through extensive consultations, rigorous technical reviews, and validation processes conducted at national and regional levels, the strategy has been carefully shaped to respond to Ethiopia's diverse farming systems and socioeconomic contexts. This important achievement would not have been possible without the dedication and collaboration of numerous partners and stakeholders. On behalf of the Ministry of Agriculture, I extend sincere appreciation to the Food and Land Use Coalition (FOLU) for leading the process and for financial and technical support. I also extend my sincere appreciation to Stichting Wageningen Research Ethiopia (SWR Ethiopia), the REFOOTURE Project, the Sasakawa Africa Association (SAA), GIZ Ethiopia (German Cooperation), the Institute for Sustainable Development (ISD), Makobu Enterprises PLC, and the relevant departments within the Ministry of Agriculture for their invaluable technical, financial, and institutional support.

Deep appreciation is also extended to the members of the Steering Committee for their strategic leadership and policy guidance, and to the Technical Committee for their rigorous desk reviews, synthesis of national and international evidence, and unwavering commitment in drafting this comprehensive document. I further acknowledge the meaningful contributions of federal and regional government institutions, research centres, universities, civil society organisations, private sector representatives, development partners, and farming communities who participated in consultations and validation workshops. Their practical insights and constructive feedback significantly strengthened the relevance, quality, and applicability of this strategy.

The Ministry of Agriculture is confident that this strategy provides a robust, credible, and action-oriented framework to guide regenerative agriculture initiatives across the country. However, its true value will be realised through effective implementation. This will require sustained partnership, strong coordination, and shared commitment among all stakeholders. As we move decisively from strategy to action, I call upon federal and regional institutions, research and academic communities, civil society organisations, private sector actors, development partners, and farming communities to work collaboratively in realising our shared vision of a regenerative, inclusive, climate-resilient, and prosperous agricultural future for Ethiopia. Together, we will advance Ethiopia's transition towards regenerative agriculture and sustainable food systems transformation.



H.E. Desalegn Teshale
State Minister, Agriculture and Horticulture Development Sector
Ministry of Agriculture Federal Democratic Republic of Ethiopia



Executive summary

Ethiopia's agricultural sector is facing a complex set of interconnected challenges that threaten its long-term sustainability and performance. These include widespread land degradation, declining soil fertility, biodiversity loss, increasing climate variability and extreme weather events, and rising demand from a rapidly growing population. Together, these pressures are placing growing pressure on natural resources and undermining agricultural productivity, resilience, and rural livelihoods.

Conventional farming systems operate in complex, diverse, and risk-prone contexts. They rely heavily on rain-fed production and standardised input packages and are often characterised by extractive and unsustainable land management practices. Although these systems contributed to past production gains, they have become insufficient to sustain productivity, environmental integrity, and food and nutrition security over the long term. Currently, many farming systems in the country face soil degradation, weakened ecosystem services, rising production costs for farmers, and increasing vulnerability to climate shocks. Therefore, transitioning to regenerative agricultural practices is essential for restoring soil health and sustainably improving productivity

Against this backdrop, the National Regenerative Agriculture Strategy for Ethiopia provides a comprehensive and forward-looking roadmap to guide the country's transition from largely unsustainable agricultural practices to regenerative, climate-resilient, and inclusive agri-food systems. Regenerative agriculture offers a transformative approach that goes beyond "do no harm" by actively restoring and enhancing ecosystem health while improving productivity and livelihoods. Accordingly, the strategy prioritises restoring soil health and fertility, enhancing agrobiodiversity, improving water-use efficiency and watershed functions,

strengthening ecosystem services, and increasing agricultural productivity through practices that are economically viable, socially inclusive, and environmentally sustainable. Central to this approach is the recognition of farmers as stewards of land and natural resources, supported by locally adapted, knowledge-based, and context-specific solutions that build resilience and sustain long-term benefits. Regenerative agriculture not only increases food production, but also strengthens the entire food system, making it more diverse, resilient, and nutrition-sensitive, thereby helping reduce food and nutrition insecurity.

The strategy is firmly grounded in Ethiopia's diverse farming systems and emerging commercialisation by smallholder farmers. It builds on and complements existing national policies, strategies, and initiatives, including the Agricultural and Rural Development Policy, the Climate Resilient Green Economy (CRGE) Strategy, Ethiopia's Nationally Determined Contribution (NDC), the Green Legacy Initiative (GLI), Ethiopia's Long-Term Low-Emission Development Strategy (LT-LEDS), sustainable land management (SLM) programs, and ongoing food systems transformation and nutrition agendas. By aligning regenerative agriculture with these frameworks, the strategy ensures policy coherence, strengthens institutional coordination, and leverages existing investments and delivery systems for effective implementation and scaling.

The National Regenerative Agriculture Strategy is anchored in a set of five interrelated strategic objectives that together provide a coherent framework for transforming Ethiopia's agricultural and food systems into ones that emphasize sustainability, resilience, and inclusivity:

- Restore land and ecosystem health: Adapt and scale regenerative practices that rebuild soil fertility, enhance biodiversity, improve water retention, and raise productivity across agroecological zones and farming systems.
- Strengthen system resilience and food security: Build climate-resilient, inclusive, and sustainable agri-food systems capable of withstanding environmental and economic shocks while meeting the food and nutrition needs of a rapidly growing population.
- Improve livelihoods and economic, social, and environmental wellbeing: Increase productivity and profitability by reducing production risks and costs, diversifying livelihoods, and strengthening ecosystem services that underpin long-term agricultural performance and human wellbeing.
- Enable coordinated, landscape-based action: Strengthen cross-sector collaboration and partnerships to deliver integrated, landscape-based approaches and collective implementation.
- Accelerate inclusive commercialisation: Promote regenerative value chains by improving access to markets, finance, technologies, and information, and supporting inclusive agribusiness models that grow farmers' incomes while protecting ecological integrity.

This national strategy has been developed through an inclusive and participatory process. It provides clear guidance for policy alignment, investment prioritisation, capacity development, and coordinated implementation, positioning regenerative agriculture as a cornerstone of Ethiopia's long-term agricultural transformation for climate resilience, landscape restoration, and food and nutrition security. Through this strategy, Ethiopia commits to a regenerative pathway that safeguards natural resources while promoting prosperous and resilient livelihoods for present and future generations.



Definition of key terms

Agricultural commercialisation

The process through which smallholder farmers progressively transition from primarily subsistence-oriented production to market-oriented, value-driven farming systems. In a regenerative agriculture (RA) context, commercialisation emphasises regenerative and sustainable intensification—through improved efficiency and ecosystem-based practices—diversification, value addition, and integration into inclusive value chains while safeguarding soil health, biodiversity, and ecosystem services. It involves improved access to markets, finance, technologies, information, and farmer organisations, enabling smallholders to increase incomes, reduce risks, and participate competitively in agri-food markets.

Agri-food system

The interconnected system encompasses food production, processing, distribution, marketing, consumption, and waste management, along with the social, economic, and environmental processes that shape these activities. Regenerative agri-food systems promote sustainability, inclusivity, resilience, and circular resource use across the entire value chain.

Biodiversity

The diversity of life within landscapes, including genetic diversity, species diversity, and ecosystem diversity. In regenerative agriculture, biodiversity—both above and below ground—supports pollination, pest regulation, nutrient cycling, soil health, and system resilience.

Climate resilience

The capacity of agricultural systems, communities, and landscapes to anticipate, absorb, adapt to, and recover from climate-related shocks and stresses—such as droughts, floods, heat waves, and pest outbreaks—while maintaining or improving productivity, livelihoods, and ecosystem integrity.

Climate-smart agriculture

An approach to agricultural development that seeks to sustainably increase productivity, enhance adaptation and resilience to climate change, and reduce or remove greenhouse gas emissions where feasible. Regenerative agriculture complements and strengthens climate-smart agriculture by prioritising ecosystem restoration, soil carbon enhancement, and long-term landscape resilience.

Conservation agriculture

A farming system that promotes sustainable crop production through minimal soil disturbance (reduced tillage), permanent soil cover using crop residues or cover crops, and diversified crop rotations or intercropping, thereby improving soil fertility, moisture retention, and resilience of smallholder farming systems.

Ecosystem services

The benefits that people derive from ecosystems, including provisioning services (food, fibre, fuel), regulating services (climate regulation, water filtration, erosion control), supporting services (soil formation, nutrient cycling), and cultural services. Regenerative agriculture aims to enhance and sustain these services through improved land, water, and biodiversity management.

Farming system

A holistic and integrated representation of the interactions between crops, livestock, trees, soils, water, labour, knowledge, and socioeconomic factors within a defined agroecological and livelihood context. Farming systems in Ethiopia are diverse and include mixed crop-livestock systems, pastoral and agro-pastoral systems, highland and lowland systems, irrigated and rain-fed systems, and peri-urban agriculture. Regenerative agriculture seeks to improve the performance, sustainability, and resilience of farming systems by optimising biological interactions, resource use efficiency, and landscape connectivity.

Integrated soil fertility management

A regenerative agricultural practice that combines organic inputs (such as compost, manure, crop residues, and green manures) with judicious use of inorganic fertilisers, improved crop varieties, and sound agronomic practices. Integrated soil fertility management enhances nutrient use efficiency, improves soil organic matter, sustains soil productivity, and increases crop yields in an economically and environmentally sustainable manner.

Regenerative agriculture

Usually defined as an adaptive, context-specific, and systems-based approach to agriculture that restores, regenerates, and enhances soil health, biodiversity, water systems, and ecosystem functions while sustainably improving productivity, climate resilience, adaptation, and livelihoods. RA goes beyond minimising harm by rebuilding natural capital, strengthening ecosystem services, and improving socioeconomic outcomes. It emphasises continuous improvement, farmer-led innovation, and integrated management of crops, livestock, trees, and landscapes to deliver long-term food and nutrition security, inclusive economic growth, and environmental sustainability.

Soil health

The capacity of soil to function as a living ecosystem that sustains plants, animals, and humans. Healthy soils are characterised by good physical structure, balanced chemical properties, active biological communities, efficient nutrient cycling, and strong water-holding capacity.

Abbreviation and Acronyms

ACC	Agricultural Commercialisation Clusters
ARDP	Agricultural and Rural Development Policy
ATI	Agricultural Transformation Institute
BoAs	Bureaus of Agriculture (Regional)
CA	Conservation Agriculture
CAADP	Comprehensive Africa Agriculture Development Programme
CBRM	Community-Based Rangeland Management
CGIAR	Consultative Group on International Agricultural Research
CRGE	Climate-Resilient Green Economy
CSA	Central Statistical Agency (Ethiopia)
EBI	Ethiopian Biodiversity Institute
EFSTN	Ethiopian Food Systems Transformation and Nutrition
EIAR	Ethiopian Institute of Agricultural Research
EPA	Environmental Protection Authority
ESIF-SLM	Ethiopian Strategic Investment Framework for Sustainable Land Management
FAO	Food and Agriculture Organization of the United Nations
FOLU	Food and Land Use Coalition
FPC	Farmer Production Cluster
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Development Cooperation)
GLI	Green Legacy Initiative
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development

ILRI	International Livestock Research Institute
IPM	Integrated Pest Management
ISD	Institute for Sustainable Development
ISFM	Integrated Soil Fertility Management
LT-LEDS	Long-Term Low-Emission Development Strategy
MoA	Ministry of Agriculture
NAP	National Adaptation Plan
NARS	National Agricultural Research System
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
OC	Organic Carbon
PWDs	People with Disabilities
RA	Regenerative Agriculture
RARIs	Regional Agricultural Research Institutes
REFOOTURE	Food Futures Eastern Africa
RUSLE/USLE	Revised Universal Soil Loss Equation / Universal Soil Loss Equation
SAA	Sasakawa Africa Association
SLM	Sustainable Land Management
SWR Ethiopia	Stichting Wageningen Research Ethiopia
SWOT	Strengths, Weaknesses, Opportunities, and Threats

1. Introduction



1.1. Background

Conventional farming is the dominant modern farming system that emphasises maximising crop yields and efficiency through high external inputs, including inorganic fertilisers to boost soil nutrients, chemical pesticides and herbicides to control pests and weeds, and often monoculture planting of single crops. It is mainly an extractive farming approach that focuses on short-term productivity and efficiency rather than long-term sustainability. Conventional farming is usually characterised by nutrient depletion and reduced fertility over time, soil and water pollution, loss of biodiversity, and negative impact on pollinators. It is also highly vulnerable to pests and climate change due to low ecosystem resilience (John and Babu 2021; Kremen and Miles 2012; Alvarez 2022). In contrast, regenerative farming focuses on improving soil health, biodiversity, and ecosystem resilience while improving productivity (Schreefel et al. 2020; Gordon et al. 2022).

Ethiopia faces significant agricultural challenges, exacerbated by several interconnected factors. The country's heavy reliance on rain-fed agriculture makes it particularly vulnerable to the increasing unpredictability of rainfall patterns brought about by climate change. This vulnerability is further amplified by the diversity of Ethiopia's agroecological zones, each expected to respond differently to climate change impacts, creating a complex and varied set of challenges across the country. Land degradation, including soil erosion, nutrient depletion, and deforestation, further diminishes agricultural productivity and resilience.

Conventional farming is delivering inadequate gains in Ethiopia compared to what it is supposed to do and to cope with emerging challenges, largely because land degradation is a severe and widespread constraint. Persistent challenges such as soil acidity and salinity, escalating pest and disease pressures, and heightened vulnerability to climate change have constrained yield improvements in many farming systems. As a result, relying mainly on input-intensive approaches often does not translate into sustained productivity growth, underscoring the need for alternative approaches that rebuild ecosystem health, strengthen resilience, and support long-term agricultural performance.

Addressing these challenges is urgent for Ethiopian agriculture. Among the many potential solutions, regenerative agriculture (RA) stands out as a key approach to building resilience, improving soil health, and enhancing agricultural productivity. It represents a shift away from extractive farming practices by prioritising soil and ecosystem health restoration while simultaneously increasing agricultural productivity (White 2020). The term *regenerative* implies moving beyond sustainability towards actively improving agricultural systems. It emphasises practices that rejuvenate ecosystem health and function, leading to increased productivity.

Integrated soil fertility management (ISFM), a regenerative agricultural practice that combines inorganic fertilisers with organic inputs, consistently results in higher and more sustainable crop yields than inorganic inputs alone. This is because organic fertilisers such as compost, manure, and crop residues improve soil structure, enhance soil organic matter, and increase water-holding capacity. They also stimulate beneficial soil biological activity, which supports nutrient cycling and reduces nutrient losses. These improvements create favourable soil conditions that enhance root development and nutrient availability. Inorganic fertilisers then supply readily available nutrients that meet immediate crop demands. Together, organic and inorganic inputs act synergistically, optimising nutrient use efficiency, improving plant uptake, sustaining soil health, and sustainably increasing productivity (Adem et al. 2023; Sileshi et al. 2024; Doldt et al. 2023).

1.2. Rationale for regenerative agriculture in Ethiopia

Ethiopia is a predominantly agrarian country where farming has been continuously practiced for thousands of years. The agricultural landscape is dominated by smallholder farmers who have long relied on various agricultural practices to boost production and productivity. However, over the years, rising population pressure and the resulting fragmentation of farmland have contributed to unsustainable land use practices, often leading to continuous cultivation without adequate soil conservation measures or replenishment of organic matter (Alemu et al. 2024; Paul and wa Githinji 2018).

Numerous research studies have indicated a drastic decline in the soil organic matter content across Ethiopian farmlands, with levels now considered critically low (Lulu et al. 2020; van Beek et al. 2018; Ahmed et al. 2022). This alarming trend has contributed to widespread soil fertility depletion and land degradation, manifested in increased soil acidity, salinity, erosion, and reduced soil productivity (Tamene et al. 2022; Daba and Qureshi 2021; Gemada 2021). Furthermore, the continued use of unsustainable farming practices, such as monocropping, overreliance on chemical inputs, and poor land management, has exacerbated the problem, putting long-term agricultural sustainability at risk (Belete and Yadete 2023; Belay and Melka 2024).

Given Ethiopia's heavy reliance on agriculture for livelihoods, food security, and economic development, there is an urgent need to transition from conventional farming systems to more sustainable and restorative approaches. Regenerative agriculture offers a transformative pathway by addressing the root causes of farmland degradation. It emphasises practices that restore soil health, enhance biodiversity, improve water retention, and sequester carbon, while strengthening the resilience of farming systems to climate change.

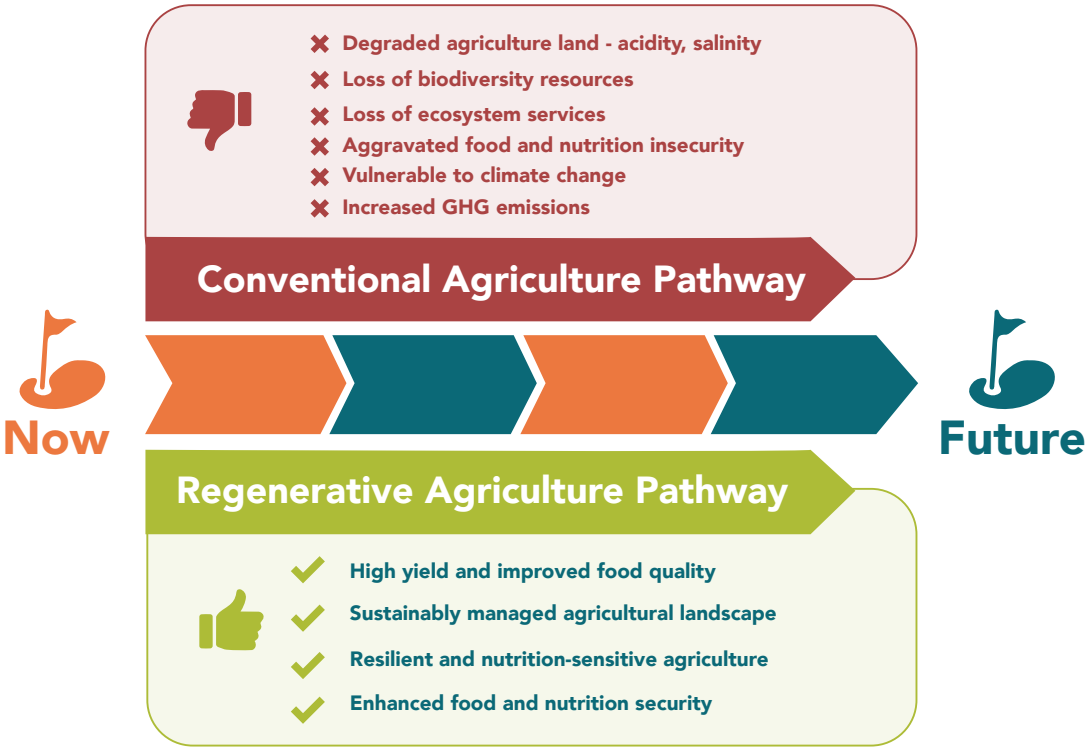
For Ethiopia, regenerative agriculture is not merely an option but also a prerequisite for boosting and sustaining agricultural production and productivity. The country faces widespread land degradation, declining soil fertility, and the impacts of climate change, all of which threaten its agrarian economy and food security. To address these challenges, Ethiopia aims to restore its agricultural landscapes by adopting regenerative practices that rebuild soil health, enhance biodiversity, and improve water retention. The country seeks to create resilient farming systems that support long-term sustainability, improve rural livelihoods, and ensure food and nutrition security for its growing population. By rebuilding broken agricultural ecosystems and promoting climate-smart, inclusive, and sustainable farming practices, regenerative agriculture holds immense potential to support Ethiopia's efforts to ensure long-term food and nutrition security, enhance rural livelihoods, and build a resilient agricultural future.

The Government of Ethiopia has prioritised food and nutrition security as a pillar of its Agricultural and Rural Development Policy 2024. Despite the commitment, land degradation, the growing population, and the escalating impact of climate change are worsening the food and nutrition security situation in the country. The government is keen to effectively address the problems of food and nutrition insecurity by transforming agricultural development. However, Ethiopia does not have a specific strategy for regenerative agriculture to anchor its efforts for adoption and scale-up.

Recognising the wide-ranging benefits of regenerative agriculture, the Government of Ethiopia has taken a significant step by developing this comprehensive national strategy for RA aimed at guiding the country's transition from current farming systems, which are

largely characterised by unsustainable practices, towards a regenerative agricultural pathway (Figure 1). This strategy serves as a guiding framework for transforming Ethiopia's agricultural sector into one that is environmentally sustainable, economically viable, climate resilient, and socially inclusive. It is a significant milestone in Ethiopia's commitment to building a more resilient, productive, sustainable, and equitable agricultural system.

Figure 1. Summary of conventional versus regenerative agriculture pathways for Ethiopia



1.3. Operational definition of regenerative agriculture

Since regenerative agriculture is context-specific, this national strategy provides an operational definition tailored to the Ethiopian context. This definition reflects the country's unique farming systems, socioeconomic realities, biophysical conditions, and development priorities, serving as a practical framework to guide policy, research, and implementation of regenerative agricultural practices at scale.

> Regenerative agriculture is a dynamic and holistic farming approach that integrates scientific and Indigenous knowledge to restore soil health, increase productivity, enhance biodiversity, optimise water management, and strengthen climate resilience to ensure food and nutrition security.



1.4. What regenerative agriculture is not

Regenerative agriculture is often misunderstood as a prescriptive set of practices or a rigid framework. In reality, it is a set of guiding principles and outcomes, a dynamic, adaptive way of farming that is shaped by local ecological, social, and economic realities. There is no one-size-fits-all model: What is regenerative in one context may not be suitable in another. Therefore, regenerative interventions must be locally designed and continuously refined to fit the specific soil, climate, landscape, and socioeconomic conditions of each farming system.

Unlike organic agriculture, regenerative agriculture is not "chemical-free." It allows the judicious, sustainable use of external inputs and embraces appropriate technologies and science-based solutions that improve soil health, crop and livestock productivity, and ecosystem resilience. In the high-input systems of advanced countries, regenerative agriculture may mean substantially reducing external inputs, but in Ethiopia—where fertiliser use remains low and constraints include depleted, acidic, moisture-stressed soils—regenerative agriculture must be tailored to optimise inputs (right source-rate-time-place) alongside organic amendments, cropping systems, crop-livestock integration, and soil and water conservation to raise productivity without repeating high-input mistakes. It also goes beyond sustainability, which emphasises maintaining current conditions, by actively restoring degraded soils, water systems, and biodiversity to make landscapes more productive and resilient and to support long-term livelihoods.

Fundamentally, regenerative agriculture is a transformative, improvement-oriented approach that regenerates, restores, and renews degraded and broken ecosystems while strengthening food production, livelihoods, and climate resilience. Clarifying what RA is not reinforces Ethiopia's national strategy emphasis on adaptive, context-specific, inclusive interventions capable of delivering economic, social, environmental, and climate benefits at scale.

1.5. Strategy formulation process

Ethiopia's national strategy for regenerative agriculture has been developed through a highly inclusive and participatory process, ensuring ownership, relevance, and alignment with national priorities. From the outset, both a Technical Committee and a Steering Committee were established, comprising representatives from government ministries, research institutions, civil society organisations, development partners, and the private sector. These bodies played complementary roles—while the Technical Committee provided technical expertise and prepared draft materials, the Steering Committee offered strategic guidance and oversight throughout the process.

The development process began with a comprehensive desk review conducted by the Technical Committee. The reviewed documents included national policies, proclamations, strategies, and sectoral programs, as well as regional and international frameworks, scientific studies, and technical reports. This review ensured that the strategy would be coherent, aligned with existing policy instruments, and informed by both global evidence and Ethiopia's specific agricultural context.

Based on this evidence, the Technical Committee prepared an initial draft of the strategy. This draft was then thoroughly reviewed by the Steering Committee, whose members provided high-level strategic feedback and direction. To refine the document, the Technical Committee organised a series of writing workshops that enabled collective reflection, iterative drafting, and incorporation of expert insights.

Following internal refinements, the draft strategy underwent several stakeholder consultations and validation workshops, involving national and regional-level stakeholders. These consultations brought together diverse actors, including policymakers, research institutes, farmers' organisations, civil society organisations, private sector actors, and development partners, and ensured that multiple perspectives and priorities were captured. The Technical Committee systematically integrated this feedback through an iterative process of revision and improvement.

As a result, the final version of the national strategy reflects a consensus-built, evidence-based, and stakeholder-driven framework for advancing regenerative agriculture in Ethiopia to accelerate agricultural transformation. This inclusive and participatory development process improved the strategy's technical rigor and contextual relevance. Furthermore, the process fostered strong stakeholder buy-in, enhancing commitment to effective implementation and cultivating a strong sense of ownership among key stakeholders.



2. Situational analysis: Ethiopian context

Ethiopia's agricultural sector and food system have undergone significant structural changes over the past few decades, driven by population growth, urbanisation, and economic expansion. Rising food demand, severe land degradation, and the escalating impacts of climate change and recurrent shocks are increasingly challenging the current paradigm of food production and consumption patterns, with major implications for sustainable agricultural development.

This section presents a situational analysis of Ethiopia's crop and livestock production, land degradation, biodiversity loss, population pressure, and climate vulnerability, providing a foundation for developing a national regenerative agriculture strategy. Furthermore, this section presents an analysis of strengths, weaknesses, opportunities, and threats (SWOT), as well as an overview of the policy landscape to strategically position regenerative agriculture within Ethiopia's existing development and climate action policies, strategies, and initiatives.

2.1. Crop production

Ethiopia's diverse agroecologies support a wide range of crops across multiple farming systems. Smallholder farmers dominate the sector, accounting for 90–95 percent of national agricultural output. Major crops include cereals, pulses, oilseeds, vegetables, and fruits. Cereals, especially teff, maize, wheat, barley, and sorghum, are the most widely cultivated, accounting for about three-fourths of the total cropland. Pulses (e.g., beans, lentils, and chickpeas) are important for domestic consumption and export, while oilseeds, particularly sesame and noug (Niger Seed), contribute significantly to foreign exchange earnings. Horticultural crops (vegetables and fruits) are also growing in importance, especially in areas with stronger linkages to urban markets (Gizaw and Assegid 2021; Belachew et al. 2022).

