National Livestock and Fisheries Extension Strategy and Roadmap

Ethiopia

2023 - 2033

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MINISTRY OF AGRICULTURE

Ethiopian ATI
Agricultural Transformation Institute
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Acronyms

Acronym	Definition
ADNIS	Animal Disease Notification Investigation System
ATI	Ethiopian Agricultural Transformation Institute
B2C	Business to Consumer
CAHWs	Community Animal Health Workers
CBOs	Community-Based Organizations
DAs	Development Agents
DAEAS	Digital Agricultural Extension and Advisory Service
EAS	Extension Advisory Services
EWS	Early Warning Systems
FFS	Farmer Field School
FTCs	Farmer Training Centers
GDP	Gross Domestic Product
HEP	Health Extension Program
KPI	Key Performance Indicators
LEWS	Livestock Early Warning Signs
LFSDP	Livestock and Fisheries Sector Development Project
LMIS	Livestock Market Information System
MiNT	Ministry of Innovation and Technology
MoA	Ministry of Agriculture
MPP	Minimum Package Project
NGOs	Non-Governmental Organizations
NMIS	National Market Information System
PADETS	Participatory Demonstration and Training Extension System
PFS	Pastoral Field School
PPP	Public Private Partnership
PTCs	Pastoral Training Centers
SMS	Short Message Services
ToR	Term of Reference

1 Preface

Livestock is an integral component of agriculture and plays significant role in the socio-economic development of Ethiopia. Ethiopia has a huge livestock population with diverse genetic pool and a diverse agro-climate suitable for livestock production, revealing the potential of livestock for the economic development of the country. Moreover, livestock is a major source of livelihood for many smallholder farmers, pastoralists, agro-pastoralists and many livestock value chain actors. However, the production system is predominantly extensive and low-input-low-output, which limits the returns from and the potential of the sector. This is due to various factors, including the lack of a livestock extension approach tailored to commodities, production systems and the value chain, limited access to extension services, and weak extension delivery, resulting in low adoption of technologies and improved production practices. Hence, it has been highly important to undertake an in-depth study of the livestock extension system, prioritizing and addressing major constraints that have rendered the livestock and fisheries extension system ineffective and inefficient.

Cognizant to this, the Ministry of Agriculture (MoA), in collaboration with the Ethiopian Agricultural Transformation Institute (ATI), assessed the major bottlenecks limiting livestock and fisheries extension through consultation of various actors and service providers from federal and regional governmental institutions, non-governmental institutions and the private sector including smallholder farmers; reviewed best practices from the country and benchmarked best international practices from relevant countries; and consequently designed the Livestock and Fisheries Extension Strategy and Roadmap. The strategy is comprehensive and addresses major livestock species and commodities (dairy, red meat, beef, poultry, camel, shoats, fisheries and aquaculture, and apiculture), and production systems (mixed crop-livestock, pastoral and agro-pastoral, and urban and peri-urban systems).

The strategy has four pillars: Policy and Governance, Human Capacity, Content, and Delivery Mode, each containing several targeted interventions. The Policy and Governance pillar aims to establish an enabling environment for the private sector integration while simultaneously implementing an optimal governance structure through an effective and inclusive policy and governance framework. The Human Capacity pillar seeks to foster human capability through continuous skill-based training and incentivization mechanisms for extension agents. The Content pillar aims recommends tailoring extension content to meet the specific requirements of diverse production systems, across the value chain, and skill levels of farmers. Finally, the Delivery Mode pillar integrates and implements innovative digital technologies, such as hotlines, and mobile applications, and adds delivery methods suitable to specific livestock commodities and each production system.

Finally, I would like to thank the ATI for coordinating and designing the strategy; Livestock and Fisheries Sector Development Project (LFSDP) of the World Bank for financial support; federal and regional livestock and fisheries sector offices and experts; and other stakeholders for technical inputs. My special appreciation goes to technical team of ATI composed of Analytics (Rosalind Parr, Michael Matwose, Roba Awegechaw, James Lovedale, and Kiya Girma) and Livestock (Yoseph Mekasha, Getachew Animut), Livestock and Fisheries Extension Executive Department (Melake Assefa, Ayele Negesse, and Eyob Abayneh) and LFSDP Federal Coordination Office (Dr. Thomas Chernet) for coordinating and driving the study, and making the document ready.

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2 Executive Summary

This livestock and fisheries extension strategy has been designed to improve productivity, especially as extension strategies to date have been sector agnostic.

Livestock and fisheries extension delivery is currently led by the public sector, with some supplementary support from NGOs through targeted projects and campaigns, and limited engagement from private actors. Although there is a high government development agent (DA) to farmer ratio, most farmers believe that they have inadequate access to livestock and fisheries extension services. Moreover, coverage or access varies significantly across production systems and commodities. Urban and peri-urban areas have better coverage whereas coverage is scant in pastoral and agro-pastoral areas. Similarly, there is satisfactory coverage for dairy and poultry farmers, but limited coverage for apiculture and fisheries.

The quality of content is also variable, with a focus on livestock production topics but an insufficient focus on pre-and post-production activities. This assessment is similar across production systems and commodities.

To tackle these challenges, ATI has developed a livestock and fisheries-specific national extension strategy to enhance the coverage and quality of extension services for the sector.

The strategic vision is to create a sustainable and thriving livestock and fisheries sector, empowered by efficient and effective extension services, driving economic growth, food security, and improved livelihoods.

The strategy has four pillars to target improvement across policy and governance, human capacity, content, and delivery mode of livestock and fisheries extension services.

Pillar 1 - Policy and governance: Establish an enabling environment for private sector integration through effective and inclusive policy and governance frameworks.

The extension system currently uses a top-down, government-led approach, resulting in service quality issues and a lack of coordination amongst actors along the value chain. The limited focus on the livestock and fisheries sector vs. crop exacerbates these challenges.

This pillar aims to address this by establishing an enabling environment for private sector integration, while simultaneously implementing an optimal governance structure through an effective and inclusive policy and governance framework.

To achieve this, specific interventions are recommended, including creating and institutionalizing a communication platform for value chain actors, establishing separate livestock and fisheries bureaus in required regions, and implementing regulations to control the quality of services.

- **PG1. Establish and institutionalize a stakeholder linkage platform.**
  - Establish and institutionalize a platform to connect and assign roles and responsibilities to value chain actors and to monitor progress using a shared database and engagement facilitation.
- **PG2. Establish a livestock and fisheries bureau.**
  - Distinguish a separate bureau for livestock and fisheries with an individual budget and ability to allocate resources, led by a designated expert livestock head from the federal to kebele level.
- **PG3. Regulate private EAS providers.**
  - Institutionalize private extension providers through a legal framework to manage quality and incentivize involvement.

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Pillar 2 - Human capacity: Foster human capability by implementing continuous training and incentivization mechanisms.

DAs are lacking in motivation and are often ineffective, both due to infrequent and theoretical training of extension agents, as well as the lack of a clear career or salary progression. Farmers reported these issues too, stating that they perceive DAs across regions as theoretically knowledgeable but lacking practical expertise.

This pillar seeks to address this by fostering human capability through continuous training and incentivization mechanisms for extension agents.

Specific interventions targeting this objective include providing skill-based training for extension agents and developing monitoring and feedback mechanisms to improve motivation and performance.

- **HC4. Provide capacity-building training.**
  - Develop a new standardized curriculum and provide regular skill-based practical training with experience sharing and demonstrations for extension agents and community leaders.
- **HC5. Develop monitoring and feedback mechanisms.**
  - Develop KPIs to assess extension quality and involve farmers in KPI reporting and DA calibration, coupled with linked incentive mechanisms for DAs.

Pillar 3 - Content: Customize extension content to address the requirements of diverse production systems while enhancing its comprehensiveness.

The content currently delivered in the Ethiopian livestock extension system focuses on livestock production and overlooks other vital aspects of the value chain, including inputs, marketing, processing, and post-production management. It also does not differentiate between the skill levels of small holder farmers versus more commercialized farmers and fails to adjust to contextual challenges. This narrow approach means that there is not comprehensive support throughout all stages of farmers and the value chain and that the diverse needs and requirements of the livestock sector in Ethiopia are not adequately addressed.

This pillar aims to address these content challenges by tailoring extension content to meet the specific requirements of diverse production systems, value chain, and skill levels of farmers.

To achieve this, specific recommended interventions include developing a tailored and market-oriented extension package that will be regularly updated and improving the consistency of dissemination.

- **C6. Develop tailor-made and market-oriented extension packages that are regularly updated and delivered consistently.**
  - Create an inclusive extension package that integrates agroecology, production system, commodity, and current indigenous practices, by consulting farmers and improving the linkages with research institutes.
- **C7. Develop and disseminate targeted information.**
  - Integrate technologies such as remote sensing to better aggregate and disseminate information around rangeland, water, and other necessities (initially in pastoral areas).

Pillar 4 - Delivery mode: Incorporate innovative and multi-channel delivery methods into extension services, including an improved digital offering.

Traditionally, agricultural extension services have heavily relied on face-to-face interactions and farmer training centers to disseminate information and knowledge. However, this approach has proven to be costly and time-consuming and does not effectively reach all stakeholders. Furthermore, digital literacy rates are improving, and there is an increasing appetite for digital methods in agricultural extension services.

Therefore, this pillar integrates and implements innovative digital technologies, such as hotlines, and mobile applications, and adds delivery methods, tailored to each production system, to existing modes.

To accomplish this, specific interventions are recommended, such as better equipping existing services or developing new services that enable practical delivery in accessible locations, designing a modality to facilitate peer-to-peer sharing of innovative best practices among farmers, and developing mobile extension services specifically tailored to marginalized and highly mobile communities.

- **DM8. Equip existing services and develop new services that enable practical and accessible delivery.**
  - Depending on the production system, develop innovative methods to better deliver practical training, such as better equipping or applying the 'Farmer's Home' model to FTCs, and locating PFS or PTCs on established mobility routes for agro-pastorals.
- **DM9. Facilitate peer-to-peer best practice sharing.**
  - Create linkages between urban and peri-urban farmers through travel workshops and field visits.

- **DM10. Develop a mobile extension service.**
  - Train, equip, and assign roaming health and AI providers, and/or community leaders equipped with training to deliver services themselves.

Overall, this strategy offers a comprehensive and inclusive approach to address the challenges faced by livestock and fisheries extension services in Ethiopia. By improving coverage and quality, increasing private sector participation, and incorporating innovative delivery methods, this strategy has the potential to empower farmers and lead to significant improvements in the sector's productivity.

3 Introduction

3.1 Background to the livestock sector and the development of an extension strategy

Ethiopia is endowed an abundant natural resource of livestock and fisheries due to its varied topography (highland and lowland) and agro-ecology, which has enabled the production of different commodities and breeds. Livestock is an integral part of Ethiopia's culture, economy, and way of life. With a population of over 115 million people, Ethiopia is home to the largest number of livestock on the African continent. These animals, which include cattle, sheep, goats, camels, fish, and apiculture are not only a source of food and income but also play a significant role in cultural and religious traditions. Ethiopia has a long history of raising and caring for livestock, with some of the oldest domesticated animal breeds in the world originating in the country. Livestock (and by-products) contribute to ~70% of the rural population's livelihood but also contribute to approximately half of the agricultural GDP (~49%)[1] with red meat, dairy, and poultry contributing the largest share and apiculture and aquaculture production showing promising potential.

However, the livestock sector has been performing well below its potential compared to regional peers. There are multiple causes for the under-development of the sector, including historic under-investment and limited market infrastructure, but a key issue hindering development is the lack of focus on livestock-specific extension services. Therefore, the national livestock and fisheries extension strategy was commissioned to address this long-standing gap and to improve production and productivity.

3.2 History of the extension service

There is a long history of extension services in Ethiopia, starting from 1953 at Alemaya College[2].

- 1953 - The first extension service consisted of just demos and farm visits by professionals from Alemaya College of Agriculture.
- 1963 - The Alemaya-based extension service was followed by a more comprehensive package that was developed by the Chillalo Agricultural Development Unit of the MoA.
- 1971 - A nationwide program called Minimum Package Project I (MPP-I) was designed to provide Small Holder Farmers with extension and input supply services.
- 1980 - The MPP-I was then replaced by the Minimum Package Project II (MPP-II) aimed to improve crop and livestock productivity and increase the production of agricultural raw materials.
- 1985 - The MPP was phased out, and the Participatory Demonstration and Training Extension System (PADETS) was developed to deliver extension services using training and visitation approaches.
- 1995 - PADETS system was further developed to use management and training plots to demonstrate better techniques and technologies to farmers.

[1] 1) World Bank, 2021, 2) Contribution of Livestock Sector in Ethiopian Economy

[2] Commercialization of Ethiopian agriculture: extension service from input supplier to knowledge broker and facilitator, ILRI

- 2010 - PADETS was replaced by the Participatory Extension approach to increase coverage and farmers' participation in efforts to introduce innovative technologies.

To date, there has never been a strategy dedicated to livestock and fisheries extension, with crop production consistently the primary focus for both content and delivery.

3.3 The current state of the extension service

3.3.1 Existing delivery actors

The government is currently the primary delivery actor of livestock and fisheries extension services. The MoA creates the content within the packages and delivers them through extension agents who are assigned at the Kebele level, with an average of 3 DAs assigned to each Kebele. Of these, one focuses on livestock, one on the crop, and one on natural resource management, but interviews showed that the burden of administrative tasks falls largely on the livestock DAs. The top-down structure of delivery makes it difficult to separate administrative and bureaucratic tasks from the demand-driven technical work of providing quality extension services.

Apart from the government, both NGOs and the private sector deliver some services, though these are highly limited. NGOs deliver targeted programs that are usually focused on specific areas, commodities, and sections of the value chain. Private sector involvement is either embedded in existing health and breed services or is found sporadically and rarely in some commercial production areas.

3.3.2 Existing delivery methods

There are three broad categories of extension delivery methods in Ethiopia today:

- **Individual:** In this method, extension is delivered to a single individual, usually through personal interaction or a targeted communication channel. Examples of individual extension delivery methods include one-on-one training, personal consultation, and personalized messaging.
- **Group:** In this method, extension is delivered to a group of individuals who share similar interests or characteristics. Examples of group extension delivery methods include Farmer Training Centers (FTCs), Farmer Field Schools (FFSs), field days, and demonstrations.
- **Mass:** In this method, extension is delivered to a large audience, usually through mass media or technology-based platforms. Examples of mass extension delivery methods include Radio and Television broadcasts, mobile apps, and social media.

3.4 Scope

To address the challenges and context outlined above, this strategy was commissioned by the Ministry of Agriculture (MoA), the Ethiopian Agriculture Transformation Institute (ATI), and the Livestock and Fisheries Sector Development Project (LSFDP). The scope is a national-level strategy that considers all production systems, and commodities (red meat, dairy, poultry, apiculture, and fisheries and aquaculture) across the value chain.

The primary categorization within this scope is by production system, as this is where there is the greatest variance in product type and the largest need to tailor both content and delivery method.

- **Mixed crop-livestock:** This production system is characterized by a mix of crop and livestock production. It is practiced mostly in highland areas of Ethiopia and is known for having better access to water and being integrated with crop production compared to other systems. As a result, this system is the major contributor to livestock production. However, the tension between the use of land and other resources for crops vs. livestock is a major challenge for farmers.
- **Pastoral and agro-pastoral:** The pastoral and agro-pastoral production system is found in the lowland parts of the country where weather is often warmer and more arid with limited access to water. Livestock production is the main source of livelihood, making up a significant part of pastoralists' diet and income. There are also specific cultural considerations, such as maintaining large herd sizes as a generic form of wealth representation.
- **Urban and peri-urban:** The urban and peri-urban production system is found in and around cities, consisting of production practices ranging from small-scale to industrial. In this system, access to resources such as water and input providers is typically not a challenge, allowing for efficient and effective production of various goods and products.

This strategy uses these categories to propose overall and production system-specific changes and additions to the existing extension system and is supplemented by a roadmap of interventions.

4 Methodology for diagnosis and strategy development

A co-creative and iterative process was used to develop this strategy, facilitated by the Ethiopian Agricultural Transformation Institute (ATI), The Ministry of Agriculture (MoA), and the Livestock and Fisheries Sector Development Project (LFSDP). The process incorporated both primary and secondary modes of data collection. There were three stages: the diagnosis phase, the strategy co-development phase, and the roadmap development phase.

4.1 Diagnosis

The first stage was the diagnosis phase which identified the delivery mechanisms and actors (including any gaps), defined barriers to access extension services, and analyzed farmer and producer satisfaction as well as DA extension delivery challenges. 20 farmer focus groups, 11 DA focus groups, and over 25 expert interviews in 9 regions were conducted as primary data-gathering sources. The second part of the diagnosis phase identified successful international livestock extension models which were then used to identify areas of opportunity, and potential pilot programs that could be implemented locally. Desk research and expert interviews were the main tools for developing national extension archetypes and identifying innovative best practices.

Farmer Focus Group Discussions: Focus group discussions were held with farmers to understand their needs, as well as opportunities and challenges in existing livestock and fisheries extension services. The

discussions were moderated by trained facilitators who asked open-ended questions to encourage participants to share their experiences and opinions. The discussions were conducted in a participatory manner to ensure that farmers felt comfortable and had the opportunity to express their views.

DA Focus Group Discussions: Focus group discussions were conducted with Development Agents (DAs) to understand their roles and responsibilities, their training needs, and the opportunities and challenges they experience in delivering extension services. The discussion was conducted in a semi-structured manner, allowing for follow-up questions to be asked to gain a deeper understanding of the issues.

Expert Interviews: Interviews were conducted with a diverse range of stakeholders across the livestock and fisheries value chain, including input providers, universities, research institutes, cooperatives, processors, and NGOs. Over 25 expert interviews were conducted across production systems, commodities, and the value chain. These interviews aimed to identify best practices and innovative approaches that could be adopted in developing a livestock and fisheries extension strategy. In addition, interviews provided insight from a policy, administrative, and organizational lens.

Desk Research: To develop extension system models tailored to Ethiopia's context, an in-depth analysis was conducted by extensively researching and drawing upon archetypes from various countries. These archetypes were categorized based on the livestock sector development level and production system of each country. The resulting extension models include a delivery actor, funder, and delivery mode that is customized to suit the specific needs of Ethiopia. Furthermore, desk research augmented with expert interviews was used to find relevant best practices and innovative approaches implemented with high success rates locally and internationally. These innovative practices were studied to understand their context, scalability, and potential applicability within a wider national livestock extension strategy.

4.2 Strategy Development

The second stage in this process was to validate the diagnosis findings and co-create the strategy with key stakeholders. We conducted a workshop with over 30 livestock experts from all three production systems, all commodities, and across the value chain to validate findings and identify and prioritize interventions. In addition, we held knowledge-sharing meetings with stakeholders who have specialist expertise and have piloted extension programs. These methods supported the co-development of an adaptable and comprehensive strategy.

Expert Workshop: To validate the challenges identified during the diagnosis phase and develop effective interventions, a co-creation workshop was organized, which brought together experts from the public sector, private companies, and NGOs. The participants were selected based on their expertise in commodities as well as their knowledge across the value chain, including inputs (health, breed, feed), production, storage, processing, and marketing.

The workshop format followed the production system categorization, with participants grouped according to their experience in the three production systems to validate and prioritize the challenges.

Groups then proposed a thorough list of interventions to target these challenges and chose one intervention per challenge that they thought would have the most impact. These were then detailed, with activities, actors, outputs, and risks all listed thoroughly. Finally, the overall delivery model for each production system was developed, with possible funders and delivery actors identified.

Knowledge Sharing: We have also drawn upon the experience of current extension providers both in Ethiopia and in the region, including SNV (specifically their Bridge Project) and start-ups like DigiCow. These providers shared information via meetings, presentations, and documents about how they operate, their successes and lessons learned, and how they see their future in the Ethiopian livestock and fisheries extension system, resulting in a better awareness of best practices, stakeholder roles, and responsibilities, and current challenges for NGO and private providers.

Document Review: We have examined different strategies formulated for extension services in various production areas (e.g., Ethiopian extension strategy, urban agriculture extension strategy, pastoral strategy, etc.). This comprehensive national livestock and fisheries extension strategy will encompass and provide overarching guidance for the implementation of all previous projects, programs, and strategies.

4.3 Strategy Validation and Roadmap Development

The final phase in this process was to validate the strategy and develop a phased roadmap with assigned owners in conjunction with key stakeholders and decision makers. We conducted a workshop with over 30 stakeholders including regional heads and policy makers to validate and provide feedback on the strategy and assign owners and timelines to the roadmap. This helped us to finalize and improve our strategy, as well as creating initial implementation ownership.

5 Diagnosis of the livestock and fisheries extension service findings

The diagnosis covered a high-level assessment of coverage and quality, as well as specific cross-cutting and production system challenges, which are detailed later in the strategic pillar and intervention context.

5.1 Extension delivery and coverage

To assess the status of today's livestock and fisheries extension services we asked farmers in focus group discussions how they perceived their access to the extension.

