

Ministry of Agriculture and Livestock Resources

Federal Democratic Republic of Ethiopia

**Ethiopian Pastoral Areas
Veterinary Services Delivery Strategy
(2018 – 2027)**

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Ethiopian ATA
Agricultural Transformation Agency

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ACRONYMS

ACDI/VOCA	Agricultural Cooperative Development International / Volunteers Overseas Cooperative Assistances
ACORD	Agency for Cooperation and Research in Development
ADNIS	Animal Disease Notification and Investigation System
AHA	Animal Health Assistant
AHT	Animal Health Technicians
AKLDP	Agriculture Knowledge Learning Documentation and Policy
APDA	Afar Pastoral Development Association
ATA	Agricultural Transformation Agency
BMGF	Bill and Melinda Gates Foundation
CAADP	Comprehensive Africa Agriculture Development Program
CAH	Community Animal Health
CAHWs	Community Animal Health Workers
CBO	Community Based Organization
CBPP	Contagious Bovine Pleuro Pneumonia
CCPP	Contagious Caprine Pleuro Pneumonia
CDSA	Community Development Service Association
COOPI	Cooperazione Internazionale
CPD	Continuous Professional Development
CSA	Central Statistical Agency
CSO	Civil Society Organization
DACA	Drug Administration Control Authority
DFID	Department for International Development
DOVAR	Disease Outbreak Vaccination Reporting
DP	Development Partners
DRLSP	Drought Resilience Sustainable Livelihood Project
DRM	Disaster Risk management
DVM	Doctor of Veterinary Medicine
ECF	East Cost Fever
ECHO	European Commission for Humanitarian Organization
ESAP	Ethiopian Society of Animal production
EU	European Union
EVA	Ethiopian Veterinary Association
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GTP II	Growth and Transformation Plan II
HCS	Hararge Catholic Secretariat
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environmental Development
ILRI	International Livestock Research Institute
IRC	International Rescue Committee
IRE	Islamic Relief Ethiopia
LEGS	Livestock Emergency Guidelines and Standards
LITS	Livestock Identification and Traceability System

LMP	Livestock Master Plan
LSD	Lumpy Skin Disease
LVC-PPD	Livestock Value Chain Public Private Dialogue
LVIA	Lay Volunteer International Association
MEL	Monitoring, Evaluation and Learning
MoA	Ministry of Agriculture (now MoALR)
MoALR	Ministry of Agriculture and Livestock Resources
MoARD	Ministry of Agriculture and Rural Development (earlier name)
MoFPDA	Ministry of Federal and Pastoral Development Affairs
MoLF	Ministry of Livestock and Fisheries (now MoALR)
NAHDIC	National Animal Health Diagnostic and Investigation Center
NGO	Nongovernmental Organization
NVI	National Veterinary Institute
OFDA	Office of US Foreign Disaster Assistance
OIE	Office des Epizootics International
OWDA	Ogaden Welfare Development Association
PC	Pastoralist Concern
PCDP	Pastoral Community Development Project
PDS	Participatory Disease Surveillance
PE	Participatory Epidemiology
PFE	Pastoralist Forum Ethiopia
PPP	Public Private Partnership
PPPE	Pastoralism and Pastoral Policy in Ethiopia
PPR	Peste des Petits Ruminants
PRIME	Pastoralist Resiliency Improvement and Market Expansion
PVP	Private Veterinary Pharmacies
PVS	Performance of Veterinary Services
RLPDB	Regional Livestock and Pastoral Development Bureau
RPLRP	Regional Pastoral Livelihood Resilience Project
RVF	Rift Valley Fever
SGP	Sheep and Goat Pox
SNNPR	Southern Nations Nationalities and Peoples Region
SOP	Standard Operating Procedures
SWOT	Strengths, Weaknesses, Opportunities and Threats
TADS	Transboundary Animal Diseases
TVET	Technical & Vocational Education Training College
VDFACA	Veterinary Drug and Feed Administration and Control Authority
VSF	Veterinary Statutory Body
VSF	Veterinaires Sans Frontieres
WFP	World Food Programme
WTO	World Trade Organization

Executive summary

Livestock diseases continue to have a major impact on pastoral livelihoods in Ethiopia; either through the direct loss of livestock, reduced production, or through reduced access to livestock export markets due to bans imposed by importing countries. During disease outbreaks, pastoral livelihoods are jeopardized, trade activities are disrupted and local and national food security is threatened. This strategic plan is a roadmap through which veterinary service delivery in pastoral areas can be realized for the coming five years in Ethiopia. It is a part of the second Growth and Transformation Plan that seeks to transform the livestock sector for socio-economic development and economic growth.

The Veterinary Services Delivery Strategy was developed followed extensive consultations with animal health practitioners in Ethiopia. A field survey was conducted in 10 selected districts in Afar, Oromia, Somali and SNNPR to review the existing situation. In the surveyed districts, government organizations, development partners working on animal health, and private veterinary drug vendors were interviewed. Participatory epidemiologic techniques were used to retrieve data from Community Animal Health Workers and community representatives. Documentation that included the national Livestock Master Plan, published scientific articles, online sources of NGO reports, routine disease reports from regional and federal veterinary departments, the recent Office des Epizootics International evaluation report for Ethiopia, animal health year books, and grey literature from academia and professional societies was reviewed for evidence and best practice examples.