While overall crop production has risen over the past two decades, largely through the expansion of cultivated area and improved input access, yields per hectare remain low by the global standards. For instance, maize and wheat yields have improved with the introduction of improved seeds and fertilisers, but productivity is still constrained by soil degradation, water stress, and limited mechanisation. Several factors hinder crop production in Ethiopia. Land degradation and soil fertility decline are widespread, driven by soil erosion, overcultivation, limited organic inputs, inefficient use of inorganic fertilisers, and poor land management practices (Desta et al. 2021). Erratic rainfall and climate change contribute to frequent droughts and crop failures. Additionally, limited access to quality inputs, poor extension services, postharvest losses, inadequate infrastructure, and market inefficiencies further restrict productivity and profitability for farmers. With the current increasing commercialisation, monocropping and simplified rotations are emerging as a growing challenge, accelerating soil fertility decline, pest and disease pressure, and vulnerability to climate variability.

Despite the ongoing challenges, Ethiopia has significant potential to improve crop production through a range of strategic interventions. One of the most promising pathways is the adoption of regenerative agricultural practices, which can restore soil fertility, enhance biodiversity, and increase water retention in farming systems. These practices not only improve productivity but also strengthen the resilience of agricultural landscapes to climate change and extreme weather events.

Expanding irrigation infrastructure and improving water management systems offer further opportunities to stabilise yields, double cropping, and enable year-round crop production. With only a small percentage of arable land currently under irrigation, there is substantial scope to reduce dependence on unpredictable rainfall and enhance crop diversification and productivity. Increased investment in agricultural research and development is also critical to drive innovation and introduce regenerative practices and innovations tailored to

Ethiopia's diverse agroecological zones. Mechanisation and improved extension services can further empower smallholder farmers by increasing efficiency and facilitating the adoption of best practices. Moreover, improving access to markets, both domestic and international, can significantly enhance farmers' incomes. Strengthening value chains, improving rural infrastructure, and ensuring fair pricing mechanisms will encourage crop diversification, reduce postharvest losses, and stimulate private sector engagement.

2.2. Land degradation and soil nutrient depletion

Land degradation poses one of the most significant threats to agricultural productivity and environmental sustainability in Ethiopia (Solomon et al. 2024), particularly in the highlands, where fertile topsoil loss and declining soil organic matter are widespread. Studies by Gashaw et al. (2014) highlight that the low supply of organic matter in the soil is a major contributor to this degradation. This soil nutrient depletion is the result of several interlinked factors, including unsustainable farming practices such as monocropping, overgrazing, and the widespread use of animal dung and crop residues as fuel sources. The combination of these activities has diminished soil organic inputs, making it difficult for soils to regenerate and maintain productivity (Yigezu Wendimu 2021).

The Ethiopian highlands, once known for their naturally fertile soils derived from volcanic parent materials, are now experiencing rapid fertility decline. The increasing population pressure has led to the expansion of agricultural land onto marginal and fragile slopes, often without proper soil conservation measures. At the same time, the growing number of livestock has intensified overgrazing, further contributing to soil compaction and the destruction of vegetative cover. Traditional soil enhancement practices, such as the use of organic manure and straw, have also been compromised. As forest resources have been depleted, these organic materials are increasingly diverted for domestic energy needs, thereby reducing their availability for soil amelioration (Hussein 2023).

Soil fertility decline in the Ethiopian highlands remains a serious concern, mainly due to unsustainable soil management and increasing human pressure. Rapid population growth has led to land shortages and continuous cropping without replenishing nutrients, resulting in significant soil nutrient depletion. Key challenges include nutrient imbalances, loss of soil organic matter, erosion, land degradation, and increasing soil acidity. The lack of appropriate land use systems and incentives has further limited the adoption of sustainable and eco-friendly practices (Ejeta and Bai 2025). Among these challenges, soil acidity is particularly severe in high rainfall areas, especially on nitisols, acrisols, and alisols (Gurmessa 2021). It restricts plant growth and reduces yields, especially for smallholder farmers. Common symptoms include stunted growth, poor legume nodulation, acid-tolerant weeds, and disease susceptibility. Major highland crops such as faba bean, barley, wheat, teff, and maize are all negatively affected.

In Ethiopia, the depletion of soil organic matter is a widespread and pressing issue, primarily driven by the complete removal of crop residues from agricultural fields and limited addition of organic fertiliser sources. These residues are often diverted for use as livestock feed or burned as a source of household energy, leaving little to no organic material to be returned to the soil. Most cultivated soils in the country are severely deficient in organic matter due to this persistent removal and the limited application of organic amendments such as compost or manure (Tiruneh et al. 2024; Ahmed et al. 2022). This depletion has led to significant nutrient exhaustion and declining crop productivity (Gelaw et al. 2014).

The problem is further exacerbated by continuous tillage practices, which break down organic matter more rapidly and disrupt soil structure. When plant residues are not incorporated into the soil, there is a marked decline in key nutrients such as organic carbon (OC), total nitrogen (N), available phosphorus (P), potassium (K), and sulphur (S). Moreover, the absence of organic inputs negatively affects soil biological health by reducing microbial diversity, abundance, and activity. As a result, most farming systems in Ethiopia operate under negative nutrient balances, where nutrient outputs consistently exceed inputs (Gebresamuel et al. 2021; Mulualem et al. 2024; Mesfin et al. 2021), threatening long-term soil fertility and agricultural sustainability.

These combined challenges have severely affected soil mass, structure, productivity, and overall fertility. The result is a decline in agricultural yields, threatening both food security and the livelihoods of millions of rural Ethiopians who depend on subsistence farming. In addition to these biological and chemical forms of degradation, soil erosion and soil fertility depletion have become increasingly problematic (Beyene et al. 2023; Solomon et al. 2024). Soil erosion, driven by both natural and human-induced factors, is particularly intense during periods of heavy rainfall. The problem is most acute on steep slopes, especially those with gradients greater than 16 percent, where the absence of vegetation cover accelerates the rate of runoff and soil loss.

Without urgent intervention, the rate of soil erosion and nutrient depletion in Ethiopia will continue to outpace the natural rate of soil formation. This imbalance not only undermines long-term agricultural productivity but also threatens national efforts to ensure food security and sustainable development. Reversing land degradation must be prioritised to safeguard the future of Ethiopia's farmland and its people through regenerative practices.

2.3. Biodiversity loss

Ethiopia is characterised by a remarkable range of environments—from humid montane forests and extensive wetlands to the arid deserts of the Afar Depression. This environmental diversity is shaped by the country's varied climate, topography, and vegetation, creating unique ecosystems that support a wide array of species.

According to Edwards (1991), Ethiopia is one of 12 globally recognised centres of origin and diversity for cultivated plants. It hosts significant genetic reserves, with 11 cultivated crops having their primary centre of diversity within the country. The Ethiopian highlands, in particular, harbour a high number of endemic plant species, driven by the unique ecological conditions of the region. Ethiopia is estimated to have between 6,500 and 7,000 species of higher plants, approximately 15 percent of which are endemic. This makes it the fifth-most floristically rich country in tropical Africa.



Despite this richness, Ethiopia faces significant biodiversity loss driven by land degradation, deforestation, and the growing impacts of climate change. Unsustainable land use, such as cultivation on steep slopes, overgrazing, and clearing of forests for agriculture and fuelwood, has led to widespread soil erosion and nutrient depletion, particularly in the highlands. As a result, large areas of productive topsoil are lost faster than they are formed, undermining agricultural productivity and habitat quality.

In Ethiopia, both wild and managed pollinators, such as bees, butterflies, beetles, and birds, play a vital role in the reproduction of crops and wild plants. However, unsustainable agricultural practices are increasingly threatening these pollination services. Habitat loss and fragmentation due to the expansion of agricultural land into forests, wetlands, and natural grasslands reduce nesting sites and forage availability for pollinators. Overgrazing and land degradation further degrade floral diversity, limiting resources for wild pollinators. Monocropping depletes soil nutrients and organic matter, increases pressure from pests, disease, and weeds; reduces biodiversity and resilience; and raises long-term production risks and costs. It also reduces the diversity of floral resources available to pollinators, leading to lower pollinator abundance and diversity. In addition, excessive and inappropriate use of chemical pesticides and herbicides directly harm pollinators, causing mortality, behavioural changes, and colony collapse in bees (Tassew et al. 2023; Fikadu 2020).



2.4. Livestock production

Livestock production is a pillar of Ethiopia's agricultural sector, playing a critical role in supporting the livelihoods and food security of millions of people, particularly in rural areas. Approximately 85 percent of the rural population depends on a mixed crop-livestock production system, where livestock contribute to household income, food and nutrition security, and agricultural productivity. Beyond providing meat, milk, and eggs, livestock provide draught power for ploughing fields, transport, and a source of manure to enhance soil fertility. The sector also offers social and economic security, acting as a form of savings and insurance in times of need. The livestock sector contributes significantly to Ethiopia's economy, accounting for about 15–17 percent of the national gross domestic product (GDP) and between 37 and 87 percent of household incomes, depending on the region and livestock system (ILRI 2020). Ethiopia possesses one of the largest livestock populations in Africa, with estimates of 60.39 million cattle, 31.3 million sheep, 32.74 million goats, 11.32 million equines, and 1.42 million camels (CSA 2018). These animals are central to the cultural and economic fabric of Ethiopian society.

Despite its scale and importance, livestock productivity in Ethiopia remains low due to several persistent constraints. Key challenges include inefficient herd and pasture management, inadequate veterinary and extension services, poor market access, limited infrastructure, weak credit systems, and particularly chronic feed shortages. Feed scarcity—both in terms of quantity and quality—is widely recognised as the most critical constraint hindering livestock production (Tullu et al. 2023). Seasonal variability in feed availability often results in poor animal health, low reproduction rates, and reduced yields of meat and milk.

To address these challenges, improved forage production is increasingly being promoted as a viable and profitable solution. Introducing high-yielding and drought-tolerant forage species, integrating fodder crops into existing farming systems, and conserving feed resources through haymaking and silage are key strategies. Additionally, the adoption of regenerative livestock practices such as rotational grazing, improved pasture management, and agroforestry integration can enhance feed availability and ecosystem health. These approaches not only improve livestock productivity but also contribute to sustainable land use, soil conservation, and climate resilience in Ethiopia's agricultural landscapes.

2.5. Population pressure

Ethiopia's current population is estimated at approximately 130 million, making it the second-most populous country in Africa. The country continues to experience significant population growth, with an annual increase of around 2.5 percent. The rapid population increase presents both opportunities and challenges for Ethiopia's development. On the one hand, a growing labour force can contribute to economic growth if adequately harnessed. On the other hand, population pressure exacerbates unsustainable land management practices, undermines ecosystem services, and accelerates land degradation in Ethiopia. The rapid population growth significantly increases demand for land, food, water, and fuel. This puts a heavy burden on the natural environment, particularly on land resources, leading to unsustainable land use practices and environmental degradation (Zegeye 2024).

Another consequence of population pressure is the expansion of agricultural land into marginal and fragile ecosystems, such as steep slopes, forested areas, and wetlands. In many rural areas, growing populations push farmers to cultivate land that is unsuitable for agriculture due to poor soil fertility or high erosion risk. This leads to accelerated soil erosion, nutrient depletion, and the loss of vegetation cover. Additionally, increasing population density often results in overgrazing, as more livestock are raised to meet food and income needs. Overgrazing reduces ground cover, compacts the soil, and increases its vulnerability to erosion. The continuous pressure from livestock prevents natural regeneration of grasses and shrubs, degrading rangelands and reducing their productivity. Furthermore, land fragmentation due to inheritance practices and population growth leads to smaller and less productive landholdings.



2.6. Climate change impacts and vulnerability

Ethiopia's agriculture, central to the country's economy and livelihoods, is increasingly threatened by climate change. The reliance on rainfed agriculture—employing over 70 percent of Ethiopia's population and contributing roughly 33 percent of national GDP—makes the country especially susceptible to climate variability and extreme weather events (World Bank 2021). At the same time, the agricultural sector itself is a major contributor to Ethiopia's greenhouse gas (GHG) emissions, creating a dual challenge of vulnerability and responsibility in the climate change context.

Ethiopia has experienced noticeable climate changes over the last few decades. Rising temperatures, changing rainfall patterns, and increasingly frequent extreme weather events, such as droughts and floods, have severely impacted agricultural production. Average temperatures in Ethiopia have risen by approximately 1.3°C since the 1960s, with even higher increases projected in the years to come (Conway and Schipper 2011). These rising temperatures contribute to higher evapotranspiration rates, leading to reduced soil moisture, diminished crop yields, and increased water stress for both humans and livestock.

Rainfall variability is another significant challenge. The country experiences both seasonal and interannual fluctuations, causing critical growing seasons to become less predictable. Droughts—such as those occurring in 1983–85, 2002, 2011, and 2015—have resulted in massive crop and livestock losses, the displacement of people, and widespread food insecurity. In contrast, unseasonal and intense rainfall events have led to flash floods and soil erosion, damaging farmlands, roads, and water infrastructure. Highland areas, which are densely populated and agriculturally important, are particularly affected by land degradation resulting from heavy rains and unsustainable land use (Zeleka et al. 2021). Agricultural productivity is further constrained by poor soil fertility, degradation, and pest outbreaks, many of which are exacerbated by climate change. For instance, climate-induced changes have been linked to the increasing frequency of crop pests such as fall armyworm and locust invasions, affecting staple crops like maize and sorghum (FAO 2020).

Socially, climate change disproportionately affects Ethiopia's most vulnerable populations, particularly smallholder farmers, women, and pastoralist communities, due to their limited access to land, financial resources, extension services, and climate information. High levels of poverty and weak institutional frameworks reduce the capacity of individuals and communities to adapt effectively to climate shocks. Agriculture accounts for over 80 percent of the country's total emissions, largely from enteric fermentation in livestock, manure management, and emissions from cropland, including nitrous oxide from fertilisers and methane from rice cultivation (FAO 2019). Additionally, deforestation driven by agricultural expansion and the overuse of biomass for energy contribute to carbon emissions and reduce the land's ability to sequester carbon.

The root causes of Ethiopia's climate vulnerability are multifaceted. Rapid population growth has increased pressure on land, leading to deforestation, overgrazing, and the cultivation of marginal lands. This, in turn, has led to land degradation and loss of soil fertility, further reducing the resilience of farming systems. Unsustainable land management practices, such as limited soil conservation, monocropping, and insufficient use of organic matter, contribute to both poor productivity and environmental degradation. The dominance of traditional farming methods, limited adoption of climate-smart agricultural practices, and minimal use of irrigation further expose the sector to climatic risks.

Institutional challenges also exacerbate vulnerability. Limited access to climate finance, weak extension services, inadequate infrastructure, and insufficient integration of climate risk in national planning constrain Ethiopia's ability to implement effective adaptation strategies. The lack of sufficient support for smallholders, particularly women and youth, also hinders inclusive resilience-building.

2.7. Policy and institutional landscape

Ethiopia has a strong set of agricultural and natural resource development and protection policies. The main challenge is often not the absence of policy but fragmented and weakly coordinated implementation across sectors and levels. Regenerative agriculture can help address this gap by providing an integrated, outcomes-focused approach that aligns institutions and investments around shared priorities—restoring natural resources while improving productivity, resilience, and livelihoods.

This National Regenerative Agriculture Strategy is well aligned with Ethiopia's existing agricultural and natural resources development policies and strategic frameworks. It builds on and complements key strategies and initiatives aimed at improving agricultural productivity, sustainability, and climate resilience. By embedding regenerative practices within established systems, the strategy reinforces policy coherence, improves implementation effectiveness, and supports coordinated action among stakeholders. This alignment also leverages existing institutions and investments to scale regenerative agriculture across Ethiopia's diverse farming systems, advancing food and nutrition security, agricultural sustainability, and climate resilience. Table 1 provides an overview of the strategy's linkages and alignment with relevant policies, strategies, and initiatives.

Table 1. Existing policies and initiatives alignment with regenerative agriculture

Policy, strategies, and initiatives in Ethiopia	Key linkages and alignment with regenerative agriculture
Agricultural and Rural Development Policy	Promotes sustainable intensification, soil fertility management, and farmer centred extension, which underpin regenerative practices such as diversified cropping and integrated soil management.
Climate Resilient Green Economy (CRGE) Strategy	Promotes as one of its pillars climate resilient, low emission agriculture through productivity gains, reduced deforestation, and sustainable land management, which overlaps strongly with regenerative systems.
Digital Agriculture Roadmap	Supports adoption of improved agronomic, climate smart, and sustainable land use practices through digital advisory and data systems (decision support tool), enabling scaling of regenerative practices.
Energy Policy for Ethiopia	Promotes sustainable bioenergy and reduced reliance on traditional biomass, which can lessen pressure on forests and rangelands and complement regenerative land management.
Environmental Policy	Provides overarching guidance on conservation and sustainable use of soil, water, forests, and biodiversity, creating an enabling framework for regenerative land use practices.
Ethiopian Food Systems Transformation and Nutrition	Promotes diversified, nutritious, and sustainable food production systems, encouraging agroecological and regenerative practices that improve soil health and diet quality.
Ethiopian Strategic Investment Framework for Sustainable Landscapes Management	Focuses on sustainable land management, erosion control, and rehabilitation of degraded landscapes, which directly support regenerative soil and watershed restoration.
Ethiopian Water Resources Management Policy	Supports integrated water resources management, watershed protection, and efficient irrigation, which are important enabling measures for regenerative soil and water conserving practices.
Ethiopia's National Agriculture Investment Plan	Prioritises investment in climate-smart, productivity-enhancing, and sustainable land and water management interventions, offering financing pathways for regenerative agriculture scale up.

Ethiopia's National Carbon Market Strategy (2025-2035)	Intends to generate carbon credits from activities such as afforestation, reforestation, SLM, and climatesmart agriculture, creating incentives for regenerative, carbonsequestering practices.
Ethiopia's Nationally Determined contributions 3.0 **(2025-2035)**	Aims to significantly reduce greenhouse gas emissions while strengthening climate resilience and adaptation by promoting low-carbon development pathways across key sectors such as energy, agriculture, transport, industry, and forestry.
Food Safety Strategy	Encourages safe production, handling, and reduced contamination, which complements regenerative systems that minimise agrochemical misuse and promote healthier agroecosystems.
Forest Development, Conservation and Utilisation Proclamation	Regulates forest conservation, sustainable utilisation, and afforestation, supporting agroforestry and forest landscape restoration integral to regenerative systems.
Green Legacy and Land Restoration Fund	Finances reforestation, agroforestry, and land rehabilitation initiatives, providing resources for large scale regenerative restoration.
Green Legacy Initiative	Aims to build a green and climate-resilient Ethiopia through mass tree planting, promotion of agroforestry, and rehabilitation of degraded lands to increase vegetative cover, enhance soil organic matter, and strengthen regenerative landscapes. It is the initiative of H.E. Prime Minister Abiy Ahmed, launched in June 2019.
Integrated Landscape Management Policy	Promotes coordinated land use planning, watershed management, and multi-stakeholder landscape governance, creating conditions for regenerative, ecosystem-based management across farms and commons.
Land Policy	Aims to ensure equitable access to land, promote efficient and sustainable land use, strengthen tenure security for farmers and pastoralists, and support agricultural productivity, environmental protection, and socio-economic development.
LongTerm Low-Emission Development Strategy (2020-2050)	Aims to guide Ethiopia toward a climate-resilient, low-carbon development pathway by 2050 through deep emissions reductions across key sectors such as energy, transport, agriculture, forestry, and industry, while supporting sustainable economic growth, job creation, and improved resilience to climate change
National Adaptation Plan	Identifies climateresilient agriculture, sustainable land management, and ecosystem-based adaptation as priorities, all of which are implemented through regenerative approaches on farms and rangelands.

National Agricultural Extension Strategy	Aims to strengthen pluralistic extension for sustainable, climate-smart, and market-oriented agriculture, providing the main delivery channel for regenerative technologies and practices.
National Agroecology Strategy for Food System Transformation in Ethiopia (2026-2040)	Aims to transform Ethiopia's food systems through agroecology, fostering sustainable farming, resilient ecosystems, empowered communities and inclusive access to resources.
National Agroforestry Development Strategy (2026-2035)	Focuses on restoring degraded landscapes and improving soil fertility through integration of trees with crops and livestock, as well as enhancing climate resilience.
National Livestock and Fisheries Extension Strategy and Roadmap	Promotes sustainable livestock and fisheries production, better feed and health, and improved natural resource use, which can integrate regenerative grazing, manure management, and aquatic ecosystem protection.
National Wheat Development Initiative	Aims to increase wheat production and productivity through rain-fed and irrigated farming to achieve national wheat self-sufficiency, enhance food security, reduce import dependence, and improve farmers' livelihoods.
Post-Harvest Management Strategy	Focuses on loss reduction, improved storage, and value addition, helping regenerative systems capture more value from sustainably produced crops and reduce resource waste.
Range Land Management Strategy	Encourages sustainable rangeland use, rotational grazing, and pasture restoration to enhance biomass, soil cover, and carbon in pastoral systems, which are regenerative grazing principles.
Ten Year Development Plan (2021-2030)	Advances rapid, inclusive, and climate-resilient economic growth by promoting structural transformation, improving livelihoods, creating jobs, and reducing poverty by 2030. Environmental sustainability and climate resilience are integrated to ensure long-term resource management and adaptation to climate change.
Yelemat Terufat (Bounty of the Basket) Initiative	Aims to improve household nutrition, food security, and rural incomes by increasing the production and productivity of milk, eggs, poultry, honey, and other livestock products through community-based agricultural development.



2.8. SWOT analysis

This analysis of strengths, weaknesses, opportunities, and threats synthesises the key internal and external factors shaping the adoption and scaling of regenerative agriculture in Ethiopia. It draws on the situational analysis presented in earlier subsections—covering farming systems performance, land and water challenges, biodiversity and ecosystem health, climate risk, institutional capacity, markets, and the enabling policy environment. The analysis highlights Ethiopia's core strengths and existing assets that can be leveraged, as well as current gaps and constraints that require attention. It also identifies emerging opportunities—such as growing climate finance, market incentives, and policy momentum—alongside risks that could undermine progress if not managed, including climate extremes, land pressure, and coordination and implementation challenges.

Table 2 summarises these strengths, weaknesses, opportunities, and threats to inform strategic priorities, sequencing, and partnership actions for mainstreaming regenerative agriculture in Ethiopia.

Table 2. SWOT analysis for advancing regenerative agriculture in Ethiopia

Strengths	Weaknesses
Policy and public commitment: • Strong government commitment to advance agricultural development • Ongoing watershed and landscape soil and water conservation initiatives **Delivery system reach, evidence and proven entry practices, and farmer readiness:** • Extensive grassroots extension workforce to support adoption and behaviour change • Existing evidence and local experience from CA, ISFM, lime application, diversification, vermicompost and composting, agroforestry, IPM—ready entry points for scaling • Farmers' willingness to adopt RA practices where benefits are demonstrated **Research and higher education capacity, and technology readiness:** • Strong network of research centres and universities to adapt, validate, and scale RA • Minimum tillage tools and prototypes available at research and rural technology centres **Farming system suitability:** • Diverse farming systems and mixed crop-livestock systems support integrated RA.	**Coordination and governance gaps:** • Weak linkage and collaboration among sectors, programs, and projects • Fragmented implementation **Knowledge and perception gaps:** • Misconceptions among some stakeholders and professions • Inconsistent advisory messages **Quality assurance gaps:** • Lack of quality standards and certification for organic fertilisers and soil amendments, reducing trust and uptake **Private sector limitations:** • Limited private sector engagement in inputs, mechanisation services, aggregation and processing, and RA-support services **Finance and incentives constraints:** • Limited investment and incentive mechanisms to support transition costs (training; equipment and services; soil amendments like lime; cover crops) • Weak risk-sharing tools **Service market weaknesses:** • Limited lime supply chains, soil testing, mechanisation service markets, and structured advisory support



Opportunities	Threats
Enabling policy space: • Conducive existing conducive policy environment for sustainable agriculture, NRM, and climate resilience **Global and regional momentum:** • Growing development partners interest and investment in RA, nature-positive, climate-resilient agriculture; regional soil health initiatives (e.g., Africa Soil Health/Fertiliser platforms) **Financing windows:** • Existence of multiple financing mechanisms (climate finance, restoration and landscape funds, blended finance, results-based financing) that could be aligned to RA **Continental platforms:** • The African Forum for Agriculture Extension and Advisory Services and the African Union Comprehensive African Agricultural Development Programme provide channels for extension strengthening and knowledge exchange. **Digital systems:** • Growing digital advisory, M&E, and farmer data systems enable targeting, monitoring, and performance-based support	**Climate risks:** • Increasing climate variability and extremes (notably drought) can undermine gains without risk management **Competing interests and trade-offs:** • Short-term production pressures may drive monocropping, residue removal, overgrazing, and cultivation of fragile lands • Infrastructure/logistics constraints: • Weak logistics and infrastructure for key transition inputs and services (e.g., lime supply, crushers, transport. mechanisation) **Market and price volatility:** • Input and output price shocks raise risk for farmers and private sector engagement.

3. Vision, strategic objectives and theory of change



3.1. Vision and strategic objectives

3.1.1. Vision

A transformed Ethiopian agricultural sector powered by regenerative agriculture that delivers inclusive and resilient agri-food systems, social wellbeing, and environmental sustainability by 2036.

3.1.2. Strategic objectives

To restore soil, land, and ecosystem health by scaling regenerative agriculture innovations and practices.

To build regenerative, inclusive, and resilient agri-food systems that strengthen food and nutrition security and climate adaptation.

To improve the economic, social, and environmental wellbeing of rural and urban communities through sustainable livelihoods and nature-positive growth.

To foster cross-sectoral collaboration and advance collective action to accelerate agricultural transformation and effective implementation.