Production system	Actors	Commodities				
		Dairy	Red meat	Poultry	Apiculture	Fish
Mixed crop-livestock	Government					
	NGOs					
	Private					
Pastoral	Government					
	NGOs				N/A	
	Private					
Urban and peri-urban	Government					
	NGOs					
	Private					

Note: NGOs deliver extension service using gov't structure

Key: Good (for larger farmers at least); Poor or inconsistent; Highly limited or non-existent

Figure 1: Analysis of coverage (the ability of farmers to access extension services across commodities, by production system and actor

Farmers said that they accessed services primarily through government delivery agents, but most said their access was poor, and this was most severe for pastoralists.

Though the concentration of DAs to farmers is high in Ethiopia, at 1 Livestock DA to 1440 farmers, especially compared to regional peers, farmers felt that they rarely got extension services. Some of the reasons for this include:

- The requirement for DAs to conduct administrative or other activities which dominate their time (for example, feedback reports in the Amhara region consist of 90% administrative tasks, with only 10% dedicated to extension activities).
- In many regions, only certain farmers are given training, leaving most in the kebele to learn independently.

Farmers also described a high variance in government coverage both across and within production systems, and across commodities, with coverage for apiculture and fisheries much more limited than other commodities.

- **Mixed crop-livestock:** Farmers assessed coverage as poor or inconsistent, as DAs were often unable to provide practical training, whilst DAs noted that they had limited financial support or access to resources such as transportation or demonstration materials; multiple DAs noted that given the lack of equipment in Farmer Training Centers (FTCs), they had to move to door-to-door services, reducing their coverage.
- **Pastoral and agro-pastoral:** DAs described their difficulties in providing extension packages to highly mobile pastoralists, especially as climate change has made movements more unpredictable, while from the pastoralist perspective, they declined to access services as they did not trust them nor saw them relevant as they suffered acutely from a lack of inputs and the effects of drought.
- **Urban and peri-urban**: Farmers in this system were far more satisfied with coverage (likely due to improved accessibility from higher concentration and funding), but given aquaculture's nascency, fishermen were not able to access services consistently; one group said that they had no access as the DAs did not even know who the fishers were in the area.

NGOs currently supplement government extension provisions, but coverage is limited to some highly targeted campaigns in poultry and dairy in specific regions. We also identified that only certain farmers were chosen to take part in these programs, and the programs were time-bound. That said, those who did have access said that there was good follow-up and monitoring, and they used group demonstrations to broaden coverage.

The private sector currently has little to no involvement in mixed crop-livestock and pastoral systems but sometimes provides limited services in urban and peri-urban areas where there is a higher willingness to pay from semi or commercial farmers. One feed processor noted that many of their peers do not provide extension services as they do not realize the business benefits, and this was a sentiment echoed across private sector interviews.

Overall, farmers want improved access which could come in the form of more pluralistic delivery, tailored and more innovative delivery modes, or more DA time dedicated to the delivery of extension.

5.2 Extension content and quality

The field team also assessed how farmers and DAs perceived the quality and usefulness of livestock and fisheries extension service package content. Quality covers the relevancy of content, as well as the innovativeness of technologies and practices, and the appropriacy of content to specific contexts and agro-ecological conditions.

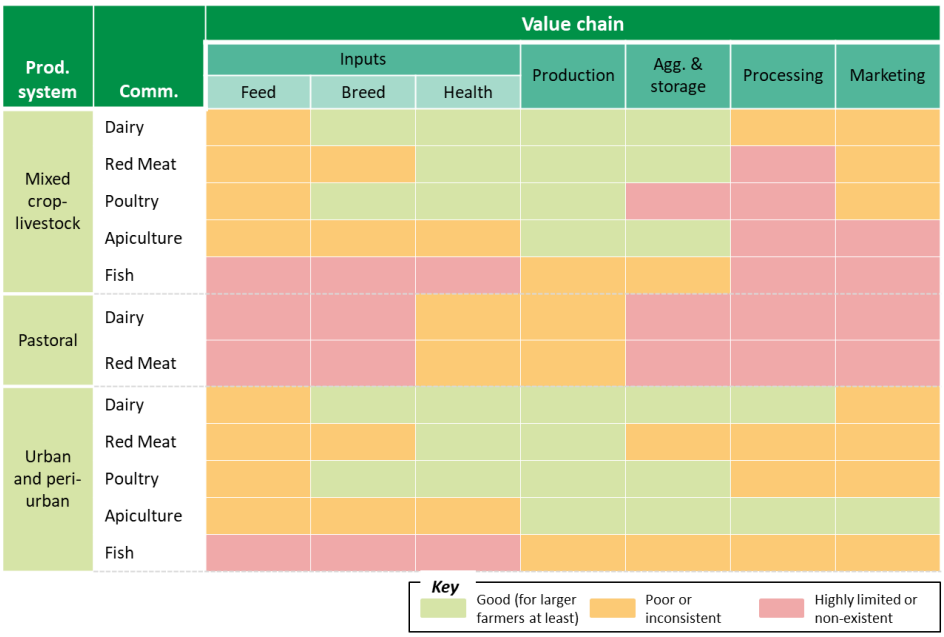

Figure 2: Analysis of perceived quality of package content across the livestock value chain, by production system and commodity

Across production systems, farmers and DAs described the packages as more satisfactory for production topics but deficient for input and post-production activities across all commodities. Specifically, farmers and DAs noted that:

- Content on **inputs**, such as **feed and materials**, is impractical and does not consider potential cost barriers or lack of availability by providing alternatives (for example, in several dairy focus groups, farmers noted that they were recommended feed that was either too expensive or was subsequently not available for purchase in their region).
- **Breed** is seen to have somewhat better content; however, farmers often equate extension services with AI provision, and describe the quality of this as inconsistent – though we cannot equate this to content quality, it does demonstrate that there is a lack of trust in AI and breed extension providers.
- **Health-**related content is seen to be the strongest in inputs, with many noting that the presence of veterinarians providing supplementary services improves the practicality and usefulness of health content.

- **Post-production** content is consistently considered poor, with market-oriented content much lacking and inadequate post-harvest management practices and technology utilization; farmers across production systems noted that they want extension services to provide them with the tools to develop better market linkages, and DAs hope for business training to support farmers.

The quality of content also differs across production systems, as content is not seen to be sufficiently tailored to the specific needs of each production system.

- **Mixed crop-livestock:** Farmers in this system said that content did not consider the conflict between crop and livestock, and how to use minimal resources to maintain both (especially with regards to planting forage), recommending that content considered alternative options for limited land size and budgets.
- **Pastoral and agro-pastoral:** Both farmers and DAs noted that the content provided did not seem relevant to these systems, asking for more detail on how to manage scarce resources (especially water) and better seek rangeland and grazing land, while DAs said that content to manage the cultural practices of maintaining large, 'wealth-representative' herds would help shift mindsets.
- **Urban and peri-urban:** Farmers sought content that would help them transition to semi-commercial production and that was more targeted to higher skill and literacy levels, while DAs looked for more specific health content given population intensification.

Finally, farmers and DAs also described variance across commodities, with the larger contributors to production, such as dairy and red meat, perceived to be better on content, but fisheries content was seen to be lacking.

This diagnosis of the general status of the livestock and fisheries extension system, alongside the strategy co-development workshop, led to the creation of the four key strategic pillars, alongside targeted interventions to improve both coverage and quality of content. In addition to this diagnosis, we also examined both cross-cutting and production system-specific challenges in depth which are addressed under each Strategic Pillar.

6 Strategy Overview

Following the assessment of coverage and quality of the extension services and packages as well as both cross-cutting and production system-specific challenges, we identified opportunities to supplement or improve the livestock and fisheries extension system.

These opportunities can be grouped into four overall strategic pillars: **Policy and governance, human capacity, content, and delivery mode**. These pillars are built from and reinforced by **ten interventions**, which target specific challenges or opportunities identified in the diagnosis and consider the key cross-cutting themes of gender, youth, nutrition, and climate.

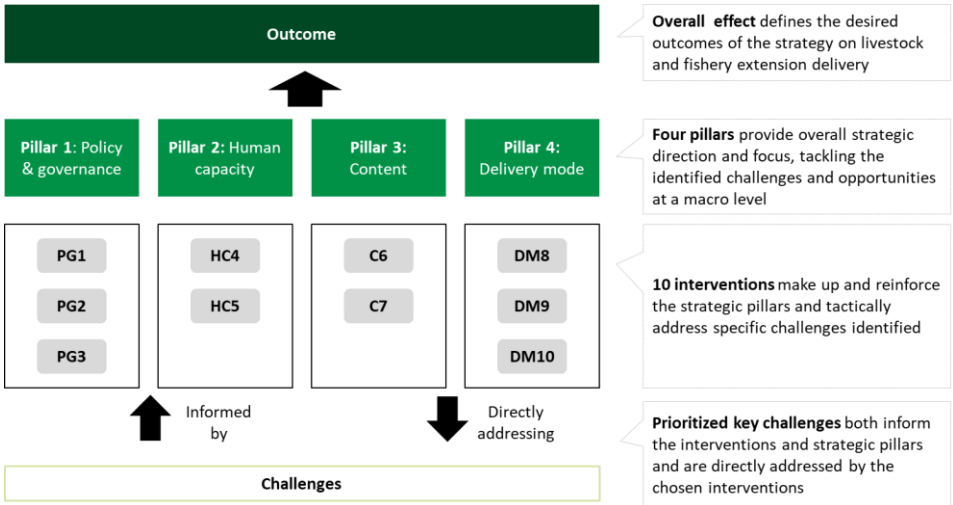

Figure 3: Overview of the national livestock and fisheries extension strategy structure

6.1 Vision, mission, goal, and objective

Vision: Create sustainable and thriving livestock and fisheries sector, empowered by efficient and effective extension services, driving economic growth, food security, and improved livelihoods.

Mission: Develop a pluralistic approach to livestock extension that a) establishes an enabling environment for private sector integration through effective and inclusive policy and governance frameworks, b) improves human capability by implementing continuous training and incentivization mechanisms, c) customizes extension content to address the requirements of diverse production systems and farmer demands, including a greater focus on markets and d) incorporates innovative, digital, and multi-channel delivery methods into extension services.

Goal: Improve food and nutrition security, reduce poverty, and foster wealth creation by farmers/pastorals/agro-pastorals, by facilitating the adoption and adaptation of improved technologies in the livestock and fisheries sector.

Objective: Develop a pluralistic and efficient extension system that promotes sustainable growth, inclusivity, and competitiveness in the livestock and fisheries sector, resulting in a food-secure and prosperous society in Ethiopia.

6.2 Strategic pillars

1. Policy and governance: Establish an enabling environment for private sector integration through effective and inclusive policy and governance frameworks.

Objective: To implement a pluralistic policy that enables and encourages private actors, and to create an effective, optimal governance structure across the federal and regional offices.

Context:

As noted in the diagnosis, the extension system is dominated by a **top-down government-led approach** with **little involvement from other stakeholders such as NGOs and the private sector actors**. This centralized approach has led to a **one-size-fits-all model** that does not consider the diverse needs and contexts of different communities, stakeholders, and production systems.

This has also resulted in a **lack of coordination and linkage among actors along the value chain**, including research providers. Through our interviews with researchers and experts across universities, many noted that they have no relationship with extension services, with one saying, *"Our research is like writing a newspaper and no one reading it. It could have been helpful to farmers, but our research results are not disseminated."*

Furthermore, one of the key challenges with the Ethiopian livestock and fisheries extension system is that **private sector actors are not incentivized or empowered to deliver services**, and nor do they see any business benefits in doing so.

In addition to the above, there is also a **perception amongst livestock experts and DAs that there is a limited focus on livestock from the government**, as evidenced by the lack of a separate bureau and/or proportional human and capital allocation. Across 6 regions respondents mention identical challenges related to a lack of focus on the livestock and fisheries sector. One zonal extension expert mentioned that *"The current Agri-Bureau is more focused on crop production and certain natural resource management campaigns, meaning there isn't sufficient budget for us or enough attention towards the livestock sector."*

Recommendation:

To address the varying needs of farmers and perceptions from experts across production systems, it is essential to **adopt a pluralistic approach**. This approach requires **collaboration between the government and non-governmental organizations (NGOs) as primary funders.** The government will continue to fund the major livestock extension programs while NGOs fund pilot and innovative projects in selected areas, while the **private sector, community-based organizations, and community animal health workers work alongside existing government structures** to deliver content. Cost-sharing will be introduced in certain areas (especially urban areas with more commercial farmers and cooperatives) to ensure sustainability and accountability, resulting in a **reduced burden on the government extension system and increase participation of private and community-based providers**.

In this approach, the government should focus on regulating and enabling the system by linking value chain actors and providing regulatory frameworks, rather than being the primary deliverer of extension services. This collaborative approach will allow for a more comprehensive response to societal needs and enable the best possible use of resources to achieve common goals. Establishing livestock and fisheries bureaus where necessary will also ensure a greater focus and improved decision-making for the extension.

Specific interventions to solve this will include:

- **PG1. Establish and institutionalize a stakeholder linkage platform.**
  - Establish and institutionalize a platform to connect and assign roles and responsibilities to value chain actors and to monitor progress using a shared database and engagement facilitation.
- **PG2. Establish a livestock and fisheries bureau.**
  - Distinguish a separate bureau for livestock and fisheries with an individual budget and ability to allocate resources, led by a designated expert livestock head from the federal to kebele level.
- **PG3. Regulate private EAS providers.**
  - Institutionalize private extension providers through a legal framework to manage quality and incentivize involvement.

Outcome: Increased access to, quality, efficiency, and accountability of the extension services.

2. Human capacity: Foster human capability by implementing continuous training and incentivization mechanisms.

Objective: To improve the quality and effectiveness of services provided to farmers by investing in the skills and knowledge of researchers, extension agents, and community leaders.

Context:

Historically, Ethiopia has focused on increasing the number of Development Agents (DAs) to farmer ratio, aiming for **21 DAs to 10,000 farmers** (or 1 livestock DA to ~1430 farmers), and even more in high potential woredas, according to the agricultural extension strategy of Ethiopia. However, there has been **insufficient attention paid to the quality and training of these DAs**. In interviews, DAs we spoke to often expressed a lack of motivation and **sought better training and development**. They also felt **hindered by a lack of resources, such as demonstration facilities**. One DA stated, *"It has been more than 4 years since we had refresher training, and it has been over 8 years since we have been provided with the extension package booklet."*

Farmers across the regions perceive DAs as **theoretically sound but lacking in practical knowledge**, and DAs often agree. One noted that *"I have been working as a DA for 5 years, but I have a hard time practically implementing what I learned in college since my training was more theoretical. Most farmers have Indigenous practical knowledge that is hard to incorporate into my work."*

Recommendation:

To better empower and enable DAs and private extension agents, a two-part comprehensive human capacity development strategy is recommended: **1) Training to improve DA's capacity and 2) Feedback and incentives to improve performance and motivation**. An updated continuous professional development manual can be a base for this. This is designed to improve technical and advisory skills and to enable delivery actors to provide more effective services to farmers, while the **improved and streamlined feedback mechanisms** will allow farmers to participate in developing DAs and control the quality of private providers. These recommendations, combined with improved incentivization through performance and tenure-based promotions and career upgrade opportunities for DAs, will create higher-quality services.

Specific interventions under this strategic pillar include:

- **HC4. Provide capacity-building training.**
  - Develop a new standardized curriculum and provide regular skill-based practical training together with ATVETs with experience sharing and demonstrations for extension agents and community leaders.
- **HC5. Develop monitoring and feedback mechanisms.**
  - Develop KPIs to assess extension quality and involve farmers in KPI reporting and DA calibration, coupled with linked incentive mechanisms for DAs.

Outcome: Improved quality of extension agent service delivery, improved DA satisfaction and reduced turnover, and an increase in the adoption of modern technologies and practices by farmers

3. Content: Customize extension content to address the requirements of diverse production systems while enhancing its comprehensiveness

Objective: To ensure that the extension package provides all farmers, pastoralists, and agro-pastoralists with the knowledge and skills necessary to produce high-quality livestock and fisheries products that meet market demands, while also promoting sustainable practices within evolving contexts.

Context:

The Ethiopian livestock extension system currently focuses primarily on the production side of the value chain, providing support and training to farmers, pastorals, and agro-pastorals to improve their productivity. However, **this narrow focus neglects other important aspects of the value chain** such as information on using inputs, marketing, processing, and post-production management. As a result, **farmers often face post-production challenges** such as accessing markets, adding value to their products, and realizing higher profits. Dairy farmers in Kembata and Tilili mentioned that *"My dairy production has grown a lot with the support of DAs and NGOs, but I don't know how to store it or where to sell it, so I keep having to give my milk to neighbors or spill it before it goes off."*

The current **content also does not cover production-system-specific topics**, such as creating content for highly mobile pastoralists or **considering various levels of farmer skill in urban and peri-urban areas**. Additionally, the current package does not differentiate between **small holder farmers and commercialized farmers** and **does not adjust to contextual challenges**, such as limited access to inputs. While the content is good, it needs to be updated to address these issues.

Recommendations:

To address these issues and ensure the sustainability and growth of Ethiopia's livestock and fisheries sector, a more **comprehensive approach is required for the livestock and fisheries extension system packages. This means tailoring content to production systems, commodities, and across the value chain**. Additionally, the extension system should consider the **skill level of each farmer** from smallholder to commercial to ensure they receive **the appropriate level of complexity** and can progress to the next level of maturity.

Furthermore, the extension system must **prioritize market orientation across production systems,** such as creating content that will shift the mindset in pastoral areas away from the belief that the size of one's herd equals wealth. Other examples are developing materials on cost-benefit analysis and ensuring mixed crop-livestock strategies are aligned with market demands and optimal timings.

To maintain high-quality content, linkages with Regional Agricultural Research Institutes (RARIs) and universities should also be established as per recommendation PG1. By adopting these measures, the Extension system can address existing challenges in the livestock and fisheries sector and promote sustainable growth.

Specific interventions to solve this will include:

- **C6. Develop tailor-made and market-oriented extension packages that are regularly updated and delivered consistently.**
  - Create an inclusive extension package that integrates agroecology, production system, commodity, and current indigenous practices, by consulting farmers and improving the linkages with research institutes.
- **C7. Develop and disseminate targeted information.**
  - Integrate technologies such as remote sensing to better aggregate and disseminate information around rangeland, water, and other necessities (initially in pastoral areas).

Outcome: Improved livelihood of smallholder farmers, pastoralists, and agro-pastoralists have improved diversified and market-oriented advisory services.

4. Delivery mode: Incorporate innovative, digital, and multi-channel delivery methods into extension services.

Objective: To improve reach and accessibility by leveraging digital technologies and innovative in-person approaches.

Context:

In Ethiopia, the agriculture extension system has **traditionally relied on face-to-face interactions** and **leveraging fixed training centers.** However, this approach has proven to be **costly** and **time-consuming**, and it may not reach all **beneficiaries**, especially those in remote areas or highly mobile pastoral communities. Additionally, the diagnosis has shown that **digital literacy rates are improving and the appetite for digital methods is increasing**, especially in urban and agro-pastoral areas, where farmers have direct access to technology, and through extension agents in mixed crop-livestock and pastoral systems. Furthermore, it has been found that demonstrations are the preferred learning method for most farmers.

Recommendations:

Ethiopia's **agriculture extension system** is in the **process of transitioning towards a more digital-based approach to extension delivery**, which involves developing and deploying digital tools and platforms to enable extension agents to reach and engage with farmers more effectively. This is being done through the **Digital Agricultural Extension and Advisory Service (DAEAS) Roadmap 2030**. The broader learnings from this approach can and should be applied to livestock and fisheries extension as well.

There are several **direct-to-farmer or agent-led digital and mass tools** that have been successful in Ethiopia and other peer countries. These include expanding the coverage area and content of the 8028 hotline and designing interactive apps for market information, emergency information dissemination, and data collection, such as DigiCow or Lersha.

In addition, **digital support tools such as remote sensing** and i**mproved weather forecasting** can also be **disseminated via text alerts**, thereby helping farmers to make better decisions. These initiatives have been successful in improving access to timely and accurate information for farmers in pilots in Ethiopia and beyond.

Alongside the adoption of digital-based approaches in Ethiopia's agriculture extension system, there is a need for more innovative modalities to enhance traditional methods that are tailored to specific production systems.

- **Mixed crop-livestock systems**: Demonstrations and the pilot Farmer Field Schools (FFS) are both in demand and effective in certain contexts and are favored by farmers. We recommend that the FFS approach alongside demonstrations should supplement a better-equipped version of the current FTC-based extension system.
- **Pastoral systems:** A mixture of modalities is required for pastoral systems, targeting:
    - Hypermobility, such as community-led initiatives, roving providers, and tracking, as well as digital tools (including text alerts, early warning systems, and push calls).
    - Semi-mobility, such as strategically placed Pastoral Field Schools (PFS) or Pastoral Training Centers (PTCs).
- **Urban and Peri-urban**: Tailored peer-to-peer linkage and delivery along with group demonstrations led by primarily private sector actors are in greatest demand in this system. In addition, digital delivery services are recommended. Technology such as mobile applications using artificial intelligence to provide personalized recommendations by leveraging user data should also be piloted and be in place for the more digitally literate urban and peri-urban areas.

To build a more effective and sustainable extension system, it is important for Ethiopia to adopt an integrated approach that combines these different modalities and tailored extension services to meet the specific needs of different production systems and groups of farmers.