The analysis of the existing situation with veterinary services delivery in pastoral areas of Ethiopia highlighted a considerable number of constraints and bottlenecks. A future vision was defined in which improved standards of veterinary services contribute to a vibrant livestock industry for the pastoral and agro-pastoral community; promoting food security, poverty alleviation, socio-economic growth and public health. The purpose of this Veterinary Services Delivery Strategy is to establish a model veterinary services framework for the pastoral and agro-pastoral production environments of Ethiopia; the implementation of which will enable Ethiopian pastoralists to be provided with effective and efficient veterinary services, and for Ethiopia to establish the capacity prevent, detect, contain and eliminate animal and public health risks.

The strategy presents an overall approach for addressing animal health issues within the work of regional governments, the Ministry of Agriculture and Livestock Resources (MoALR) and its affiliated institutions, development partners, the private sector and civil society organizations. Based on agreed priorities, the Veterinary Services Delivery Strategy has been built around five pillars with a series of corresponding proposed interventions.

1. *Strengthen Veterinary Governance*

The delivery of animal health services in pastoral areas of Ethiopia is a challenge because of the remoteness of the extensive production system, the harsh terrain and poor communication infrastructure, lack of facilities, weak monetary economy, low capacity of local organizations, high mobility of people and animals, and ongoing inappropriate approaches towards pastoral development. This situation has contributed to the weaknesses in the delivery of veterinary services, both in terms of coverage and quality. The key bottlenecks leading to inadequate performance of veterinary service delivery in pastoral areas include: (1) weak governance capacities in design and delivery of veterinary services and regulatory functions; (2) low and irregular disease surveillance and reporting; (3) absence of risk based, strategic and progressive disease prevention and control system approaches; and (4) weak competencies of the regional veterinary laboratories. The strategy developed to address these constraints includes a revised task-based structure for veterinary services and extensive human resources capacity development.

2. *Strengthen Competencies for Primary Animal Health Care*

The current provision of clinical services in the pastoral areas of the country is focused on the expansion of public veterinary clinics and health posts, and the provision of therapeutic treatment to individual animals or herds. The clinics and health posts have varying levels of functionality and currently most of them are not capable of providing the services expected by pastoralists. The responsiveness of existing animal health service delivery by both the public sector and private drug vendors is seen as unsatisfactory in terms of its accessibility, availability, affordability and quality. Ensuring better access to basic clinical services through a combination of a disease preventative approaches and clinical service delivery is needed for pastoral, agro-pastoral and peri-urban areas. The Strategy has developed systemic interventions towards improving geographical coverage of clinical services, promoting the expansion of private veterinary services delivery, and strengthening existing community-based animal health systems.

3. *Strengthen Veterinary Public health*

The close association of pastoralists with their livestock poses a huge challenge to public health as diseases transmissible between humans and animals infect livestock in pastoral areas. The prevention and control of zoonotic and food-borne diseases is related to abattoir construction, meat inspection, and environmental and food safety issues. The systemic constraints to veterinary public health service delivery include poor veterinary public health services to combat zoonotic diseases, and absence of frontline prevention and control services. There is a need to address issues related to licensing and certification of abattoirs, whilst rabies control and other zoonotic diseases need addressing in collaboration with the public health department.

4. Human Capacity Development, Resource Mobilization and Communication

The evidence suggests that there is a lack of capacity and poor understanding of veterinary services provision by all actors. This is then translated into limited capacities to implement existing livestock strategies, programs and projects. The capacity limitation is much more severe at *woreda* and *kebele* level. Whilst lack of capacity is the major limitation, the lack of systems to build capacity regularly, document best practices and reward achievements are other key challenges. The Strategy therefore proposes the development of institutionalized systems to build capacity, share veterinary practices and reward achievements, with a specific task of developing and linking services with appropriate information and skills. The aim is to enhance pastoralist oriented multi actor veterinary extension services and to ensure the provision of quality and adequate animal health inputs.

5. Strengthen Competencies for Animal Welfare

The inclusion of animal welfare in the Veterinary Services Delivery Strategy recognizes the ever-increasing public and scientific attention being given to the topic, and the need for interregional leadership in the development of science-based animal welfare policies and guidelines tailored to the pastoral production system. For this reason the Strategy includes animal welfare as a key strategic issue, and the development of animal welfare guidelines as part of guidelines for good farming practices and Standard Operating Procedures for transport and slaughter. Currently there is limited professional capacity on animal welfare and its management, and no animal welfare guidelines specifically tailored to pastoral production system. The Strategy has developed systemic interventions to address these bottlenecks.

Implementation Framework

Addressing the bottlenecks and ensuring the implementation of the strategic interventions will require a coordinated effort of all organizations and individuals engaged in veterinary services delivery in Ethiopia. This document identifies the key actors at all levels and suggests their roles and responsibilities. Since not all interventions can be simultaneously implemented, a phased approach for implementing interventions has been designed. In this phased approach, pillars and interventions that can serve as input for the achievement of other pillars have been prioritized. Prioritization and sequencing of interventions will be further refined based on the responsibility of each organization within their existing settings.

SECTION ONE: INTRODUCTION

1.1 Background to the pastoral production system

In the greater Horn of Africa domestic livestock production from pastoralism makes up an important sector of the food production system and contributes to the overall economic development of countries in the region (Shapiro *et al*, 2015). According to a recent estimate, the trade volume from livestock and livestock products in the region has reached close to 1 billion USD annually (FAC CAADP, 2012).

Ethiopia's pastoral and agro-pastoral area covers about 60% of the country's total land area. Pastoralist systems are associated with the agro-ecological zones that are too dry to sustain crop production: rainfall is erratic and the extensive production system is characterized by mobility and flexibility in the search for grazing and water. Agro-pastoralists tend to have a permanent residence and their movement is more limited in terms of distance and duration. Their system is characterized by a high degree of dependence on milk and meat production, with some crop agriculture practiced around the permanent homestead. Agro-pastoralism is usually practiced below 1,500m asl, in areas with sufficient rainfall to support short season crops compared to the pastoral system.