3.2 Theory of change

Transforming Ethiopia's food system is a national imperative to achieve sustainable food and nutrition security, resilient livelihoods, and long-term economic stability. Many smallholder farmers operate within a complex and fragile socioecological systems characterised by severe land degradation, low productivity, food insecurity, widespread malnutrition, climate variability, and livelihood vulnerability. These challenges are deeply interconnected and mutually reinforcing, creating a cycle of declining soil health, weak ecosystem services, and constrained agricultural performance.

This National Regenerative Agriculture Strategy presents a bold, integrated response through the widespread adoption of regenerative agricultural practices. By restoring soil health, enhancing biodiversity, improving water retention, and building climate resilience, regenerative agriculture offers a transformative pathway to close yield gaps, boost productivity, and secure nutritious food for Ethiopians. Grounded in a comprehensive theory of change (Figure 2), the strategy links core problems and root causes to strategic interventions, enabling conditions, and measurable outcomes required to transition from conventional production systems to regenerative, resilient agri-food systems. Through this transition, the strategy aims to deliver sustained food and nutrition security, improved livelihoods, stronger climate adaptation and resilience, economic vitality, and enhanced environmental stewardship for current and future generations.

Figure 2. Theory of change

Problems

- Degraded agriculture land
- Yield gaps and low agricultural productivity
- Soil acidity and salinity
- Declining soil organic matter
- Nutrient depletion
- Loss of ecosystem services
- Food and nutrition insecurity
- High vulnerability to climate change
- Increased GHG emissions
- Fragmentation and lack of system thinking

RA Principles

- Restore and protect soil health
- Diversify production systems
- Strengthen crop-livestock-tree integration
- Build climate resilience and sequester carbon
- Apply context-specific and adaptive solutions
- Optimise input use and nutrient balance
- Strengthen market access and livelihood opportunities
- Promote equity, inclusion, and holistic systems thinking
- Strengthen water stewardship
- Farmer-led innovation

Strategic Interventions

- Regenerative crop and livestock systems
- Soil fertility and health
- Agricultural water management
- Climate change adaptation and mitigation
- Renewable and clean energy
- Research and extension
- Sociocultural innovation
- Postharvest management systems
- Sustainable market systems
- Cross cutting issues

Outcomes

Intermediate outcomes

- Reduced yield gaps and improved productivity
- Improved dietary diversity and livelihood resilience
- Restored soil health and fertility
- Enhanced nutrient recycling
- Improved ecosystem services
- Reduced greenhouse gas emissions
- Strengthened enabling environment
- Enhanced institutional and technical capacities

Long-term outcomes

- Enhanced food and nutrition security
- Enhanced ecosystem services
- Increased climate resilience
- Regenerative and sustainable food systems

Key Assumptions:

1. Access to quality inputs and technologies
2. Strong coordination among stakeholders
3. Stable environmental and socio-economic conditions
4. Private sector engagement and investment increase
5. Reliable climate and market information systems

Risks:

1. Limited access to market and unfavourable prices
2. Limited funding to implement the interventions
3. Climate change
4. Lack of awareness and intrinsic motivation

Mitigations:

1. Develop market systems
2. Diversify funding (government and donors)
3. Create awareness and incentive mechanisms

4. Strategic framework and guiding principles for regenerative agriculture

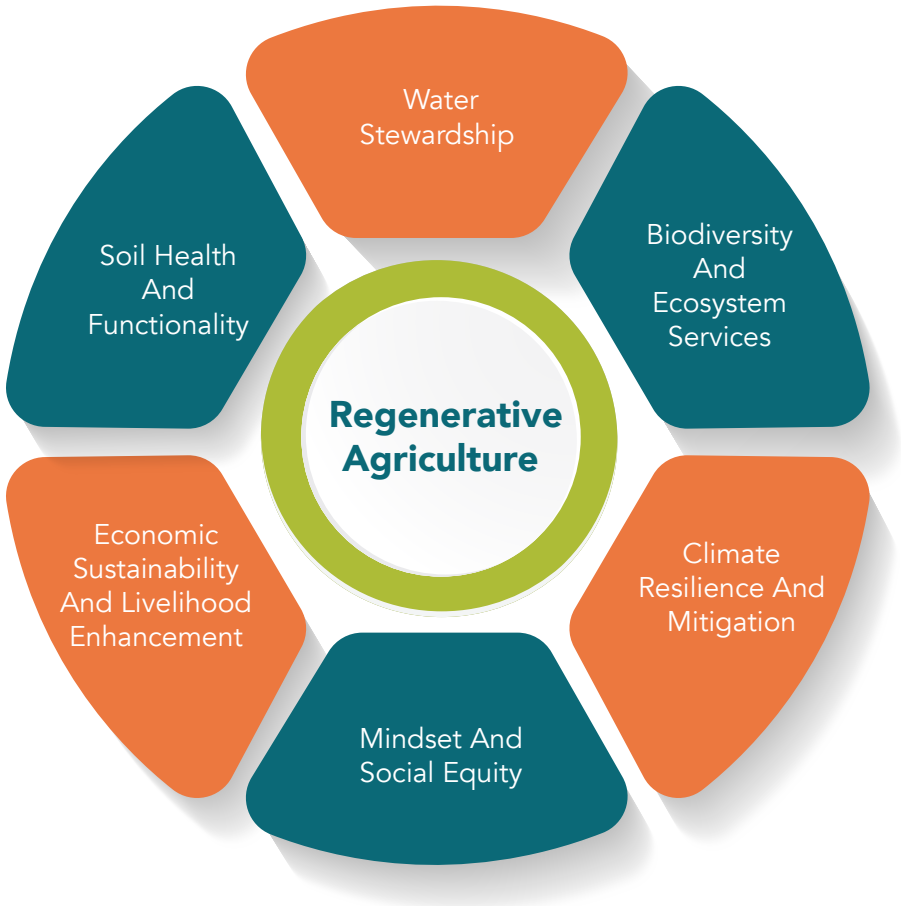


4.1. Strategic framework of regenerative agriculture

This national strategy is guided by a set of core principles and a strategic framework for regenerative agriculture (Figure 3). At the heart of the framework is a commitment to restoring and enhancing the health and performance of agricultural systems through regenerative, context-specific practices. The framework is organised around six mutually reinforcing pillars. The first, *soil health and functionality,* focuses on restoring and maintaining healthy soils as the foundation of productive agriculture by improving soil structure, fertility, organic matter content, and microbial activity. *Biodiversity and ecosystem* services promotes the conservation and integration of diverse plant, animal, and microbial life within agricultural systems. It supports natural ecosystem functions such as pollination, pest control, nutrient cycling, and habitat provision. *Water stewardship* focuses on the efficient, sustainable, and equitable use of water resources in agriculture. It includes improving water retention in soils, reducing runoff and pollution, promoting irrigation efficiency, and protecting watersheds.

Climate resilience and mitigation focuses on implementing practices that not only adapt to changing climatic conditions but also contribute to reducing greenhouse gas emissions and enhancing carbon sequestration. *Economic viability and livelihood enhancement* underscores the need for regenerative practices to be economically sustainable, providing farmers with viable income sources while simultaneously promoting local economies and viable livelihoods. *Mindset and social equity* involves fostering a cultural transformation towards regenerative agriculture and emphasising social equity and community engagement in agricultural practices. Together, these pillars create a holistic approach to regenerative agriculture, aiming for a sustainable future in farming.

Figure 3. Regenerative agriculture framework and its pillars



4.2. Guiding principles of regenerative agriculture

1. Restore and protect soil health

Regenerative agriculture begins with practices that minimise soil disturbance, maintain continuous soil cover, and keep living roots in the ground throughout the year. These actions strengthen soil structure, enhance microbial life, reduce erosion, and improve long-term productivity.

2. Diversify production systems

Regenerative agriculture promotes both above- and below-ground diversity, including the use of diverse crop species, improved varieties, and rich soil biota. Species and varietal diversity enhance resilience to climate variability, pests, and diseases while improving productivity and nutritional outcomes. Practices such as intercropping, crop rotation, and the use of locally adapted and improved varieties strengthen ecological functions and system stability.

3. Strengthen crop-livestock-tree integration

The integration of crops, livestock, and trees is a foundational principle of regenerative agriculture that enhances resource efficiency, soil fertility, and farm resilience. Rather than treating these as separate enterprises, this approach builds a circular system in which livestock convert crop residues into manure, returning nutrients to the soil, while trees provide additional biomass, shade, and ecosystem services. This closed-loop interaction reduces waste, lowers dependence on external inputs, and strengthens overall farm productivity.

Ecologically, crop-livestock-tree integration replenishes nutrients, improves soil structure, and supports soil biological activity. Well-managed grazing can stimulate pasture growth, suppress weeds, and increase soil carbon, while trees provide additional biomass, shade, fodder, and habitat-enhancing microclimates, water regulation, and landscape resilience.

4. Build climate resilience and sequester carbon

Regenerative systems prioritise practices that increase soil carbon, restore degraded land, enhance water retention, and reduce climate risks. The use of clean and renewable energy further supports resilient, low-emission food systems.

5. Apply context-specific and adaptive, and knowledge-driven solutions

Context-specific design is a core principle of regenerative agriculture that emphasises tailoring interventions to unique local farming systems, as well as to the social and economic realities of each community, region, and production system. Rather than applying uniform packages, regenerative agriculture promotes adaptive approaches grounded in local farming conditions, traditional knowledge, and farmers' priorities. This ensures that interventions are both effective and sustainable in the long term. Hence, local ecological, cultural, and socioeconomic conditions guide practice selection. Communities, extension systems, and research actors co-create solutions tailored to landscapes, watersheds, and farming systems. Continuous learning, feedback, and adjustment over time are integral to ensuring effectiveness and long-term sustainability.

6. Optimise input use, nutrient balance, and waste recycling

Regenerative agriculture promotes the judicious use of inputs—organic, biological, or synthetic—to maximise efficiency while avoiding overuse and environmental harm. The focus is on building natural fertility, maintaining nutrient balance, and strengthening circular resource flows. Organic residues, manure, and crop by-products are recycled within farming systems to reduce waste, enhance soil fertility, and minimise pollution, including through value recovery options such as renewable energy use (e.g., biogas).

7. Strengthen market access and livelihood opportunities

Regenerative agriculture must be economically viable. Value-chain development, inclusive markets, fair returns, and livelihood diversification enable farmers to adopt and sustain regenerative transitions. Strong business cases for regenerative inputs and services are needed to accelerate regenerative transitions while creating jobs and new market opportunities along the way.

8. Promote equity, inclusion, and holistic systems thinking

Regenerative transitions centre on people and communities. Inclusive participation, social equity, gender responsiveness, and systems thinking ensure that ecological restoration goes hand-in-hand with improved wellbeing and shared benefits.

9. Strengthen water stewardship

Regenerative agriculture prioritises the protection and efficient use of water by improving infiltration and soil water retention, reducing runoff and erosion, safeguarding water quality, and managing farms within watershed or catchment systems—using irrigation efficiently to strengthen resilience to climate variability.

10. Farmer-led innovation and co-learning

This principle promotes participation, experimentation, and local knowledge alongside science-based solutions.

4.3. Strategic interventions

The National Regenerative Agriculture Strategy sets out ten strategic interventions grounded in regenerative agriculture principles and tailored to Ethiopia's unique socioeconomic and ecological conditions. The objectives are designed to address the root causes of soil degradation, low and declining agricultural productivity, and rural poverty while promoting environmental sustainability and climate resilience. Recognising the country's diverse farming systems, widespread land degradation, and heavy dependence on subsistence and semi-commercial farming, the strategy provides a comprehensive roadmap for transitioning towards more sustainable and regenerative production systems. It places strong emphasis on restoring soil health, enhancing biodiversity, increasing production, effectively managing agricultural water, promoting renewable energy solutions, and improving ecosystem services to transform the livelihoods of farmers. Through these strategic objectives, Ethiopia aims to build a resilient food system that supports long-term productivity, ecological balance, and social and economic wellbeing for current and future generations.

4.3.1. Promote regenerative crops and livestock production

Unsustainable crop cultivation practices, such as monocropping and weak pest and disease management, together with overgrazing, chronic feed shortages, and weak crop and livestock integration have undermined Ethiopia's agricultural productivity and increased the vulnerability of smallholder farmers and pastoralists to climate change. It is therefore essential to scale regenerative crop and livestock practices that restore ecosystem functions, raise productivity, and sustain food production for a rapidly growing population.

Regenerative agriculture offers a holistic approach that strengthens the linkages between crops, livestock, trees, soils, and landscapes. Practices such as crop rotation, intercropping with legumes, double cropping, improved pasture and rangeland management, agroforestry, integrated pest management, and improved livestock feeding systems enhance nutrient cycling, rebuild soil organic matter, improve water retention, and increase on-farm resilience. Scaling these practices across the country will simultaneously boost crop yields, maximise land-use efficiency, improve livestock productivity, enhance household nutrition, and reduce vulnerability to climate change shocks. This strategic intervention includes eight key specific interventions:

- Advance crop diversification by fostering the adoption of regenerative practices such as crop rotation, double cropping, intercropping, relay cropping, and production of backyard horticultural crops.
- Enhance crop-livestock integration in mixed farming systems.
- Strengthen the community-based rangeland management (CBRM) approach.
- Promote high-yielding, drought-tolerant, and nutrient-rich forage species.
- Promote agroforestry practices using locally adapted, fast-growing, and multipurpose tree species.
- Expand integrated pest management (IPM), combining cultural, biological, mechanical, and judicious chemical methods.
- Expand appropriate agricultural mechanisation to improve the timeliness of farm operations and reduce postharvest losses.
- Promote improved varieties and agronomic practices as part of regenerative production systems to raise yields while strengthening resilience.

4.3.2. Enhance soil fertility and health

Healthy soils are the foundation of Ethiopia's agriculture, livelihoods, and national food security. Decades of land degradation, nutrient mining, erosion, and declining organic matter have weakened the productive capacity of the country's soils. These challenges are exacerbated by climate change, which is manifested through recurrent droughts, erratic rainfall, and rising temperatures. Without urgent and deliberate action to restore soil health and fertility, Ethiopia risks declining crop yields, increased production costs for farmers, heightened vulnerability of rural communities, and setbacks to national goals for food and nutrition security, economic growth, and environmental sustainability.

For Ethiopia, investing in soil health is not merely a technical choice but also a strategic national priority that supports climate resilience, improves the efficiency of external agricultural inputs, strengthens farmer livelihoods, and safeguards ecosystems for future generations. Enhancing soil health and fertility through regenerative agriculture offers a transformative pathway to reverse these trends while building resilient and productive farming systems. Regenerative agricultural practices, such as integrated soil fertility management and reduced or minimum tillage, combined with complementary measures like soil acidity management, soil salinity management, vertisol management, and soil and water conservation restore soil health and fertility. This strategic intervention includes six key specific interventions:

- Expand integrated soil fertility management (ISFM) by combining inorganic fertilisers, organic fertilisers, biochar, biofertilisers, green manures, legumes, and mulching.
- Strengthen integrated soil acidity management in priority acidic areas.
- Strengthen integrated soil salinity management in salinity-affected areas.
- Improve vertisol management where vertisols are widespread.
- Promote minimum or reduced tillage among smallholder farmers where appropriate.
- Promote soil and water conservation measures to reduce erosion and restore land productivity.

4.3.3. Enhance sustainable agricultural water management

Enhancing sustainable agricultural water management is a cornerstone of building regenerative and resilient farming systems in Ethiopia. Agriculture in Ethiopia is predominantly rainfed, making it highly vulnerable to erratic rainfall, recurrent droughts, and climate variability. This has led to significant yield losses, reduced water-use efficiency, and increased vulnerability of smallholder farmers' livelihoods. In addition, unsustainable water management practices, such as overextraction, poor irrigation scheduling, and inefficient rainwater use, exacerbate land degradation, soil erosion, and nutrient loss, undermining long-term soil health and productivity.

Integrating sustainable water management into agricultural systems is critical for advancing regenerative agriculture principles. By enhancing soil moisture conservation, rainwater harvesting, storage, and utilisation of irrigation water, alongside appropriate soil health and crop management, farmers will improve crop yields and livestock productivity, improve soil fertility, and enhance the resilience of farming systems to climate shocks. When combined with ISFM, agroforestry, and crop diversification, sustainable water management not only secures water availability but also contributes to ecosystem restoration and biodiversity conservation. Enhancing water availability increases the adaptive capacity of smallholder farmers and pastoralists to climate variability, reduces land degradation, and promotes long-term food and nutrition security across Ethiopia's diverse farming systems. This strategic intervention includes four key specific interventions:

- Promote water-saving and efficient irrigation technologies and practices.
- Expand the adoption of soil moisture conservation measures to improve infiltration and reduce evaporation.
- Promote on-farm water harvesting and storage structures.
- Develop surface drainage systems to manage waterlogging, reduce runoff, and prevent soil erosion.

4.3.4. Enhance climate change adaptation and mitigation

Enhancing adaptation is essential, as climate variability and extremes increasingly threaten food security, rural livelihoods, and ecosystem integrity. Ethiopia's predominantly rain-fed agriculture is highly vulnerable to recurrent droughts, erratic rainfall, rising temperatures, floods, and climate-induced pests and diseases. These stresses exacerbate land degradation, reduce crop yields and livestock productivity, and undermine the resilience of rural communities. Hence, enhancing adaptation to climate change is not an option but a necessity for sustainable and regenerative agriculture. The success of regenerative agriculture depends on the ability of farmers and pastoralists to anticipate and adapt to climate shocks. Climate change adaptation measures and interventions strengthen climate resilience, safeguard livelihoods, and enable regenerative agriculture to deliver lasting environmental and socioeconomic benefits for the country. This strategic intervention includes four key specific interventions:

- Promote early maturing and drought-resistant crop varieties to cope with shortened growing seasons, rainfall uncertainty, and moisture stress.
- Enhance access to timely and localised climate information and early warning systems to support farm-level decision-making.
- Develop and scale robust agricultural insurance and risk-sharing mechanisms to protect farmers and pastoralists from climate shocks.
- Promote carbon farming among smallholder farmers.

4.3.5. Promote renewable and clean energy

Promoting access to sustainable renewable energy is essential for transforming agri-food systems, strengthening climate resilience, and reducing pressure on natural resources. Rural Ethiopia remains heavily dependent on traditional biomass for cooking and limited access to modern energy services, contributing to deforestation, land degradation, greenhouse gas emissions, and adverse health effects that particularly affect women and children. At the same time, unreliable energy supply constrains agricultural productivity, value addition, and market access, undermining efforts to build resilient and regenerative food systems.

Integrating renewable energy solutions into regenerative agriculture enhances productivity while restoring ecosystem functions. Solar energy for lighting and irrigation enables reliable water access and reduces dependence on diesel pumps. Bioenergy technologies such as biogas convert agricultural and livestock waste into clean energy while producing nutrient-rich bioslurry that improves soil fertility. Energy-saving stoves reduce fuelwood consumption and contribute to landscape restoration, whereas solar-powered cold storage and drying units minimise post-harvest losses and increase farmers' incomes. This strategic intervention includes four key specific interventions:

- Promote solar-powered irrigation systems to improve water access, extend growing seasons, and reduce dependence on rainfall.
- Promote solar-powered cold storage and solar drying to reduce post-harvest losses and support value addition.

- Expand biogas technologies at the household and community levels to convert organic waste into clean energy and bioslurry for soil fertility.
- Enhance adoption of energy-saving stoves to reduce fuelwood use and pressure on natural resources.

4.3.6. Strengthen research and extension

Strengthening research and extension ensures that scientific knowledge, innovative technologies, and best practices are effectively translated into practical actions on the ground. Advancing regenerative agriculture requires locally relevant research and extension services that can bridge the gap between innovation and implementation, empowering farmers and pastoralists to adopt regenerative agricultural practices that restore ecosystems, enhance productivity, and improve livelihoods. It is therefore essential to disseminate context-specific regenerative agriculture packages that integrate crops, livestock, soil, and water management practices tailored to diverse farming systems in the country. This strategic intervention includes five key specific interventions:

- Promote tailored regenerative agriculture packages for different farming systems.
- Generate and validate new regenerative agricultural technologies and innovations that fit diverse farming contexts.
- Strengthen the capacity of extension agents, farmers, and pastoralists through training, coaching, and practical learning platforms.
- Promote digital advisory tools to improve reach, timeliness, and quality of agricultural extension service delivery.
- Establish and facilitate multi-stakeholder research and innovation platforms at national, regional, and woreda levels.
- Enhance cross-sectoral integration and coordination across regenerative agriculture, water, forestry, environment, and energy sectors.

4.3.7. Strengthen sociocultural innovation

Strengthening sociocultural innovation is a critical enabler for the successful and sustained transition to regenerative agriculture in Ethiopia. Regenerative agriculture is not only a technical transformation but also a social, cultural, and behavioural change process that requires shifts in values, norms, knowledge systems, and collective action across farming communities and institutions. This strategic intervention focuses on recognising, revitalising, and integrating Indigenous knowledge, social institutions, cultural practices, and local innovation systems that have historically supported sustainable land management, collective resource governance, and resilience. Ethiopia's diverse farming systems are embedded in strong sociocultural contexts, including customary institutions, community norms, faith-based values, and traditional practices that can significantly accelerate or constrain regenerative transitions. Strengthened sociocultural innovation will enhance adoption rates for regenerative agricultural practices, reduce resistance to change, reinforce collective stewardship of natural resources, and contribute to resilient food systems rooted in local identity and shared responsibility.

This intervention promotes community-driven innovation, social learning, and behavioural change by strengthening farmer networks, customary governance structures, cooperatives, youth and women's groups, and intergenerational knowledge exchange. It emphasises participatory approaches that enhance farmers' agency, ownership, and leadership in designing, adapting, and scaling regenerative practices that are culturally appropriate and locally relevant. This strategic intervention includes five key specific interventions:

- Integrate Indigenous and local knowledge systems with scientific research and extension to co-create context-specific regenerative solutions.
- Strengthen collective action and social capital, including customary land and water management institutions, community bylaws, and shared stewardship arrangements.
- Promote behaviour change and social norm transformation through participatory learning, demonstration, storytelling, and peer-to-peer exchange.
- Empower women, youth, and marginalised groups as innovators, leaders, and change agents in regenerative agriculture.
- Strengthen social accountability and trust among farmers, institutions, and markets to sustain long-term regenerative outcomes.

4.3.8. Strengthen postharvest management systems

Postharvest systems, extending beyond simple mechanisation, are a critical strategic intervention for advancing the National Regenerative Agriculture (RA) Strategy in Ethiopia. While regenerative agriculture focuses on restoring soil health, enhancing biodiversity, and improving ecosystem functions, its long-term effectiveness is also influenced by how agricultural products are handled after harvest. In Ethiopia, substantial postharvest losses are common due to inadequate storage facilities, limited processing capacity, and poor handling practices, which reduce the quantity and quality of harvested produce.

Strengthening postharvest systems is therefore essential to complement on-farm regenerative efforts by ensuring that improved production is not lost after harvest. Beyond mechanisation, effective postharvest systems include improved drying, cleaning, sorting, storage, and primary processing technologies that help reduce losses, maintain product quality, and extend shelf life. These practices are particularly important for smallholder farmers, who are highly vulnerable to postharvest spoilage and seasonal food shortages.

Integrating postharvest interventions into the RA strategy enhances overall system efficiency by minimising waste and improving resource use. It also supports better food utilisation and reduces pressure on natural resources by maximising the value derived from existing production. Therefore, postharvest systems are not merely technical improvements but a pillar for ensuring the sustainability and effectiveness of regenerative agriculture in Ethiopia. This strategic intervention includes five key specific interventions:

- Promote the widespread adoption of improved storage technologies (e.g., Purdue improved crop storage bags, metal silos, improved granaries) to reduce postharvest losses.
- Establish decentralised, climate-resilient storage and aggregation facilities managed by farmer groups or cooperatives to reduce handling losses.

- Promote improved drying and handling technologies to reduce contamination, aflatoxin risks, and quality deterioration during drying and transport.
- Promote small-scale, energy-efficient processing equipment (e.g., threshers, shellers, mills) to reduce physical losses, improve efficiency, and add value.
- Provide customised training for farmers and extension agents on proper harvesting time, sorting, grading, packaging, and storage management to minimise losses and maintain quality.

4.3.9. Establish sustainable market systems and linkages

Sustainable market determine how effectively farmers can engage with and benefit from production outcomes. In many parts of Ethiopia, smallholder farmers face limited access to reliable markets, weak market information systems, and low bargaining power, which often results in low prices and inefficient sales of agricultural produce. These challenges constrain farmers' ability to plan production effectively and invest in improved and sustainable farming practices.

Strengthening sustainable market linkages includes improving farmers' access to structured and reliable markets through cooperatives, farmer organisations, and better linkages with buyers and agro-processors. It also includes enhancing access to timely and accurate market information on prices, demand trends, and quality requirements, enabling farmers to make informed decisions. Improving collective marketing systems further strengthens farmers' bargaining power, reduces exploitation by intermediaries, and ensures fairer price negotiation.

Furthermore, well-functioning market systems support more coordinated and predictable demand, which helps reduce postharvest losses caused by market delays and distress sales. By improving transparency, coordination, and information flow, sustainable market systems enhance efficiency across the value chain. Therefore, strengthening market access, information systems, and farmer organisation is essential for ensuring that regenerative agriculture delivers both environmental and economic benefits in a balanced and inclusive manner. This strategic intervention includes four key specific interventions:

- Strengthen the capacity of farmer cooperatives to improve collective marketing, reduce individual transaction costs, and enhance farmers' bargaining power in price negotiations.
- Establishment direct linkages between farmers, buyers, agro-processors, and institutional markets through contract farming arrangements and aggregation systems that reduce reliance on intermediaries.
- Develop integrated market information systems to provide farmers with real-time data on prices, demand trends, and quality requirements.
- Train farmers and extension agents on market dynamics, price negotiation, grading, and quality standards to strengthen their ability to engage effectively and confidently in markets.