Specific interventions beyond the described delivery modes will include:

- **DM8. Equip existing services and develop new services that enable practical and accessible delivery.**
    - Depending on the production system, develop innovative methods to better deliver practical training, such as better equipping or applying the 'Farmer's Home' model to FTCs, and locating PFS or PTCs on established mobility routes for agro-pastorals.
- **DM9. Facilitate peer-to-peer best practice sharing.**
    - Create linkages between urban and peri-urban farmers through travel workshops and field visits.

- **DM10. Develop a mobile extension service.**
  - Train, equip, and assign roaming health and AI providers, and/or community leaders equipped with training to deliver services themselves.

Outcome: Incorporated innovative, digital, and multi-channel delivery methods into extension services to Increase accessibility and convenience for farmers, pastoralists, and agro-pastoralists.

Delivery mode	Mixed crop livestock system	Pastoral and agro-pastoral	Urban and peri-urban	Comment
Farmer Training Centers	◕	○	◕	Repurpose FTCs to offer training programs using input service providers and incentives for DAs
Farmer Field School	◕	○	◑	Organize group-based learning programs that are collaborative and participatory learning environment
Cluster-based Model Villages	◕	○	◑	Expand the "Lemat Tírufat" cluster-based model
Farm to Farm	◕	○	●	Deploy DAs who can visit the homes of urban livestock keepers to provide personalized training and guidance
Digital Delivery	◑	◕	●	Utilize private digital technologies, such as hot lines and mobile Apps
Mobile Delivery	◔	●	○	Deploy extension agents or community-selected individuals who can physically move along pastorals
Community Based Organization Model	◔	●	○	Involve local communities in planning and implementing the extension program to foster community ownership
Pastoral Training Centers	○	◕	○	Strategically locate facilities based on movement trends of pastorals and agro pastorals with limited movement
Pastoral Field School	◔	◕	○	Define a specific period of time for the PFS, during which regular meetings are held for pastorals
Group Experience Sharing	◑	◔	◕	Facilitate group discussions and experience sharing sessions among farmers, either in person or through digital platforms

Figure 4: Suitability of delivery modes for production systems

7 Strategic Interventions

In response to the challenges and opportunities identified in the diagnosis phase, targeted interventions were developed under each strategic pillar to improve the overall effectiveness of livestock and fisheries extension services. Some of these interventions have been assigned to the production systems where the challenges or opportunities are most acute, and where a pilot would be most useful**.** Assigning targeted interventions to specific production systems will also ensure that interventions are tailored to the specific challenges and opportunities faced by each production system as seen in *Figure 5*. This approach will improve the quality and reach of livestock and fisheries extension services and contribute to the overall effectiveness of these services.

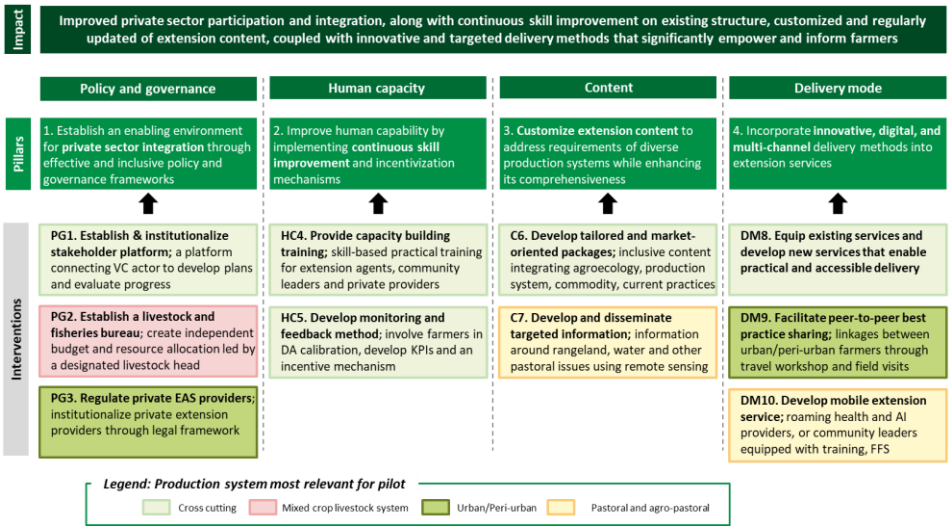

Figure 5: The strategy's framework encompassing an overarching impact, strategic pillars, and targeted interventions

Experts from the livestock and fisheries industries developed detailed interventions to support the strategic pillars above, based on the cross-cutting and production system-specific challenges they perceived to be most important to the sector, and with the highest chance of success.

7.1 Cross-cutting interventions

In the strategy co-development workshop, five major interventions were identified that address common or 'cross-cutting' challenges or opportunities that are consistent between different production systems and commodities. The proposed cross-cutting interventions are:

- Establish and institutionalize a stakeholder linkage platform to improve coordination along the livestock and fisheries extension value chain.
- Provide capacity-building training for extension agents.
- Develop monitoring and feedback mechanisms to assess extension quality and extension agents' performance.
- Develop tailor-made and market-oriented extension packages that are regularly updated and delivered consistently.
- Equip existing services and develop new services that enable practical and accessible delivery.

Intervention PG1: Establish and institutionalize stakeholder linkage platform.

Context: Improving linkage and coordination among actors in the livestock and fisheries value chain is needed to address the current inefficiencies and gaps in extension service delivery. Currently, actors such as government extension workers, NGOs, input suppliers, processors, and marketers have limited opportunities to interact and share information. This results in gaps or overlaps in extension service delivery. Inadequate coordination can also lead to a lack of trust and suboptimal utilization of resources along the value chain. Addressing this challenge is crucial for improving the overall performance and sustainability of the livestock and fisheries sector.

For instance, interviews conducted with research centers, universities, and experts in the livestock and fisheries sector reveal a lack of collaboration and communication. The findings also revealed a duplication of efforts and overlaps in mandates (e.g., research centers and universities are doing the same studies without knowing that others are already doing it). This wastes resources and slows down progress in improving the sector, which hinders the practical application of research and prevents farmers from accessing the latest technologies that can improve their livelihoods.

Intervention description: Establish a platform and institutionalize for stakeholders to communicate and coordinate s**emi-annually**. This committee will bring together key actors along the value chain to co-develop plans, assign roles, evaluate activities, and provide feedback and overall direction related to effective and efficient livestock and fisheries extension service delivery.

The intervention will be implemented in two phases involving platform establishment and institutionalizing the platform.

Phase 1: Establish a stakeholder linkage platform; which includes conducting the following key activities:

- Formation of the stakeholder committee: A Stakeholder committee will be established, consisting of representatives from key actors along the livestock and fisheries value chain, including government extension workers, NGOs, input suppliers, processors, marketers, research centers, ATVETs, & universities. The committee will serve as a platform for communication & coordination
- Development of plans and assigning roles: The Stakeholder committee will meet semi-annually to co-develop action plans, set objectives, assign roles, and discuss strategies for effective and efficient livestock and fisheries extension service delivery. By involving all stakeholders, the committee ensures that diverse perspectives and expertise are considered in decision-making processes.
- Database Establishment: The Stakeholder Committee will work together to establish a database for collecting and sharing data and information related to the livestock and fisheries value chain. This database will include research findings, production volumes, prices, quality standards, and other relevant information. The committee will determine the technical requirements, data formats, and security measures necessary for the database's effectiveness.

Phase 2: Institutionalization of the stakeholder linkage platform:

- Phased Transition: After the initial establishment of the Stakeholder Linkage Platform, a phased transition plan will be implemented to institutionalize the platform. This process will involve defining the structure, governance, and funding mechanisms required to sustain the platform's activities beyond the initial phase.
- Legal framework and governance: A legal framework will be developed to formalize the stakeholder linkage platform as an institution. This framework will outline the roles and responsibilities of the institution, its decision-making processes, and mechanisms for ensuring accountability and transparency. The governance structure will involve representatives from key stakeholder groups and ensure inclusive and equitable participation.
- Resource mobilization and funding: Sustainable funding mechanisms will be identified and established to support the institution's activities. This may involve leveraging government funding, private sector partnerships, grants, or user fees from value chain actors. Additionally, strategies for resource mobilization and financial sustainability will be developed, including exploring partnerships with relevant institutions and accessing existing funding opportunities.
- Capacity development: Capacity-building programs will be implemented to enhance the skills and knowledge of the institution's staff and stakeholders involved in the Stakeholder Linkage Platform. This includes training in database management, communication, negotiation, and coordination techniques to ensure effective service delivery.

By initially establishing a Stakeholder Linkage Platform and subsequently transitioning it into a formal institution, the intervention ensures the continuity and long-term impact of the collaboration and coordination efforts. The phased approach allows for learning, adaptation, and the development of robust structures and mechanisms that can support effective livestock and fisheries extension service delivery over time.

The stakeholders to be involved on the meeting platform will include representatives of all actors along the value chain such as:

- Farmer/pastoral/agro-pastoral representatives
- Research centers, universities, and ATVETs
- Policy makers
- MoA experts/leadership
- Input suppliers
- Traders
- Cooperatives and unions
- Processors
- Implementation partners
- Donors
- NGOS
- Private actors
- Other government and private institutions and actors

The committee will work on better coordination to improve the overall livestock and fisheries extension service delivery. It will include activities such as:

- Establishing partnerships between extension service providers to ensure comprehensive and efficient delivery
  - Conducting joint activities to promote learning and collaboration among actors.
  - Developing and implementing joint extension service delivery plans including feedback and reporting mechanisms to ensure alignment and coherence across the value chain.
- Facilitate linkage among research institutions, package developers, and farmers to deliver extension services on the ground.
  - Create a structure that ensures consistent and sustainable communication and encourages joint research and development activities between package creators, extension agents, and research institutions.
  - Monitor and evaluate the effectiveness of the linkage activities and make adjustments as needed.
- The committee will focus on strengthening the linkages between the stakeholders in the value chain to mobilize resources and improve the livestock and fisheries extension service delivery.
  - Identify all relevant stakeholders, including government agencies, NGOs, and private sector actors to build long-term partnerships and mobilize resources.
  - Develop diverse funding proposals for livestock and fisheries extension services and explore funding opportunities to support their implementation.

Increased interaction among stakeholders in the livestock and fisheries sector can help improve extension services in several ways. Firstly, it can enhance knowledge sharing among stakeholders, leading to the development of more effective and relevant extension services. Secondly, it can facilitate joint planning and resource mobilization, leading to better coordination and more efficient use of resources.
Thirdly, it can help identify gaps and challenges in the extension service delivery, and use the wide stakeholder list to plug these, leading to more targeted and effective interventions.

Finally, it can build trust and collaboration among stakeholders, which is critical for achieving sustainable development outcomes in the sector.

Cross-cutting themes: Gender representation will be ensured during implementation, with a requirement of 30% women on Steering and Technical Committees. The committees will also be obliged to consider **youth and gender, climate, and nutrition** as part of the planning and implementation of extension services, and progress along key cross-cutting dimensions will be measured through common shared data in the database.

Activities: The key activities to develop this intervention would be:

- Develop detailed Terms of Reference (ToR) outlining the committee's objectives, structure, roles, and responsibilities.
- Identify relevant stakeholders along the value chain.
- Identify which laws will be required to enforce accountability e.g., directives, joint ventures
- Establish and set guidelines for a database for collecting and sharing data and information on the performance of the value chain actors, including research findings, production volumes, prices, quality standards, etc. (e.g., develop a website).
- Develop a clear communication strategy to ensure effective communication among stakeholders and to ensure that all stakeholders are aware of the committee's objectives, roles, and responsibilities.
- Establish an intermediary between researchers and extension providers to liaison or facilitate communication, collaboration, or other forms of partnership between these two groups to enhance the effectiveness of the interventions.
- Develop an agenda for the quarterly meetings, outlining the topics to be discussed, and the specific objectives.
- Define a set of indicators to measure the success of the committee and its impact on the value chain.

Outputs and KPIs: The success of this intervention could be measured by:

- A committee with representatives from each of the key value chain actors.
- A comprehensive database that maps the key actors and their roles in the livestock and fisheries value chain and provides production data and research to support evidence-based decision-making.
- Annual report on livestock and fisheries extension service to show progress, achievement, and plans.
- Percentage increase in stakeholder participation and coordination.
- Percentage increase in the level of satisfaction among stakeholders with the meeting platform.
- The number of successful collaborations formed due to the meeting platform.
- The number of technologies and research findings introduced to farmers per annum.
- Percentage increase in the adoption of recommended practices by farmers/pastorals or agro-pastorals.
- Percentage increase in the number of farmers who adopt recent technologies and practices.

- The number of farmers directly trained by intern researchers.

Intervention HC4: Provide capacity-building training

Context: Development agents are not getting relevant training opportunities due to limited resources, inadequate training programs, and limited access to professional development opportunities. As a result, development agents lack the necessary knowledge and skills to effectively teach and deploy recent technologies and practices for farmers, pastoralists, and agro-pastoralists.

Farmer and DA focus groups noted a widespread lack of confidence and motivation among development agents in offering extension services to farmers. Both farmers and DAs have expressed concerns about the practical skills of the extension agents. One of the root causes of this challenge is the limited training opportunities and access to professional development for development agents. This challenge is reported across all regions.

The consequences of limited or inconsistent training opportunities for development agents can result in:

- Ineffective and inefficient extension services.
- Low adoption rates of modern technologies and practices.
- Low productivity and income for farmers/pastoralists/agro-pastorals.

Intervention description: Provide demand-driven and skill-based practical training annually for livestock and fisheries extension agents/providers.

- The training will be provided using a newly developed standard training manual.
- The training would include experience sharing and demonstrations to improve the extension agents' practical knowledge and delivery skills.
- In addition, it also includes providing training of trainers (ToT) for community leaders, candidates selected from the community, and others who will be involved in delivering extension services for farmers/pastorals/agro-pastorals.
- Actively work with the educational institute (ATVET and universities) to ensure the educational program for DAs includes an up-to-date curriculum that emphasizes practical knowledge.

Cross-cutting themes: Training will be provided to a requisite percentage of **female and youth** DAs, with training designed to empower and upskill women and youth. Practical training will also include topics related to mitigating **climate** impacts, reducing emissions, and adopting climate-smart practices such as managing natural resources.

1 Provide capacity building training best practice example: Improving Employment and Income through the Development of Egypt's Aquaculture Sector (IEIDEAS), Egypt

Egypt has implemented IEIDEAS project in 2012. One of the first actions was to set up a best management practices (BMP) **training program** by **involving key stakeholders** in its **design** and **implementation**. Representatives from across the main aquaculture zones were brought together to develop BMP guidelines, based on blending current Egyptian aquaculture practices, which varied in different aquaculture zones, and international best practice programs.

The local experts then helped develop BMP training modules; short, **field-based training sessions** on the key topics, each containing a **practical demonstration** and simple materials such as posters, flipcharts, and readily available tools was developed. This was followed by training of trainers, again involving the local experts, as well as additional private sector trainers, who delivered the training to fish farmers in their own fish farming areas. Around 10 training modules was be delivered at the appropriate time of year in 3 or 4 sessions, each session covering 2–4 training modules.

The **quantitative assessment** to evaluate the impact of the project was conducted in 2015, through **field-based surveys** including a BMP adoption **survey**, to determine whether fish farmers had applied the recommended practices, and a fish farm and farmer impact assessment survey.

The project resulted in greatly **increased profitability** for fish farms equivalent to around 16k USD in **extra profit generated** per farm and 27Mn USD **total value added** by the project. **Increased profitability was mainly achieved by cost savings through more efficient feed management** rather than increased production.

Activities: The key activities to develop this intervention would be:

- Conduct a needs assessment survey to identify specific areas of training in which the livestock experts most acutely need to improve their skills.
- Conduct stakeholder mapping and analysis to identify relevant NGOs and private sector actors working in the livestock and fisheries sector and collaborate for joint implementation of the capacity-building training.
- Include representatives from private sector actors and NGOs in the needs assessment survey and training of trainers to ensure their input and participation in the process.
- Explore opportunities for these stakeholders to provide additional resources, such as funding or in-kind support, for the implementation of the training program.
- Develop a standard manual to train livestock experts together with RARIs and universities and pilot with a group of DAs.
- Develop ongoing support and resources e.g., online resources.
- Create monitoring and evaluation guidelines for the training e.g., feedback form for the trainees, impact assessment, etc.

Outputs and KPIs:

- Improved skill, knowledge, and confidence of livestock and fisheries extension agents.
- Improved satisfaction of livestock and fisheries extension agents on quality and relevance of training provided.
- Increased farmer satisfaction regarding extension agents' expertise and practicality.
- The number of livestock and fisheries extension agents/providers who receive training annually.
- Percentage increase in technical knowledge of extension agents after receiving training using pre- and post-training scores.
- The number of community leaders, candidates selected from the community, and others who receive training from trainers annually.
- Percentage increase in the number of farmers/pastoralists/agro-pastoralists who receive extension services after the implementation of the intervention.

Intervention HC5: Develop monitoring and feedback mechanisms to assess extension quality and extension agents' performance

Context: The farmer's satisfaction with DA's performance is low and DAs also lack confidence in their knowledge and expertise in livestock production and management, which contributes to their reported low motivation and performance. This is further exacerbated by the absence of a clear mechanism for assessing the quality of services provided by DAs, as well as a lack of support systems in place to upskill underperforming DAs. To address these challenges, a mechanism is needed to monitor both DA's performance and service quality delivered by various extension providers (public, private, and NGOs).

During the focus group discussions with DAs, they highlighted that their performance evaluation is primarily based on administrative tasks rather than extension service delivery. Additionally, they expressed that the current incentive mechanism is inadequate, which is contributing significantly to the high turnover rate among extension workers.

Intervention description: Develop a monitoring and feedback mechanism to evaluate the performance of extension agents, to improve their motivation and service quality. To ensure fairness in the evaluation process, the feedback mechanisms will include collecting data from farmers through surveys and conducting regular focus group discussions, among other methods. This feedback will identify areas of improvement and allow for better recognition and rewards for extension agents who perform well.

Establishing key performance indicators (KPIs) and a systematic monitoring and evaluation mechanism is crucial to assess the overall performance of the extension system delivered by various actors. The KPIs and monitoring mechanism will offer valuable insights into areas that require improvement and identify best practices that can be replicated for optimal results.

Furthermore, the implementation of regular data collection methods such as surveys and focus group discussions among farmers/pastorals/agro-pastorals can be used to gather valuable feedback from the beneficiaries of the extension services. This feedback can help to better understand the needs and challenges of the farmers and ensure that the extension services are meeting their demands effectively. It is important to note that the feedback collected will be carefully calibrated for an accurate and unbiased assessment of DAs performance.

A career development system that assesses and promotes extension agents based on their performance (evaluated using feedback mechanisms) and length of service should be developed. This system will provide a clear career path for the extension agents, and they will be promoted solely based on their deliverable performance and tenure, designed to motivate and reduce high turnover.

The feedback collected from farmers and pastoralists through surveys and focus group discussions will not only contribute to evaluating extension agents but also provide valuable insights into the needs and challenges of the farming community. This information will help educational institutes tailor their curriculum and training programs to better align with the demands of the agricultural sector. By incorporating real-world feedback into their educational approach, ATVET and universities can ensure that students are well-prepared to address the practical challenges faced by farmers.

Moreover, the collaboration between extension services and educational institutes will extend beyond performance evaluation. It will also involve designing a career development system for extension agents and students. The career development system will assess and promote both extension agents and students based on their performance, as evaluated through the feedback mechanisms and performance evaluation processes. Recognizing and rewarding exceptional performance and long-term commitment will motivate extension agents and students alike, reducing high turnover and creating a clear career path for their professional growth.

By integrating the roles of ATVET institutions, universities, and extension services, this intervention will foster a continuous cycle of improvement in agricultural extension. The monitoring and feedback mechanisms will ensure that extension agents receive accurate and unbiased assessments of their performance, driving motivation and service quality. Simultaneously, educational institutes will develop performance evaluation mechanisms for students, aligning their education and training with the needs of

the agricultural sector, thus producing skilled and competent graduates ready to contribute to agricultural development.

Cross-cutting themes: Monitoring and feedback KPIs will be developed with careful consideration to ensure **gender and youth** biases are removed (e.g., removing gendered language from reviews, or developing incentives that are agnostic of parental leave). KPIs will also be developed considering progress against the cross-cutting themes, e.g., productivity improvements, which contribute to improved access to better **nutritional** quality, quantity, and variety, and improved resource management and **climate** resilience.

Activities:

- Align across stakeholders such as extension experts, RARIs, universities, donors and NGOs, implementation partners, and private actors on extension agent KPIs for improved production and productivity to assess extension service quality.
- Develop a farmer satisfaction survey.
- Develop incentive mechanisms (e.g., promotion, education opportunity, bonus) for high-performing DAs and secure funding via MoA.
- Define performance and tenure metrics for DA's assessment considering the career development manual.
- Develop calibration guidelines based on the metrics using a consultative process with DAs and kebele heads.
- Liaise with woreda/kebele heads to align on the new performance requirements and communicate the farmer survey.

Outputs and KPIs:

- Improved performance of livestock and fisheries extension service.
- Increase in farmers' satisfaction with extension services.
- The number of extension agents promoted based on their performance and length of service per year.
- The number of farmers involved in feedback surveys on the performance of extension agents and service quality completed by farmers annually.
- Percentage of extension agents meeting or exceeding KPIs for extension quality.
- The number of extension agents getting performance-based incentives.