Recent studies have showed that the livestock that largely originates from these areas contributes 12-16% of Ethiopia's Gross Domestic Product (GDP) and 30-35% of the agricultural GDP. Pastoralists are generating these benefits through tried and tested strategies, and institutions, that enable them to exploit what is normally considered a problem in agriculture—the climatic variability characteristic of drylands—in which the high-value resources required for animal production typically become available in short-lived random concentrations. (IIED and SOS Sahel, 2010)

Infrastructure in the pastoral and agro-pastoral areas of Ethiopia is extremely poor. The regions have been isolated from development activities for many years, basic transport and communication facilities are weak, and the roads are in bad condition. The problems are exacerbated by the large size of the regions. In recent years the Ethiopian government has taken steps to bring services and development to the pastoral regions and areas of the country: The pastoral and agro-pastoral directorate of the (previously named) Ministry of Livestock and Fisheries (MoLF), the pastoral directorate at the Ministry of Federal and Pastoral Development Affairs (MoFPDA), and pastoralist development institutions and programs of the regional government, are all notable interventions. Despite these efforts there is still a huge task ahead to bring sustainable development to the pastoral regions—including essential economic and services infrastructure, environmental and natural resource management, land rights and its management, and support for the dynamism of the pastoral systems and livelihoods.

The pastoralist population of Ethiopia and their livestock regularly move across the borders into neighboring countries depending on levels of rainfall, grazing and security: Traditional clan boundaries cross Ethiopia's border along its entire length from Djibouti to northern Kenya. Estimates of the national livestock population should therefore be treated with caution, but approximate figures are available: The livestock population in pastoral areas of Ethiopia is estimated at 9.3 million cattle (30% of the national population), 12.4 million sheep (51.7% of the national population), 8.1 million goats (45% of the national population) and 1.8 million camels (almost 100% of the national population) (PFE, 2007).

Pastoralists rear mixed herds in order to utilize different vegetation types and to minimize losses due to species-specific diseases. The type of species also varies according to the area: in many pastoral areas the camel is the most important species due to its high tolerance to drought. Recent studies indicate that several hundred thousand livestock have died in Ethiopia due to the effects of *El Niño* (FAO, 2016). Whilst water and feed shortages during drought lead to many animals dying of starvation, those that survive are left with reduced capacity to respond to infections in an environment of increased pathogens and vectors population (Bett *et al.*, 2017). Catley *et al.* (2014), have also demonstrated the huge livestock death rate as a result of starvation/dehydration during drought, and increased disease risk and mortality in the immediate post-drought period when rains return. As drought events become the norm in the region, the need for early warning systems and emergency intervention plans adjusted to the local context have been recognized. Along with this is the need for timely destocking, protection of core breeding animals and restocking after shocks; complemented by strategic animal health interventions that include vaccination and vector control (FAO, 2016).

Pastoral productivity and animal health

Like many other parts of the world, pastoralist livelihoods in Ethiopia have proved to be efficient for generations, supporting close to 15% of the population in the lowland agro ecology areas (PPPE, 2015). Pastoralism and agro-pastoralism remains the dominant livelihood of people living in Afar and Somali regional states, as well as the southern part of Oromia and Southern Nations and Nationalities Peoples' Region (SNNPR) (MoFED, 2007). These areas are characterized by their large size and harsh climate. But with growing man-made and natural calamities, the pastoralist system is now critically challenged and struggling to serve the purposes it has done for generations (UNEP, 2015). Strategic interventions targeting livestock production are essential. According to research evidence the presence of widespread infectious and non-infectious diseases is a critical issue, as well as nutrition, inferior production traits and marketing (MoARD, 2006). The levels of livestock losses from disease are expected to rise as the production system is characterized by limited animal disease surveillance and poor veterinary services (Onono *et al.*, 2013; Byaruhanga *et al.*, 2015). Strategic interventions in livestock health are both logical and pragmatic to reduce disease impact and boost production for the food and nutritional security of pastoralists, their families and local economies.

Like most developing countries in Africa, Ethiopia does not have a specific veterinary services delivery policy. Instead, animal health related projects are formulated and implemented on the basis of the overall government policy of the agriculture sector (MoA, 1997). In 1992 a livestock development policy was drafted as part of the overall draft agricultural policy of the country. The principal objectives of the draft policy document included: achieving food self-sufficiency in livestock products; improving the nutritional status of the population; increasing employment opportunities through the promotion of agri-businesses; expanding livestock and livestock product exports; as well as boosting rural incomes (MoA, 2001). The need to formulate more specific pastoral livestock development policies remained; relating to the major constraints of mobility, feed and nutrition, animal health and marketing.

The multidimensional impacts of livestock disease, that include lack of productivity due to morbidity or mortality along with compromised product quality and safety, have a major impact on the national economy. The economic losses have been further intensified due to restricted market opportunities for livestock products (MoA, 2010). This situation led to the development of a road map (Ethiopia's Livestock Master Plan, 2015-2020) in which animal health services are identified as one of the development ventures that needs strategic transformation, along with product value chains. To this end, Ethiopia has been divided into three major production typology zones, officially categorized by the (former) MoLF as lowland grazing including both pastoral and agro-pastoral systems, highland mixed crop-livestock rainfall deficient, and highland mixed crop-livestock rainfall sufficient (MoA, 2015).