4.3.10. Mainstream and institutionalise cross-cutting issues

Mainstreaming and institutionalising cross-cutting issues is essential to creating the foundation required for the successful and sustainable implementation of a national regenerative agriculture strategy in Ethiopia. Effective implementation of the strategy is not only a set of technical practices but a systemic transformation that requires social inclusion, well-functioning farm services, robust seed systems, innovative financial services, cross-sectoral integration, coordination, and data and knowledge management. Without deliberate integration of these cross-cutting issues into the national strategy, it will be difficult to deliver the aspired long-term social, economic, and environmental benefits on a meaningful scale.

Mainstreaming gender and youth considerations ensures equitable access to resources, strengthens livelihoods, and accelerates the adoption of regenerative practices. Strengthening farm services, including input supply, mechanisation, and advisory services, is necessary to translate regenerative principles into practical, context-specific solutions for each farming system. Innovative financing mechanisms are equally important to overcome investment barriers faced by smallholders and agribusinesses transitioning to regenerative systems. Robust seed systems that promote diverse, locally adapted, high-yielding, climate-resilient, and nutritious crop varieties (improved and farmers' seeds) will underpin regenerative agriculture and food system resilience. Furthermore, effective cross-sectoral integration and coordination among agriculture, water, energy, and finance institutions are critical to addressing the interconnected challenges of land degradation, climate change, and food insecurity through regenerative practices. Finally, strengthening data and knowledge management enables learning, adaptive management, innovation, and scaling by grounding regenerative agriculture in science, local knowledge, and continuous monitoring. This strategic intervention includes seven key specific interventions:

- Mainstream gender- and youth-responsive approaches to ensure inclusive participation and equitable benefits.
- Strengthen nutrition-sensitive regenerative agriculture by promoting diversified production systems.
- Strengthen farm service delivery systems, including extension, advisory services, mechanisation, animal feed, and input supply to support context-specific regenerative practices.
- Strengthen formal, informal, and community-based seed systems to ensure access to diverse, climate-resilient, quality, and high-yielding seeds.
- Develop and scale inclusive and innovative financing instruments to support regenerative transition investments.
- Establish robust multi-stakeholder and cross-sectoral coordination mechanisms for coherent planning, implementation, monitoring, evaluation, and learning.
- Develop integrated data and knowledge management systems to support evidence-based planning, monitoring, learning, knowledge-sharing, and scaling of regenerative agriculture.

5. Implementation modality



The successful implementation of the Regenerative Agriculture (RA) National Strategy is crucial for enhancing food security, promoting ecological health, and improving the livelihoods of farming communities. Achieving these objectives requires a well-structured approach that not only addresses the diverse agricultural landscapes and farming systems across the nation but also adapts to the unique socioeconomic and environmental contexts of different regions.

Regenerative agriculture emphasises practices that restore soil health, enhance biodiversity, and improve water management, making it essential to develop a framework that allows these practices to be effectively integrated into existing agricultural systems. Given Ethiopia's diverse farming systems, implementation will follow a phased, adaptive, and scalable approach rather than a one-size-fits-all model, tailoring interventions to local socioeconomic and environmental conditions. Therefore, this section outlines a phased implementation modality that is both adaptable and scalable over time, ensuring that strategies can evolve in response to emerging challenges and opportunities.

Central to this implementation approach is the active engagement of farmers and co-creation, who are the primary stewards of the land. By involving farmers in the planning and execution of regenerative practices, we can leverage their local knowledge and experience, fostering a sense of ownership and commitment to sustainable practices. In addition, this section emphasises the importance of fostering multi-stakeholder coordination and collaboration among diverse stakeholders, including government agencies, nongovernmental organisations (NGOs), private sector actors, and academic institutions. Such collaboration is essential for sharing knowledge, resources, and best practices, which will ultimately enhance the effectiveness of the RA strategy.

Moreover, establishing supportive institutional frameworks is critical to ensure that the necessary resources, policies, and support services are in place. To enable delivery, the strategy will strengthen institutional arrangements, coordination platforms, and communication mechanisms, alongside capacity-building for farmers and agricultural extension systems and the provision of necessary support services.

This section outlines the implementation phases, roles and responsibilities, and key support mechanisms required for a successful transition to regenerative agriculture.

The RA strategy will be implemented through a phased approach; promotion of context-specific RA practice packages; clear institutional arrangements and coordination; defined roles for the private sector, financial institutions, and development partners; establishment of national and regional RA platforms; and delivery of an integrated support package for adoption and scaling.

5.1. Phased approach

Ethiopia's transition towards a regenerative and inclusive food system requires a structured, sequenced, and adaptive implementation pathway. The strategy adopts a progressive three-phased approach that builds capabilities, expands action, and deepens system-wide transformation. Instead of being strictly linear, the phases are iterative and mutually reinforcing, guided by continuous monitoring, learning, and adaptation to navigate complexity, respond to emerging challenges, and scale what works.

The phased rollout of regenerative agriculture (Figure 4) begins with the first phase that maps and scales familiar RA practices that have already demonstrated benefits and gained acceptance among farmers and stakeholders in different contexts. The second phase focuses on piloting and validating innovative RA practices that require targeted investment and locally

generated evidence to confirm effectiveness and scalability. The third phase culminates in institutionalisation, integrating principles and practices into extension and advisory systems so that they become part of routine agricultural support services. This progressive framework enables a systematic transition, builds confidence through evidence and experience, and supports the long-term adoption of regenerative agriculture at scale.

The phased approach also supports smallholder farmers in their gradual adoption of validated practices, reducing transition risks and managing costs—especially where initial investments are required—while building confidence through evidence and experience.

Figure 4. Phased approach



5.1.1. First phase: Foundation and activation

The first phase focuses on laying the groundwork for regenerative transformation. This includes developing a comprehensive understanding of ecological conditions, livelihoods, and food system dynamics through detailed baselines and diagnostic assessments. During this period, government institutions, research organisations, civil society, and community actors come together to establish a shared understanding of regenerative principles and to align around a common agenda.

Key capacities are built within national and local institutions through training and awareness initiatives that introduce regenerative agriculture, soil and water management, biodiversity conservation, and circular resource practices. This phase focuses on mapping and implementing familiar RA practices, capacity-building, and institutional networking. These actions create opportunities for rapid learning, adaptation, and community engagement. By the end of Phase 1, Ethiopia has a solid evidence base, a network of aligned stakeholders, and the institutional capacity needed to begin scaling regenerative solutions.

5.1.2. Second phase: Evidence building for regenerative investment

The second phase focuses on piloting selected regenerative agricultural practices in targeted landscapes and farming communities to validate their agronomic, economic, and ecological performance before large-scale expansion, requiring investment, profitability assessment, and evidence generation. This stage is essential for understanding how different RA practices function under different farming conditions.

Pilot activities will test a menu of regenerative options—including soil-cover management, diversified cropping systems, crop-livestock integration, composting and nutrient recycling, agroforestry, and water-harvesting measures—while tracking both biophysical and economic results. Overall, this evidence-driven phase builds a credible business and agronomic case for regenerative agriculture—clarifying where benefits materialise quickly, where returns accumulate over time, and what enabling conditions are required—thereby informing policy adjustments, strengthening delivery systems, and preparing for scaled implementation in the next phase. Depending on the results of the pilot work, transitional support mechanisms will be developed where needed. Top of FormBottom of Form

5.1.3. Third phase: Scaling and system integration

With a strong foundation established, the strategy moves into a national scaling phase.

Effective practices identified and validated in earlier phases are expanded across diverse farming systems. Regenerative principles increasingly shape the design and implementation of public agricultural development programs, natural resource management, watershed restoration, and climate resilience—marking a shift from isolated interventions to system-level transformation.

During this phase, extension services, research institutions, and local administrations integrate regenerative practices into their routine operations, guidelines, and work plans. Markets and value chains also begin to adjust, supported by partnerships with private-sector actors engaged in regenerative sourcing, processing, and traceability.

Financial instruments and incentives are progressively developed to support farmers and enterprises adopting regenerative practices, while monitoring and learning systems are strengthened to provide real-time feedback and continuous improvement.

Through these processes, regeneration becomes embedded within government systems, economic structures, and social processes, moving to wider institutional adoption. Innovation ecosystems deepen as research and higher-education institutions, digital platforms, and youth-led enterprises drive the development and dissemination of locally appropriate technologies and solutions. National monitoring systems track ecological recovery, improved soil health, biodiversity restoration, livelihood gains, resilience to climate shocks, and progress towards equity in food systems. By the end of Phase 3, regenerative agriculture is embedded in policies, institutions, markets, and social processes, becoming a national orientation that aligns ecological integrity, social wellbeing, and economic vitality.

5.2. Landscape and farmers groups

Regenerative agriculture (RA) will be planned and implemented at watershed level and operationalised through cluster-based farmer groups. This approach recognises that farms are embedded in a broader natural landscape—uplands, valleys, grazing areas, wetlands, and riparian zones—where land and water processes are connected and where upstream practices directly affect downstream soils, water quality, flooding, and ecosystem health. Therefore, RA will move beyond isolated plot-level actions to coordinated management of the farmscape and surrounding landscape.

Planning unit: The micro- to meso-watershed will serve as the primary planning unit because it is ecologically coherent, socially manageable, and aligns with Ethiopia's established watershed management experience. Watershed planning enables integrated action across farmland and non-farmland areas, linking soil restoration, water regulation, biodiversity recovery, and livelihood objectives within one geography.

Operational scale: Implementation will be organised through farmer clusters (e.g., Farmer C Production Clusters, or FPCs; cooperatives; and community groups) within each watershed. Clusters will jointly plan and implement a portfolio of regenerative interventions across crops, livestock, and trees—such as diversified cropping and rotations, legume integration, soil fertility management, agroforestry, and improved grazing and forage systems, integrated pest management, moisture conservation, water harvesting, and rehabilitation of communal and riparian areas. Coordinated cluster action reduces free-rider problems, supports collective investments (e.g., soil and water conservation structures, grazing management, tree establishment), and strengthens access to services, finance, markets, and learning.

Overall, the strategy adopts a watershed-based, cluster-delivered RA modality that connects farm-level practice change with landscape restoration, enabling measurable gains in productivity, resilience, ecosystem services, and community wellbeing.

5.3. Set of tailored RA practices for the diverse agricultural settings

5.3.1. Tailoring RA for farming systems and commercial-oriented agriculture

In an era of increasing environmental challenges and rising food demands, the integration of regenerative agriculture into diverse farming systems is essential for promoting sustainability and resilience. Tailoring regenerative practices to both diverse farming systems and commercial-oriented agriculture requires a holistic approach that acknowledges the intricate interplay between ecological health and economic viability. This context-specific adaptation is crucial for addressing the unique needs and conditions of various agricultural landscapes. By recognising that each farming system has distinct characteristics—such as soil types, climate conditions, and local market dynamics—stakeholders can develop targeted strategies that enhance productivity while safeguarding natural resources.

A holistic approach to regenerative agriculture not only focuses on improving soil health and biodiversity but also considers the commercial realities faced by farmers. By aligning regenerative practices with market demands, farmers can achieve profitability while

contributing to environmental restoration. This synergy fosters a sustainable agricultural model where ecological integrity and economic success go hand in hand. Ultimately, tailoring regenerative agriculture to fit both farming systems and commercial objectives creates a pathway for sustainable development. This strategy empowers farmers to implement practices that are not only beneficial to the environment but also economically rewarding, ensuring a resilient agricultural future for communities worldwide.

5.3.2. Structure of farming in Ethiopia

Smallholder farmers account for approximately 98 percent of agricultural producers, cultivate about 95 percent of the total cultivated land, and contribute nearly 90 percent of the country's agricultural output (CSA 2021; FAO 2018). Despite their dominant role in the agricultural sector, most smallholders operate under subsistence or semi-subsistence production systems, where the primary objective is household food security rather than market-oriented production. As a result, only a portion of their agricultural output is marketed, typically through local and informal markets.

The level of market participation varies considerably across farming households due to differences in agroecological conditions, access to markets, infrastructure, extension services, and resource endowments. Agricultural commercialisation studies commonly use the Household Commercialisation Index to measure the proportion of agricultural production that is sold in markets (von Braun and Kennedy 1994; Pingali and Rosegrant 1995). Based on these analytical frameworks and national agricultural assessments, farming systems in Ethiopia can broadly be categorised into subsistence, semi-commercial, and commercial farming systems, reflecting different levels of market engagement and production intensity (Table 3).

Evidence from agricultural transformation studies indicates that although the majority of Ethiopian farmers remain in subsistence-oriented production systems, a growing share of smallholders are gradually transitioning towards semi-commercial farming as a result of improved market access, agricultural extension services, infrastructure development, and value-chain initiatives (Dorosh and Rashid 2013; ATA 2017). Fully commercial agriculture remains relatively limited and is mainly represented by large-scale commercial farms and a small number of highly market-oriented smallholders integrated into structured value chains.



Table 3. Approximate distribution of farming systems in Ethiopia

Farming system	Estimated share of farmers	Key characteristics
Subsistence farming	60–70%	Production mainly for household consumption with minimal market participation
Semi-commercial farming	25–35%	Production partly for household consumption and partly for markets
Commercial farming	1–5%	Production primarily for markets; includes large-scale farms and specialised market-oriented producers

5.3.3. Transition towards commercialisation through regenerative agriculture

The transition from subsistence to semi-commercial and ultimately commercial farming systems can be accelerated through the adoption of regenerative and sustainable intensification of agriculture approaches that restore soil health, enhance ecosystem services, and improve the productivity and resilience of farming systems. In many smallholder contexts, farmers initially produce mainly for household consumption with limited surplus available for market sale. However, the adoption of regenerative agriculture practices—such as diversified cropping systems, integrated soil fertility management, conservation agriculture, agroforestry, renewable and green energy, and integrated crop-livestock systems—can gradually improve soil organic matter, enhance water retention, and strengthen nutrient cycling.

These improvements contribute to higher and more stable agricultural productivity, reduced production risks, and greater resilience to climate variability. As soil fertility and ecosystem functions improve, farmers are able to generate increasing marketable surplus beyond household consumption needs. At the same time, regenerative agriculture practices often enhance efficiency, improve input use, and reduce reliance on costly external inputs, improving farm profitability and economic sustainability.

With increasing productivity and surplus production, many farmers begin transitioning towards semi-commercial farming systems, where a significant share of agricultural output is marketed while household food security remains protected. This transition is further supported by improved access to extension and advisory services, input supply systems, rural infrastructure, financial services, and market linkages, often facilitated through development programs and policies, farmer cooperatives, and value-chain initiatives.

Regenerative agriculture also encourages diversification of farm enterprises, including the integration of high-value crops, agroforestry products, and livestock-based income streams, which enhances farm resilience and income stability. Over time, as farmers strengthen their market linkages and gain improved access to finance, technology, and value chains, production systems increasingly shift towards commercial agriculture characterised by higher productivity, specialisation in profitable commodities, and stronger market integration.

In this way, regenerative agriculture not only helps restore degraded natural resources and improve ecosystem health but also creates the ecological and economic foundation for a gradual transition from subsistence-oriented production to more diversified, resilient, and market-oriented farming systems in Ethiopia.

5.4. Agricultural commercialisation typology in Ethiopia and proposed transition

Figure 5. Commercial agriculture typology in Ethiopia

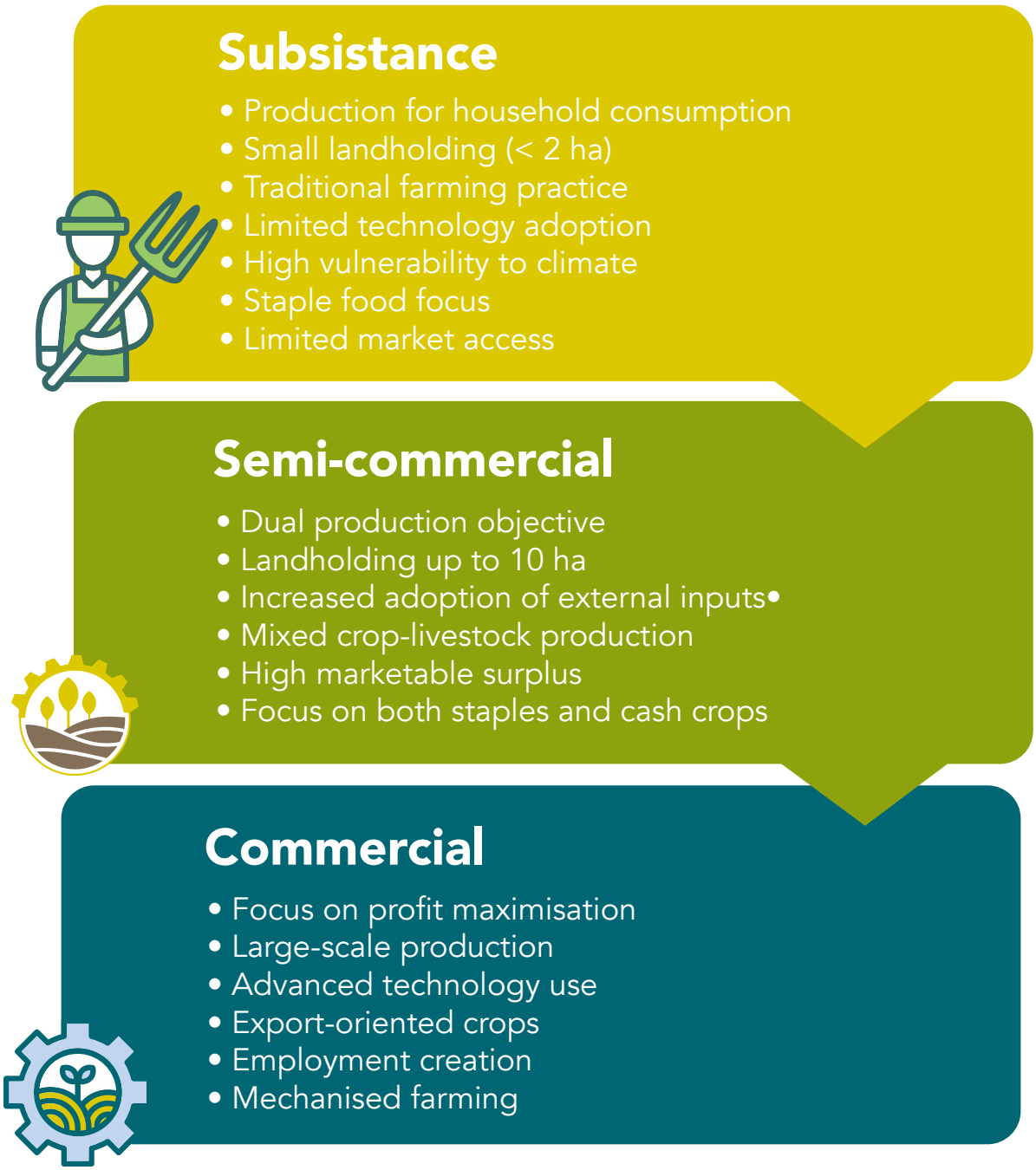


Table 4. Set of regenerative practices for different commercial-oriented agricultural systems

Subsistence farming (resource-constrained, food security-oriented)	Semi-commercial farming (productivity improvement and partial market integration)	Commercial farming (market-oriented, efficiency, and scale)
Agroforestry	Agroforestry	Agroforestry
Crop rotation	Crop rotation	Crop rotation
Intercropping	Cover cropping	Cover cropping
Mixed cropping	Double cropping	Double cropping
Double and mixed cropping	Integrated pest management	Integrated pest management
Drought-tolerant varieties	Disease-resistant varieties	Disease-resistant varieties
Disease-resistant varieties	Drought-tolerant varieties	Drought-tolerant varieties
Organic fertilisers (manure, compost)	Integrated soil fertility management	Integrated soil fertility management
Mulching	Liming	Liming
Soil and water conservation	Soil and water conservation	Reduced or conservation tillage
Reduce tillage (manual or animal traction)	Reduced tillage	Green manuring
Permaculture approaches	Managed grazing (crop-livestock integration)	Drainage management

The transition of farming systems from subsistence to semi-commercial production involves a gradual shift in the type and intensity of regenerative agricultural practices adopted by farmers. In the subsistence farming stage, practices focus on low-cost and locally available regenerative approaches that enhance soil health, improve resilience to climate variability, and strengthen household food security. These include practices such as agroforestry, intercropping and mixed cropping, the use of organic fertilisers such as manure and compost, soil and water conservation measures, and the use of drought-tolerant crop varieties. Such practices help farmers improve soil fertility, conserve moisture, and reduce production risks while relying largely on locally available resources and minimising dependence on external inputs.

As farmers gradually begin producing a surplus for market participation, farming systems transition towards a semi-commercial stage, where the emphasis shifts towards improving productivity and resource use efficiency while maintaining soil health. At this stage, farmers increasingly adopt practices such as integrated soil fertility management, cover cropping, double cropping, integrated pest management, liming to address soil acidity, and crop-livestock integration through managed grazing systems. These practices contribute to improved nutrient management, enhanced soil biological activity, and more efficient use of natural resources, thereby increasing yield stability and enabling farmers to generate a larger marketable surplus while sustaining the regenerative functions of the farming system.

This progression closely aligns with the phased rollout approach of regenerative agriculture. In the first phase, efforts focus on mapping and scaling familiar regenerative agriculture practices that farmers already recognise and have successfully applied in different agroecological contexts—such as soil and water conservation, agroforestry, and organic soil fertility management. Building on these foundations, the second phase emphasises piloting and validating more advanced regenerative practices—including integrated soil fertility management, cover cropping, and improved crop-livestock integration—which require targeted investments, technical support, and locally generated evidence to demonstrate their effectiveness and scalability. The third phase culminates in institutionalisation, where validated regenerative agriculture principles and practices are integrated into national extension and advisory systems, enabling them to become part of routine agricultural support services. Through this progressive and evidence-based framework, regenerative agriculture supports a systematic transition of farming systems from subsistence to more productive and market-oriented semi-commercial systems, while restoring natural resources and strengthening long-term agricultural sustainability.

5.4.1. Farming system in Ethiopia

Ethiopia's agricultural landscape is characterised by a rich tapestry of diverse farming and pastoral systems, each uniquely adapted to the country's varied climatic and geographical conditions (Figure 6). These systems not only reflect Ethiopia's ecological diversity but also play a crucial role in supporting the livelihoods of millions of people. From the integration of crops and livestock in agropastoral systems to specialised practices in arid environments, the various agricultural systems offer insights into sustainable practices that bolster food security and economic resilience. This overview highlights key agricultural systems across Ethiopia, including the agropastoral system, which combines the cultivation of sorghum and millet with livestock, and the arid pastoral and oasis system, which thrives in the challenging conditions of the Afar and Somali regions. Each system, whether focused on staple crops like maize and barley or high-value products like coffee and sesame, contributes to the overall agricultural productivity and cultural heritage of the nation. Understanding these systems is essential for fostering sustainable development and enhancing food security across Ethiopia.

1. **Pastoral system (33.03 percent):** The largest farming system, dominated by mobile livestock production in arid and semi-arid areas. Livelihoods depend on cattle, camels, goats, and sheep. This system is highly adaptive but increasingly threatened by climate change, rangeland degradation, and conflict over resources. This farming system exists particularly in the Afar and Somali regions. This system is well adapted to the arid environments of Ethiopia, ensuring food security and economic stability for pastoral communities. By integrating livestock rearing with selective farming, these communities effectively manage scarce resources and sustain their livelihoods in challenging conditions.

2. **Agropastoral system (16.82 percent):** A transitional livelihood system combining crop production with livestock rearing. Households cultivate drought-tolerant crops (sorghum, maize, pulses) while relying heavily on livestock for income, food, and risk buffering. Common in semi-arid areas, this system is highly climate-vulnerable but adaptive. This system, predominantly found in the Somali region and the Borana area of Oromia, supports communities by providing both food and income through diversified agricultural and pastoral activities.

3. **Eastern highland maize mixed system (8.67 percent):** Primarily crop-focused, with maize as the dominant staple. Livestock play a secondary role. This system benefits from relatively good rainfall but faces challenges related to nutrient depletion, pests, and yield

variability. The highland maize mixed system primarily flourishes in the Hararghe areas of eastern Oromia and the eastern highlands. It supports subsistence farming and local markets through the production of staple crops.

4. **Highland barley livestock mixed system (0.96 percent):** Found in cool highland zones, this system integrates barley production with cattle and small ruminants. Barley is mainly grown for food and feed, while livestock provide traction, manure, and income. Productivity is constrained by soil acidity and cold stress. Found in the central and northern highlands of Amhara, Tigray, and Oromia, this system combines crop cultivation with livestock rearing, enhancing soil fertility and providing diverse dietary options.

5. **Highland perennial system (5.78 percent):** A perennial-based mixed system centred on coffee, combined with food crops and livestock. Coffee is the main cash crop, while enset, maize, pulses, fruits, root crops, and vegetables, alongside bees and cattle, support food security. Soil fertility, shade management, and market volatility are key concerns. Predominantly located in the southern and southwestern highlands of Ethiopia, it fosters sustainable agriculture and supports local economies through high-value crops.

6. **Highland sorghum chat mixed system (1.52 percent):** Combines food crop production (sorghum) with chat as a cash crop. Livestock are present but less dominant. While chat provides regular income, it raises concerns related to land competition and household nutrition. This system is practiced mainly in Sidama and southern Oromia. It combines cash crop production with subsistence farming, catering to both local consumption and market demand.

7. **Highland teff mixed system (4.13 percent):** A market-oriented system centred on teff, Ethiopia's major staple grain and cash crop. Livestock contribute draft power and manure. The system is sensitive to soil erosion, labour demand, and rainfall variability. It emphasises the cultivation of teff while supporting livestock production for additional income.

8. **Highland wheat livestock mixed system (8.13 percent):** A cereal-based mixed system prevalent in mid- to high-altitude areas. Wheat and barley are grown for both consumption and market, supported by livestock. This system is important for national food supply but faces soil fertility and disease pressures. Predominantly found in the Amhara and Oromia regions, it integrates crop production with livestock rearing, promoting food security and economic resilience.