2 Extension service monitoring and evaluation best practice example: Ethiopian Health Extension Program (HEP)

The HEP was established in 2003 to improve the health status of rural communities by providing essential health services and health education through trained Health Extension Workers (HEWs). The HEP utilizes a community-based approach, which involves training and deploying female community health workers (CHWs) to provide essential health services, health education, and promotion activities at the grassroots level.

A comprehensive **data collection and feedback mechanism** has been established to ensure effective monitoring and evaluation of the HEP. Community Health Workers (CHWs) conduct regular **monitoring visits and house-to-house surveys** to collect data, which is then entered into a digital health management information system (HMIS) at the health center level. **Periodic satisfaction surveys and community meetings** are also conducted to obtain feedback on the quality of services provided by CHWs.

Regular performance review meetings are conducted at the health facility, **district, and regional levels** where program data is reported. The reported data is then analyzed through a combination of quantitative and qualitative methods to identify any emerging trends, gaps, and challenges in service delivery.

Intervention C6: Develop tailor-made and market-oriented extension packages that are regularly updated and delivered consistently

Context: The main challenge with the content in the livestock and fisheries extension packages is that they are generic across farmers' skill levels and market needs. Currently, there is a lack of tailoring to farmers' skill levels, resulting in content that seems either too basic for experienced farmers or too technical for emerging farmers. This disconnect between the content being delivered and farmers' skill levels is a significant obstacle to effective extension services.

From the focus group discussions, most farmers mentioned receiving the same extension package, regardless of the difference in the scale of their farming operations. For example, a farmer who specializes in poultry production and has experience in the sector may receive the same extension package as a beginner farmer with no prior experience in poultry. This indicates that the content was not tailored to meet the needs of different farmers, resulting in a mismatch between the content and their knowledge and skill levels.

Additionally, extension services are primarily focused on production, and there is insufficient emphasis on market-oriented practices, leading to poor access to markets, while farmers do not feel that they have the necessary information and skills to access markets and maximize their profits.

Furthermore, the content of the packages does not keep up with the latest practices and technologies, making it difficult for farmers to remain competitive in the industry. Furthermore, from the field assessment conducted pastoralists pointed out that the content did not reflect the unique needs of their arid and fragile agroecology. Pastorals require the content on areas like:

- How to manage grazing pressure in arid regions.
- How to identify and manage drought-resistant forage plants.
- How to manage water resources in an environment with limited access to water.

Intervention description: Develop an all-inclusive extension package that encompasses various aspects of livestock and fisheries production, including agroecology, production systems, commodities, current practices, and technologies. The package will undergo regular updates every three or four years based on new research and technologies being introduced to ensure that it aligns with the latest practices and technologies. The packages should be customized by skill level and operation size will be created to cater to the individual needs of small holder farmers, targeting commercial, and semi-commercial farmers.

In addition, the extension package will include financial literacy content to equip farmers, pastoralists, and agro-pastoralists with the necessary knowledge and skills to manage their finances effectively. The financial literacy content will cover topics such as budgeting, record-keeping, accessing financial services, and establishing linkages with financial institutions.

Moreover, farmers, pastoralists, and agro-pastoralists should be encouraged to adopt a business mindset, cultivate relationships with potential buyers in the marketplace, and establish linkages with financial institutions to secure the required financial services.

Note: the package needs to target all farmer's skill levels including smallholder farmers, semi-commercial and commercial farmers.

Cross-cutting themes: The content developed will support production and post-production practices that contribute to improved **nutritional** outcomes, such as improved meat and dairy quality, food safety measures, and effective post-production management. This, in turn, will improve national access to high-quality proteins and dairy products, increasing nutritional diversity.

The content will also include information on improving resilience and adaptation to mitigate **climate impacts**, as well as reducing emissions and managing resource scarcity. Finally, content will target different skill levels, and thus will be more accessible to **youth** farmers or **women** who may have had reduced educational access.

Activities:

- Conduct demand assessment of farmer's/pastorals/agro-pastoral needs through surveys and identify current practices and technologies used by farmers to integrate Indigenous knowledge into the package.
- Conduct benchmarking of existing market-oriented packages.
- Consult experts for market-related training e.g., creating a business mindset, destocking, etc.

- Mobilize internal and external stakeholders to develop content, packages, and operational guidelines.
- Pilot the market-oriented extension package in areas transitioning towards semi-commercial production and expand based on learnings.

Outputs and KPIs:

- Increased satisfaction of farmers with package content.
- Increased market awareness of farmers.
- Improved market access for farmers e.g., linkage with processors/cooperatives (e.g., a percentage increase in the number of farmers with better market access).
- Number of market linkages created and increase in the volume of livestock products sold.
- The number of woredas where the package has been successfully piloted.
- Percentage increase in satisfaction of farmers on extension package content.

3 Tailored content best practice example: National Agriculture and Livestock Extension Program (NALEP), Kenya

An example from Kenya could be used as best practice and piloted in Ethiopia to develop tailored and comprehensive content. The National Agriculture and Livestock Extension Program (NALEP) in Kenya, was developed using a **farmer-centric approach,** where a **survey was taken first to assess the needs** of farmers and based on these needs, extension agents (EAs) were dispersed across the country to provide **technical and business education** to farmers. The program also focused on the capacity building of farmer groups through recent technologies to contribute to the national priority of poverty alleviation.

By tailoring the program's **market-led and commercial content to meet the needs of farmers**, the program was deemed relevant and effective. **71% of all farmers** reported an increase in their **surplus,** while NALEP has transformed smallholder farmers into successful entrepreneurs, changing their perspective from a survival **mindset to income-generating businesses**. The program's success has contributed significantly to the socioeconomic development of the agricultural sector in Kenya.

Intervention DM8: Equip existing services and develop new services that enable practical and accessible delivery.

Context: Farmers, pastoralists, and agro-pastoralists face a significant challenge in accessing hands-on practical training, which is hindering their ability to improve their livestock management practices. Although Farmer Training Centers (FTCs) and Pastoral Training Centers (PTCs) exist to provide such training, they are not being utilized effectively due to a lack of necessary materials and resources and poor location. Therefore, there is a pressing need to either better equip existing services or create new services that facilitate practical and accessible delivery of livestock extension services.

During the field assessment, it was found that most FTCs/PTCs are obsolete as there is no practical training being provided. The existing training centers are not adequately equipped with the necessary materials and resources to provide practical training, and as a result, farmers and extension agents are not utilizing these facilities effectively.

Intervention description: Depending on the production system, develop innovative methods to better deliver practical training. This would include better equipping or applying the 'Farmer's Home' model to FTCs (where the training facilities are also used to introduce embedded extension services provided by private sector actors such as processors, cooperatives, etc.). New FTCs/PTCs should be established considering:

- Specific commodity or livestock and fisheries cluster.
- Mobility routes for pastorals and agro-pastorals.

In addition to providing practical training through the training facilities, DAs can also generate income from livestock products like apiculture, dairy, feed, and other related products by utilizing these facilities. This could serve as a motivation and incentive mechanism for the DAs as proposed in **Intervention HC5.**

Cross-cutting themes: This intervention is designed to adapt to **climate change**, as services will be relocated as climate impacts change mobility patterns. This will ensure continued access for pastoralists.

Activities:

- Conduct a needs assessment to identify the practical training needs of farmers/pastorals/agro-pastorals.
- Identify the existing training facilities and services available and assess their adequacy in delivering practical training.
- Develop innovative methods for practical training delivery, such as the "Farmer's Home" model or mobile training units.
- Equip existing training facilities (FTCs/PTCs) with necessary resources and materials to enable hands-on practical training if these existing facilities are viewed to be fit for purpose.
- Pilot an embedded extension service utilizing FTCs/PTCs in potential areas.
- Develop and implement a strategy for using FTCs/PTCs to generate income from livestock products such as dairy, feed, etc.

- Identify established mobility routes for pastorals/agro-pastorals and establish new training facilities or services, such as Pastoral Field Schools (PFS) or Pastoral Training Centers (PTCs), located on the routes established.

Outputs and KPIs:

- Increased access to training facilities or sessions by farmers and pastoralists.
- Improved satisfaction of farmers/agro-pastorals with practical training provided.
- Improved utilization of FTCs/PTCs by farmers/agro-pastorals.
- Number of farmers/pastorals/agro-pastorals with access to practical training.
- The number of existing training facilities equipped with necessary resources for practical training delivery.
- The number of new training facilities established and their accessibility to farmers and agro-pastorals.
- Amount of income generated from FTCs/PTCs.

4 Equipped services best practice example: Farmer's Homes, China

A pilot project in China turned extension centers (such as the Ethiopian FTCs) into community information centers called "Farmers' Homes." These are centers where **farmers can purchase inputs while obtaining extension services**, enabling the private sector to promote their product and the public to recoup the admin costs.

These centers could be a highly relevant model to the Ethiopian context, as they would simultaneously solve the issues of under-resourced FTCs or PTCs by putting the onus on the private sector to equip them, the low participation of the private sector by encouraging involvement through direct market access, and the unreliable access to inputs by ensuring provider attendance.

7.2 Production specific interventions

Although the production-specific intervention has the potential to be applied to all production systems, we have opted to create interventions that are specific to each production system. This approach will enable us to pilot and implement interventions at a smaller scale, ensuring their effectiveness and suitability for the unique attributes of each system before scaling them up more broadly.

7.2.1 Mixed crop-livestock production system

Intervention PG2: Establish a livestock and fisheries bureau

Context: Livestock and fisheries experts described feeling neglected and under-resourced due to poor organizational structure. In most regions, livestock is grouped under the Agricultural Bureau, leading to minimal focus, budget, and human capacity compared to crop production. This problem is particularly evident in mixed crop-livestock systems, where livestock experts are highly demotivated due to this issue and there is often conflicting advice from livestock and crop DAs. Furthermore, the existing organizational structure makes it difficult to hold anyone accountable for successes or failures.

Intervention description: Establish a dedicated bureau for livestock and fisheries with an aligned structure from the federal to kebele level with its own budget and the ability to allocate resources, led by a designated livestock head. This will provide the livestock sector with the necessary focus, resources, and decision-making power to thrive. The establishment of an independent livestock and fisheries bureau will also provide a structured solution that fosters collaboration between the crop and livestock sectors and enables a more cohesive and integrated approach.

Activities:

- Assess the current state of the livestock and fisheries organization structure e.g., use a survey to obtain feedback from livestock experts and beneficiaries.
- Conduct a feasibility study on the need and impact of a livestock bureau.
- Conduct benchmarking to identify successful models e.g., Sidama as well as assess what has contributed to the success of regions that already have an independent bureau.
- Expand the benchmarking activities to include not only successful models but also those that have faced challenges and limitations and consider potential solutions or adaptations to address these challenges in the design and implementation of the proposed bureau.
- Conduct a resource needs assessment for the bureau and develop a budget proposal.
- Deliver evidence to MoA to secure the endorsement.
- Develop a detailed implementation plan for the establishment of the bureau.
- Develop policies, guidelines, and procedures for the bureau's operation and management.

Outputs and KPIs:

- Improved motivation and satisfaction of livestock and fisheries experts.
- The number of livestock and fisheries programs initiated and successfully implemented by the bureau annually.

- Percentage increase in livestock and fisheries production and productivity in the regions
- Farmer's satisfaction level with a service provided by the bureau, measured by surveys.

5 Independent Livestock Bureau best practice example: Sidama

Sidama has a widely recognized successful independent livestock bureau. This is due to four key success factors:

- **Leverage bureau for resource management**: The livestock bureau in Sidama has leveraged its independence from the agricultural bureau to effectively manage their resources and establish targeted initiatives and programs, resulting in an amplified budget allocation. One notable example is the implementation of a clustering approach, exemplified by the Hawassa city dairy cluster, which optimizes the utilization of limited land areas. Furthermore, the livestock bureau diligently assesses their funding requirements, prioritizes them, and allocates resources accordingly. Under competent leadership, they ensure the proper allocation of resources, with a primary focus on maximizing the impact of their budget. This approach guarantees that the initiatives and programs they undertake receive ample funding, enabling them to deliver the desired outcomes effectively.
- **Focus on livestock activities:** Prioritization of livestock activities has led to adequate resource allocation and attention to the sector, resulting in improved outcomes. In contrast, other regions may struggle with a lack of emphasis on livestock within their agricultural bureaus, which diminishes the overall success of their livestock management efforts.
- **Work culture:** The staff are livestock experts who feel passionately about their jobs and the due attention that is given to their sector has resulted in increased dedication, motivation, and accountability for their activities. The bureau also invests in developing the human capacity of their livestock experts, creating more targeted training and capacity-building initiatives. Thus, staff have the necessary skills and knowledge to effectively perform their sector-specific duties.
- **Targeted monitoring and evaluation:** The bureau have been able to develop their own sector specific monitoring and evaluation practices. By regularly assessing livestock-related activities, they identify areas for improvement, track progress, and make informed decisions. This systematic approach allows them to adapt and remain responsive to the evolving needs of the livestock sector.

While the Sidama livestock bureau exemplifies success, other regions with independent bureaus, such as Gambella and Somali, have not seen the same success, primarily due to external factors. These regions face recurrent challenges like drought which adversely affect the efficiency of their bureaus. Additionally, factors such as poor management of budget, inadequate monitoring, and evaluation, limited qualified workforce, and security issues may have further hindered their success.

It is important to note that the mentioned factors are not an exhaustive list, and there may be other region-specific circumstances that influence the outcomes. To fully understand the reasons behind the success of the Sidama Livestock bureau and the challenges faced by other regions, a comprehensive study should be conducted as part of the implementation process. This study would help investigate the feasibility of having an independent livestock and fisheries bureau and identify strategies to address the issues faced by other regions, improving livestock development across the board.

7.2.2 Pastoral production system

Intervention C7: Develop and disseminate targeted information.

Context: The pastoral community is encountering major difficulty acquiring adequate rangeland and water resources. The existing extension services are outdated and insufficient to effectively address these challenges. As a result, pastoralists are struggling to adapt to the current climate and are missing potentially game-changing opportunities for their livelihoods. This situation underscores the urgent need for targeted development and dissemination of information to better serve the needs of the pastoral community.

In the focus group discussion with pastoralists, they expressed their frustration with the existing extension services. They stated that either the extension service should tell them how to combat drought or support them in finding resources. This highlights the gap between the existing extension services and the needs of pastoralists. Pastoralists require updated and relevant information that can help them combat the effects of climate change, particularly drought, which is a significant issue in many pastoral communities. Therefore, there is a need to develop and disseminate targeted information to meet the needs of pastoralists and help them make better decisions in their livelihood activities.

Intervention description: Develop and disseminate targeted information to better equip pastoralists with relevant and updated information on input availability (like feed, health, etc.), early warning signals, and strategies to combat climate issues. This will be achieved through the development and provision of digital pastoral extension services, including resource mapping, evaluation, monitoring, and prediction.

Cross-cutting themes: Increased access to relevant extension services for pastoralists will result in increased adoption of practices that contribute to improved **nutritional** outcomes, such as improved meat and dairy quality, food safety measures, and effective post-production management. This in turn will improve national access to high-quality proteins and dairy products, increasing nutritional diversity. More targeted content will also better equip pastoralists with the information needed to improve resilience and adapt to mitigate **climate impacts**, as well as better manage resource scarcity.

Activities:

- Assess international examples e.g., Mongolia, and Kenya, and hire experts to develop a resource mapping tool & prediction model.
- Enable integration of satellite images onto the platform and pilot in a small area with high or existing satellite coverage.
- Train extension agents to upload community leader information onto the prediction platform and other existing technologies e.g., ADNIS, LMIS, NMIS, 8028.
- DAs will gather information on rangeland and livestock health from community leaders and upload it onto the prediction platform and other existing technologies such as ADNIS, LMIS, NMIS, and 8028.
- Extract relevant information from the platform and existing technologies such as ADNIS, and communicate it to the community through various channels such as DAs, SMS, calls, 8028, etc.

Outputs and KPIs:

- Integrated indigenous information systems are enabled by both existing and new digital technologies.
- Developed resource mapping, evaluation and monitoring, and prediction platform.
- Improved access to rangeland and feed, with a reduced number of animal fatalities.
- Percentage increase in the number of pastoralists accessing targeted information, and early warning signals.
- Increased satisfaction level of pastoralists with target information distributed.
- Percentage increase in the use of resource maps and monitoring reports by pastoralists.
- Percentage decrease in livestock loss due to information delivered.

Intervention DM10: Develop a mobile extension service.

Context: Pastoral communities are facing increasing challenges in accessing livestock extension services due to their mobility in search of water and feed, compounded by the unpredictable movements caused by climate-related events such as droughts. Their inability to access stationary training centers makes it difficult for extension service providers to track them and provide relevant and timely information on modern livestock management practices and technologies. As climate change continues to impact the availability and distribution of resources, this lack of access to extension services becomes an even more critical issue, hindering the ability of pastoralists to adapt and improve their livelihoods.

The involvement of ATVET, universities, and research institutions will bring additional expertise and resources to enhance the effectiveness of the mobile extension service. Here are the roles that ATVET and universities can play in this intervention:

- Curriculum development: Collaborate in developing specialized curricula tailored to the needs of pastoralists in highly mobile areas. This curriculum can focus on livestock management, sustainable grazing practices, animal health, mobile technology utilization, and other relevant subjects. The curriculum should be designed to incorporate practical field-based training and digital literacy.
- Training and capacity building: Provide training programs for community leaders, CBOs, and CAHWs involved in the mobile extension service. These programs can include workshops, seminars, and hands-on field training to enhance their knowledge and skills in delivering extension services effectively. ATVET and university experts can serve as trainers and mentors for these capacity-building initiatives.
- Research and Innovation: Continue to research efforts focused on pastoralist communities, their challenges, and potential solutions. Research outcomes can inform the development and improvement of extension services, technology utilization, and sustainable practices. Universities can facilitate research collaborations, support data collection, and offer academic expertise to ensure evidence-based interventions.
- Technology Integration: Collaborate with mobile technology experts to develop and refine digital extension tools, such as mobile apps and SMS platforms.

Outreach and communication: educational institutes can engage their students, faculty, and researchers in community outreach activities. They can organize awareness campaigns, workshops, and knowledge-sharing sessions in collaboration with CBOs and CAHWs. These efforts can foster dialogue, build trust, and facilitate the adoption of improved practices among pastoral communities.

It is essential to solving this challenge as pastoralists depend on their livestock for their livelihoods, and access to extension services could improve their livestock management practices, in turn leading to increased productivity and income.

Intervention description: Develop a mobile extension service that will provide training and information to pastoralists in highly mobile areas. The mobile extension service will be based on community-based organizations (CBOs), Community-Based Animal Health Workers (CAHWs), digital extension tools (SMS, mobile apps, 8028 hotlines, etc.) and will use roaming health and AI providers, as well as community leaders equipped with training to deliver services themselves.

The use of CBOs/CAHWs will ensure that the extension services are tailored to the needs of the local communities, while the use of mobile providers will allow pastoralists to have access to services regardless of their location.

This intervention is also intricately linked with Intervention HCF3: Provide capacity-building training, as community leaders will benefit from the regular training proposed.

Cross-cutting themes: Training will be provided to a requisite percentage of **female** community leaders as well as **youth** groups and will be designed to empower and upskill to teach their communities. This training will also include digital literacy modules to ensure women and youth are as familiar with the digital tools proposed. Youth roaming AI, health, and overall extension providers will ensure access even as **climate change** disrupts traditional mobility patterns.

Activities:

- Assess pastoral mobility trends to identify locations for fixed or semi-fixed facilities in less mobile areas.
- Train extension providers, such as community health workers or community leaders, to deliver extension services using mobile devices and other technologies.
- Utilize community leaders, and CAHWs to expand existing technologies such as ADNIS and 8028 by adding tailored content and providing digital literacy training where required.
- Conduct awareness campaigns to educate pastoralists about the availability and benefits of mobile extension services.
- Establish a monitoring and evaluation system to track the effectiveness of the mobile extension service, including the adoption of new livestock management practices and technologies by pastoralists.

Outputs and KPIs:

- Increased number of pastorals and agro-pastorals with access to training facilities.
- Increased number of mobile extension services in highly mobile areas.

- Number of CBOs trained and equipped to provide extension service.
- Number of pastoralists with access to mobile extension service.
- Percentage increase in adoption of improved livestock production and management practices.

6 Digital best practice example: Livestock early warning signs (LEWS) in Kenya and Mongolia

Kenya and Mongolia separately and successfully implemented **Livestock Early Warning Sign** (LEWS) projects that help herders access, interpret, and **apply weather forecast information** using digital tools. The LEWS systems were developed to provide **drought warnings** and generate a 6-monthly **forecast of forage** conditions.

Timely actions based on advanced information **reduced the potential impacts of extreme weather** and **climate events on livestock**. The information was delivered by NGOs and extension agents using the **internet, radio, maps, SMS, and farmer-to-farmer** word of mouth.

In the Ethiopian context, we can leverage **existing early warning systems** and disseminate information

7.2.3 Urban/per-urban production system

Intervention DM8: Regulate private EAS providers.