The second Growth and Transformation Plan (GTP II) of the Ethiopian government also aspires to transform the livestock sector for socio economic development, and the realization of equitable growth in the coming 5 years. According to the plan, the pastoral production system is the major source of indigenous cattle, sheep, goats and camels for commodity production, *i.e.* meat-milk. Meaningful interventions in the health and welfare of these animals are an integral component of the road map towards the expected production boost. GTP II puts considerable emphasis on animal health services to ensure far-reaching impact on the productivity of livestock and the income Ethiopia hopes to realize from these resources. It also clearly indicates that significant efforts have already been exerted to attain the GTP I projection of reaching one billion USD from the export of live animals and livestock products; although this targeted income from exports has not yet been attained as there is a need to address a number of challenges to meet ever rising export standards.

As a product of GTP II, the Livestock Master Plan (LMP) was developed as a decisive livestock development strategy that the country can follow to transform its livestock industries into becoming more productive, resilient and responsible. The LMP is a series of five-year development implementation plans or 'roadmaps'. Seven major objectives that relate to the implementation of the veterinary elements of LMP have been identified, each with specific outputs and indicators.

Trade and border security

Cross-border livestock trade from Ethiopia to neighboring countries is the highest in Africa. Livestock from Ethiopia are traded across the border to Djibouti, Somalia, Kenya, Sudan and South Sudan. The officially recorded volume of live animal and meat exports is almost negligible compared to neighboring Somalia and Sudan (Yacob and Catley, 2010) hinting at the massive volume of informal livestock exports from Ethiopia. Jabar *et al.* (2007), stated the volume of informal live animal exports from Ethiopia was estimated at 328,000 head of cattle and 1.1 million sheep and goats in 2005-06, which is more than seven times the volume of formal exports.¹ If this informal trade is normalized it can significantly increase the contribution of pastoral livestock to the national economy, thereby supporting investment by government in infrastructure and livestock related inputs to these otherwise underdeveloped areas.

The recent decade's livestock revolution in Africa is centered on the Horn, where Ethiopia is one of the most significant trading nations, however the trade is criticized for not following standard economic models: The business is run by a vast network of producers, traders, financiers and transporters who find ways through border restrictions, excessive taxation, outdated veterinary controls and insecurity. In this environment opportunities for illegal trade and instability expand, fed by demand for imported goods from cities and the involvement of elites outside pastoral areas (FAC CAADP, 2012). Nationally, the phenomenon can bring about the loss of huge revenues from livestock resources and create opportunities for the dumping of substandard drugs and other veterinary inputs to pastoral areas (EVA 2010a; EVA, 2010b). This is partly a reflection of the pastoral areas' geographical location, political marginalization, and long and porous borders with neighboring countries.

1.2 Purpose and scope of the Veterinary Services Delivery Strategy

The purpose of this Veterinary Services Delivery Strategy is to establish a model framework for the pastoral and agro-pastoral production environments of Ethiopia; enabling Ethiopian pastoralists to be provided with effective and efficient veterinary services, whilst also establishing the capacity for Ethiopia to prevent, detect, contain and eliminate animal and public health risks. The Strategy identifies the key constraints that are currently severely hampering livestock health and the transformation of veterinary services, proposing a series of system level objectives and interventions to address these bottlenecks. The scope of the strategy ranges from establishing overall veterinary governance down to the innovative, tactical, strategic and progressive livestock diseases prevention services and quality inputs supplies needed for pastoralists. While the Strategy is designed for the long-term it envisages an initial implementation period of 5 years to coincide with GTP II, and a ten-year period during which the interventions may be further refined based on lessons learned and continuous pastoralist and agro-pastoralist feedback.

¹ Sintayehu *et al.* (2013), based on data from different sources, indicated that the informal cross border livestock export from Ethiopia during the years 1981–2001 is six times of the volume of formal exports.

1.3 Strategic approach followed for the development of the strategy

The Veterinary Services Delivery Strategy was developed based on a consultative and iterative process facilitated by a team of consultants, regional veterinary departments and the Agricultural Transformation Agency (ATA). A series of consultative meetings were held with regional and *woreda* veterinary authorities; clinicians at *kebele* health posts were interviewed and the situation of the health posts were observed; and pastoralists' perceptions regarding the existing veterinary service delivery systems were obtained through focus group discussions conducted in all visited *kebeles*. The resulting situation analysis provides an up-to-date account of the status of veterinary services in the pastoral regions of Ethiopia.

The regional veterinary services reviewed by senior veterinary staff, the consultants and the respective regional experts were in Afar, Ethiopian Somali, Southern and Eastern lowland areas of Oromia and SNNPR. In addition, field visits were made to collect primary data from various stakeholders at a number of locations using key informant interviews, semi-structured interviews, focus group discussions and other participatory methods. The purpose of the situation analysis was to assist policy makers at regional level with identifying options for defining public and private sector roles in veterinary service delivery. The situation analysis was also to review veterinary services in the pastoral areas of the country, and clearly identify the bottlenecks in the technical and institutional environment, and the impact they currently have on the service delivery system. The situation analysis helped significantly in determining the development of the strategy and implementation plan.

In 2011 the Office des Epizootics International (OIE) evaluated the performance of veterinary services (PVS) in Ethiopia and identified the strengths and weaknesses. This was followed by a gap analysis in 2012 during which stakeholders throughout the country, including the pastoral regions, were consulted on the gaps identified by the PVS and proposed activities to address these gaps in the veterinary services. Both these documents were also consulted as the basis for developing this strategy (see OIE, 2011; 2012).