9. **Lake fish-based system:** This unique system combines fish farming with the cultivation of maize, rice, and vegetables around Lake Tana and the Rift Valley. It leverages aquatic resources to enhance food diversity and nutrition for local communities.

10. **Livestock maize mixed system (3.02 percent):** Maize is the primary staple, often cultivated under rain-fed conditions and vulnerable to drought, pests, and market access constraints. Found in Benishangul-Gumuz and western Oromia, it supports smallholder farmers by providing food security and income through diversified production.

11. **Lowland maize mixed system:** This system incorporates maize, sorghum, pulses, and sesame, along with livestock. Found in the lowland areas of southwest Ethiopia, it is designed to maximise agricultural output in regions with varying climatic conditions.

12. **Lowland sesame mixed system (2.12 percent):** A commercially oriented system, with sesame as a major export crop, often combined with sorghum, soyabean, or livestock. While economically important, the system faces challenges related to soil degradation, labour shortages, and price volatility. Predominantly found in Amhara, western Tigray, and southwestern Oromia, it supports both subsistence and cash crop production.

13. **Sorghum mixed system (12.11 percent):** A drought-tolerant system centred on sorghum, integrated with livestock. Common in semi-arid lowlands, it supports food security under harsh conditions but is constrained by low productivity and climate stress. In addition to sorghum, this system includes maize, millet, and pulses alongside livestock such as cattle, goats, sheep, and donkeys. It is prevalent in eastern and central Amhara, Oromia, and Tigray, providing a balanced diet and economic livelihood for farmers.

14. **Western highland maize mixed system:** Characterised by the cultivation of maize, teff, wheat, pulses, and roots, this system is prominent in western Oromia and Benishangul-Gumuz. It supports diverse agricultural practices and enhances food security through a mix of crop and livestock farming.

Table 5. Major farming systems in Ethiopia

System no.	Farming system	Major crops and livestock	Typical location
1	Pastoral	Camels, goats, sheep, date palms, drought-resistant grains	Afar and Somali regions
2	Agropastoral	Sorghum, millet, goats, cattle, camels	Somali region, Borana (Oromia), Southern and Eastern Ethiopia
3	Eastern highland maize mixed	Maize, beans, potatoes	Hararghe areas (eastern Oromia), eastern highlands
4	Highland barley livestock mixed	Barley, wheat, pulses, sheep, cattle	Central and northern highlands (Amhara, Tigray, Oromia)
5	Highland perennial	Coffee, enset, fruits, root crops, vegetables, bees, cattle	Southern and southwestern highlands (central Ethiopia, south Ethiopia, Oromia)
6	Highland sorghum chat mixed	Sorghum, chat, maize, cattle, goats	Sidama, southern Oromia, Central Ethiopia
7	Highland teff mixed	Teff, barley, wheat, pulses, sheep, and goats	Tigray, Amhara, central and northern highlands
8	Highland wheat livestock mixed	Wheat, barley, pulses, sheep, cattle	Amhara, Oromia (central and southern highlands)
9	Lake fish-based	Fish, maize, vegetables, rice, vegetables, cattle, poultry	Lake Tana and Rift Valley

10	Livestock maize mixed	Maize, beans, cattle, sheep, goats, poultry	Benishangul-Gumuz, western Oromia, western Amhara
11	Lowland maize mixed	Maize, sorghum, pulses, sesame, cattle, goats	Lowland areas of the southwest, Benishangul-Gumuz, Gambela
12	Lowland sesame mixed	Sesame, sorghum, soybeans, cotton, cattle, goats	Amhara, western Tigray, Southwest Oromia, Gambelia Regions
13	Sorghum mixed	Sorghum, maize, millet, pulses, cattle, goats, sheep, donkeys	Eastern and central Amhara, Oromia, Tigray
14	Western highland maize mixed	Maize, teff, wheat, pulses, roots, cattle, sheep, goats, poultry	Western Oromia, Benishangul-Gumuz, western Amhara

5.4.2. A set of practices for farming systems based on commercialisation orientation

By recognising the varying degrees of commercial orientation—from subsistence to fully commercial practices—stakeholders can tailor interventions to various farming systems that enhance both ecological health and economic profitability.

Table 6 outlines a comprehensive framework that connects specific farming systems with their respective regenerative practices and levels of commercialisation. Each farming system, whether agropastoral, arid pastoral, or highland mixed, incorporates unique practices that are adapted to local environmental conditions and market dynamics. By delineating these systems, we can better understand how regenerative agriculture can be effectively implemented across different contexts, ensuring that farmers can sustainably manage resources while meeting market demand.

This typology not only serves as a tool for policymakers, researchers, and practitioners but also emphasises the importance of context-specific solutions. By aligning regenerative practices with the commercialisation orientation of various farming systems, we can foster resilience, increase productivity, and promote sustainable livelihoods for farming communities.

Table 6. Proposed typology of regenerative agriculture for farming systems through commercialisation orientation

Practices are arranged incrementally, each column lists only what is NEW at that stage. All subsistence-level practices continue into semi-commercial and commercial stages (not repeated).

• SUBSISTENCE — foundation practices; retained at all levels	• SEMI-COMMERCIAL — new practices added at this stage	• COMMERCIAL — new practices added at this stage

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
1. Pastoral System	Controlled grazing	Improved pasture management	Commercial fodder production
	Native drought-resistant plants (forages/fodder)	Sustainable forage development	Enhanced water management systems (dryland technologies)
	Soil moisture conservation	Water-efficient irrigation (solar-powered pumps)	Date palm commercialisation
	Traditional water storage	IPM implementation	Renewable energy (solar-powered pumps, biogas)
	Grazing/pasture land management	Feed processing (hay making)	Carbon-sequestering silvopastoral systems (certified)
	Manure management	Silvopastoral systems (trees for fodder/shade)	Precision livestock management (GPS tracking, remote sensing)
	Community water ponds (ex-situ)	Legume-based forage integration (Leucaena, Desmodium)	Commercial compost/biofertiliser enterprise from manure
	Holistic planned grazing (rotational cell grazing)	Rangeland health assessment with participatory monitoring	Fodder seed multiplication and commercial seed enterprise
	Native seed saving and propagation	Improved water harvesting (half-moons, zai pits)	Landscape-level carbon MRV for pastoral lands
	Live brush barriers for wind/erosion control	Compost/bioslurry from biogas for pasture fertility	—
	Rangeland monitoring (cover, bare soil, plant diversity)	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
2. Agropastoral System	Rotational grazing	Managed grazing with defined rest periods	Market-oriented livestock production
	Agroforestry	Improved fodder crops (dual-purpose varieties)	Commercial crop production
	Water harvesting	Selective breeding	Value chain integration
	Integrated livestock-crop systems	Silvopastoral systems	Certified organic livestock and crop production
	Grazing/pasture land management	Alley cropping (food/fodder trees)	Commercial biogas/bioslurry enterprise
	Manure management	IPM	Precision nutrient management (soil testing, variable-rate application)
	Crop residue management	ISFM for crop-livestock fields (integrated soil fertility)	Carbon footprint accounting and climate finance readiness
	Reduced tillage (2–3×)	Bioslurry application from biogas as liquid fertiliser	Fattening and dairy value chain development
	Harvesting at higher height	Improved SWC practices (bunds, terraces, infiltration trenches)	—
	Legume intercropping for dual purpose (food + fodder)	Farmer group-based selective breeding and AI (artificial insemination)	—
	On-farm composting (manure + crop residues)	—	—
	SWC earthworks (bunds, terraces, infiltration trenches)	—	—
	Fodder bank establishment (drought buffer)	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
3. Eastern Highland Maize Mixed System	Intercropping with legumes	Organic inputs (vermicompost, biofertiliser)	Precision agriculture
	Cover cropping (mulching and crop residues)	Quality seed use (improved OPV varieties)	Market-focused double cropping
	Reduced tillage	Alley cropping (multipurpose trees)	Commodity diversification
	Seed saving	Biochar for soil amendment	Mechanisation & renewable energy at scale
	Crop rotation/diversification	Renewable energy (solar drying, milling)	Systematic crop rotation for productivity
	Liming of acidic soils	Improved seed production (open-pollinated improved varieties)	Soil carbon sequestration and MRV for climate finance
	ISFM	Composting and biofertiliser production for sale	Commercial seed enterprise (hybrid or OPV maize)
	SWC practices	Rainwater harvesting systems (in-situ and ex-situ)	Value-added processing (maize milling, animal feed production)
	Agroforestry	—	Contract farming with agro-processors
	Rhizobia inoculation for pulses	—	Integrated post-harvest management (hermetic storage, solar drying)
	Water management (tied ridges)	—	—
	IPM	—	—
	Judicious use of agrochemicals	—	—
	Crop-livestock integration	—	—
	Harvesting at higher height	—	—
	• Push-pull pest management (Desmodium + Napier grass)	—	—
	• On-farm composting from maize stover + manure	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
4. Highland Barley Livestock Mixed	Crop rotation	Improved crop management with enhanced ISFM	High-value crop production
	Composting & farmyard manure	Enhanced water management with renewable energy	Malting barley production
	IPM practices	Judicious use of external inputs	Contract farming
	Crop-livestock integration	Malting barley variety trials with farmers (participatory breeding)	Liming at scale
	SWC practices	Soil testing and lime quality assessment	Windbreak establishment
	Reduced tillage	Forage legume integration for livestock dry-season feed	Renewable energy integration
	Agroforestry	Group-based input procurement (reduce per-unit input cost)	Certified malting barley (brewery/distillery value chain)
	Water management (water harvesting, tie ridges, mulching)	—	Precision nutrient management (VRA, soil mapping)
	Harvesting at higher height	—	Commercial forage production for urban dairy markets
	Vetch/field pea integration in rotation for nitrogen fixation	—	Cold-chain and moisture monitoring for grain storage
	Straw management (mulching + partial incorporation for SOC)	—	—
	On-farm barley seed saving (landrace conservation)	—	—
	Frost-risk management (micro-windbreaks, mulching)	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
5. Highland Perennial System	Agroforestry	Enhanced biodiversity practices	Bioenergy production (biogas) at enterprise scale
	SWC practices	Soil fertility management (ISFM) for perennials	Specialty coffee production
	Organic amendments (ISFM)	Multispecies cropping systems	Eco-tourism integration
	Biodiversity maintenance	Renewable energy (biogas, solar)	Forest garden certification (organic, Rainforest Alliance, UTZ)
	Reduced tillage	Judicious use of external inputs	Commercial honey and beeswax enterprise
	IPM practices	Shade-grown coffee quality improvement (for premium markets)	Eco-tourism trails linked to regenerative landscape demonstration
	Crop-livestock integration (forage + beekeeping)	Compost and vermicompost production for perennial fertility	Timber and non-timber forest product (NTFP) enterprise
	Intercropping	Grafting and vegetative propagation for improved perennial varieties	Value-added coffee processing (wet mill, sun-drying, cupping lab)
	Mulching/cover crops	Riparian buffer strip establishment (watershed protection)	—
	Water management (water harvesting, tie ridges, mulching)	—	—
	Harvesting at a higher height	—	—
	Multi-strata home garden design (food security + income)	—	—
	Traditional variety conservation (in-situ agrobiodiversity)	—	—
	Honey bee integration (pollination services + income)	—	—
	Shade-grown vegetable intercropping under perennials	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
6. Highland Sorghum Chat Mixed System	Intercropping with legumes	Integrated livestock-crop systems at field scale	High-value crop production
	Water management (water harvesting, tie ridges)	Sustainable irrigation with renewable energy	Advanced pest management (IPM) at scale
	Mulching	Market linkage development	Value-added processing
	Crop residue utilisation	Agroforestry (shade integration for chat quality)	Commercial sorghum malting/processing enterprise
	SWC practices	Judicious use of external inputs	Certified chat export quality protocols
	IPM practices (push-pull)	Push-pull at scale (Desmodium + Napier border rows)	Drip irrigation with solar pumping for high-value production
	Crop-livestock integration	Soil testing and site-specific lime + fertiliser recommendation	Contract farming for food processing industry
	Reduced tillage	Chat quality improvement (shade regulation, harvest timing)	Post-harvest value-addition (sorghum flour milling, packaging)
	ISFM	Group-based market aggregation for sorghum + chat	Carbon credits from no-till and agroforestry integration
	Harvesting at higher height	Biochar production from sorghum stovers	—
	Bird/pest-deterrent intercropping (Napier/Sudan grass borders)	—	—
	Tannin-reduced/early sorghum variety adoption	—	—
	On-farm composting from sorghum stovers + manure	—	—
	Living mulch establishment between sorghum rows	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
7. Highland Teff Mixed System	Crop rotation	Cover cropping (targeted species)	Market-oriented teff production
	Composting & farmyard manure (ISFM)	Improved soil health practices (ISFM with quality inputs)	Value-added processing
	Reduced tillage	IPM implementation at group level	Mechanisation
	Seed conservation	Judicious use of external inputs	Certified organic teff for export markets
	SWC practices	Precision row/bed planting for teff (yield improvement)	Teff flour milling, packaging, and export value chain
	IPM practices	Soil testing for pH and micronutrient deficiency correction	Combine harvester cooperative (mechanised harvesting)
	Crop-livestock integration	Participatory variety selection (improved + landrace comparison)	Carbon accounting from minimum/zero-till teff production
	Water management (water harvesting, BBM, mulching, community ponds)	Group-based compost + biofertiliser production and marketing	Contract farming with health food manufacturers
	Agroforestry	Improved grain cleaning and grading for premium markets	—
	Cover crop/mulch	—	—
	Harvesting at a higher height	—	—
	• Raised-bed teff sowing (improved broadcasting technique)	—	—
	• Legume rotation before teff (cowpea, vetch) for N build-up	—	—
	• On-farm teff landrace diversity conservation	—	—
	• Waterlogging management (improved drainage + raised beds)	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
8. Highland Wheat Livestock Mixed	Forage development	Enhanced livestock management (CLI)	High-yield wheat production
	Eco-friendly pest control	Soil fertility practices (ISFM) with quality inputs	Integrated marketing strategies
	Crop rotation	Wheat-legume intercropping for N fixation and risk reduction	Seed production enterprise
	Crop-livestock integration	Soil testing with ISFM optimisation (lime + micro-nutrients)	Dairy value chain development
	Composting & farmyard manure (ISFM)	Improved forage chopper/silage for livestock dry season	Certified wheat seed multiplication enterprise
	Reduced tillage	Group-based improved seed procurement and storage	Precision nutrient management (soil mapping + VRA)
	SWC	Aflatoxin and grain quality management (hermetic storage)	Commercial silage production for urban dairy supply chain
	IPM	—	Wheat-dairy integration (whey and bran for livestock feed)
	Water management (water harvesting, BBM, mulching, community ponds)	—	Post-harvest value-addition (milling, pasta, bakery products)
	Agroforestry	—	Carbon sequestration from cover cropping + no-till (MRV)
	Cover crop/mulch	—	—
	Harvesting at a higher height	—	—
	Triticale/barley inclusion in wheat rotation for soil health	—	—
	Straw management (partial incorporation for SOC improvement)	—	—
	Rust-resistant wheat variety adoption (biosecurity)	—	—
	On-farm seed priming for improved germination	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
9. Lake Fish-Based System	Integrated aquaculture	Community-based fisheries management	Commercial aquaculture at scale
	Wetland restoration	Improved fish feed processing practices	Fish product processing
	Sustainable fishing practices (lake + riverine fisheries)	Aquaculture — pond management systems	Value addition & marketing
	Small-scale fish farming (aquaculture)	Integrated farming (poultry-fish-vegetable production)	Commercial cage aquaculture (tilapia, catfish) — certified
	Agroforestry (riparian zones)	Water quality monitoring (community-based, low-tech)	Integrated fish-vegetable (aquaponics) enterprise
	SWC — watershed development	Fish hatchery management and fingerling production	Cold-chain establishment for fresh fish marketing
	Riparian vegetation restoration (buffer strips)	Vegetable production using aquaculture effluent (nutrient cycling)	Fishmeal and fish oil by-product enterprise
	Traditional fishing calendar observance (seasonal closed areas)	Fish smoking, drying, and packaging for local markets	Eco-label certification (sustainable fisheries, MSC-equivalent)
	On-farm drying and salting for fish preservation	Community fisheries by-law development and enforcement	Watershed carbon/ecosystem services payment linkage
	Integrated poultry-fish system (household scale)	Floating cage aquaculture (tilapia, catfish)	Tourism integration (fishing tourism, lake eco-tourism)
	Aquatic plant (water hyacinth) composting for soil amendment	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
10. Livestock Maize Mixed System	Rotational grazing	Enhanced pasture management (rest-rotation)	Commercial maize-livestock integration
	Legume integration	Improved water management systems	Advanced irrigation technologies
	Reduced tillage	Crop diversification (dual-purpose varieties)	Commercial feed production
	Composting (ISFM)	Silage production and storage (plastic-sealed pit silage)	Commercial silage enterprise supplying urban dairy farms
	Manure management	Soil testing for ISFM optimisation in maize fields	Precision irrigation (drip/sprinkler with solar pumping)
	Crop-livestock integration	Improved water harvesting (tied ridges, Zai pits)	Certified organic maize for premium markets
	IPM	Dual-purpose maize varieties (grain + high-quality stover)	Carbon accounting from biogas and reduced-till maize
	SWC (watershed development)	Group-based input supply and output marketing	Integrated dairy-maize system (milk + grain market supply)
	Agroforestry	—	—
	Water management (water harvesting, BBM, mulching, community ponds)	—	—
	Renewable energy (biogas/bioslurry)	—	—
	Forage legume strips between maize plots	—	—
	Stover conservation and chopping for silage	—	—
	On-farm compost quality improvement (C:N ratio management)	—	—
	Maize stover mulching for soil moisture conservation	—	—

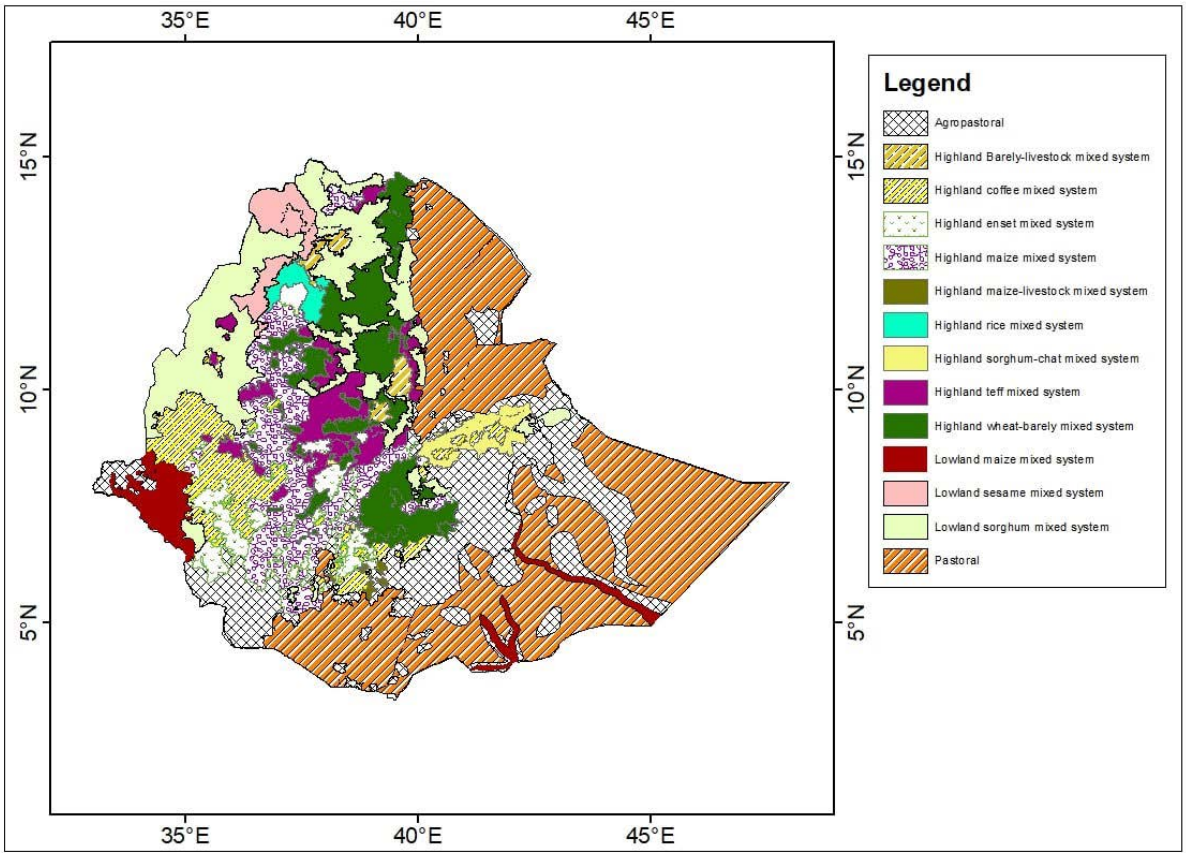
S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
11. Lowland Maize Mixed System	Cover cropping	Crop rotation (systematic)	High-value maize production
	Water management (water harvesting, BBM, mulching, community ponds)	Improved irrigation systems	Agro-processing initiatives
	Intercropping	Soil fertility enhancement with quality inputs	Mechanisation
	IPM (push-pull, improved storage)	Legume rotation (cowpea, groundnut) for N fixation + income	Contract farming
	ISFM	Drip/furrow irrigation with water-use efficiency improvements	Commercial maize drying and milling enterprise
	Reduced tillage	Post-harvest quality management (moisture meters, hermetic storage)	Animal feed manufacturing (maize bran + by-products)
	Cover crop/mulch	Collective marketing through farmer groups/ cooperatives	Precision agriculture (drone scouting, variable-rate application)
	Harvesting at a higher height	—	Aflatoxin-safe value chain certification for institutional markets
	Drought-tolerant maize variety adoption (lowland-adapted)	—	—
	Push-pull with Desmodium and Napier grass borders	—	—
	Tied ridges for in-situ rainwater harvesting	—	—
	Hermetic bag storage (prevent post-harvest loss and aflatoxin)	—	—
	Composting from crop residues + manure for ISFM	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
12. Lowland Sesame Mixed System	Crop rotation with legumes	Sustainable sesame production practices	Commercial sesame production
	IPM	ISFM with quality inputs	Market-driven seed improvement
	Green manures (ISFM)	Improved sesame variety multiplication (registered seed)	Oil processing & value addition
	Water management practices	Soil testing and phosphorus management for sesame	Certified organic sesame for export premium markets
	Cover crop/mulch	Post-harvest cleaning and grading (quality premium access)	Cold-pressed sesame oil enterprise (value addition)
	Drought-tolerant sesame variety selection and seed saving	Collective storage and marketing (reduce trader price suppression)	Traceability system for export (farmer registry, GPS mapping)
	Intercropping sesame with cowpea (yield stability + N fixation)	Aflatoxin and moisture management in sesame storage	Contract farming with oil millers and exporters
	Weed management by timely hand-weeding + mulching	Conservation agriculture adaptation for lowland sesame	Carbon sequestration accounting from rotation + minimum tillage
	Minimum tillage to preserve soil structure in sandy soils	—	Commercial sesame seed multiplication enterprise
	In-situ rainwater harvesting (micro-basins, half-moons)	—	—
	Compost application for organic matter improvement	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
13. Sorghum Mixed System	Crop rotation	Improved sorghum varieties (certified seed)	Commercial sorghum production
	Intercropping	Market linkage development	Value-added processing
	Composting	Biochar from sorghum stover for soil amendment	Contract farming
	Water harvesting	Collective post-harvest handling (threshing, cleaning, storage)	Commercial sorghum malting and brewing enterprise
	IPM (push-pull, improved storage)	Improved push-pull at the field scale with certified Desmodium seed	Sorghum flour milling and animal feed production
	ISFM	—	Certified seed multiplication enterprise (sorghum OPV)
	Reduced tillage	—	Precision agriculture for irrigation scheduling and nutrient management
	Cover crop/mulch	—	Carbon footprint accounting from minimum-till sorghum + biochar
	Harvesting at higher height	—	—
	Crop-livestock integration (forage development, fattening)	—	—
	Early-maturing/drought-tolerant sorghum variety adoption	—	—
	Bird-resistant sorghum variety use (tannin types in high bird-pressure areas)	—	—
	Stover management for mulch and livestock feed	—	—
	Traditional sorghum landrace conservation (in-situ diversity)	—	—

S/No. Farming System	SUBSISTENCE PRACTICES (Foundation — available to all an levels)	SEMI-COMMERCIAL PRACTICES (New additions at this stage)	COMMERCIAL PRACTICES (New additions at this stage)
14. Western Highland Maize Mixed System	Composting (ISFM)	Enhanced composting (quality-controlled)	Seed production enterprise
	Crop rotation	Crop-livestock integration	IPM & precision agriculture
	Intercropping	Soil testing and ISFM optimisation (P, K, micro-nutrients)	Value chain integration
	IPM practices (push-pull, improved storage)	Maize-soybean rotation with improved varieties	Certified hybrid/OPV maize seed multiplication enterprise
	Reduced tillage	Biochar production from maize stover for SOC improvement	Commercial soybean production for oil/meal market
	Cover crop/mulch	Collective input procurement and output marketing	Maize milling and animal feed value-addition enterprise
	Harvesting at a higher height	Forage development (Napier grass, fodder legumes) for livestock	Contract farming with agro-processors and export traders
	Legume intercropping (soybean, cowpea, bean) for N fixation + food	Water harvesting (tied ridges, community ponds)	Precision agriculture (drone scouting, GPS field mapping, VRA)
	Agroforestry integration (Grevillea, Calliandra, Leucaena for fertility)	—	Commercial composting/biofertiliser enterprise
	SWC earthworks (fanya juu terraces, bunds) for highland slopes	—	
	Rhizobia inoculation for soybean/legume intercrop	—	
	On-farm seed saving of improved varieties	—	—
	Crop residue retention and surface mulching	—	—

Figure 6. Farming systems



Source: Adopted from Amede et al. (2017).