Context: The lack of regulatory frameworks and institutions to regulate private actors is a significant challenge for livestock extension services in urban and peri-urban areas. Private extension providers who deliver embedded advisory services, mainly on health and breeding, are crucial in delivering advisory services to farmers, especially in areas where public extension services are limited. However, the absence of proper regulation and quality assurance mechanisms results in farmers receiving sub-standard services and discourages private actors from providing services.

During a focus group discussion with farmers, they noted that despite relying on these private health and breed providers, they were receiving sub-standard quality services that did not meet their expectations. This highlights the importance of regulating private extension providers and ensuring that quality services are delivered to farmers.

In addition to the need for regulation of private extension providers to ensure quality services for farmers, it is also important to incentivize providers through financial support and other means. Failing to do so may discourage quality providers from entering the market, despite clear business benefits.

Intervention description: Establish a legal and regulatory framework that institutionalizes private extension providers, improves service quality, and encourages and promotes investment in the sector. This regulatory framework will consist of directives and regulations aimed at encouraging private actors to engage in extension service provision, while also promoting adherence to quality standards by private extension providers.

By improving the quality of services and building trust in private extension providers, this intervention will provide opportunities for private sector investment and entrepreneurship, thus promoting the growth and sustainability of the livestock extension sector.

Cross-cutting themes: Job opportunities will be created for **youth and women** in the livestock and fisheries sector as private EAS providers, experts, and VC actors by ensuring that regulations and incentives enable and encourage female and youth participation (e.g., incentives will only be given if a certain number of private agents are women/youth). By regulating providers, the quality of extension services will improve, thus increasing productivity and in turn **nutritional** quality and access to a greater diversity of nutrition-rich foods.

Activities:

- Conduct a market study of private extension services to assess the current situation and identify gaps.
- Mobilize various stakeholders to draft the legal and regulatory framework to license, institutionalize and incentivize private EAS.
- Use benchmarks and focus groups to define incentives, run cost-benefit analysis, and secure endorsement and resources.
- Set up a regulatory body or task force responsible for licensing and monitoring private extension providers.
- Develop a monitoring and evaluation system to ensure that private extension providers adhere to quality standards and that their services are effective.
- Develop incentives, such as tax breaks or subsidies, to encourage private sector investment in the livestock extension sector.

Outputs and KPIs:

- Legal instruments: Directives, proclamations, regulations licensing procedures, and guidelines
- Incentive packages (e.g., subsidies, credit, loans, etc.).
- Increased private sector actor participation in EAS delivery.
- Increased trade fairs and awareness creation sessions conducted for linkage formation.
- The number of awareness creation trade fairs conducted.
- The number of private sector actors delivering extension services.

7 Private actors-based extension example: Processors delivering extension service in Urban areas of Kenya.

In Kenya, dairy processors have successfully **implemented a private sector-led extension delivery** model to provide extension services to **smallholder dairy farmers** in their own supply chains. By providing input provision and extension services, private processors **have ensured a consistent supply of high-quality milk** for their operations, while also **improving the livelihoods** of smallholder dairy farmers

The **extension services are embedded** through **input provision**, meaning that processors provide inputs such as feed, veterinary drugs, and artificial insemination services to farmers while also offering extension services. This approach ensures that farmers have access to the necessary inputs to improve productivity and quality and receive training and technical support to optimize their operations.

In the Ethiopian context, a similar private sector-led approach to extension delivery could be adopted with the **support of government regulations, contracts, and subsidies.**

Intervention DM9: Facilitate peer-to-peer best practice sharing.

Context: The current delivery modes for livestock extension services in urban and peri-urban areas are not effectively facilitating skill and knowledge-sharing mechanisms between urban-rural and urban-commercial farmers. This limits the opportunities for small to medium-sized farmers to learn from model and commercial farmers and to apply best practices in their farming operations.

During our focus group discussion with farmers in urban areas, they expressed their desire to improve their knowledge and skills in livestock production such as animal health, feeding and nutrition, and breeding and genetics, to help optimize their livestock production practices and increase profitability. They wanted to learn about successful models and commercial farmers who have achieved elevated levels of efficiency and profitability in their livestock operations through workshops or training/experience sessions that would provide them with practical knowledge and skills they could apply in their livestock production practices.

Intervention description: Pilot and roll out peer-to-peer best practice-sharing learning approaches by organizing field visits, and travel workshops per commodity according to the season that targets small, medium-sized, and commercial farmers, creating linkages between urban and peri-urban farmers as well as farmers across other production system to facilitate experience sharing. This approach will allow urban and peri-urban farmers to learn from successful commercial farmers and apply their best practices. This will help to bridge the gap between urban and rural farmers and promote the adoption of best practices for improved livestock production and it will promote interactive and collaborative learning, increasing the effectiveness of extension services in the urban and peri-urban areas.

To optimize the impact of the peer-to-peer knowledge-sharing approach, the program will employ model farmers as trainers and mentors for other farmers during the sessions.

Additionally, the training sessions will be documented and packaged, which will be given to extension agents and farmers to ensure that the knowledge and skills gained are disseminated widely.

Cross-cutting themes: When implementing this intervention, specific networking and learning opportunities for minority groups such as **women or youth** will be developed. Topics for workshops or curricula will be developed with **climate and nutrition** in mind, such as topics on water management, reducing methane production through feed adjustments, and improving the nutritional value of products.

Activities:

- Interview or survey stakeholders and experts on agenda topics for learning events.
- Map seasonal topics per commodity by interviewing experts and identifying the highest priority locations for rollout by engaging with regional heads.
- Identify medium-sized to commercial farmers who have successful livestock production models and can act as peer-to-peer trainers.
- Develop a training curriculum and materials for the peer-to-peer best practice sharing workshops and field days.
- Pilot the first learning event in a high-intensity location such as Bishoftu or Bahir Dar.
- Monitoring and evaluating the effectiveness of the intervention to make improvements and adjustments as needed.

Outputs and KPIs:

- Improved linkage between urban commercial farmers and peri-urban farmers
- Increased farmer participation and engagement.
- The number of urban and peri-urban farmers who participate in experience sharing, travel workshops, and field days.
- The number of new linkages created between urban and peri-urban farmers and commercial farmers.
- Percentage increase in knowledge and skills of urban and peri-urban farmers who participated in experience-sharing and travel workshops.
- The number of urban and peri-urban farmers who adopted the best practices learned during the travel workshops.

Further examples of innovative best practices, both local and international, have been included in the Annex (section 11).

8 Production system models

As noted, **different approaches will be required to ensure the success of extension services in each production system**. Therefore, we recommend **piloting different and supplementary models for funding and delivery in small areas within each production system**, which brings together the recommended interventions alongside new methods of delivering them.

These models involve multiple actors, including funding agencies, extension service providers, and beneficiaries, who work together to deliver effective extension services. They also explore using different modalities, some of which have been explored in detail in the interventions above (such as community leaders, CAHWs, CBOs, and digital platforms). **All models should tailor delivery to different farmer types e.g., adoption or skill level, commercialization level in urban, farm size in mixed crop-livestock, and mobility level in pastoral.**

The success of extension models relies on the close collaboration among these actors, which is why smaller pilots are recommended to test collaboration approaches and identify potential risks in scaling while maintaining the existing services.

8.1 Mixed crop-livestock

Policy and governance:

Ethiopia's livestock and fisheries extension system should incorporate a supplementary model that adopts a pluralistic approach, like the model implemented in India, which incorporates outsourcing contracts and embedded extension advisory services (EAS). The system should also test cost-sharing mechanisms where larger farmers can contribute more towards the extension services. Furthermore, a policy framework should be developed and endorsed that allows private actors such as processors, agro-dealers, and cooperatives to provide extension services through contracts or embedded services. The government should regulate the quality of these services to ensure their effectiveness and incentivize actors to encourage their participation in the extension system. Finally, a separate Livestock and Fisheries Bureau should be created to ensure accountability and effective governance.

Human capacity:
In the mixed crop-livestock system, the existing, currently under-resourced Farmer Training Centers (FTCs) should be strengthened and equipped to deliver extension services and use products from FTCs to incentivize DAs working the training centers.

Content:
As per Strategic Pillar 3, content should be designed based on skill level and cover all aspects of the value chain with a focus on market orientation.

Delivery mode:

In this system, a comprehensive approach is recommended given the varied skill and size levels as well as commodity spread. This approach should incorporate a range of extension services and models, including Farmer Field Schools (FFS), cluster-based model villages and model farmers, strengthened Farmer Training Centers (FTCs), and expand supply-driven digital extension services such as radio, SMS, and 8028.

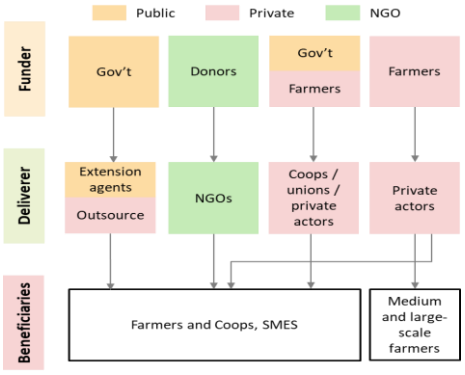

Figure 6: A recommended model for the mixed crop-livestock production system

8.2 Pastoral

Policy and governance:

A community-based extension as implemented in Namibia is a recommended model to implement in Ethiopia. This system should involve the use of community-based organizations to ensure the delivery of services to marginalized communities. However, due to the reduced willingness or ability to pay in pastoral areas, the extension system should be funded by the government and NGOs. Additionally, a pilot public-private partnership (PPP) and model pastoral approach should be utilized, where the government provides funds to the private sector for service delivery. This will not only ensure the sustainability of the extension system but also promote greater reach and ownership by the communities.

Human capacity:

Community-selected representatives should be trained and capacitated to provide basic breed and health extension services for their communities, embedding themselves to follow their movements. In addition, the formal government structure should be capacitated to provide a mobile extension.

Content:

Community-based organizations and CAHWs selected individuals can play a crucial role in developing relevant extension content for their communities by combining Indigenous knowledge with new tailored packages. By involving the community in the content development process, the resulting materials are more likely to be relevant, useful, and applicable to the local context and pressing needs.

Delivery mode:

In addition to leveraging CBOs, mobile extension services should be leveraged in highly mobile communities. A study should be commissioned to develop relevant extension content, and digital tools such as rangeland tracking, early warning systems (EWS), and text alerts on drought and rangeland information should be piloted, as these target the most pressing issues in the pastoral and agropastoral communities.

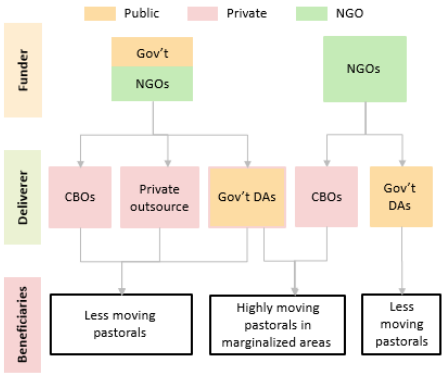

Figure 7: A recommended model for the pastoral and agro-pastoral production system.

8.3 Urban/Peri-Urban

Policy and governance:

A pluralistic policy approach be adopted in addition to existing delivery. This approach should involve cost-sharing, particularly in areas characterized by higher wealth, awareness of benefits, and willingness to pay.

The delivery of extension services should be implemented through government contracts and public-private partnerships (PPPs). Urban and peri-urban farmers are more capable of accessing fee-based extension services from private actors, and hence, cooperatives can be empowered to self-fund and contract-based Development Agents (DAs) as per the method used by NGOs such as SNV, promoting sustainability and ownership of the extension services by the community.

It is also important to create regulatory frameworks and design incentive mechanisms to enhance the effectiveness of extension services as described in Interventions 1c and 4b. This can include the creation of linkages between service providers and farmers through business-to-consumer (B2C) promotions, awareness creation, and trade fairs. These mechanisms will not only facilitate access to extension services by farmers and pastoralists but also promote the adoption of sustainable practices and technologies.

Human capacity:

Empowering research institutions through improved linkages will better help them identify necessary and useful research while working with them to use students and interns should be piloted as an effective strategy for enhancing human capacity. Research institutions can also benefit from the practical experience gained by their interns, improving the quality of their research output.

Content:

Content quality can be improved through the proposed PPPs, as farmers and cooperatives would hire extension agents based on the content they need to be delivered. This will ensure that the content is relevant and appropriate for the target audience and encourages demand-driven extension.

Delivery mode:

Tailored peer-to-peer delivery modalities along with group demonstrations led primarily by private sectors are recommended for pilots in urban and peri-urban areas. In addition, digital delivery services using high-end technology such as personalized mobile applications using data-driven recommendations should be trialed for urban and peri-urban areas.

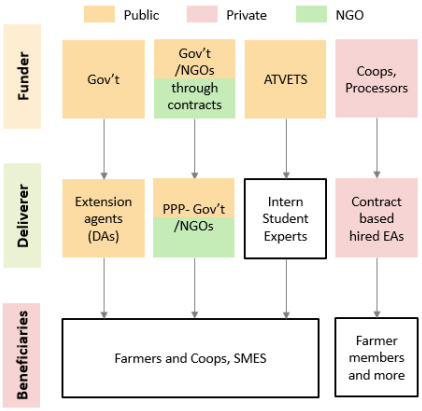

Figure 8: A recommended model for the urban and peri-urban production system.

9 Ten-year livestock and fisheries extension strategy roadmap

We have developed a roadmap developed for the livestock and fisheries extension strategy, which outlines the phasing of the interventions over ten years. This roadmap provides:

- An overview of the sequence of actions and their interdependencies
- Key activities and KPIs per intervention
- Initial and high-level budget estimate per intervention
- Owners for each intervention
- Risks and mitigations

The roadmap will serve as the foundation for intervention owners and a corresponding task force to develop complete implementation plans. These implementation plans will detail:

- A framework for tracking progress, identifying, and resolving issues, and ensuring effective execution of interventions.
- Detailed project breakdown of each strategic intervention in the roadmap, indicating the specific sequence of tasks for each activity and a comprehensive dependency register.
- A comprehensive, line-by-line budget
- Milestones
- Activity-level owners and responsibility assignations

9.1 High-level success measurement

The effectiveness of the national livestock and fisheries extension plan will be evaluated based on enhanced outreach and quality of extension services, as well as increased production and productivity among farmers, pastoralists, and agro-pastoralists.

a) Quality of the extension services
   - e.g., increase in farmer satisfaction, five content refreshments per decade.

b) Extension coverage
   - e.g., an increase in beneficiaries, and an increase in private sector providers.

c) Adoption and adaptation of technology
   - e.g., the percentage of farmers who received an extension to adopt new tech.

d) Production and productivity
   - e.g., an increase in liters per cow per year, or an increase in the number of eggs sold.

As part of the implementation plan, a comprehensive results framework, detailed KPIs, targets, and a monitoring, learning, and evaluation (MLE) mechanism need to be established.

9.2 Sequencing of interventions

The strategic interventions outlined will be executed in three phases over a span of 10 years. The first phase will begin after official approval and the creation of a Task Force to monitor implementation and manage the program. Given these required activities, the provisional dates for the phases are:

- Phase One: End of 2023 to 2026
- Phase Two: 2026 to 2029
- Phase Three: 2029 to 2033

After each phase, a comprehensive evaluation will be conducted to identify the strengths, gaps, and necessary remedial actions of the implementation program.

Interventions have been sequenced across these three phases based on interdependencies as well as ease of implementation and impact (see Figures 9 and 10 below). Though we recommend the ten-year phasing for implementation, comprehensive planning for each intervention can begin once owners have been assigned and the Ethiopian Ministry of Agriculture (MoA) has established the Task Force to lead strategic implementation.

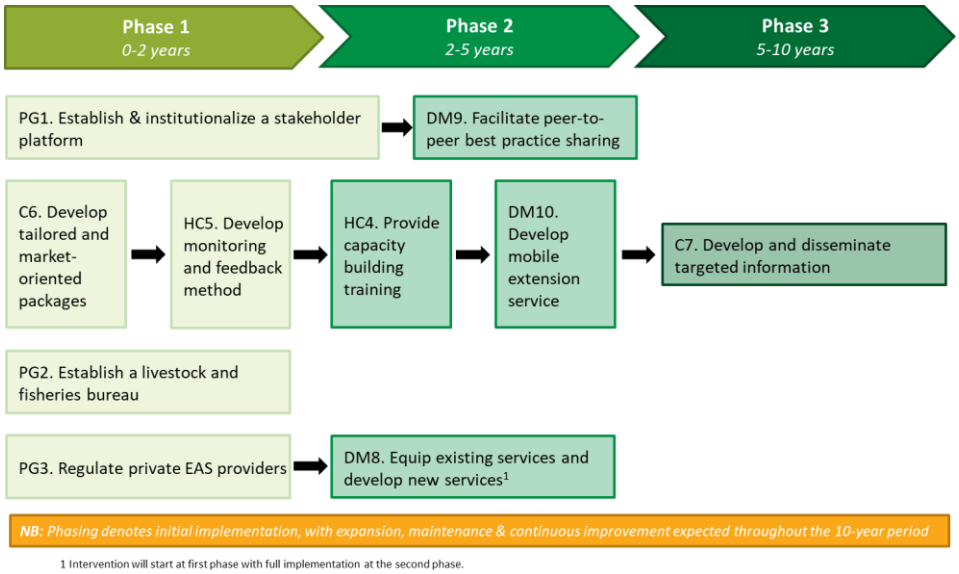

Figure 9: Sequencing of interventions

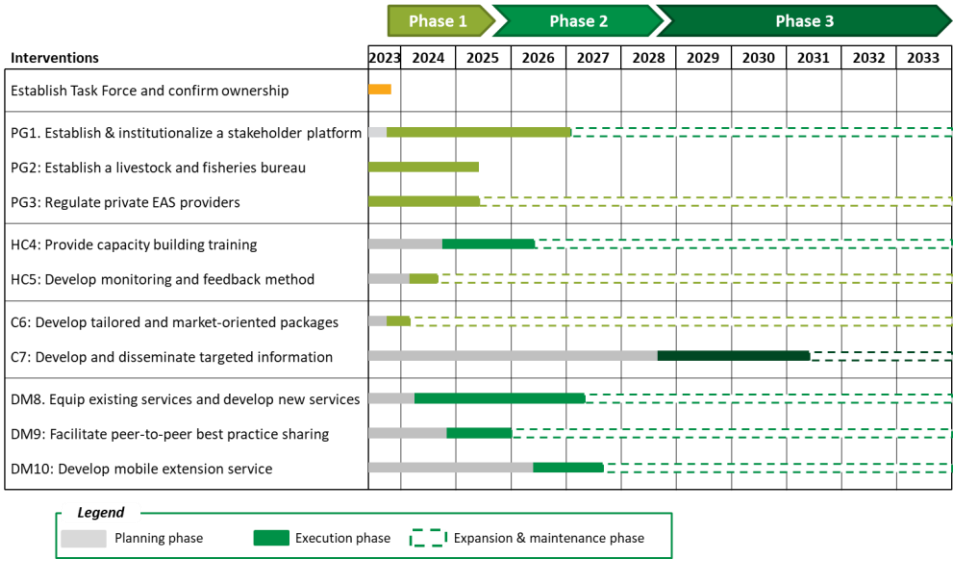

Figure 10: Sequencing of interventions and phasing across planning, execution, maintenance, and expansion

The dependencies of each intervention that have informed sequencing are as follows:

Intervention PG1: Establish & institutionalize a stakeholder platform.

- Should begin immediately after the task force is assigned.
- Does not depend on any other interventions.
- Institutionalizing the platform could start at the second phase

Intervention PG2: Establish a livestock and fisheries bureau.

- Should begin immediately after the task force is assigned.
- Does not depend on any other interventions.
- Good asset to properly implement all other interventions effectively.

Intervention PG 3: Regulate private EAS providers.

- Is already in progress as part of the pluralistic extension policy program.
- Does not depend on any other interventions.

Intervention HC4: Provide capacity-building training.

- Implementation of the intervention is dependent on Intervention C6 (develop tailored and market-oriented packages) and Intervention HC5 (develop monitoring and feedback method).
    - An updated content package must be in place to deliver effective practical training.
    - The monitoring and feedback mechanism should be developed first so that it can be communicated to DAs as part of the training and should also be in place to evaluate how effective the training is.

Intervention HC5: Develop a monitoring and feedback method.

- Implementation of the intervention is dependent on Intervention 6 (develop tailored and market-oriented packages).
    - An updated content package must be in place so that KPIs and evaluation methods can be tailored to the updated content.

Intervention C6: develop tailored and market-oriented packages.

- Should begin immediately after the task force is assigned.
- Does not depend on any other interventions.

Intervention C7: Develop and disseminate targeted information.

- This intervention requires the implementation of Intervention HC4 (provide capacity-building training), Intervention HC5 (develop monitoring and feedback method), and Intervention DM10 (develop mobile extension service).
    - Training, monitoring, and evaluation must be in place to train the new community and mobile agents, as well as monitor the quality of the extension services they provide.
    - A mobile extension service should be in place so that digital platforms can be best utilized for the dissemination of information.

Intervention DM8: Equip existing services and develop new services.

- Existing training centers can be better resourced during Phase 1.
- Creating new services in existing facilities and building financially sustainable new facilities using the 'Farmers' Home' approach requires Intervention PG3 (Regulate private EAS providers) to be in place.
    - Private sector integration and regulations must be in place to facilitate private sector-driven extension services in existing and new facilities.