Policymakers provided overall direction to the team, and served as the basis for the development of the Strategy following the key informant interviews conducted with each of them in their offices. Each step ensured the active participation of all relevant actors, including animal health professionals and researchers from Federal government and regions, *woreda* animal health officers, and rural clinicians, pastoralists, relevant NGOs, private actors and practitioners. The process of developing the Veterinary Services Delivery Strategy for pastoral areas of Ethiopia was overseen by the ATA livestock team, which included representatives from national and international development partners and institutions dealing with animal health issues in Ethiopia. The strategy development process followed the steps below:

- *Agreement on the template and structure for the strategy.*
- *Review of literature and submission of the inception report:* Key livestock sector and animal health related policies, strategies, programs and research documents of Ethiopia, as well as documents on the experience of other countries and international organizations relevant for a veterinary services delivery strategy, were reviewed.
- *In-depth key informant interviews, focus group discussions and consultations:* Key informant interviews were conducted with relevant animal health and technical professionals in selected regions, zones, *woredas* and pastoral villages. In this regard, valuable inputs and insights were obtained from (former) MoLF, ATA, the International Livestock Research Institute (ILRI), World Bank, the Pastoral Community Development Project (PCDP), FAO, AKLDP and Veterinaires San Frontieres (VSF) Germany and Suisse. The consultants made use of various participatory and interactive methods and assessment techniques involving sample individuals from pastoralist groups, market actors including NGOs, and other stakeholders.

SECTION TWO: SITUATION ANALYSIS OF VETERINARY SERVICES IN THE PASTORAL AREAS

2.1 Livestock diseases in pastoral areas

Despite past achievements, for example efforts to eradicate rinderpest, livestock diseases in the pastoral regions continue to have major impacts on pastoral livelihoods—either through direct loss of livestock, reduced production, or through reduced access to the livestock export market due to bans imposed by importing countries. Some of these diseases are at risk of becoming epidemics, implying relatively rapid onset and in some cases high mortality. During disease outbreaks, pastoral livelihoods are jeopardized, trade activities are disrupted and food security is threatened. The presence of disease not only results in lower outputs but also prevents the introduction of livestock into certain areas and precludes the use of more productive animals such as crossbreeds (McDermott *et al.*, 2010). Furthermore, certain livestock diseases are zoonotic and pose a serious public health hazard (Wang and Cramer, 2014).

Poor management, the environmental conditions, as well as lack of proper disease control and prevention strategies, result in pastoral livestock being affected by diseases and parasites both frequently and widely. Some are defined as transboundary animal diseases (TADs): highly contagious epidemic diseases with the potential for very rapid spread, irrespective of national borders, causing serious socio-economic and possibly public health consequences (FAO, 2017). While the TADs currently reported in Ethiopia's pastoral livestock are not of zoonotic potential, they are a major limiting factor for international trade in livestock and livestock products. A number of TADs in the pastoral areas of Ethiopia—Afar, Borana, parts of East Shewa zone of Oromia, the Ethiopian Somali Regional State and the South Omo area of SNNPR—were reported to the researchers and by the regional states themselves to the federal veterinary services (MoA, 2012). They include Foot and Mouth Disease (FMD) (Rufael *et al.*, 2008; Bayissa *et al.*, 2011; Molla and Delil, 2014; Jemberu *et al.*, 2015; Wagari, 2016), Contagious Bovine Pleuro-Pneumonia (CBPP) (Kassaye and Molla, 2013; Molla and Delil, 2014; Alemayehu *et al.*, 2015), *Peste des Petits Ruminants* (PPR) (Megersa *et al.*, 2011c; Delil *et al.*, 2012; Molla and Delil, 2014) and Lumpy Skin Disease (LSD) (Gari *et al.*, 2012; Ayelet *et al.*, 2014).

Recent livestock mortality figures from pastoral herds in Ethiopia are presented in Table 1. The numbers are consistent with pastoral areas of other countries (Catley, unpublished document). By averaging the annual mortality rates in Table 1 to 11.3%, an 'order of magnitude' estimation of the total value of pastoral livestock lost each year due to disease can be made. This amounts to preventable losses of 5.4 million animals valued at \$400 million² per annum. In comparison, according to the National Bank of Ethiopia the total value of livestock and meat exports in 2016 was only \$200 million. Therefore, the value of disease-related livestock losses in pastoral areas alone is approximately 2 times

² The calculation was made by taking a conservative average price of Birr 5000 for cattle, Birr 800 for sheep and goat and Birr 5000 for a camel.

the value of livestock and meat exports. In addition to these mortality losses are livestock production losses, such as reduced milk production and reduced fertility. For pastoralist children in particular, who are heavily reliant on livestock milk as food, livestock disease is a major cause of malnutrition. These figures demonstrate the potentially huge economic and human nutrition benefits of veterinary services in pastoral areas of Ethiopia, at both household level and in terms of national economic growth through livestock marketing.

Table 1: Estimated annual large and small ruminant mortality loss

Region	Cattle	Goats	Sheep	Camel
Afar	1,627,200	3,398,200	1,799,000	
Somali	675,600	1,710,400	1,316,800	
Oromia Pastoral Areas	6,464,469	1,723,362	1,674,435	
SNNPR pastoral area	1,673,434	2,924,841	1,205,825	
Total livestock population	15,293,782	20,257,218	12,212,228	4,500,000
Average annual mortality, %	8-10	11-13	12-14	
Annual mortality loss in animal head	1,376,449	2,430,866	1,587,589	
Estimate Annual mortality loss, USD	252,096,634	88,969,696	58,105,757	88,969,696

Source: Modified from Tilahun and Schmidt (2012) and Shapiro et al. (2015) and CSA (2014/2015, Volume II).