5.5. Institutional arrangement and coordination

Regenerative agriculture is inherently cross-cutting, linking soil health, crop and livestock production, water stewardship, and the conservation and restoration of natural resources. This holistic approach follows the principle that "the whole is greater than the sum of its parts," requiring integrated planning and coordinated implementation across agricultural subsectors, including crops, horticulture, livestock, natural resources, water, forestry, and energy. Because outcomes depend on how these elements function together, effective implementation requires institutional arrangements that enable collaboration across sectors while promoting social, economic, and environmental sustainability.

Achieving this integration requires strong intra-institutional coordination within implementing agencies and effective collaboration among government institutions, research and higher education organisations, NGOs, private-sector actors, farmer organisations, and local communities. These partnerships enable knowledge-sharing, joint planning, and coordinated implementation of regenerative practices across landscapes and value chains.

Institutional frameworks should also create an enabling environment for regenerative agriculture by mobilising policy support, financial resources, and technical capacity. This includes incentives for regenerative practices, sustainable financing mechanisms, extension and advisory services, and capacity-building programs for farmers and extension personnel. Strengthening institutional capacity will enable farmers and stakeholders to make informed decisions that support long-term productivity and ecological sustainability.

In addition, effective institutional arrangements require robust monitoring, evaluation, and learning systems with clear indicators to track progress, identify implementation challenges, and support adaptive management. Evidence generated through these systems can inform policy adjustments, strengthen accountability, and support the scaling of successful regenerative agriculture practices.

5.6. Role of the private sector, development partners, and financial institutions

From the perspective of a regenerative agriculture strategy, the involvement of the private sector, development partners, and financial institutions is vital for fostering sustainable agricultural practices that enhance soil health, biodiversity, and community resilience. Each of these stakeholders plays a unique and complementary role in driving the transition towards regenerative agriculture, ensuring that both economic viability and environmental sustainability are prioritised.

5.6.1. Private sector engagement

The private sector is central to scaling regenerative agriculture by developing markets, services, and innovations that make regenerative transitions practical and profitable. Agricultural inputs, mechanisation, irrigation, and advisory services providers can invest in research and product development to supply solutions aligned with regenerative agriculture—such as quality organic amendments and fertilisers, biofertilisers and biopesticides, soil testing services, appropriate mechanisation, and precision tools that improve efficiency and reduce environmental harm. Additionally, private sector actors can promote sustainable sourcing and supply chain practices, encouraging farmers to adopt regenerative methods by offering fair prices for sustainably produced goods. Furthermore, private enterprises can play a pivotal role in market access and value-chain development for regenerative products. By establishing partnerships with farmers and cooperatives, businesses can create incentives for adopting regenerative practices. This could include offering technical assistance, training programs, and access to markets for products that meet sustainability certifications. By aligning their business models with regenerative principles, private sector entities can contribute to the economic empowerment of farming communities while simultaneously addressing environmental challenges.

5.6.2. Development partners

Development partners, including international organisations, NGOs, and bilateral and multilateral agencies, are instrumental in promoting regenerative agriculture through technical support, capacity development, knowledge-sharing, and resource allocation. These partners can provide technical assistance and funding for research initiatives that explore new regenerative practices suitable for local contexts. By facilitating workshops, training sessions, and field demonstrations, development partners can help farmers gain the skills and knowledge needed to implement regenerative techniques effectively.

Additionally, development partners can support the multi-stakeholder platforms that foster collaboration among farmers, researchers, and policymakers. Such platforms can facilitate the exchange of best practices, lessons learned, and successful case studies, promoting a culture of continuous learning and adaptation. By working closely with local communities, development partners can ensure that regenerative agriculture initiatives are culturally relevant and tailored to the specific needs of farmers.

5.6.3. Financial institutions

Financial institutions play a critical role in enabling the transition to regenerative agriculture by providing access to capital and financial products tailored to the needs of farmers adopting sustainable practices. This includes offering low-interest loans, grants, and credit facilities that specifically support investments in regenerative techniques, such as soil restoration, agroforestry, and organic farming. By reducing financial barriers, these institutions can empower farmers to implement practices that improve long-term productivity and sustainability.

Moreover, financial institutions can develop risk-sharing mechanisms and insurance products that protect farmers against the uncertainties associated with transitioning to regenerative practices. By mitigating financial risks, these institutions can encourage more farmers to adopt innovative methods that may initially seem daunting or financially unsustainable. Additionally, they can play a role in promoting impact investing, where investors seek financial returns alongside positive environmental and social outcomes, further driving investment in regenerative agriculture.

In summary, the roles of the private sector, development partners, and financial institutions are integral to the success of a regenerative agriculture strategy. By fostering collaboration and aligning their efforts, these stakeholders can create an enabling environment that supports farmers in transitioning to regenerative practices. This collective action will not only enhance agricultural productivity and resilience but also contribute to the overall health of ecosystems and communities, paving the way for a sustainable agricultural future.

5.7. Coordination and cross-sectoral alignment

Effective implementation of a national regenerative agriculture strategy depends on strong coordination across institutions responsible for agricultural land, water, biodiversity, food systems, research, extension, environmental protection, and social development. Regenerative agriculture sits at the intersection of many mandates; therefore, coherent action requires well-defined mechanisms for intra-ministerial, inter-ministerial, and multi-level coordination. The following domains outline how institutional collaboration can be structured to ensure coherence, reduce duplication, and accelerate systemic transformation.

5.7.1. Intra-ministry coordination within the Ministry of Agriculture

Regenerative agriculture touches all core mandates of the Ministry of Agriculture (MoA). Strong internal coordination is essential to align planning, budgets, extension services, research linkages, data generation, and field implementation.

Within the MoA, several directorates and state minister offices play critical and interconnected roles. The Agriculture and Horticulture Development Sector State Minister Office leads crop production systems, agronomy, plant protection, and horticulture development. This office plays a central role in promoting diversified cropping systems, improved soil fertility management, conservation agriculture, and regenerative farming practices.

Since regenerative agriculture requires integrating farm-level practices with landscape-level restoration, close coordination with the Natural Resource Development Sector State Minister Office is essential, as this office oversees watershed management, soil and water conservation, land restoration, and sustainable land management programs.

The Livestock and Fisheries Resource Development Sector State Minister Office contributes to regenerative systems through improved grazing management, manure recycling, rangeland restoration, and integrated crop-livestock systems. Similarly, the Agricultural Investment and Input Supply Sector State Minister Office plays a key role in ensuring that input supply systems—including biological inputs, improved seeds, organic fertilisers, irrigation technologies, and sustainable mechanisation—support regenerative pathways rather than high external-input systems.

Food system outcomes are also closely linked to regenerative agriculture. The Food Security Coordination Office and the Food and Nutrition Office ensure that regenerative practices contribute to improved household nutrition, resilience, and diversified food availability. The Policy and Strategy Study and Research Office provides strategic guidance, ensuring that regulations, guidelines, and policy frameworks across the ministry incorporate the principles of regenerative agriculture.

For effective implementation, these MoA units should establish shared work plans, harmonised extension messages, joint technical working groups, and coordinated monitoring indicators that support a coherent regenerative agriculture program across regions and woredas.

5.7.2. Inter-ministerial coordination across the government system

Regenerative agriculture is inherently multi-sectoral. Soil health, biodiversity conservation, water governance, climate adaptation, food systems, and rural livelihoods all shape the enabling environment for regenerative transitions. Effective implementation therefore requires structured coordination between the Ministry of Agriculture and other relevant ministries and national institutions.

Table 7 summarises key institutions and their roles in supporting regenerative agriculture.

Table 7. Institutional roles in supporting regenerative agriculture

Institution	Role in regenerative agriculture
Ministry of Agriculture	Leads policy formulation, extension services, and programs promoting soil conservation, soil health, and sustainable land management.
Ethiopian Biodiversity Institute	Supports biodiversity conservation, agroforestry development, and the protection of genetic resources.
National Agricultural Research System	Conducts research on soil health, climate-resilient crops, agroforestry systems, and regenerative farming practices.
Ethiopian Forest Development	Promotes landscape restoration, forest conservation, and agroforestry development.
Ministry of Education	Integrates regenerative agriculture concepts into education and training programs.
Ministry of Water and Energy	Supports water-efficient irrigation systems and renewable energy solutions.

Ministry of Irrigation and Lowlands	Promotes irrigation development and sustainable farming in lowland areas.
Ministry of Health	Links regenerative agriculture to nutrition-sensitive agriculture and improved food quality.
Ministry of Trade and Regional Integration	Facilitates market access and trade policies for sustainably produced agricultural products.
Ministry of Planning and Development	Aligns regenerative agriculture with national development strategies and climate commitments.
Environmental Protection Authority	Ensures environmental compliance and supports ecosystem restoration initiatives.
Ministry of Labour and Skills	Supports green skills development and employment related to regenerative agriculture.
Ministry of Innovation and Technology	Promotes innovation, digital agriculture, and technological solutions for sustainable farming.
Ministry of Women and Social Affairs	Promotes inclusive development and supports women and vulnerable groups in regenerative value chains.
Agricultural Transformation Institute (ATI)	Integrates context-specific regenerative agricultural practices into the Agricultural Commercialisation Clusters (ACC) and strengthens research and extension linkages, multi-stakeholder coordination, and capacity building.
Ministry of Finance	Allocates budget and supports coordination of finance mobilisation from development partners, climate funds, and private sector investment.
Ethiopian Agricultural Authority	Sets and enforces standards for regenerative agricultural inputs and practices, including seeds, soil amendments, bio-fertilizers, and other technologies.
Ethiopian Cooperative Commission	Strengthens the capacity of cooperatives and mobilises them to improve farmers' access to agricultural inputs, facilitate market linkages, and support collective marketing and value addition

To strengthen collaboration across institutions, the government may establish inter-ministerial coordination mechanisms, such as high-level steering committees and thematic technical working groups focusing on soil health, water management, markets, climate action, and nutrition. Aligning planning cycles, budgets, and monitoring indicators across ministries will help ensure coherent implementation and reduce institutional fragmentation.

5.7.3. National and regional regenerative agriculture platforms

Coordination also requires mechanisms that link national policy frameworks with regional implementation and local innovation. National and regional regenerative agriculture platforms can serve as multi-stakeholder forums that bring together government institutions, research organisations, private-sector actors, civil society organisations, farmer organisations, and development partners.

At the national level, such platforms can provide strategic policy guidance, mobilise financing, harmonise technical standards, and coordinate large-scale programs across regions. They can also facilitate knowledge-sharing, document lessons from pilot initiatives, and support alignment

with national frameworks such as the Climate Resilient Green Economy (CRGE) Strategy, the nationally determined contributions (NDCs), and the National Adaptation Plan.

At the regional level, platforms support operational coordination and ensure that regenerative agriculture interventions are adapted to local agroecological conditions, institutional capacities, gender dynamics, and livelihood systems. These platforms can strengthen coordination among extension services, research institutions, NGOs, and private-sector actors while enabling farmers and cooperatives to participate in planning and decision-making processes.

Together, these national and regional platforms strengthen vertical coordination between federal, regional, and local institutions while also promoting horizontal collaboration across sectors. This multi-level coordination architecture is essential for achieving a coherent, scalable, and locally responsive regenerative agriculture transformation.

5.8. Support package

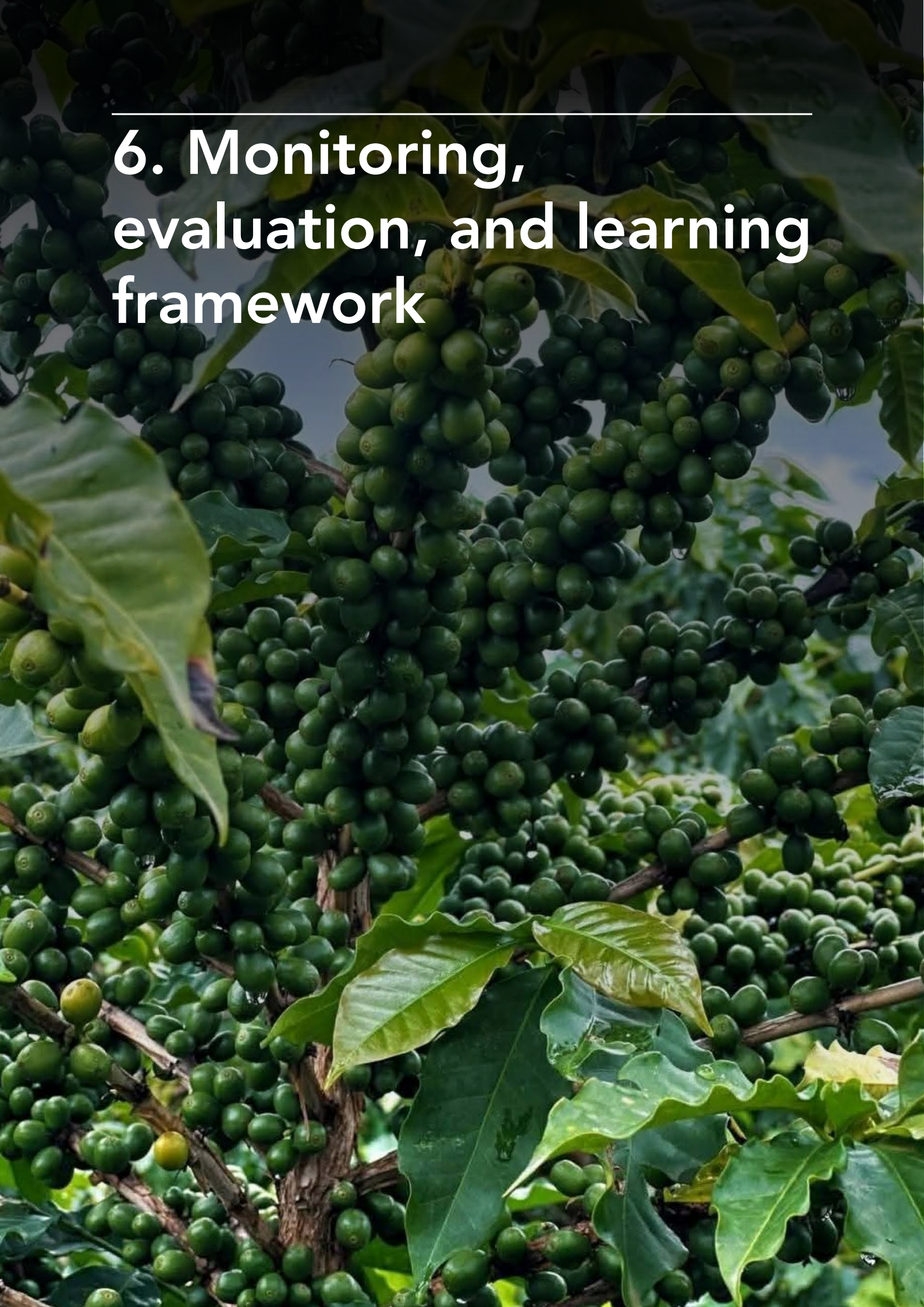
Implementing regenerative agriculture (RA) requires a well-planned support system that helps farmers manage the transition from conventional to regenerative practices. Many RA interventions—such as crop rotation, adopting conservation tillage, establishing agroforestry systems, or rehabilitating degraded land—provide substantial long-term benefits, but they may involve short-term trade-offs. A comprehensive support package is therefore essential to lower risks, improve financial viability, and accelerate adoption. This package brings together financial instruments, risk mitigation tools, market incentives, and enabling policies that create a conducive environment for farmers, cooperatives, and private sector actors engaged in regenerative transitions.

One key instrument is a co-essential loan scheme, offering flexible, low-interest financing tailored specifically to regenerative activities. These loans support investments in soil health (e.g., composting structures, soil cover technologies), water management (e.g., micro-catchments, terraces), and biological diversification (e.g., tree planting, improved livestock integration). Aligning repayment schedules with the long-term nature of ecological recovery is crucial, as demonstrated in India's watershed and agroforestry programs, where concessional loans significantly reduced farmers' initial financial burden (Rathore and Chaturvedi 2020).

Agricultural insurance is another vital tool. Weather-index insurance, crop insurance, and livestock insurance can help farmers remain resilient during the vulnerable early years of transition. Experiences from Kenya and Rwanda show that insurance products linked to climate-smart agriculture enhance farmers' willingness to adopt new practices by reducing perceived risks (Kogo et al. 2021).

Engaging the private sector is equally important. De-risking mechanisms—such as guarantee schemes, blended finance, and matching grants—can encourage agribusinesses and cooperatives to invest in regenerative supply chains, compost production, agroforestry processing, soil testing services, and sustainable livestock systems. Ethiopia can learn from Zambia's experience, where blended finance and matching grants significantly stimulated private investments in climate-smart agriculture and regenerative value chains (Musonda et al. 2021).

Collectively, these instruments form a transition support package that reduces the hurdles associated with regenerative agriculture adoption. By lowering financial risks, increasing access to capital, and incentivising private sector participation, the support package ensures that regenerative agriculture is both feasible and attractive for farmers and businesses. Over time, these measures help build a resilient, inclusive, and ecologically regenerative food system that benefits communities, landscapes, and the national economy.



6. Monitoring, evaluation, and learning framework

Regenerative agriculture aims to improve environmental and social outcomes, including soil health, biodiversity, water quality, and carbon sequestration, while maintaining or enhancing farm productivity and profitability. An effective monitoring, evaluation, and learning framework is crucial for tracking progress, demonstrating results, understanding what works (and what does not), and fostering a continuous learning cycle to refine and scale regenerative practices.

Table 8. Regenerative agriculture indicator framework

Indicator	Description	Measurement	Expected outcome/ contribution
Soil organic matter (SOM)	The proportion of organic material in the soil that supports nutrient cycling, water retention, soil structure, and microbial activity.	Percentage of SOM measured through standard laboratory soil analysis (e.g., Walkley–Black or dry combustion).	Increased SOM reflects improved soil health and carbon sequestration resulting from composting, cover crops, residue retention, and reduced disturbance.
Diversification index	Degree of biological diversity within the farming system, including crops, trees, livestock, and associated biodiversity.	Shannon–Wiener or Simpson Index applied to crop species and land-use types; farm-level crop and enterprise counts.	Greater diversification improves resilience, pest regulation, nutrient cycling, income stability, and dietary options.
Agricultural productivity	Quantity of crop output per unit area, reflecting system productivity.	Tons per hectare (t/ha) or kilograms per hectare (kg/ha) from farmer records or crop cuts.	Short-term yield stability and medium- to long-term yield improvement as soil fertility and ecosystem functions recover.
Water quality	Status of surface and groundwater affected by agricultural practices.	Field or laboratory analysis of pH, nitrates, phosphates, sediment load, and pesticide residues; water quality index.	Improved water quality due to reduced runoff, erosion, and nutrient leaching from healthier soils and buffer practices.
Greenhouse gas balance	Net emissions or sequestration of CO_2, N_2O, and CH_4 from farming activities.	kg CO_2-equivalent per hectare per year using activity data and emission factors or models.	Reduced emissions and increased sequestration contribute to climate mitigation and climate-resilient food systems.
Nutrient balance	Difference between nutrient inputs and outputs, indicating efficiency and sustainability of nutrient use.	kg/ha balance for N, P, and K calculated from fertiliser, manure, crop removal, and losses.	Improved nutrient efficiency, reduced dependency on external inputs, and lower environmental losses.

Land use pattern	Spatial arrangement and proportion of land under different uses within the farm and landscape.	GIS mapping, satellite imagery, or farm mapping (% under crops, pasture, trees, buffers).	More multifunctional landscapes with improved habitat connectivity, ecosystem services, and production diversity.
Animal productivity	Livestock output efficiency within integrated crop-livestock systems.	Milk yield, liveweight gain, offtake rates, or reproduction indicators per animal or per hectare.	Improved productivity and animal health through better forage quality, stall feeding, and nutrient recycling.
Soil erosion	Loss of topsoil due to water or wind erosion.	Estimated using RUSLE/USLE models, erosion plots, or visual field indicators.	Reduced erosion through soil cover, contouring, agroforestry, and improved soil structure.
Dietary diversity score	Variety of food groups consumed by household members, reflecting nutrition quality and food system diversity.	Household dietary diversity score or minimum dietary diversity based on 24-hour recall.	Improved household nutrition outcomes linked to diversified production, home gardens, livestock products, and income stability.
Adoption index	Extent and depth of farmer uptake of regenerative practices.	Percentage or weighted index of farmers adopting practices (e.g., composting, intercropping, agroforestry).	Demonstrates scaling readiness and effectiveness of extension, incentives, and social learning.
Social and economic resilience index	Composite measure of livelihood wellbeing, equity, and resilience in regenerative transitions.	Mixed methods: surveys, focus groups, and interviews measuring income, food security, dietary diversity, gender equity, market access, and social capital.	Enhanced food security, improved nutrition, stronger incomes, women's empowerment, and resilience to climate and market shocks.

Social capital and collective action	Degree of collaboration, trust, and participation among farmers and community institutions in managing regenerative practices such as watershed management, agroforestry, grazing systems, and knowledge exchange.	Participation rate in farmer groups, cooperatives, watershed committees, or producer organisations; number of collective activities (e.g., communal SWC, tree planting); survey-based social capital indices.	Stronger farmer networks, improved knowledge-sharing, enhanced collective natural resource management, and more effective scaling of regenerative agriculture practices.
Women's empowerment and gender equity	The degree to which women have equitable access to resources, decision-making power, and benefits from regenerative agriculture practices and value chains.	Indicators such as the Women's Empowerment in Agriculture Index, proportion of women participating in training and decision-making, access to land, inputs, credit, and leadership roles in farmer organisations or cooperatives.	Increased participation of women in farm and community decision-making, improved access to productive resources and services, enhanced livelihood opportunities, and more equitable distribution of benefits from regenerative agriculture.

7. Risks and mitigation measures



7.1. Strategic risks

The transition to regenerative agriculture at a national scale in Ethiopia faces a set of interrelated structural, institutional, economic, and behavioural risks. Addressing these risks is essential to ensure the effective implementation, equitable adoption, and long-term sustainability of the strategy.

Limited and misaligned agricultural finance represents a major systemic risk. A large proportion of smallholder farmers lack access to affordable, long-term financing mechanisms that align with the investment profile of regenerative agriculture, which often involves upfront costs and delayed returns. Existing agricultural credit systems and subsidy schemes are largely oriented towards short-term productivity gains and external input use, limiting farmers' ability to invest in soil regeneration, agroforestry, organic nutrient management, and diversified farming systems.

Weak and underdeveloped market incentives for regenerative products pose a further risk. National and regional markets currently do not sufficiently differentiate or reward regenerative production through price premiums, preferential procurement, or certification mechanisms. The absence of structured market linkages reduces the economic attractiveness of regenerative practices and constrains private-sector engagement across value chains.

Competing uses of biomass and organic resources constitute a significant constraint within Ethiopia's mixed farming systems. Organic inputs such as crop residues and manure play multiple roles in rural livelihoods, including as household energy sources and livestock feed. Without alternative energy solutions and integrated resource management approaches, the availability of organic matter for soil restoration remains limited, undermining soil fertility improvement objectives.

Limited awareness, skills, and behavioural change capacity across the agricultural system represents another critical risk. While regenerative agriculture offers long-term productivity, resilience, and environmental benefits, these advantages are not yet widely understood by farmers, extension agents, policymakers, and market actors. Prevailing perceptions favour conventional, input-intensive approaches, slowing behavioural change and innovation uptake.

Institutional and regulatory gaps further constrain the effective scaling of regenerative agriculture. In particular, the absence of nationally harmonised quality standards, certification frameworks, and regulatory oversight for organic fertilisers and bio-inputs reduces farmer confidence, limits private-sector investment, and weakens the credibility of regenerative practices.

Climate variability and increasing systemic shocks amplify these risks. Without effective early warning systems, climate-informed advisory services, and adaptive planning mechanisms, farmers remain highly exposed to droughts, floods, pest outbreaks, and market volatility, which can undermine confidence in transitioning to regenerative systems.

7.2. Risk mitigation and enabling measures

To mitigate these strategic risks, the Government of Ethiopia will establish a coherent enabling framework that integrates institutional coordination, targeted investment, and market development to support the nationwide transition to regenerative agriculture.

Aligning financial systems with regenerative investment needs will be a priority. This includes the development of tailored financial instruments such as concessional credit, blended finance, results-based incentives, and climate finance mechanisms that recognise the long-term public benefits of soil restoration, biodiversity enhancement, and climate resilience. Regenerative agriculture will be integrated into national agricultural financing, safety net programs, and climate funding windows to reduce adoption risks for smallholder farmers.

Strengthening market systems and value-chain incentives will be central to accelerating adoption. The strategy will promote the development of domestic and export markets for regenerative products through standards development, certification schemes, public and institutional procurement, and partnerships with the private sector. These measures will ensure that regenerative practices translate into tangible economic returns for producers.

Addressing biomass competition through integrated resource management will be pursued by promoting alternative household energy solutions, improved feed systems, and circular nutrient management approaches. The expansion of biogas, renewable energy technologies, and improved forage production will reduce pressure on organic soil inputs while enhancing livelihood resilience.

Transforming extension and advisory services will be a cornerstone of risk mitigation. The national extension system will be strengthened to deliver regenerative agriculture knowledge, climate-smart advisory services, and behaviour-change communication tailored to diverse agroecological zones and farming systems. Capacity-building will target farmers, extension agents, development actors, and policymakers, with a strong emphasis on experiential learning, demonstration sites, and farmer-to-farmer exchange.

Establishing regulatory and quality assurance frameworks will enhance trust and investment in regenerative inputs and practices. National standards for organic fertilisers, bio-inputs, and regenerative production systems will be developed and enforced in collaboration with relevant regulatory authorities, research institutions, and the private sector.

Strengthening climate risk management and early warning systems will support adaptive decision-making. Climate, pest, and market early warning information will be integrated into extension and advisory services, enabling farmers and institutions to anticipate and respond to shocks while safeguarding regenerative investments.