Intervention DM9: Facilitate peer-to-peer best practice sharing.

- Depending on Intervention PG1 (establish stakeholder meeting platform) to most efficiently facilitate peer-to-peer best practice sharing.
    - Prioritization is recommended, as existing linkages between value chain stakeholders and the database can be leveraged to facilitate effective peer-to-peer sharing.

Intervention DM10: Develop a mobile extension service.

- Dependent on the implementation of Intervention 6 (provide capacity-building training) and Intervention HC5 (develop monitoring and feedback method).
    - Training, monitoring, and evaluation must be in place to train the new community and mobile agents, as well as monitor the quality of the extension services they provide.

9.3 Intervention level roadmap

The necessary tasks to initiate each intervention, significant deliverables, and KPIs are detailed in Section 6 (Strategic Interventions). In addition to these elements, the roadmap includes:

- Crucial activities across the 10-year timeframe.
- Preliminary budget estimates for each intervention.
- High-level ownership of interventions.
- High-level identification of potential risks and corresponding mitigation strategies.

The following section provides comprehensive details on these elements.

Intervention PG1: Establish & institutionalize a stakeholder platform.

i. **Objective**: Improve the coordination, linkage, and communication among actors in the livestock and fisheries value chain to enhance the delivery of extension services.

ii. **Ownership of the intervention**

Planning: MoA

Implementation: MoA (to set up a technical committee), Technical committee board to implement the intervention

Regulation: MoA

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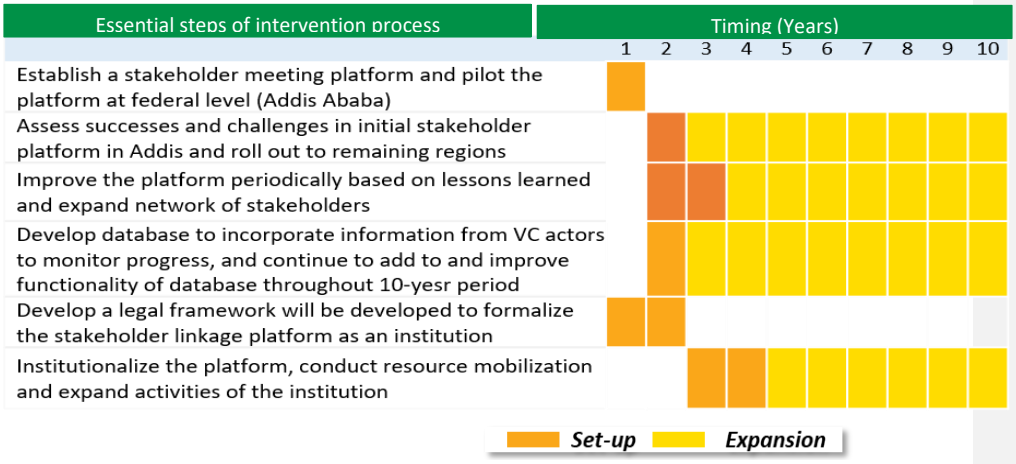
iii. **Key stages of the intervention:**



iv. **Estimated budget:**

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~14	~11	○ Quarterly Technical Committee: 6.5Mn ETB (60 participants, 7 days per diem, accommodation, meeting venue, air ticket for 30 experts) ○ Quarterly Steering Committee: 3.3Mn ETB (30 participants for 7 days; per diem, accommodation, venue cost, and air ticket for 15 participants) ○ Develop ToR: 2.1Mn ETB (2 workshops, 30 experts for 10 days; per diem, accommodation, and venue cost) ○ Fie Database administrator staff: 1.2Mn ETB per year (staff wage 240k ETB/year/person) ○ Develop a database:1Mn ETB on average. ○ Server maintenance cost: 240k ETB/year	○ Quarterly & Steering Committee meeting: 9.8Mn ETB (same assumptions as setup cost) ○ Server maintenance cost: 240k ETB/year ○ Database admin:1.2 Mn ETB/year ○ Server maintenance:240k ETB/year

v. **High-level risks and mitigations:**

a) Potential risks
   - Limited commitment, accountability, and interest from stakeholders across the value chain.
   - Limited budget to organize and sustain the platforms.

b) Risk mitigations
   - Select members that are willing to commit their time and skills as needed.
   - Precisely define and convey the duties of each member.
   - The committee can be involved in resource mobilization activity.

Intervention PG2: Establish a livestock and fisheries bureau; create an independent budget and resource allocation led by a designated livestock head.

i. **Objective**: Establish a dedicated livestock and fisheries bureau that provides the livestock sector with the necessary focus, resources, and decision-making power to thrive.

ii. **Ownership of the intervention**

Planning: MoA, Regional government
Implementation: MoA, Regional Bureaus
Regulation: MoA, Regional government

iii. Key stages of the intervention:

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Conduct an independent feasibility study on the need and impact of livestock bureau in all regions										
Conduct benchmarking to identify local & international successful models & assess lessons learned										
Deliver evidence to the MoA to secure endorsement for a livestock bureau and gain political approval										
Develop policies, guidelines, and procedures along with a detailed implementation plan for bureau establishment										
Establish the livestock bureau in the required remaining regions										

iv. Estimated budget:

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~39	~24	○ Incremental budget increase bureau: 24Mn ETB (20% budget increment for 8 regions, assuming 15Mn yearly budget of Amhara) ○ Conduct feasibility study, and benchmarking: 11Mn ETB (local consulting firm service fee 40k USD[3]/month, for 5 months) ○ Validation workshops: 3.8Mn ETB (2 workshops, 10 days, 50 experts; per diem, accommodation, venue, air ticket for 25 experts)	○ Incremental budget increase bureau: 24Mn ETB (20% budget increment for 8 regions, assuming 15Mn yearly budget of Amhara)

v. High-level risks and mitigations:

c) Potential risks
- Low willingness/interest from the government to establish a new livestock org-structure.
- Limited budget availability to establish new offices and facilities.

d) Risk mitigations
- Use evidence-based data to demonstrate impact and communicate with relevant stakeholders at all levels.
- Seek alternative funding sources for successful intervention implementation (e.g., partnership with a private sector, NGOs).

Set-up *Expansion*

[3]Conversion rate used; 1USD=54.9 ETB

Intervention PG3: Regulate private EAS providers; institutionalize private extension providers through a legal framework.

i. **Objective**: Establish a legal and regulatory framework for private extension services to improve their quality. incentivize investment and promote sustainable growth of the sector.

ii. **Ownership of the intervention:**

Planning: MoA

Implementation: MoA, Regional bureaus

Regulation: EAA, MoA, technical team

iii. **Key stages of the intervention:**

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Develop a regulatory framework to license, institutionalize and incentivize private EAS										
Identify and collaborate with prospective private sector partners to provide extension services										
Implement a pilot program for extension services led by private sector actors in recommended areas										
Evaluate and use the main takeaways derived from the pilot to enhance frameworks and incentives										
Expand private sector actor-based extension service to new regions										
Continuously monitor and regulate extension service										

iv. **Estimated budget:**

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	Annual cost	Set-up cost	Annual cost
~16	*N/D*	○ Workshop to develop regulatory framework/incentive: 9.6Mn ETB (3 workshops, 30 experts for 30 days; per diem, accommodation, meeting venue, and air ticket for 15 experts) ○ Validation of regulation: 2.7Mn ETB (1 workshop, 100participants, 7 days, per diem, accommodation, venue & air ticket for 50 experts) ○ M & E system dev't: 2.2Mn ETB (local consulting firm service fee 40k USD/month, for 1 month) ○ Training on regulation: 1.6Mn ETB (30 experts for 15 days; per diem, accommodation, venue, and air ticket for 15 participants)	○ Subsidies, and incentives for private sector actor extension service providers *(to be decided in implementation)* ○ Training on regulation: 1.6Mn ETB *(same assumptions as setup cost)*

Set-up ***Expansion***

v. **High-level risks and mitigations:**

a) Potential risks
   - Unqualified extension providers might take advantage of this system.
   - The unwillingness of farmers to pay for private extension services.

b) Risk mitigations
   - Develop and enforce standards for the qualification and certification of private extension providers.
   - Conduct awareness campaigns to educate farmers on the benefits of quality private extension services.

Intervention HC4: Provide capacity-building training; skill-based practical training for extension agents, community leaders, and private providers.

i. **Objective**: Improve the knowledge, skills, and confidence of extension agents in providing effective extension services by providing practical and demand-driven capacity-building training.

ii. **Ownership of the intervention:**

Planning: MoA, Regional Bureaus

Implementation: A committee including MoA, Regional Bureaus, RARI, educational institute

Regulation: MoA, Regional Bureaus

iii. **Key stages of the intervention:**

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Conduct a needs assessment to identify a practical skill gap										
Develop a standard manual to train livestock experts together with RARIs and universities										
Develop monitoring and evaluation guidelines to determine whether the training is successful										
Deliver practical based training for extension agents										
Develop ongoing support and resources such as an online training platform and biannual in-person programs										

Set-up *Expansion*

iv. **Estimated budget:**

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~170	*~164*	○ Train extension agents: 134Mn ETB (10,330 trainees, per diem) ○ Trainer's expense: 21.5Mn ETB (1 model farmer to train 30 trainees, 1 expert to train 50 trainees, per diem, and accommodation cost) ○ DAs training demand assessment: 5.4 Mn ETB (5-page questionnaires, 1200 ETB per 5 pages, 30% of Ethiopian kebele i.e., 4500 kebele) ○ M &E of extension training: 5.4Mn ETB (5-page questionnaires, 1200 ETB per 5 pages, 30% of Ethiopian kebele i.e., 4500 kebeles) ○ Develop standard training manual: 2.1Mn ETB (1 workshop, 30 experts for 20 days; per diem, accommodation, venue cost) ○ Develop an online resource for Das: 1Mn ETB (average database development cost) ○ 1 database management staff: 240K ETB/year (average staff wage) ○ Server maintenance cost: 240k ETB/year	○ Train extension agents and trainers' cost: 155.5Mn ETB *(same assumptions as setup cost)* ○ M &E of extension training: 5.4Mn *(same assumptions as setup cost)* ○ Revise standard training manual: 2.1Mn ETB *(same assumptions as setup cost)* ○ 1 database management staff: 240K ETB/year ○ Server maintenance cost: 240k ETB/year

v. **High-level risks and mitigations:**

a) Potential risks
- Minimal intake rate of extension agents.
- High resource loss due to costs related to training if DA's turnover rate is not improved.

b) Risk mitigations
- Ensure that the training is demand-driven and skill-based, tailored to the needs of livestock and fisheries extension agents.
- Develop a retention strategy for the development agents to prevent high turnover rates (e.g., compensation and incentives).

Intervention HC5: Develop monitoring and feedback method; involve farmers in DA's calibration, develop KPIs and an incentive mechanism.

i. **Objective**: Improve the performance and motivation of extension agents and assess the quality of extension services provided by various actors.

ii. **Ownership of the intervention:**

Planning: ATI, Regional Bureaus
Implementation: MoA, Regional Bureaus
Regulation: MoA

iii. Key stages of the intervention:

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Develop KPIs to assess extension service quality and DA's performance, and convert these into an evaluation form										
Create a mechanism for calibrating and incentivizing DAs and communicate with relevant stakeholders (woredas)										
Pilot the intervention in specific areas and identify key lessons learned										
Expand implementation of monitoring and feedback mechanisms on a large scale										
Conduct farmer satisfaction survey and address issues raised on extension service and DAs performance										
Calibration and incentivization of Das based on farmer's survey										

iv. Estimated budget:

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~66	*N/D*	○ Validation of KPIs and incentive for DAs: 34.5Mn ETB (1 workshop, 500 experts, 20 days; per diem, accommodation, and venue cost) ○ Consultancy service to develop KPIs and farmer's satisfaction survey: 2.2Mn ETB (local consulting firm service 40k USD/month) ○ Develop DAs performance & calibration mechanism: 2.1Mn ETB (1 workshop, 30 experts, 20 days; per diem, accommodation, and venue cost) ○ Conduct farmer satisfaction survey: 27Mn ETB (5 samples per Kebele, 4500 Kebeles 5-page questionnaires, 1200 ETB per 5 pages)	○ Farmer satisfaction survey: 27Mn ETB (same assumptions as setup cost) ○ Incentives for extension agents (*(to be decided in implementation)*

v. High-level risks and mitigations:

a) Potential risks
   - Poor and inconsistent implementation of reporting and feedback mechanisms.

b) Risk mitigations
   - Regularly review and evaluate the implementation of the feedback mechanism and make necessary adjustments to improve its effectiveness.

Set-up ***Expansion***

Intervention C6: Develop tailored and market-oriented packages; inclusive content integrating agroecology, production system, commodity, and best practice.

i. **Objective**: Develop and deliver regularly updated, market-oriented extension packages that are tailored to the needs of farmers, pastoralists, and agro-pastoralists, with a focus on improving their access to markets, profits, and financial literacy.

ii. **Ownership of the intervention:**

Planning: A committee including MoA, Regional Bureaus, RARI
Implementation: MoA, Regional bureaus
Regulation: MoA, Regional Bureaus

iii. **Key stages of the intervention:**

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Conduct farmer demand assessment and survey to develop farmer centered extension package										
Work with research institutions to structure and develop market-oriented and tailored extension package										
Pilot the package in high production areas and assess lessons learned for scaleup										
Implement the package across production systems and gather feedback on relevancy and skill levels										
Update the package every two years using research institutions, farmer surveys, and global best practice										

iv. **Estimated budget:**

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	Annual cost	Set-up cost	Annual cost
~36	~35	○ Survey to conduct training demand assessment: 27Mn ETB (5-page questionnaires, 1200 ETB per 5 pages, 30% of Ethiopian kebele covered i.e., 4500 kebele, 5 samples per kebele) ○ Workshop to develop the package: 6.2 Mn ETB (60 experts for 30 days; per diem, accommodation, meeting venue covered) ○ Employ experts to write package 1.5 Mn (10 experts, average wage 250k ETB per year)	○ Continued demand assessment every 3 years 27 Mn ○ Package revision every 2 years 6.2 Mn ETB ○ Employ experts to write a package (6 experts, average wage 250k ETB

Set-up *Expansion*

v. **High-level risks and mitigations:**

a) Potential risks

- Budget constraints to conduct the assessment and develop a package based on the production system, commodity, and farmer skill.
- Limited adoption by farmers due to the affordability of the package.

b) Risk mitigations

- Conduct a cost-benefit analysis of the extension package to determine the potential return on investment for farmers.
- Create awareness and promote the benefits of the extension package through various channel mechanisms.

Intervention C7: Develop and disseminate targeted information; information around rangeland, water, and other pastoral issues using remote sensing.

i. **Objective**: Develop and disseminate targeted and relevant information for pastoralists on input availability, early warning signals, and strategies to address climate issues.

ii. **Ownership of the intervention:**

Planning: A committee including MoA, MiNT, Meteorology
Implementation: A committee including MoA, MiNT, Meteorology, Regional bureauss
Regulation: MoA, Regional bureaus

Commented [RP2]: Where we have many 'owners' maybe we should say a committee including: X, Y, Z

iii. **Key stages of the intervention:**

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Conduct a domestic gap assessment and benchmark international best practices to develop a resource mapping tool and prediction model (e.g., water, forage)										
Integrate satellite images into a custom platform and pilot in selected pastoral areas (initially Somali), using existing tools (e.g., 8028) to disseminate information										
Train extension agents to gather and upload community leader information onto the platform to support and improve predictions										
Expand existing and develop recent technologies to develop improved platform information for farmers &pastoralists										

Set-up *Expansion*

iv. Estimated budget:

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~404	~368	○ Design and integrate a platform to consolidate information from satellite image: 355 Mn (1075 ETB/sq Kms for satellite image, assuming we will cover 330k sq km areas of land) ○ Train extension agents to gather and upload pastoralist data to the prediction platform: 39 Mn ETB (5k extension agents and trainers for 15 days; per diem covered) ○ Alert pastoralist using existing tools like 8028: 5Mn ETB (assume 20% of 8028 annual budget i.e., 5.2 Mn ETB) ○ Conduct cost-benefit analysis: 4.3 Mn (2.2 Mn ETB /month –local consulting firm service cost) ○ Hire system admin 249K (average wage 240k ETB/ year)	○ Integrate a platform to consolidate information from satellite images *(same assumptions as setup cost)* ○ System admin wages *(same assumptions as setup cost)* ○ Alert pastoralists using existing tools like 8028

v. High-level risks and mitigations:

a) Potential risks
   - Lack of human and financial capacity to expand pilot technologies.
   - Limited technology adoption rate of DAs and CBO leaders.

b) Risk mitigations
   - Build the capacity of DAs and CBO leaders through comprehensive training and follow-up support to increase the technology adoption rate.
   - Create partnerships with potential donors/NGOs to conduct piloting.

Intervention DM8: Equip existing services and develop new services that enable practical and accessible delivery.

i. Objective: Improve livestock management practice of farmers, pastorals, and agro-pastorals by increasing access to practical training through better equipping existing training facilities or creating new services.

ii. Ownership of the intervention:

Planning: MoA, Regional Bureaus
Implementation: MoA, Regional Bureaus
Regulation: MoA, Regional Bureaus

iii. Key stages of the intervention:

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Equip existing training facilities with the necessary resources to deliver practical training		Set-up	Set-up	Expansion	Expansion	Expansion	Expansion	Expansion	Expansion	Expansion
Establish new services (like FTCs/PTCs, farmer's homes…) that suit the beneficiaries		Set-up	Set-up	Expansion	Expansion	Expansion	Expansion	Expansion	Expansion	Expansion
Develop and pilot a strategy for using FTCs/PTCs to generate income to ensure the sustainability of the model	Set-up	Set-up	Set-up							
Develop and pilot innovative and new extension delivery models such as farmer's homes, embedded extension services, etc.			Set-up							
Assess lessons learned from the pilot initiative and address issues to expand to a large scale				Expansion	Expansion	Expansion	Expansion	Expansion	Expansion	Expansion

iv. Estimated budget:

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~258	~250	○ Equip existing facilities 140 Mn ETB (284 facilities per year, 10k USD per unit) ○ Build new training facilities: 109 Mn ETB (100 facilities/year, 20k USD per unit) ○ Survey to assess the current status of facilities, and farmer's presence of service: 5.4 Mn ETB (5-page questionnaires, 1200 ETB per 5 pages) ○ Develop a strategy to use FTCs/PTCs to generate income: 2.1 Mn ETB (local consulting firm service)	○ Equip existing facilities *(same assumptions as setup cost)* ○ Build new training facilities *(same assumptions as setup cost)*

v. High-level risks and mitigations:

c) Potential risks
   - Lack of sustained funding for the development and maintenance of the training facilities.

d) Risk mitigations
   - Develop a sustainable funding model for the training facilities and services, such as public-private partnerships or cost-sharing with the communities.

Intervention DM9: Facilitate peer-to-peer best practice sharing; linkages between urban/peri-urban farmers through travel workshops and field visits.

i. Objective: Facilitate interactive and collaborative learning among small to medium/large-sized urban and peri-urban farmers through experience-sharing sessions.

Set-up *Expansion*

ii. Ownership of the intervention:

Planning: MoA

Implementation: MoA, Technical Committee

Regulation: MoA, Regional Bureaus

Key stages of the intervention:

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Develop a training manual and materials required for peer-to-peer experience sharing										
Identify prospective commercial farmers who are open to sharing their experiences with small and medium-sized farmers										
Pilot the intervention in promising regions										
Assess lessons learned from experience experiences and record the information in a database for future reference										
Expand the peer-to-peer experience sharing to regions/ areas										

iii. Estimated budget:

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	Annual cost	Set-up cost	Annual cost
~16	~5	○ Identify prospective commercial farmers: 9.6 Mn ETB (5 pages of data collection, 8k Farmers, 1200 ETB per 5 pages) ○ Peer-to-peer knowledge sharing: 3.3 Mn ETB (1 moderator for 30 farmers (333 moderators for 10k farmers), salary for one moderator 10k ETB) ○ Conduct needs assessment to identify the practical needs of farmers and pastorals: 2.1 Mn (local consulting firm service fee 40k USD/month)) ○ Pilot the intervention:1.5 Mn ETB (10k farmers, per diem covered) ○ Develop an agenda for events/workshops based around the calendar: 1.4 Mn ETB (one workshop, 20 experts for 20 days; per diem and meeting venue accounted) ○ Model farmer incentivization: 216K Mn ETB (1 model farmer for 30 farmers, per diem covered)	○ Model farmer incentivization *(same assumptions as setup cost)* ○ Pilot the intervention *(same assumptions as setup cost)* ○ Peer-to-peer knowledge sharing *(same assumptions as setup cost)*

Set-up ***Expansion***

iv. High-level risks and mitigations:

a) Potential risks
   - The limited willingness of farmers to engage in peer-to-peer experience sharing, especially commercial farmers.

b) Risk mitigations
   - Incentivize commercial farmers to participate in the program by offering them opportunities to showcase their expertise and products as well as offering appreciation certifications.