Studies conducted by several investigators have demonstrated the presence of zoonotic diseases in the pastoral areas of Ethiopia. Important among them are bovine tuberculosis (Kassa *et al.*, 2012; Dejene *et al.*, 2017), brucellosis (Megersa *et al.*, 2011a, c; 2012; Gumi *et al.*, 2013), toxoplasmosis (Gebremedhin *et al.*, 2016) and coxiellosis (Gumi *et al.*, 2013). Close association of pastoralists with their animals, food consumption behavior, problems related to contamination of milk and meat, inadequate supply of treatment drugs, harsh environmental conditions, and socio-economic and cultural practices all predispose pastoralists to different zoonotic diseases (Swift *et al.*, 1990; Zinsstag *et al.*, 2006). The previously cited studies conducted in Ethiopia also illustrate the presence of human behavioral risk factors that may increase the chance of acquiring the diseases, such as consumption of raw milk and meat, and bare hand handling of aborted materials and fetal membranes (Gebremedhin *et al.*, 2014; Tegegn *et al.*, 2016).

A retrospective study conducted through the collation of 15 years of disease outbreak reports (2000-2014), obtained from the Federal Veterinary Directorate, showed that small ruminants in the pastoral areas of the country are seriously affected by some of the important trade limiting diseases with significant morbidity and mortality. Accordingly, Contagious Caprine Pleuro Pneumonia (CCPP), PPR and sheep and goat pox (SGP) were reported from small ruminants in all the pastoral areas. CCPP was more frequently reported from South Omo zone of the SNNPR, while PPR and SGP were more commonly reported from Borana Zone of Oromia (Asmare *et al.*, 2015). Other diseases of economic importance—such as anthrax, blackleg, ovine and bovine pasteurellosis, camel mange, and external

and internal parasites of livestock—are also commonly reported diseases from the pastoral areas of the country.³

Mastitis is the other economically important livestock disease that affects household energy intake and food safety. It has been reported frequently from cattle (Adane *et al.*, 2012), camel (Abera *et al.*, 2010; Regassa *et al.*, 2013), and goats (Megersa *et al.*, 2010). Gastrointestinal parasites (Muhomed *et al.*, 2017), fasciolosis (Bedada *et al.*, 2017), trypanosomiasis both in cattle and camels (Aregawi *et al.*, 2015; Birhanu *et al.*, 2015; Terefe *et al.*, 2015; Kassa and Megerssa, 2017) and other vector borne diseases (Tomassone *et al.*, 2012) were reported in recent years. Ticks and mange mites were among the most common ecto-parasites reported from all the pastoral areas of the country (Bekele, 2001; Abebe *et al.*, 2010; Megersa *et al.*, 2012; Feyera *et al.*, 2017). These diseases are among the most epidemiologically complex diseases that require access to routine therapeutic, preventive and animal health extension services close to the pastoral communities.

A highly contagious camel disease with unknown etiology has been reported from several areas of the country, and across the Horn of Africa, by different investigators at different times. When it occurred the disease had high morbidity and mortality in adult pregnant camels, followed by lactating camels, creating serious socio-economic consequences for pastoralists as the death of these animals resulted in loss of the staple food for the pastoral households. Replacing reproducing female animals also takes a long period of time (Bekele, 2006; Dawo, 2010; Megersa *et al.*, 2012). Although the disease had been reported in other parts of Ethiopia, the camel sudden death was reported to have spread from the southernmost tip of Borana zone along trade routes to inland areas such as Negele, Borana, Harobake and Surupa. Before the disease was detected in Ethiopian Moyale in May 2007, it was reported in Southern Somalia in March 2007 and in February and May 2007 in northern Kenya (Megersa *et al.*, 2012a). Livestock diseases entering the country as a result of seasonal migration and trade pose the risk of introducing TADs with devastating consequences for pastoral livestock, for example diseases such as Rift Valley fever (RVF) and East Coast Fever (ECF).

2.2 Young stock mortality and disease

Young stock morbidity and mortality in pastoral areas is a significant constraint that is associated with poor livestock production and health management systems, and severely affects the replacement herd and livestock performance. As a result, pastoralists raise more animals under an inefficient system to buffer against the losses in production that result from disease, compared to the alternative of raising fewer animals in a more efficient, well-managed system.

Young stock mortality in livestock is generally higher when compared to the mortalities in adult livestock. Adult mortalities in the range of 8-10% in cattle, 12-14% in sheep, and 11-13% in goats have been

³ <http://web.oie.int/hs2/report.asp>

reported (Siraw, 2013). A retrospective study undertaken in 2015/16 in the pastoral production systems of the country by Ethiopian University partners reported alarmingly high annual losses of young stock from birth-to-weaning age, and premature losses in terms of abortion and stillbirth. The birth-to-weaning young stock mortality was reported in the range of 26-29.2% in cattle, 32.5-35% in camel calves, and 35-36% in lambs and kids; while the premature loss was between 17.4-21.2% in cattle, 23.4-48.8% in camels, and 25-41% in sheep and goats (Fentie *et al.*, 2016). The mortalities in lambs at national level may be as high as 25% (Siraw, 2013). A very recent baseline survey undertaken in the Regional Pastoral Livestock Resilience Project (RPLRP) intervention *woredas* reported a mean calf mortality rate of 27.8%, a mean kid mortality of 21.9%, and a mean lamb mortality of 13.7% (ILRI, 2017). In pastoral settings mortalities of both adult and young animals can be devastatingly high in years of severe drought, which are frequently becoming the norm rather than the exception⁴. Tables 2 & 3 summarize some of the available data on mortality and its causes in young stock in pastoral areas of Ethiopia. Diseases were ranked among the top causes of mortality.