Ensuring inclusive and differentiated implementation will underpin all mitigation measures. The strategy will explicitly address the needs of women, youth, pastoral and agropastoral communities, and resource-poor households, ensuring equitable access to finance, knowledge, markets, and decision-making processes.

8. Strategy implementation action plan



Tables 9–18 detail the implementation plan for the National Regenerative Agriculture Strategy, outlining specific interventions, institutional roles and responsibilities, and implementation timelines. The implementation of this strategy will be carried out in three phases: Phase I (2026–2028), Phase II (2029–2032), and Phase III (2033–2036).

Table 9. Promote crop and livestock regenerative agriculture practices

No.	Main interventions	Specific activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
1.1	Diversified cropping systems	Intercropping, rotation, pulses, training	Ministry of Agriculture	ATI, EIAR, RARIs, CGIAR, NGOs, regional BoAs	✓	✓✓	✓
1.2	Agroforestry systems	Multipurpose trees, value chains	Ethiopian Forest Development	MoA, regional BoAs, EIAR, NGOs, EBI	✓	✓✓	✓✓
1.3	Crop-livestock integration	Fodder, manure, composting	Ministry of Agriculture	Regional BoAs, EIAR, NGOs, CGIAR	✓	✓✓	✓✓
1.4	Integrated pest management	Biopesticides, safe use	Ministry of Agriculture	ATI, EIAR, RARIs, CGIAR, NGOs	✓	✓✓	✓✓

Table 10. Enhance soil fertility and health

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
2.1	ISFM	Soil testing, organic fertilisers, inorganic fertilizers, legumes	Ministry of Agriculture	ATI, EIAR, RARIs, CGIAR, private sector, NGOs	✓✓	✓✓	✓
2.2	Soil acidity management	Lime, tolerant varieties	Ministry of Agriculture	EIAR, regional BoAs, NGOs	✓✓	✓✓	✓
2.3	Soil salinity management	Drainage, salt-tolerant crops	Ministry of Irrigation and Lowlands	MoA, EIAR, regional BoAs, NGOs	✓	✓✓	✓✓
2.4	Vertisol management	Drainage, water management	Ministry of Agriculture	ATI, EIAR, RARIs, CGIAR	✓	✓✓	✓✓
2.5	Soil and water conservation	Watershed management	Ministry of Agriculture	ATI, EIAR, RARIs, CGIAR, EPA	✓	✓✓	✓✓

Table 11. Enhance sustainable agricultural water management

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
3.1	Efficient irrigation	Drip, solar irrigation	Ministry of Water and Energy	MoA, ATI, EIAR, CGIAR, private sector	✓✓	✓✓	✓
3.2	Moisture conservation	Mulching, bunds	Ministry of Agriculture	Regional BoAs, EIAR, NGOs	✓✓	✓✓	✓
3.3	Water harvesting	Ponds, micro-catchments	Ministry of Irrigation and Lowlands	MoA, regional BoAs, NGOs	✓	✓✓	✓✓
3.4	Drainage systems	Field drainage	Ministry of Irrigation and Lowlands	MoA, ATI, EIAR, RARIs	✓	✓✓	✓✓

Table 12. Enhance climate change adaptation and mitigation

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
4.1	Climate-resilient crops	Improved varieties	EIAR (NARS)	MoA, RARIs, CGIAR, NGOs	✓✓	✓✓	✓
4.2	Climate info systems	Early warning, weather	Ministry of Water and Energy	MoA, ATI, EIAR, NGOs	✓	✓✓	✓✓
4.3	Agricultural insurance	Index insurance	Ministry of Planning and Development	MoA, ATI, private insurers, NGOs	✓	✓✓	✓✓
4.4	Carbon trading	Measuring and verifying carbon emissions	Ministry of Agriculture	Regional BoAs, ATI, EIAR, CGIAR, private sector	✓	✓✓	✓✓

Table 13. Promote renewable energy

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
5.1	Solar irrigation	Solar pumps	Ministry of Water and Energy	MoA, ATI, private sector, NGOs	✓	✓✓	✓✓
5.2	Cold storage	Solar cold chains	Ministry of Trade and Regional Integration	MoA, ATI, private sector, NGOs	✓	✓✓	✓✓
5.3	Biogas	Digesters	Ministry of Water and Energy	MoA, NGOs, private sector	✓	✓✓	✓✓
5.4	Energy-saving stoves	Production and distribution	Ministry of Labour and Skills	MoA, NGOs, private sector	✓	✓✓	✓✓

Table 14. Strengthen research and extension

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
6.1	Disseminate RA packages	Extension integration	Ministry of Agriculture	ATI, EIAR, RARIs, NGOs, private sector	✓✓	✓✓	✓
6.2	Generate technologies	Bio-inputs, mechanisation	EIAR (NARIs)	ATI, CGIAR, universities, private sector	✓	✓✓	✓✓
6.3	Capacity development	Training	Ministry of Education	MoA, ATI, EIAR, NGOs	✓	✓✓	✓✓
6.4	Digital advisory	Platforms	Ministry of Innovation and Technology	ATI, MoA, private tech firms	✓	✓✓	✓✓
6.5	Platforms (MSPs)	Innovation platforms	Agricultural Transformation Institute	MoA, EIAR, NGOs, private sector	✓	✓✓	✓✓
6.6	Sectoral integration	Coordination	Ministry of Planning and Development	MoA, ATI, EIAR, ministries	✓	✓✓	✓✓

Table 15. Strengthen Sociocultural innovation

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
7.1	Indigenous knowledge	Documentation	Ethiopian Biodiversity Institute	MoA, EIAR, NGOs, RARIS	✓✓	✓✓	✓
7.2	Collective action	Community rules	Ministry of Agriculture	ATI, NGOs, local institutions	✓	✓✓	✓✓
7.3	Behaviour change	Media, demos	Ministry of Agriculture	ATI, NGOs	✓	✓✓	✓✓
7.4	Women and youth	Inclusive training	Ministry of Women and Social Affairs	MoA, ATI, NGOs, private sector	✓	✓✓	✓✓
7.5	Social accountability and trust among farmers	Training and demonstrations	Ministry of Agriculture	Regional BoAs, ATI, EIAR, NGOs, RARIS	✓✓	✓✓	✓

Table 16. Strengthen postharvest management systems

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
8.1	Improved postharvest storage technologies	Training, demonstrations, linkages	Ministry of Agriculture	EIAR, NGOs, RARIs, Regional BoAs,	✓✓	✓✓	✓
8.2	Storage and aggregation facilities	Training, demonstrations, facilitate linkages	Ministry of Agriculture	EIAR, NGOs, RARIs, Regional BoAs,	✓✓	✓✓	✓
8.3	Drying and handling technologies	Training, demonstrations, facilitate linkages	Ministry of Agriculture	EIAR, NGOs, RARIs, Regional BoAs,	✓✓	✓✓	✓
8.4	Processing equipment	Training, demonstrations, facilitate linkages	Ministry of Agriculture	EIAR, NGOs, RARIs, Regional BoAs,	✓	✓✓	✓✓
8.5	Capacity building	Training, demonstrations, Experience sharing visits	Ministry of Agriculture	EIAR, NGOs, RARIs, Regional BoAs,	✓✓	✓✓	✓✓

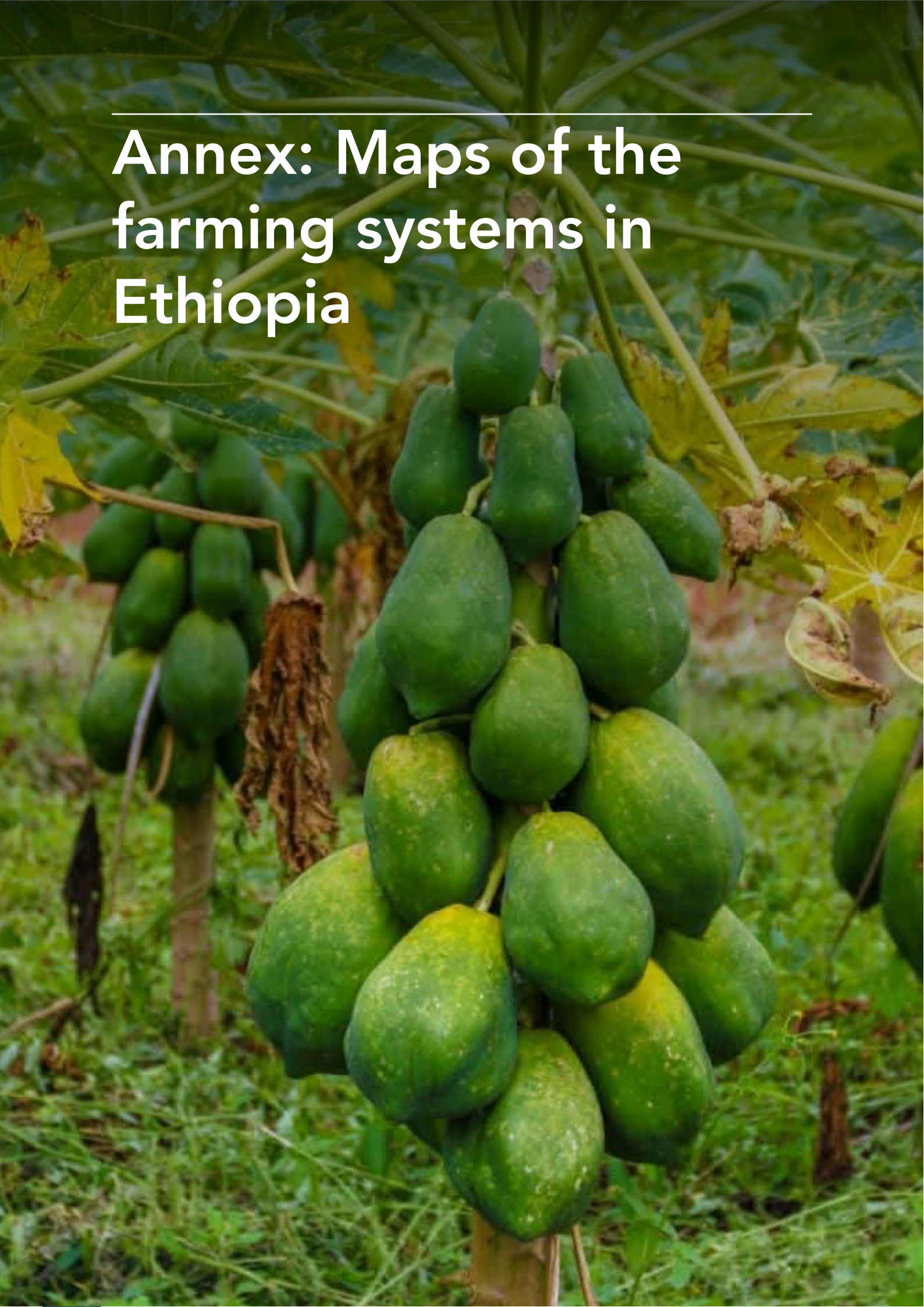
Table 17. Establish sustainable market systems and linkages

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
9.1	Strengthen farmers' cooperatives	Training, facilitate market linkages, market information	Ethiopia Cooperative Commission	MoA, Regional BoAs, Regional Cooperative Agencies	✓✓	✓✓	✓
9.2	Market linkages and contract farming	Training, facilitate market linkages	Ethiopia Cooperative Commission	MoA, Regional BoAs, Regional Cooperative Agencies	✓✓	✓✓	✓✓
9.3	Market information systems	Training, digital platforms	Ethiopia Cooperative Commission	MoA, Regional BoAs, Regional Cooperative Agencies	✓✓	✓✓	✓✓
9.4	Capacity building	Training, demonstrations, Experience sharing visits	Ethiopia Cooperative Commission	MoA, Regional BoAs, Regional Cooperative Agencies	✓✓	✓✓	✓✓

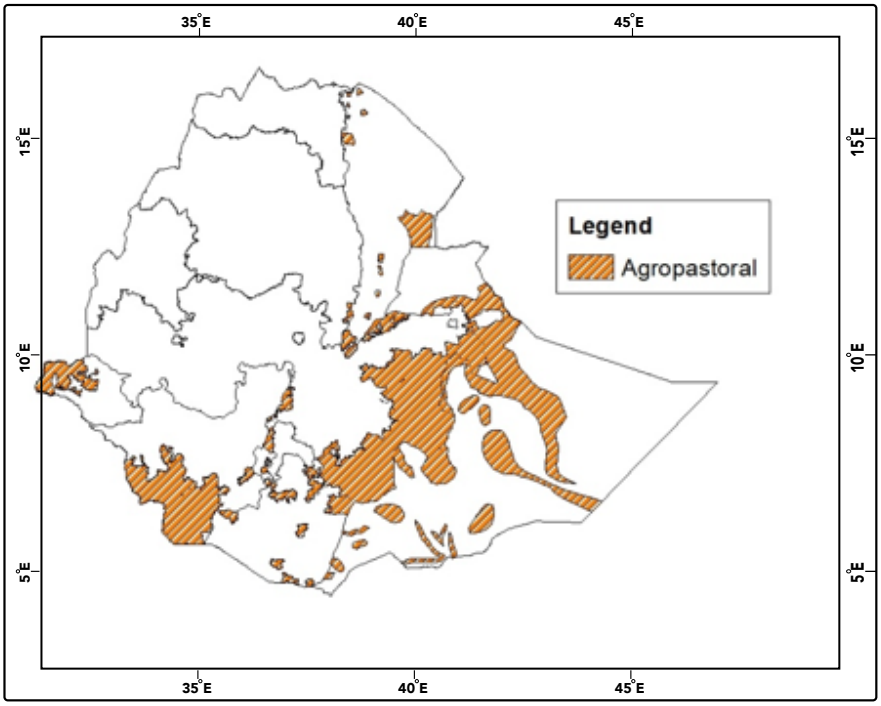
Table 18. Cross-cutting institutionalisation

No.	Main interventions	Key activities	Lead institution	Collaborators	Phase I	Phase II	Phase III
10.1	Gender and youth	Inclusion	Ministry of Agriculture	MoA, ATI, NGOs	✓✓	✓✓	✓
10.2	Nutrition-sensitive RA	Diet diversity	Ministry of Agriculture	MoA, EIAR, NGOs, Regional BoAs, RARIs, private companies	✓	✓✓	✓✓
10.3	Service delivery	Extension and inputs	Ministry of Agriculture	ATI, private sector, NGOs	✓	✓✓	✓✓
10.4	Seed systems	Seed supply	Ministry of Agriculture	EIAR, private seed companies, NGOs	✓	✓✓	✓✓
10.5	Financing	Credit systems	Ministry of Finance	MoA, EIAR, NGOs, Regional BoAs, RARIs,	✓	✓✓	✓✓
10.6	Coordination	Platforms	Agricultural Transformation Institute	MoA, EIAR, NGOs, Regional BoAs, RARIs,	✓	✓✓	✓✓
10.7	Data systems	RA database	Ministry of Innovation and Technology	MoA, EIAR, NGOs, Regional BoAs, RARIs,	✓	✓✓	✓✓

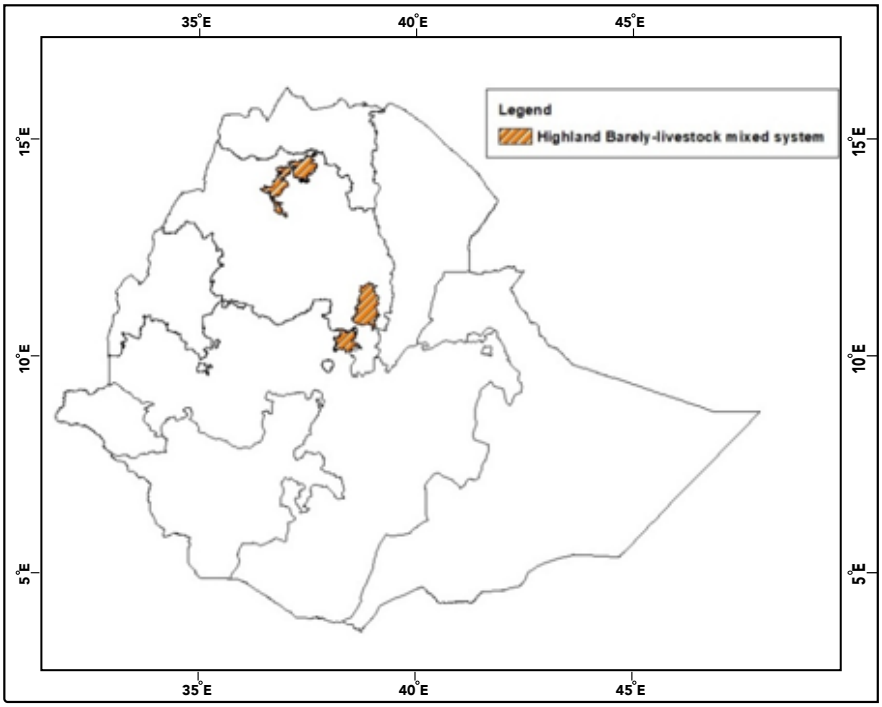
Annex: Maps of the farming systems in Ethiopia



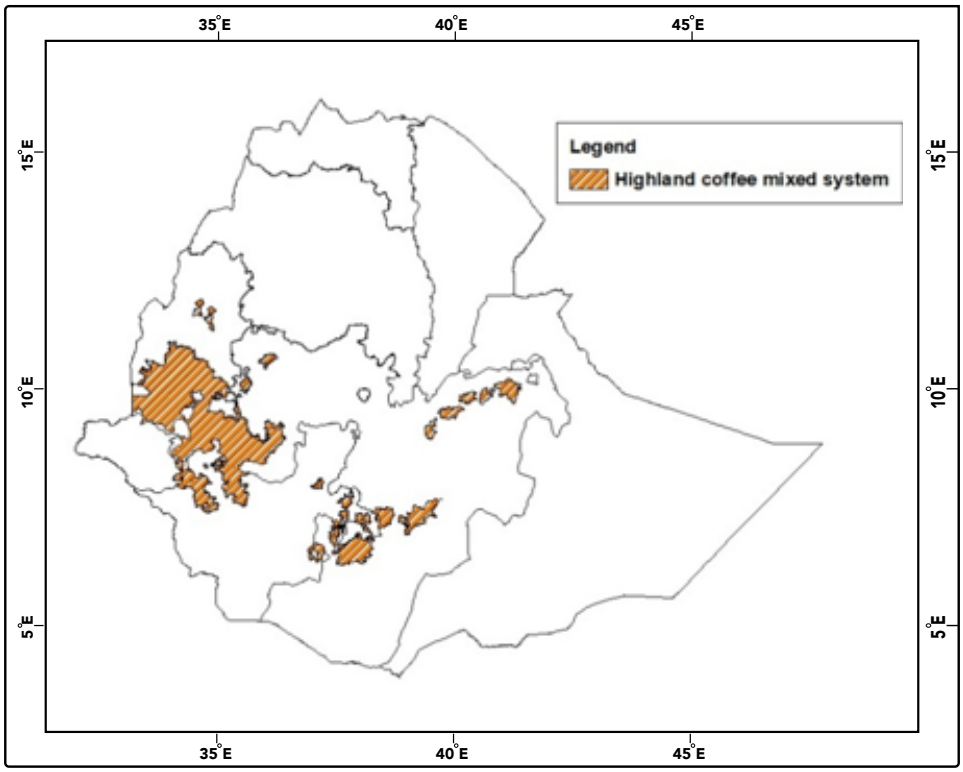
1. Agropastoral farming system



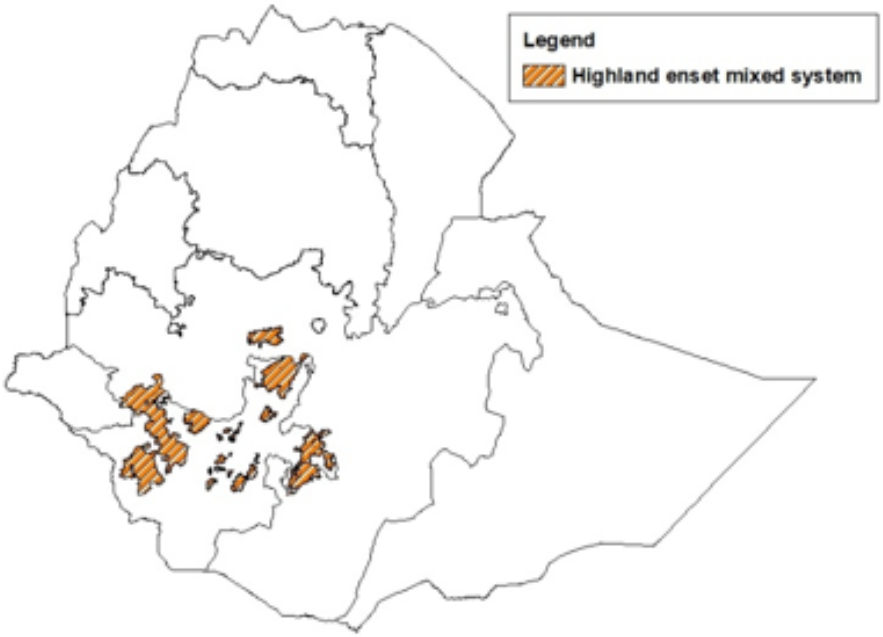
2. Highland-barley-livestock mixed system