Intervention DM10: Develop mobile extension service; roaming health and AI providers, or community leaders equipped with training.

i. Objective: Improve access to livestock extension services for pastoral communities in highly mobile areas through the development of a mobile extension service.

ii. Ownership of the intervention:

Planning: A committee including MoA, Regional Bureaus, ATI
Implementation: A committee including MoA, MiNT, ATI, Regional Bureaus
Regulation: MoA, Regional Bureaus

iii. Key stages of the intervention:

Essential steps of the intervention process	Timing (Years)									
	1	2	3	4	5	6	7	8	9	10
Assess pastoral mobility trends to identify locations for fixed or semi-fixed facilities										
Train and utilize community leaders and CAHWs to expand existing and recent technologies										
Conduct awareness campaigns to educate pastoralists about the availability and benefits of mobile extension services										
Establish a monitoring and evaluation system to track the effectiveness of the mobile extension service, including the adoption of new livestock management practices and technologies by pastoralists										

Set-up *Expansion*

iv. Estimated budget:

Estimated cost *(Mn ETB)*		Key drivers and assumptions	
Set-up cost	**Annual cost**	**Set-up cost**	**Annual cost**
~277	~182	○ Awareness campaigns: 90Mn ETB (Train 10k farmers, per diem of farmers 450 ETB/day) ○ Train CBOs, community leaders, and CAHWS: 65 Mn ETB (5K CBOs, community leaders, and CAHWs to be trained, per diem covered) ○ Assess pastoral mobility trends 2.1 Mn ETB (Local consulting firm - Average price for data collection 40k USD) ○ Expand existing digital technologies to pastoral areas: 2.5 Mn ETB (Assuming 5 digital technologies will be expanded to pastoral areas, the Average cost of database expansion is 500K ETB) ○ Permanent staff for digital tools: 480K (2 staff per one digital technology introduced into pastoral areas) ○ Incentives for AI and health service providers: 117K (Assuming 1000 service providers move for 6 months of per diem)	○ Train CBOs, community leaders, and CAHWS *(same assumptions as setup cost)* ○ Permanent staff for digital tools *(same assumptions as setup cost)* ○ Incentives for AI and health service providers *(same assumptions as setup cost)*

v. High-level risks and mitigations:

a) Potential risks
   - Limited access to mobile devices (smartphones).

b) Risk mitigations
   - Provide mobile devices to community leaders and CAHWs who can then deliver service.

Budget Summary: High-level budget estimate shows 1.3bn ETB for strategy set-up & 1bn ETB annual costs; detailed budgets are to be outlined in implementation plan

Intervention	Set-up cost (Mn ETB)	Annual cost (Mn ETB)
PG1. Establish a stakeholder platform	14	11
PG2. Establish a livestock and fisheries bureau	39	24
PG3. Regulate private EAS providers	16	*N/D*[4]
HC4. Provide capacity-building training	170	164
HC5. Develop monitoring and feedback method	66	*N/D*
C6. Develop tailored and market-oriented packages	36	35
C7. Develop and disseminate targeted information	404	368
DM8. Equip existing services and develop new services that enable practical and accessible delivery	258	250
DM9. Facilitate peer-to-peer best practice sharing	16	5
DM10. Develop a mobile extension service	277	182
Total (Mn ETB)	1,294	1,039*

10 Conclusion

This livestock and fisheries extension strategy has been developed to improve productivity by encouraging and incentivizing pluralistic extension, better-equipping extension agents to deliver services, improving packages, and diversifying delivery channels.

To tackle the challenges laid out in this document, four strategic pillars with ten corresponding and targeted interventions have been developed that will enhance access to and quality of extension services for the sector:

- **Pillar 1 - Policy and governance:** Establish an enabling environment for private sector integration through effective and inclusive policy and governance frameworks.
- **Pillar 2 - Human capacity:** Foster human capability by implementing continuous training and incentivization mechanisms.
- **Pillar 3 - Content:** Customize extension content to address the requirements of diverse production systems while enhancing its comprehensiveness.
- **Pillar 4 - Delivery mode:** Incorporate innovative and multi-channel delivery methods into extension services, including an improved digital offering.

These pillars, and the interventions which target specific challenges, will combine to produce a strategy that by improving coverage and quality, increasing private sector participation, and incorporating

[4] Not-Defined (N/D); will necessitate the creation of a detailed implementation plan to determine the budget

*Anticipated to increase once the non-defined budget is accounted for in the implementation plan

innovative delivery methods, will empower farmers and lead to significant improvements in the sector's productivity.

The delivery model will be key to the success of the strategy, and new modes and combinations of funding and delivery should be trialed as supplementary to the existing frameworks to encourage pluralism, promote the inclusion of farmers and cooperatives in delivery and development, and ensure the financial sustainability of extension services. These new modes and combinations should vary between production systems to allow for the individual nuances and challenges in each system.

A roadmap, which proposes packages of interventions, high-level timelines, budget, and owners was developed. Afterward, a detailed implementation plan should be developed by the strategy owner, and respective technical teams should develop packages and training materials based on the recommendations outlined.

Overall, this strategy should be implemented by piloting the proposed interventions and modes and scaling based on successes and lessons learned. By doing this, risk will be reduced and there will be the greatest chance of improving farmer and pastoralist livelihoods.

11 Next Steps

The next steps in this process are to obtain the endorsement of the strategy by the relevant body. Additionally, a task force should be established to develop a detailed implementation plan and oversee the implementation of the proposed interventions. It will also be necessary to mobilize the required resources to ensure successful implementation.

12 Annex

Cross-cutting challenges

Table 1: Cross-cutting challenges across all production systems

#	Challenge	Resulting issues
1	**Policy and governance:** Poor organizational and institutional support	○ Absence of an independent organizational structure for livestock ○ Limited focus on livestock from the government compared to crops ○ Poor linkage and coordination among actors along the value cha
2	**Human capacity:** The inadequate capability of extension providers	○ Limited or inconsistent training opportunities for development agents ○ Inadequate practical learning program ○ Limited subject matter expertise of the Ag Bureau leadership ○ Low motivation and performance of DAs ○ Insufficient availability of offices and facilities
3	**Content:** Impractical & incomplete extension package content	○ Content is generic, not considering production system nuances ○ Content is not market-oriented and does not consider differing farmer skill levels ○ Packages do not provide alternative recommendations at different implementation price points
4	**Delivery mode:** Inadequate and basic extension delivery modes	○ Government-dominated extension delivery with low participation of the private sector and other actors ○ Insufficient access to updated packages tailored to agro-ecology ○ Limited development of digital technologies as the delivery method ○ Improper implementation of government initiatives ○ DAs being focused on political and administrative tasks

Production specific challenges

Table 2: Mixed crop-livestock production system-specific challenges

#	Challenge	Resulting issues
1	**Policy and governance:** Poor organizational and institutional support	○ Inconsistent, and poor org structure (grouping livestock under the ag bureau instead of having a standalone department) ▪ More attention and budget are being given to crop ▪ Livestock experts feeling neglected & demotivated ▪ Inadequate org- structure makes it hard to hold anyone accountable for the success/failure of the activities conducted ○ Conflicting advice from livestock and crop DAs ▪ Lack of collaboration between departments to provide holistic advice
2	**Content:** Impractical & incomplete extension package content	○ Insufficient availability of packages that keep up with the latest practices and technologies in livestock production ○ Lack of market-oriented extension package leading to poor access and marketing knowledge, especially timing ○ Farmers are recommended expensive and often unavailable feed types ○ Inconsistent availability and poor implementation of alternative packages or recommendations (e.g., feed)
3	**Delivery mode:** Inadequate and basic extension delivery modes	○ Demand is high for digital extension services (supply-driven digital tools) ○ Not properly utilizing the existing opportunity ▪ Farmers have the potential to use digital tools, but these have not been fully explored or utilized

Table 3: Pastorals/agro-pastoral production system-specific challenges

#	Challenge	Resulting issues
1	**Policy and governance:** Poor organizational and institutional support	○ Pastoralists perceive that pastoral farming is an afterthought to mixed crop-livestock ○ Reflected in willingness to accept advisory services (seen as poor and irrelevant)
2	**Content:** Impractical & incomplete extension package content	○ Pastoralists perceive that pastoral farming is an afterthought to mixed crop-livestock ○ Reflected in willingness to accept advisory services (seen as poor and irrelevant) ○ Pastoralists perceive that pastoral farming is an afterthought to mixed crop-livestock ○ Reflected in willingness to accept advisory services (seen as poor and irrelevant)
3	**Delivery mode:** Inadequate and basic extension delivery modes	○ Pastoralists not accessing training centers as they move to seek water ○ Providers unable to track pastoral communities ○ Unutilized digital extension service ▪ Demand for new services such as remote sensing for rangeland and demand for digital services like 8028

Table 4: Urban/per-urban production system-specific challenges

#	Challenge	Resulting issues
1	**Policy and governance:** Poor organizational and institutional support	○ Transitioning towns do not have extension services as structures have not yet been put in place to provide services ○ Lack of regulatory frameworks and institutions to regulate small private sectors providing embedded advisory services with health and breeding
2	**Content:** Impractical & incomplete extension package content	○ Farmers want to implement extension package documents on their own but lack the necessary materials ○ The discrepancy between the content being delivered and skill levels ○ Content doesn't address underlying challenges in urban areas such as urban intensification
3	**Delivery mode:** Inadequate and basic extension delivery modes	○ Delivery modes are not facilitating skill and knowledge-sharing mechanisms between urban-rural and urban-commercial ○ Limited awareness among the private sector on the potential of extension service as a business

Strength, weakness, opportunities, and threats

- **For the Strengths, weaknesses, opportunities, and threats (SWOT) of the current extension system please review the diagnosis phase of the strategy deck in section 4**

Extension delivery model – Best practices

Archetype: High-level models to be used to develop an overall strategic funding, delivery, and content model for Ethiopian livestock and fisheries sector

- Extension models/frameworks at a country level
- High-level impact at a country level rather than specific intervention or pilots
- Used to develop a system considering structure, funding, delivery, and content

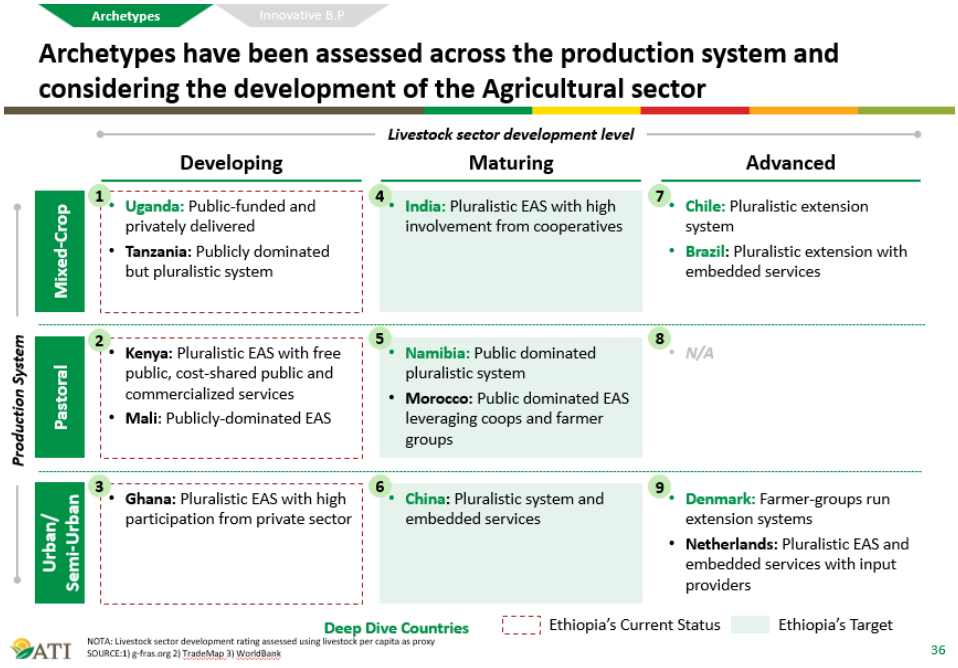


Figure 11: Archetypes

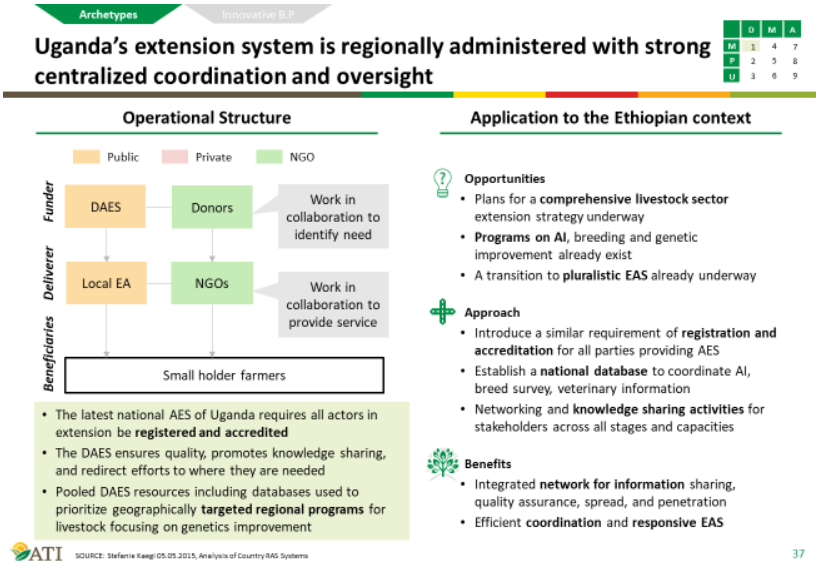


Figure 12:Best practices: Uganda extension system

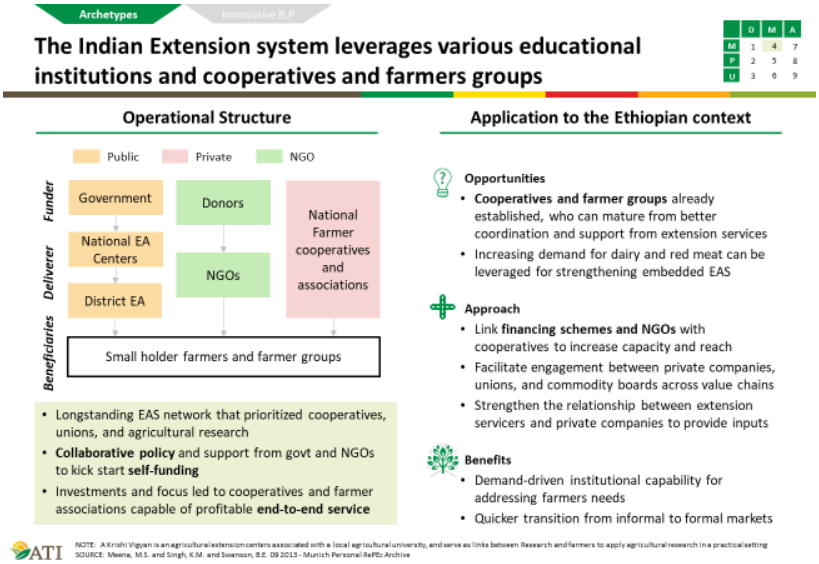


Figure 13: Best practices: India extension system

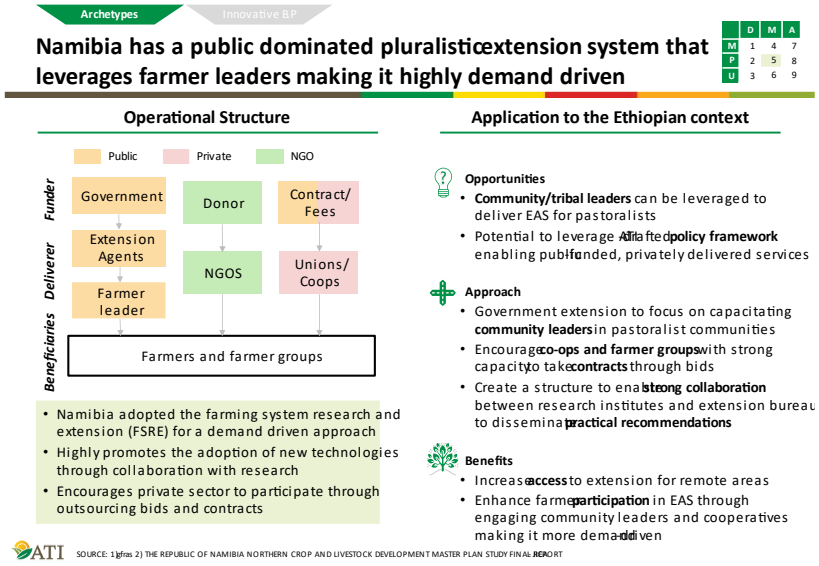


Figure 14: Best practices: Namibia extension system

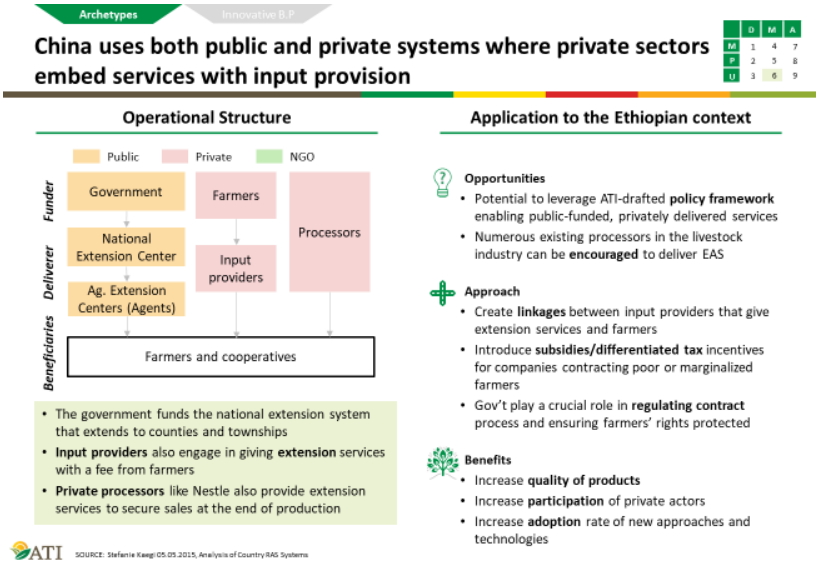


Figure 15: Best practices: Namibia extension system

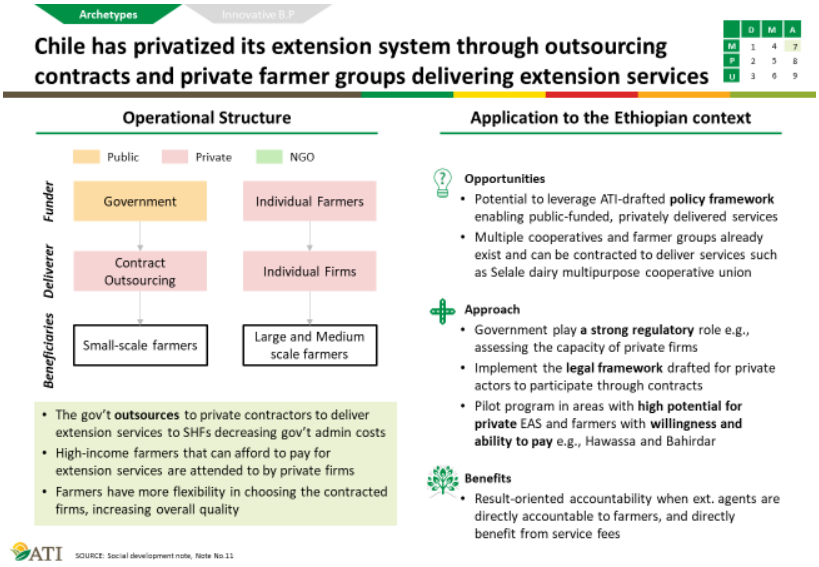


Figure 16: Best practices: Chile extension system

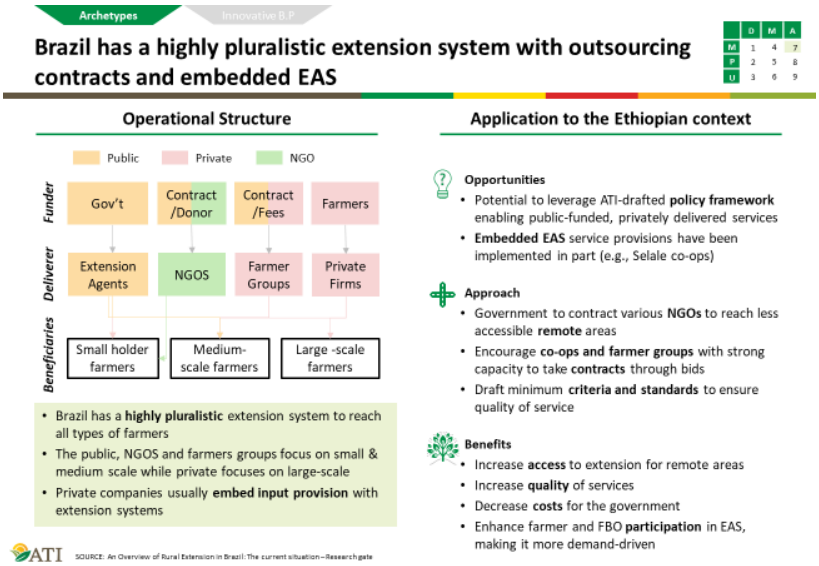


Figure 17: Best practices: Brazil extension system

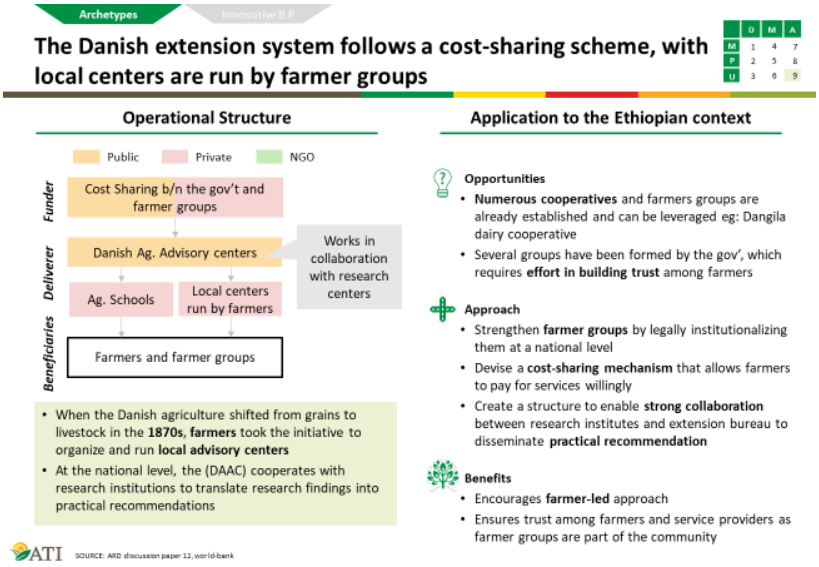


Figure 18: Best practices: Denmark extension system

Innovative best practice – examples

Innovative best practices: High impact cases to be used to create strategic pillars and develop specific interventions.