Table 2: Young stock mortality in pastoralist areas of Ethiopia from RPLRP data

Region	Calf Mortality Mean	Kid Mortality Mean	Lamb Mortality Mean	Mean
Afar	51.8	36.2	16.9	35.0
Oromia (Borana)	14.6	19.5	19.8	17.9
Somali	28.9	17.7	4.1	16.9
SNNPR (South Omo & Bench Maji)	15.9	14.5	14.3	14.9

Source: Baseline survey report for the Regional Pastoral Livelihoods Resilience Project in Ethiopia, 2017

Table 3: Young stock mortality data from other references

Animal species	Region	Reproductive wastage (%) ^a	Mortality (%) ^b	Reference
Bovine (Calf)	Afar	21.2	26.0	Fentie <i>et al.</i> , 2016
Camel calf	Afar	48.8	35.2	
Lambs	Afar	36.4	35.0	
Kids	Afar	40.9	41.2	
Bovine (calf)	Somali	1.5	29.2	
Camel calf	Somali	2.8	32.5	
Lambs	Somali	7.0	35.2	
Kids	Somali	2.4	35.7	
Camel calve	Dire Dawa, Somali, Jijiga, Afar	NA	50	Melaku and Gebreab, 2001
Camel calves	Borana	NA	15-20	Megersa <i>et al.</i> , 2008
Camel calves	Borana	NA	18.1	Megersa, 2010
Camel calves	Jijiga, Shinile	13.3	12.5-22.5	Getahun and Kassa, 2002

⁴ This was observed from young stock mortality rates of 66.7% for calves, 50.2 for camel calves, 52.2 for lambs and kids in Afdem district of Somali region during the 2015 drought, which coincided with the study period of the Ethiopian University investigators (Fentie *et al.*, 2016); and also from a previous study by Catley *et al.* (2014) where excess mortalities were observed in different livestock species more often in drought years than during normal years.

^a Reproductive wastage = abortion plus stillbirths. ^b Mortality = death between birth and weaning. NA= data not available

The (former) MoLF has developed young stock mortality reduction packages for testing in different production systems of Ethiopia focused on mixed crop-livestock farms, pastoral herds and peri-urban dairy farms. The intervention packages are species and production system specific, and designed to be implemented by livestock owners with the assistance of livestock extension agents. As mortality mostly involves disease causing agents, a further objective of this pilot work will be to identify the disease agents responsible for young stock mortality and evaluate effective young stock mortality reduction intervention strategies to improve health and production in the pastoral production systems of the country. The package testing will help to identify likely impediments amenable to modification and fine-tuning for the eventual scale-up of the intervention packages. The piloting is planned to be conducted in two *woredas* in the pastoral areas and will involve building human resources, institutional capacity as well as at the main regional laboratory system.

2.3 Government veterinary structures, resources and policy

Veterinary services - governance structure

There are three levels of veterinary administrative structures in regions, zones and at *woreda* level. The organization of veterinary services varies in each region, but the general administrative arrangements are:

- Regional Bureau of Livestock and Pastoral Development in Ethiopian Somali and Afar regions and the Pastoralist Commission in Oromia and SNNP regions
- Zonal office of Livestock and Pastoral Development – coordination and linkage roles only
- *Woreda* office of Livestock and Pastoral Development
- Animal health clinic/posts (*Pastoral Kebele Association*)

The veterinary services mandated to be implemented by regional (state), zonal and / or district offices are:

- Provide preventive and clinical services, therapeutic services, control of ecto-parasites;
- Diagnostic services for diseases other than TADs;
- Provide extension services and public awareness campaigns;
- Provide disease diagnostic services (endemic diseases and epizootics of minor importance/ non-transboundary);
- Perform meat inspections at slaughter slabs and slaughterhouses;
- Conduct annual vaccination programs;
- Conduct vector control and procurement.

These tasks are implemented by staff at regional/state, zonal and *woreda* office level. The regional laboratories take the lead in field investigations of diseases and training staff at *woreda* level.

The *woreda* field veterinary service is based upon a system of stationed *woreda* clinics and is increasingly supported by satellite health posts. A clinical service is provided only to those pastoralists who are able to present their sick animals to the nearest clinic or health post. Due to constraints, such as lack of mobility and budgetary limitations, veterinary personnel do not provide any services outside the clinics. The only exception is during vaccinations in the event of an outbreak or emergency interventions. Budget constraints are a key limiting factor and commonly there is a shortage of veterinary drugs with supplies insufficient to meet the demand. In order to bring the service closer to pastoralists, a community-based animal health service delivery system has been introduced in all pastoral regions.

Veterinary services – human resources and infrastructure

All levels of government veterinary staff - veterinarians, animal health assistants and animal health technicians - are currently working in the pastoral regions, although recently there has been a reduction in veterinary staff numbers as part of a restructuring process. Tables 4 and 5 show the existing type and number of manpower distribution in each region.

Table 4: Veterinary human resources distribution in pastoral regions

Qualifications	Afar	Somali	Borana Zone	South Omo
Doctor of Veterinary Medicine (DVM)	26	35	14	5
Animal Health Assistant (AHA)	174	506	217	150
Animal Health Technician (AHT)	276	378	7	119
Community Animal Health Worker (CAHW)	795	1671	293	267

Table 5: Veterinary infrastructure distribution in pastoral regions

Existing Facilities	Afar	Somali	Borena zone	South Omo
Veterinary Clinic	40	3	122	7
Animal Health Post	222	799	110	81
Regional vet Laboratory	1	2	1	2

Source: survey report compiled for the pastoral regional veterinary records

Ethiopia does not have a Veterinary Statutory Body (VSB). Both the OIE-PVS Evaluation Report (2011) and the OIE-PVS Gap Analysis Report (2012) identified the need for the establishment of a veterinary statutory body for regulation of the veterinary profession in Ethiopia. The (formerly named) MoLF is working to address this concern, notably through the ongoing development of a proclamation for the organization and function of a VSB to be known as the Veterinary Council of Ethiopia.