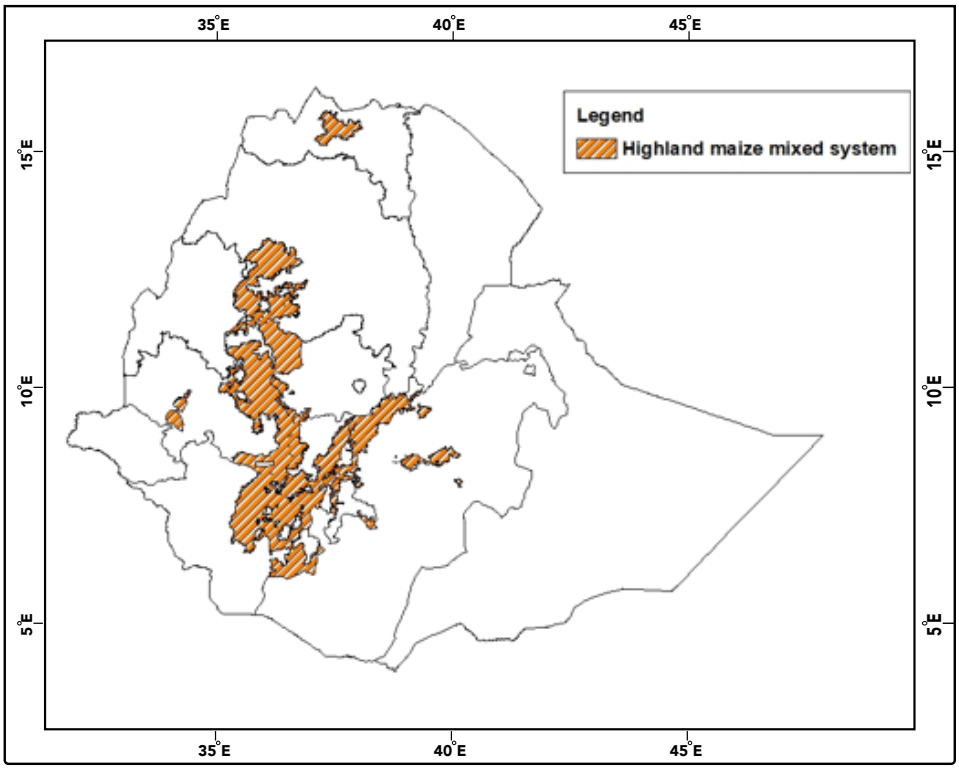
3. Highland coffee mixed system



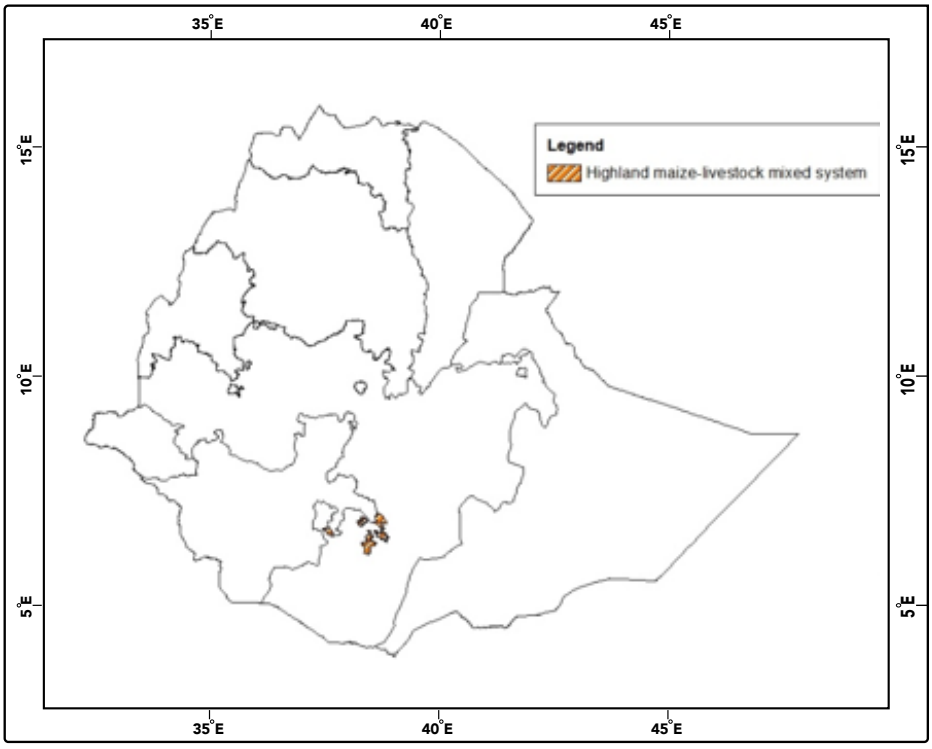
4. Highland enset mixed system



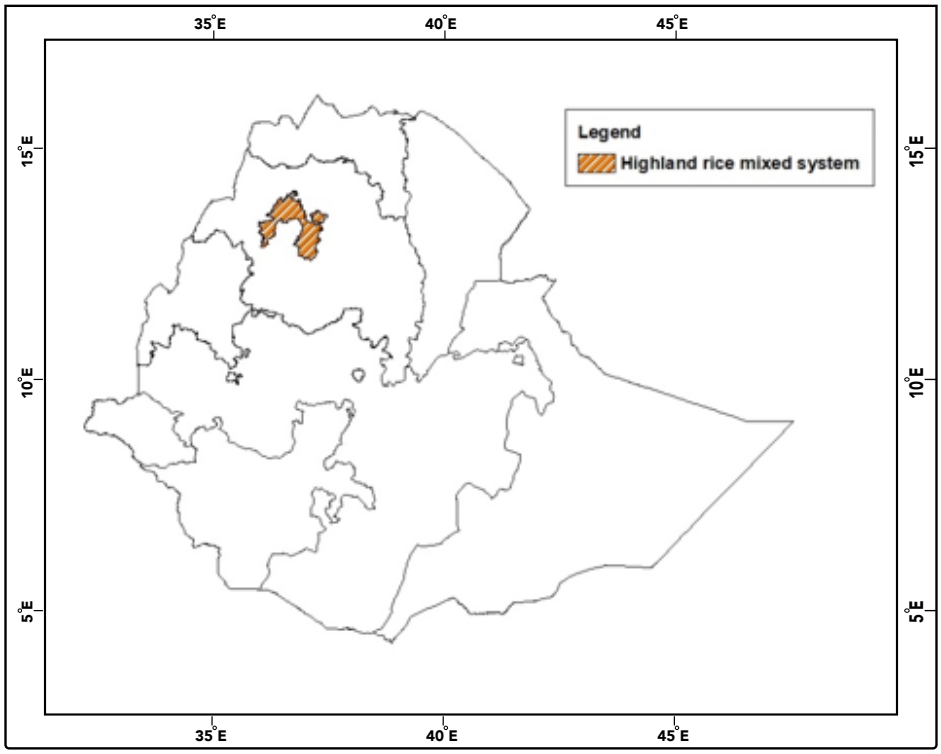
5. Highland maize mixed system



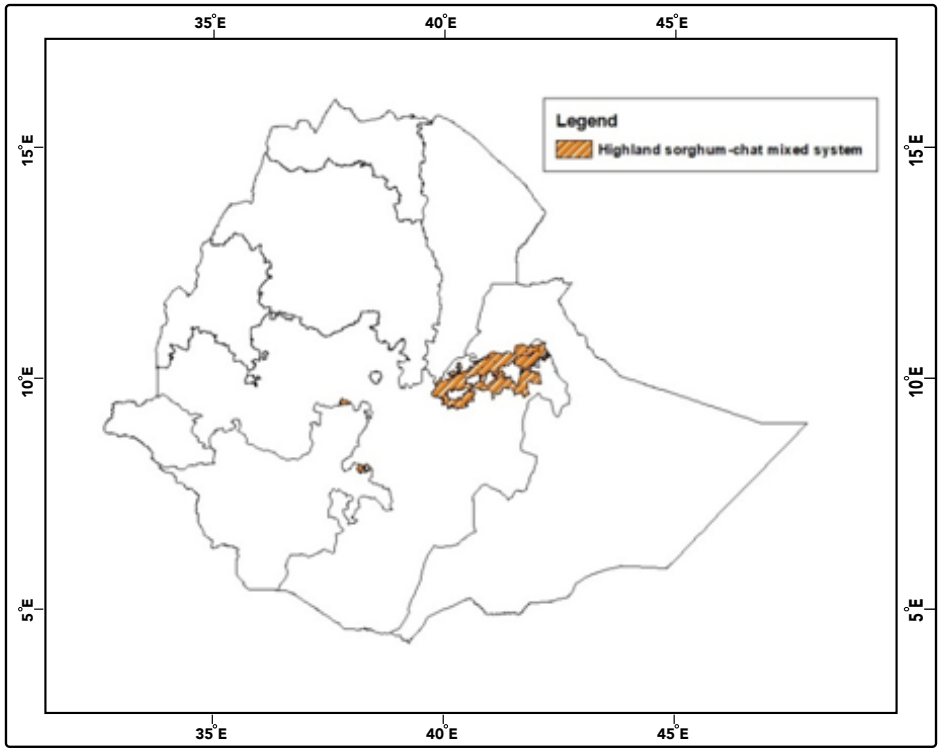
6. Highland Mize-Livestock Mixed System



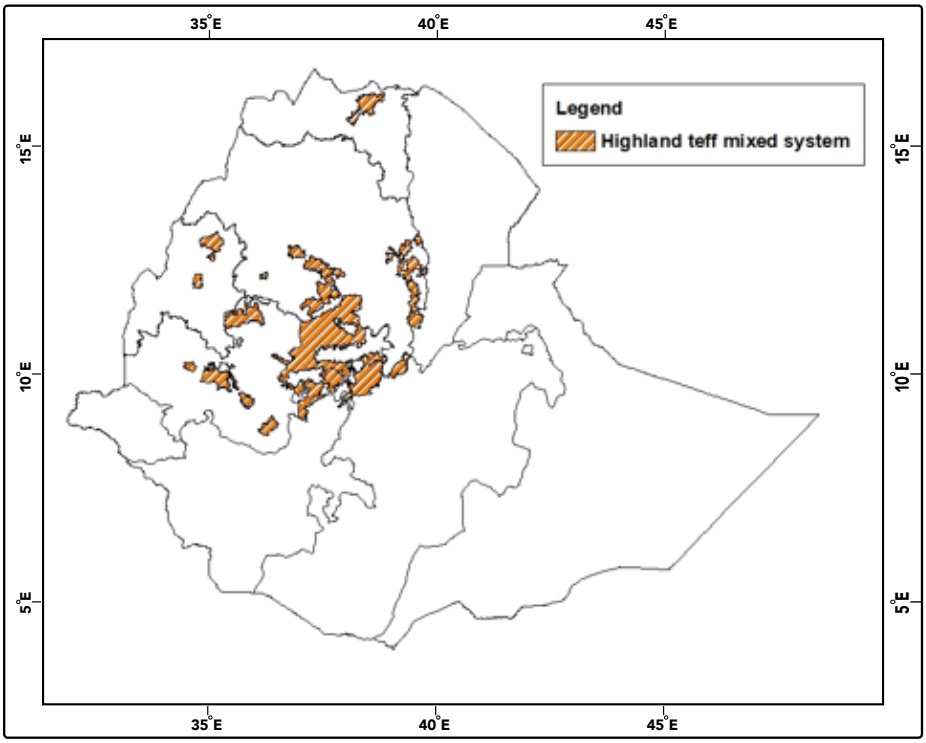
7. Highland Rice Mixed System



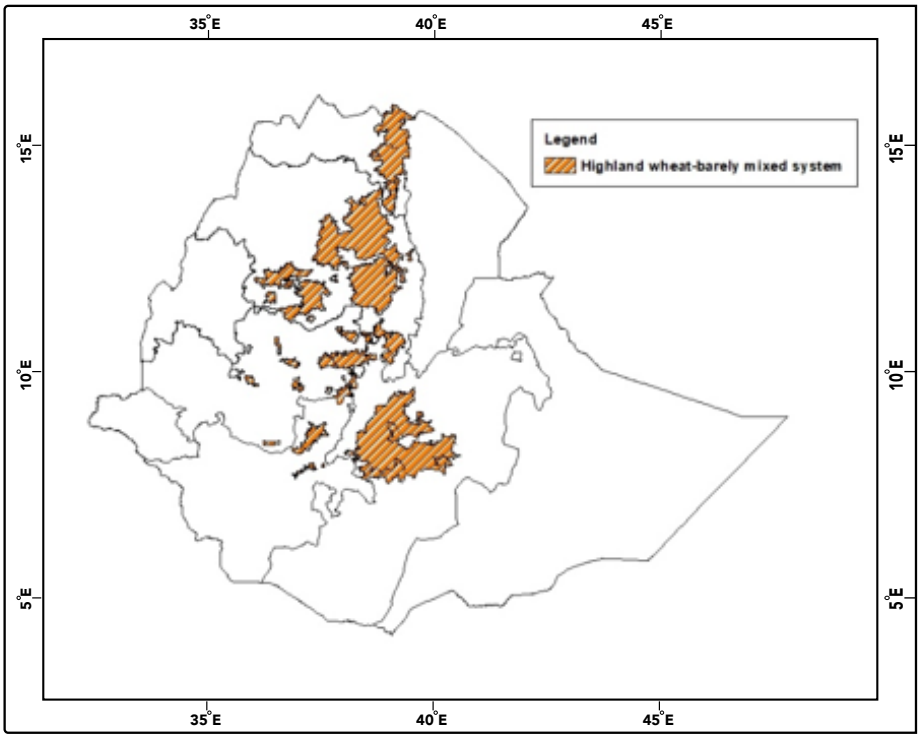
8. Highland sorghum-chat mixed system



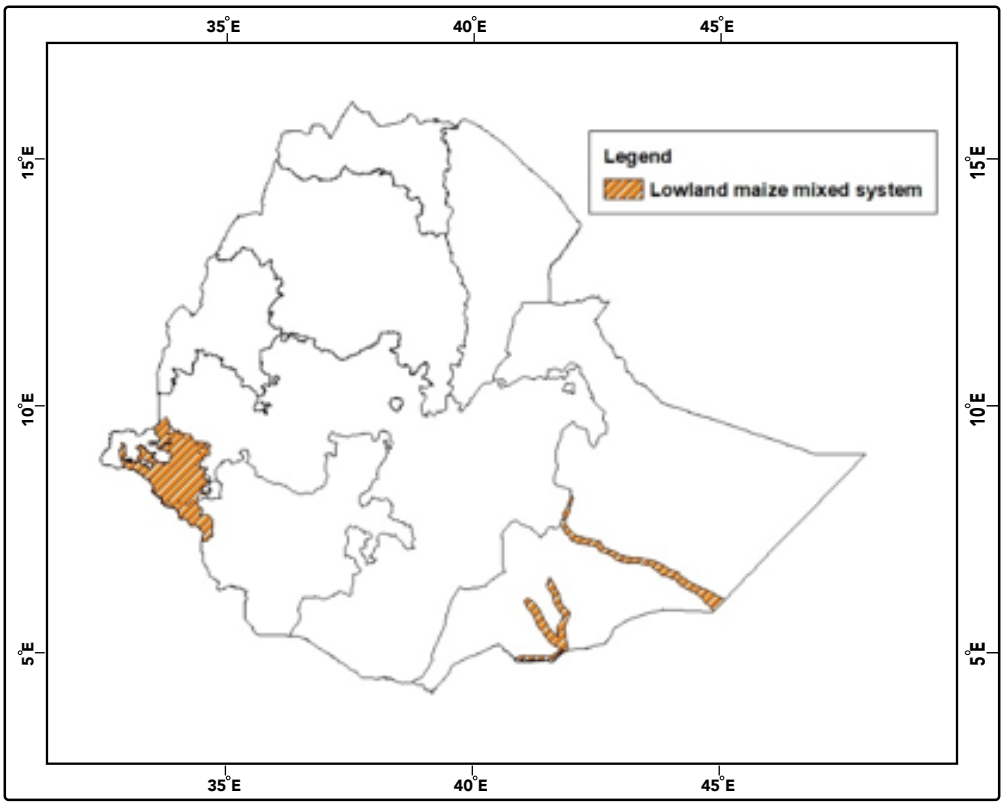
9. Highland Teff Mixed System



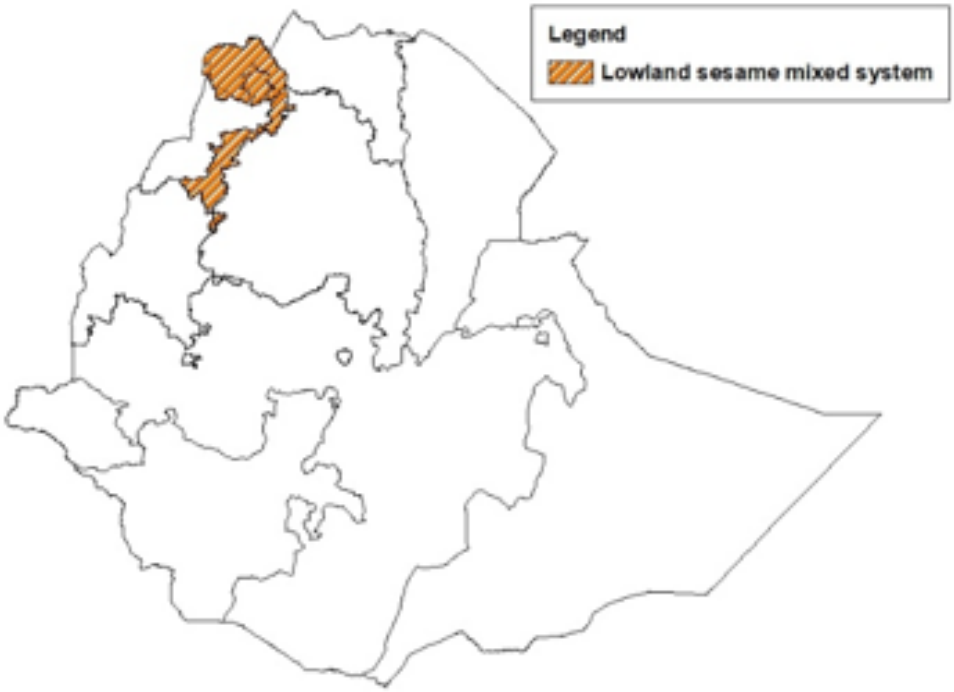
10. Highland Wheat-Barely Mixed System



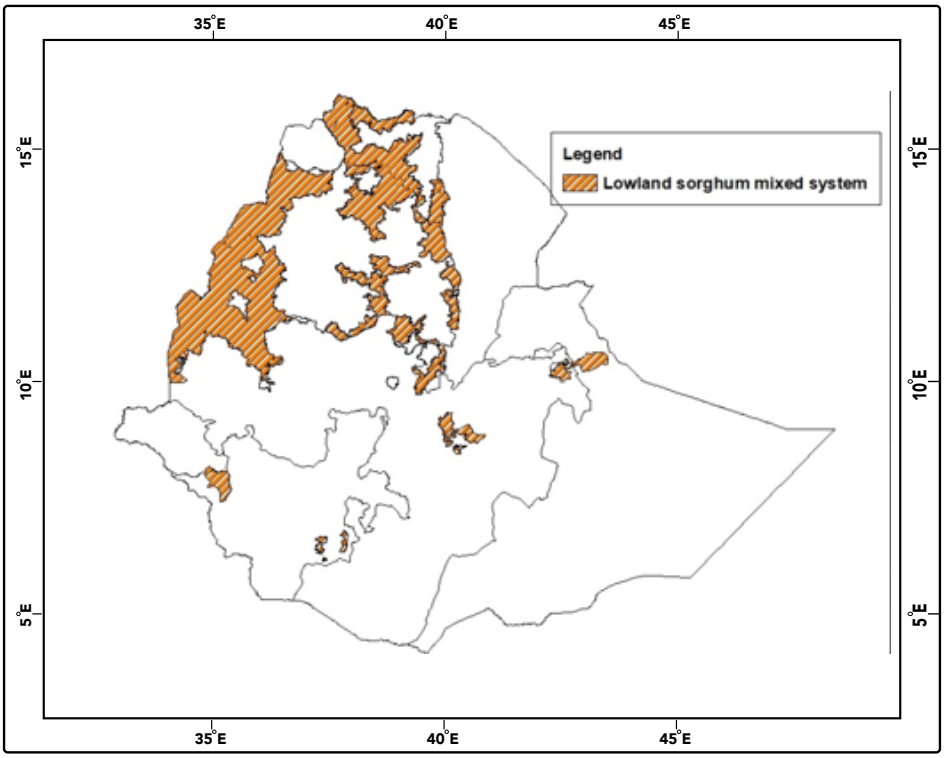
11. Lowland Maize Mixed System



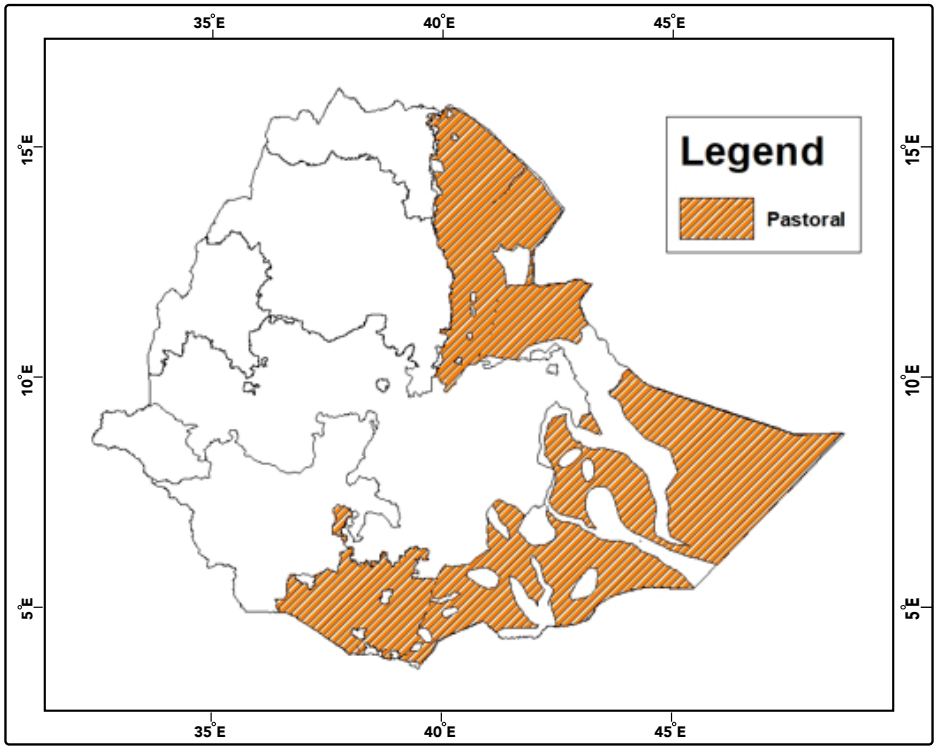
12. Lowland Sesame Mixed System



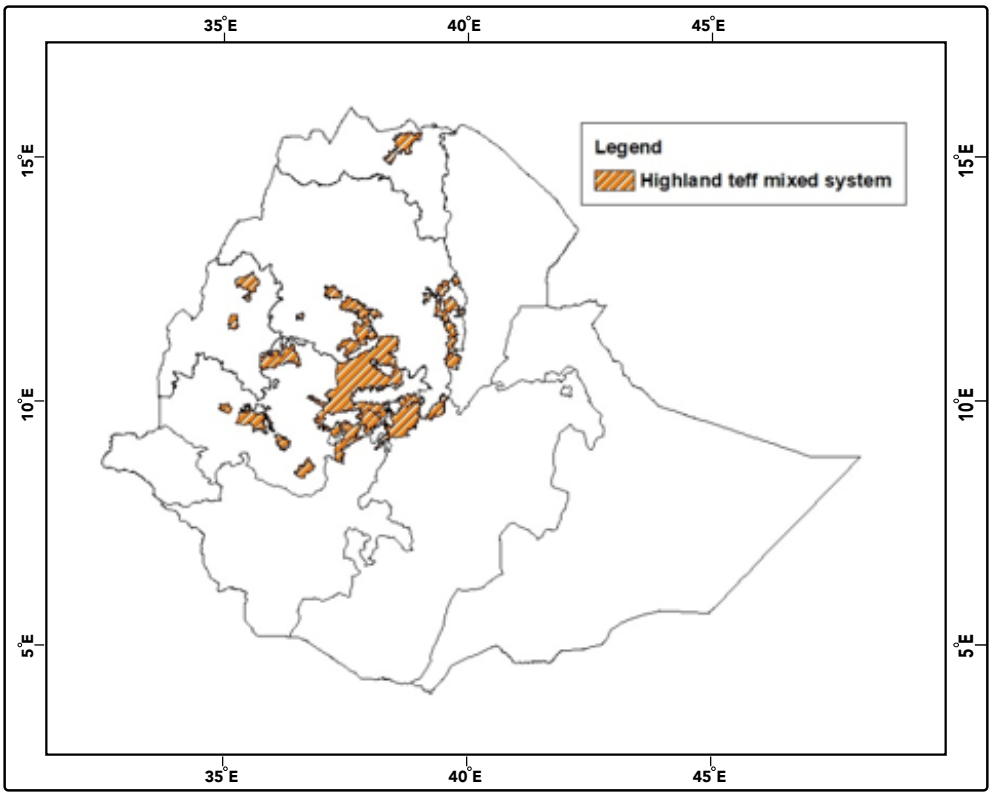
13. Lowland Sorghum Mixed System



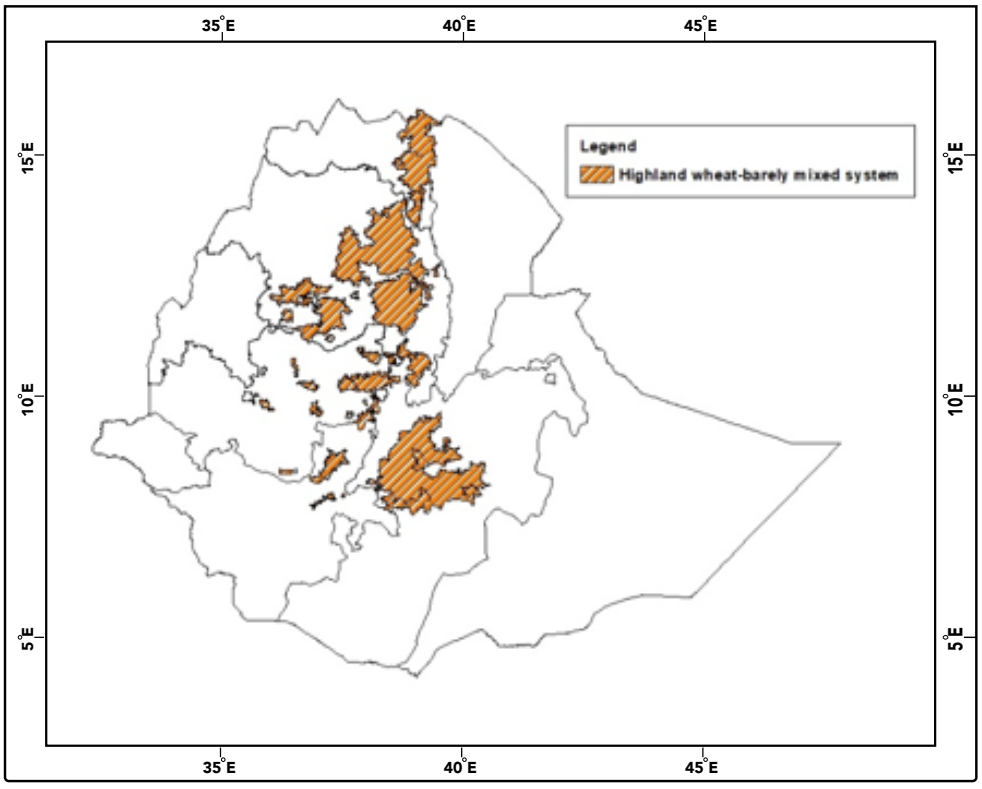
14. Pastoral system



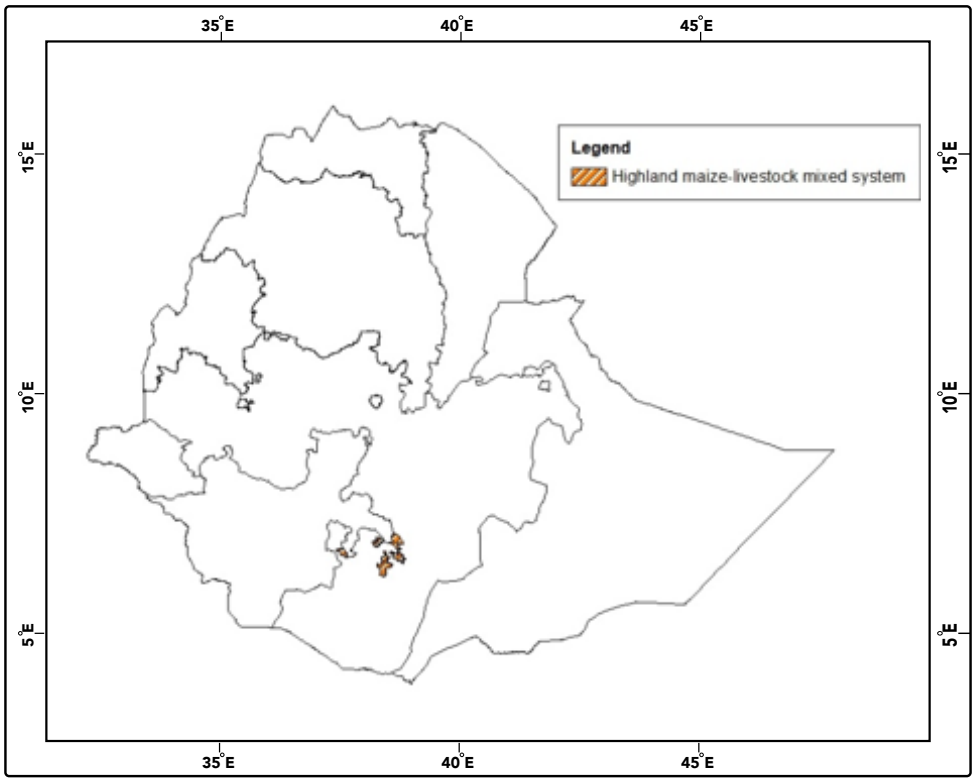
15. Highland teff mixed system



16. Highland wheat-barley mixed system



17. Highland maize livestock mixed system



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