- Specific projects/programs piloted at a small scale both internationally and within Ethiopia
- Innovative and impactful at a small scale but learning to be taken to develop principals

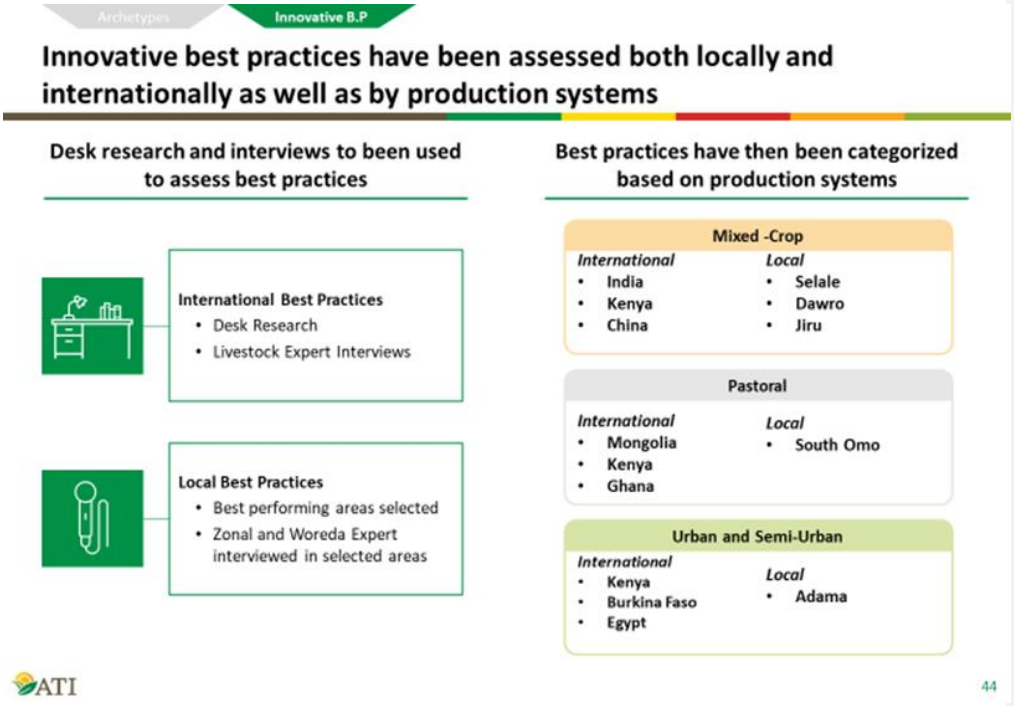


Figure 19: Innovative best practices

Mixed Crop | Pastoral | Urban/ Peri-Urban

International: India and Kenya has shown innovative approaches in delivery mode and tailoring services based on farmers needs

Countries	Overview	Innovation/Best Practices	Applications to Ethiopian context
India	• India implemented a project named JOHAR that mainly targeted women to train as Extension Agents (EAs) • They were intensively trained, certified and equipped • They gave both door-to-door and group extension services, embedded in additional services e.g., health	• **Delivery actors:** 95% of EAs are women, building trust within the farmer community • **Delivery methods:** Extension was embedded in additional services such as health, marketing • **Funding methods:** Viable revenue model – charged fees for services	• **Approach:** Include more women DAs with livestock experience (tend to be trusted and more prevalent in livestock farming) • Pilot fee-based projects • **Result:** Farmers more willing to accept extension services
	• CABI, an Indian-based company has explored **mobile-based** agro-advisory services • Provides targeted, personalized messages • Information disseminated through SMS and voice messages	• **Delivery methods:** Information was collected such as farmers' location, language, and farming practices (crop and livestock) • Information was tailored accordingly	• **Approach:** Include livestock advisory in digital services (8028) • Tailor information based on farmers needs (e.g., following a survey) • **Result:** Increased reach to farmers and more relevant information
Kenya	• Kenya initiated the National Agriculture and Livestock Extension Program which helped the system become more demand-driven • Program distributed EAs across the country to advise which packages should be adopted based on needs • It also focus on capacity building of farmers groups through new tech	• **Content:** Market-led, with content determined by farmer needs • **Content:** Commercial, with EAs creating linkage b/n farmers and service providers • **Delivery methods:** Cross-site exchange b/n farmers • **Funding methods:** Government-led but donor funded	• **Approach:** Identify farmer needs through surveys and update packages to meet diverse needs • Encourage cross-site exchange to increase trust in delivery • **Result:** More targeted information and better access to inputs • Content better tailored to demand from farmers

ATI SOURCE: 1) South Asia Agriculture and Rural Growth Discussion Note Series, Norton, F. , Abrahams, P., Banerjee, S., Jain, S., Jadhav, A., Allen, C., Subharwal, M., Karanja, L. 2) Direct2Farm proves the case for mobile-based agro-advisory services in India, CABI impact case study 16. 6pp, 3) NALEP study of implementation process by Martin Mudar Hill

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Figure 20: Innovative best practices-India and Kenya

Mixed Crop | Pastoral | Urban/ Peri-Urban

International: China has 24-hours extension services and uses farm homes to sell inputs while delivering extension advice

Countries	Overview	Innovation/Best Practices	Applications to Ethiopian context
China	• China designed and implemented an extension service reform program • A survey was first taken to identify farmers' needs and accordingly extension plans were designed • This plan was then used as an indicator to assess each EA's performance	• **Delivery methods:** EAs ensure farmers access all the time (24-hours) and on-call services • A plan based on the survey was drafted and if EAs fully implement it, they get bonuses • **Delivery actors:** Clear and defined KPIs to track EAs performances, with performance-based bonuses	• **Approach:** Develop survey to identify greatest needs in mixed C-L production system • Update existing packages and delivery plan based on farmer demand/needs • Evaluate DA performance using the developed delivery plan • **Result:** Increased access to extension services • Highly efficient delivery
	• A pilot project turned extension centers into community information centers called **"Farmers' Home"** • These are centers where farmers can purchase inputs while obtaining extension services • This enables the private sector to promote their product and the public to recoup the admin costs	• **Delivery actors:** Joint public-private delivery, with inputs provided by private actors and extension by public EAs • **Delivery method:** Extension services are embedded into input provision • **Content:** Inputs and market prices • **Funding:** Farmers pay for inputs while private actors pay the public EAs	• **Approach**: Facilitate market linkages b/n input providers and farmers • Leverage existing facilities such as FTCs as market centers • **Results:** Increased willingness to pay for services and private participation • Increased adoption rate to new technologies and improved quality of extension

SOURCE: 1) IFPRI Discussion Paper 01037, Effects of Inclusive Public Agricultural Extension Service, Stefanie Kaegi 05.05.2015, Analysis of Country RAS Systems

Figure 21: Innovative best practices-China

Mixed Crop | Pastoral | Urban/ Peri-Urban

Local: 3 zones in the mixed crop production systems have best practices in input provision, marketing and training

Zone	Delivery mode	Content	Best practices	Applications
Selale	• Group training	• Targeted content on dairy production	• NGOs[1] gives training through **FRG**[2] resulting in increased engagement and promoting a **demand-driven** approach • Content is **targeted** based on demand such as Selale on **lactation curve**	• Design a national livestock **program** that links various actors to support specific intervention in potential production areas
Dawro	• Group training • Service in combination with inputs	• Training across the value chain	• DAs and technical personnels are assigned on breed, feed and health in each kebele making services easily **accessible**	• Allocate technical personnel to give extension services across each value chain and evaluate their performance based on extension services KPIs
Jiru	• Group training • Experience sharing • Door-to-door service	• Training across the value chain	• **Quality** control on feed • 24-hour **health access** • **Promotion** of livestock produced (Breed type, location) on media to get buyer from urban areas • Provide **training manuals** for kebele DAs	• Encourage **media promotion** for better marketing • **Updated training manuals** to be prepared & disseminated

ATI NOTE- 1. Bridge project by SNV, 2. Farmers research groups
SOURCE: 1) Expert Interviews

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Figure 22: Innovative best practices-selale, Dawro, and Jiru

Mixed Crop | Pastoral | Urban/ Peri-Urban

International: Use of technology and community-based extension experts is an innovative approach within the pastoralist community

Countries	Overview	Innovation/Best Practices	Applications to Ethiopian context
Mongolia	• An NGO in Mongolia implemented a project that helps herders to access, interpret and apply weather forecast information using digital tools • This empowers herders to make informed decisions in the face of natural disasters	• **Delivery actors**: NGO • **Delivery mode:** Text messages (SMS), training • **Content:** Weather forecasts, forage information, veterinary assistance and infrastructure rebuilding • **Funding:** NGO	• **Approach:** Obtain weather forecast info and disseminate it through SMS along with input advice • **Results:** Farmers can make informed contextual decisions and increase awareness on inputs and health
Kenya	• Livestock early warning signs (LEWS) was developed for drought warnings and generates a 6-monthly forecast of forage conditions • Timely actions based on advanced information can reduce the potential impacts of extreme weather and climate events on livestock	• **Delivery actors:** NGOs and EAs • **Delivery mode:** Internet, radio, maps, and farmer-to-farmer word of mouth • **Content:** Weather forecast and forage information • **Funding:** Donor	• **Approach:** Leverage existing livestock early warning systems • Train EAs on how to read various maps and disseminate information through existing platforms (8028) • **Results:** Early warning for pastoralists on drought for early decision-making • Guides farmers resource areas
Ghana	• Community-based extension agents (CBEA) were piloted in Ghana to address the inadequacy of extension service provision • CBEA are experts on indigenous knowledge within the community and are the bridge b/n extension stakeholder and the community	• **Delivery actors:** Community-based extension agents • **Delivery mode:** Group trainings and demonstrations • **Funding:** Donor	• **Approach:** Mobilization of community-based experts as extension workers through capacitation and support • **Results:** Increase access to extension for pastoralists • Building trust from farmers • Leverages the indigenous knowledge

ATI SOURCE: 1) EFFECTIVE ENGAGEMENT WITH PAS TORALIST POPULATIONS: USAID, 2) ESTABLISHMENT AND EVALUATION OF A LIVESTOCK EARLY WARNING SYSTEM FOR LAIKIPIA, KENYA, 3) A Thesis by Zola Ryan, Promoting Community-based Extension Agents as an Alternative Approach to Formal Agricultural Extension Service Delivery in Northern Ghana ISSN(P): 2304-1455/ ISSN(E): 2224-4433

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Figure 23: Innovative best practices-Mongolia, Kenya, and Ghana 0920302170

Mixed Crop | **Pastoral** | Urban/ Peri-Urban

Local: South Omo shows best practice in engaging model farmers and delivering market-oriented advice

Zone	Delivery mode	Content	Best practices	Applications
South Omo	• Door-to-door • Farmers group training	• Training across the value chain	• DAs frequently engage with **model farmers** and use them as **demonstrations** to increase acceptance of EAS • Training is given on **markets** and farmers are encouraged to sell to cooperatives rather than traders	• Develop an approach of **engaging model community farmers** as way of delivering extension advices • Update **extension packages** to include commercial perspectives and shift farmers from production based to business based

SOURCE: 1) Expert Interviews

Figure 24: Innovative best practices-South Omo

Mixed Crop | Pastoral | **Urban/ Peri-Urban**

International: Kenya processors deliver extension services to farmers while Burkina Faso organizes volunteers to health delivery

Countries	Overview	Innovation/Best Practices	Applications to Ethiopian context
Kenya	• Kenya's dairy processors have begun to invest in providing extension services to smallholder dairy farmers in their own supply chains • The public sector can support private sector-led extension by ensuring the provision of public goods and key input supplies	• **Delivery actors**: Private processors, NGOs • **Delivery mode:** Embedded extension services through input provision • **Funding:** Private processors, model varies b/n processors	• **Approach:** Create government-led regulation to assure quality of inputs and milk • Facilitate contracts b/n processors and farmers • Subsidize costs for processors who provide extension services • **Results:** Increased quality of products and private participation
Burkina Faso	• A national poultry project has successfully organized a network of vaccinators to given extension services on preventive and curative health • Vaccinators are paid by the number of vaccines they sell as an incentive	• **Delivery actors**: Community vaccinators • **Delivery mode:** Group presentation • **Content:** Health • **Funding:** Donor	• **Approach:** Organize community extension workers (recent graduated) to deliver extension services • **Results:** Increased access to extension services • Minimized admin costs for the gov't
Egypt	• A Development of Egypt's Aquaculture Sector (IEIDEAS) project was established for improving employment and income from fisheries and aquaculture • The first action taken was to set up a best management practices training programme by involving key stakeholders in its design and implementation	• **Delivery actors**: Local experts and private trainers • **Delivery mode:** Field-based training sessions, and group demonstrations • **Content:** Fisheries production • **Funding:** Donor (SDC)	• **Approach:** A training module was developed with the active involvement of fish production value chain stakeholders. The training was conducted in the field by local experts and private trainers • **Results:** Increased in profitability and efficient feed management

ATI SOURCE: 1) Private-sector led extension in Kenya's dairy sector 2) CGIAR, Livestock Production and Extension: Issues, Case studies and policy options by J Morton, R Matthewman and D Barton 3) Case Study: Best Management Practice Training for Egyptian Fish Farmers Managed by WorldFish Under the IEIDEAS and STREAMS Projects, 2020 50

Figure 25: Innovative best practices-Kenya, Burkina Faso and Egypt

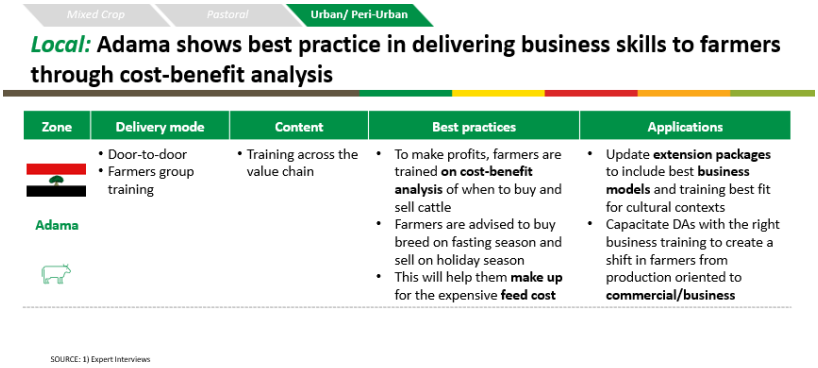

Figure 26: Innovative best practices-Adama

Recommended Framework for the Livestock and Fisheries extension package

As per the recommendations on this strategy, the content is to be comprehensive of production systems, commodities, and farmers' skill levels. **This means tailoring content to production systems, commodities, and across the value chain**. Additionally, the extension system should take into account the **skill level of each farmer** to ensure they receive **the appropriate level of complexity** and can progress to the next level of maturity.

To that end, it is recommended that the to be developed livestock and fisheries extension package have the below framework to address challenges.

Level 1

1.1 Mixed Crop System

1.1.1 Dairy

1.1.1.1 Inputs

1.1.1.1.1 Feed

1.1.1.1.2 Breed

1.1.1.1.3 Health

1.1.1.2 Production

1.1.1.3 Aggregation

1.1.1.4 Processing

1.1.1.5 Marketing

1.1.1.6 Consumption

1.1.2 Red meat

1.1.2.1 Inputs

1.1.2.1.1 Feed

1.1.2.1.2 Breed

1.1.2.1.3 Health

1.1.2.2 Production

1.1.2.3 Aggregation

1.1.2.4 Processing

1.1.2.5 Marketing

1.1.2.6 Consumption

1.1.3 Poultry

1.1.3.1 Inputs

1.1.3.1.1 Feed

1.1.3.1.2 Breed

1.1.3.1.3 Health

1.1.3.2 Production

1.1.3.3 Aggregation

1.1.3.4 Processing

1.1.3.5 Marketing

1.1.3.6 Consumption

1.1.4 Apiculture

1.1.4.1 Inputs

1.1.4.1.1 Feed

1.1.4.1.2 Breed

1.1.4.1.3 Health

1.1.4.2 Production

1.1.4.3 Aggregation

1.1.4.4 Processing

1.1.4.5 Marketing

1.1.4.6 Consumption

1.1.5 Fisheries

1.1.5.1 Inputs

1.1.5.1.1 Feed

1.1.5.1.2 Breed

1.1.5.1.3 Health

1.1.5.2 Production

1.1.5.3 Aggregation

1.1.5.4 Processing

1.1.5.5 Marketing

1.1.5.6 Consumption

1.2 Pastoral and Agro-pastoral System

1.2.1 Dairy

1.2.1.1 Inputs

1.2.1.1.1 Feed

1.2.1.1.2 Breed

1.2.1.1.3 Health

1.2.1.2 Production

1.2.1.3 Aggregation

1.2.1.4 Processing

1.2.1.5 Marketing

1.2.1.6 Consumption

1.2.2 Red meat

1.2.2.1 Inputs

1.2.2.1.1 Feed

1.2.2.1.2 Breed

1.2.2.1.3 Health

1.2.2.2 Production

1.2.2.3 Aggregation

1.2.2.4 Processing

1.2.2.5 Marketing

1.2.2.6 Consumption

1.2.3 Poultry

1.2.3.1 Inputs

1.2.3.1.1 Feed

1.2.3.1.2 Breed

1.2.3.1.3 Health

1.2.3.2 Production

1.2.3.3 Aggregation

1.2.3.4 Processing

1.2.3.5 Marketing

1.2.3.6 Consumption

1.2.4 Apiculture

1.2.4.1 Inputs

1.2.4.1.1 Feed

1.2.4.1.2 Breed

1.2.4.1.3 Health

1.2.4.2 Production

1.2.4.3 Aggregation

1.2.4.4 Processing

1.2.4.5 Marketing

1.2.4.6 Consumption

1.2.5 Fisheries

1.2.5.1 Inputs

1.2.5.1.1 Feed

1.2.5.1.2 Breed

1.2.5.1.3 Health

1.2.5.2 Production

1.2.5.3 Aggregation

1.2.5.4 Processing

1.2.5.5 Marketing

1.2.5.6 Consumption

1.3 Urban and Peri-Urban System

1.3.1 Dairy

1.3.1.1 Inputs

1.3.1.1.1 Feed

1.3.1.1.2 Breed

1.3.1.1.3 Health

1.3.1.2 Production

1.3.1.3 Aggregation

1.3.1.4 Processing

1.3.1.5 Marketing

1.3.1.6 Consumption

1.3.2 Red meat

1.3.2.1 Inputs

1.3.2.1.1 Feed

1.3.2.1.2 Breed

1.3.2.1.3 Health

1.3.2.2 Production

1.3.2.3 Aggregation

1.3.2.4 Processing

1.3.2.5 Marketing

1.3.2.6 Consumption

1.3.3 Poultry

1.3.3.1 Inputs

1.3.3.1.1 Feed

1.3.3.1.2 Breed

1.3.3.1.3 Health

1.3.3.2 Production

1.3.3.3 Aggregation

1.3.3.4 Processing

1.3.3.5 Marketing

1.3.3.6 Consumption

1.3.4 Apiculture

1.3.4.1 Inputs

1.3.4.1.1 Feed

1.3.4.1.2 Breed

1.3.4.1.3 Health

1.3.4.2 Production

1.3.4.3 Aggregation

1.3.4.4 Processing

1.3.4.5 Marketing

1.3.4.6 Consumption

1.3.5 Fisheries

1.3.5.1 Inputs

1.3.5.1.1 Feed

1.3.5.1.2 Breed

1.3.5.1.3 Health

1.3.5.2 Production

1.3.5.3 Aggregation

1.3.5.4 Processing

1.3.5.5 Marketing

1.3.5.6 Consumption