2.4 Status of veterinary services delivery

Veterinary services in the pastoral and agro-pastoral areas, as with most other services for mixed crop-livestock production systems, are being delivered according to extension packages tested in sedentary production systems and have therefore proved to be impractical and unsustainable. Resource constraints, organizational weaknesses, professional biases and numerous logistical problems are some of the problems associated with servicing mobile communities in harsh terrain environments with limited infrastructure. For veterinary services, irregular and insufficient stocks of medicines and high personnel turnover further compound the situation.

In some pastoral areas private veterinary practices are gradually emerging, with drug vendors and clinical services found in and around urban centers, but public clinical services are the main option in rural areas - albeit with limited coverage. At the same time, a myriad of NGO projects are providing services using systems that vary from free delivery to full cost recovery. The private veterinary services that sell medicines to pastoralists and CAHWs operate from zonal towns and *woreda* stations, and have limited access to the majority of users. These drug vendors are also the least trusted, due to suspicious quality and people being fearful of expired drugs. The generation of old traditional healers therefore continues to play a role in prevailing clinical service delivery. The public sector tends to focus on disease prevention, diagnosis and clinical services in urban areas; the private wing is fully engaged with drug and other veterinary input sales; whilst CAHWs work on vaccination and clinical service delivery in collaboration with public, private and other development partners (EVA, 2010a; EVA 2010b).

In the pastoralist areas of Oromia and Somali regions, the most sustainable model appears to be the private veterinary pharmacy. The government veterinary clinics and health posts do continue to function however: Somali region has over 30 veterinary clinics and 799 animal health posts; Borena zone has 122 veterinary clinics and 110 animal health posts. In many cases, the drug revolving funds of these clinics continue to be topped up annually at *woreda* level. Afar regional state has over 40 clinics and 222 animal health posts, while in south Omo 7 clinics and 81 health posts have been constructed.

The veterinary clinics in urban areas, and health posts in some of the rural areas, are also meant to be providing clinical services as a private good.⁵ Commonly, vaccinations are conducted after a disease outbreak has been reported, although by the time vaccination takes place, peak mortality has already occurred. According to the field survey, some of these posts are not operational due to delays in construction or lack of water facilities. Others are not furnished and equipped after construction, or have no assigned staff. For example, in the surveyed districts of Somali Regional State (Danot, Dartole, Geladid and Bokh), only 29 out of 42 posts were operational in 2017. Apart from in some pastoral areas

⁵ For many years, all vaccination of livestock has been handled by government services, irrespective of whether the disease in question is in economic terms, a public or private good. In contrast, in other countries with more modern veterinary services there is a clear distinction between vaccines to be delivered by the private sector (for those diseases categorized as private goods) and those to be delivered by government (public goods, often contracted out to the private sector).

of Borena and SNNPR, where revolving funds are available for purchase of drugs, the budgets allocated to the districts for animal health service delivery were found to be sufficient for only 2-3 months of service per year. This finding is supported by a previous study, where public animal health delivery covered 30% of the service demand while the informal and private sectors shared the remaining 27% and 43% respectively (MoA, 2014).

Despite the government's continued expansion of health posts to pastoral *kebeles*, pastoralists continue to use low quality drugs from ordinary shops and black market dealers⁶ and their livestock continue to be affected by preventable diseases with severe implications for their livelihoods. For example, pox diseases, CCPP and PPR can all be prevented by well-designed and delivered vaccination as a routine preventive measure. In all areas regular and strategic vaccination programs have not been undertaken in a well-planned or coordinated manner during the last three years. Basic epidemiological and economic assessments with pastoralists clarified the demand for effective vaccination and assistance from government to develop better health management strategies. If such strategies were developed and implemented with private sector involvement, the need to use antibiotics in response to outbreaks of viral diseases could be reduced. The role of cattle vaccines to reduce mortality in camels is another key issue for further investigation.

In the visited pastoral districts in all four regions, assessments of the public veterinary services using the OIE-PVS Toolkit showed that, while they are at different levels, they are all at an unacceptably low standard. The overall performance of Oromia pastoral areas (2) is relatively better, followed by Somali (1.1), South Omo (0.9) and Afar (0.5). The current status of the disease surveillance (passive and active) system in many of the pastoral regions was also found to be weak. For instance, the 2017 disease reporting rate is 25.8% in Ethio-Somali, 21% in Afar, 26.2 in SNNP and 12.2% in Oromia regional states (MoLF, 2018b), indicating a very low reporting rate considering that the required reporting rate by the surveillance system of the nation from all of its *woredas* required by the OIE is 80%.

Rationalization of the delivery of veterinary services

The Government of Ethiopia is embarking on a program to rationalize the way in which veterinary services are being delivered. The Livestock Value Chain Public Private Dialogue (LVC-PPD) project has facilitated dialogue with all stakeholders to create an enabling framework for the participation of the private sector in veterinary service delivery. A key output has been the creation of pathways towards privatized service delivery in areas/activities that were previously the domain of the government veterinary services. Stakeholders have been consulted through the medium of workshops, meetings and interviews, culminating in the preparation of a 'Road Map for Rationalisation of Veterinary Services' that is now fully owned by the Veterinary and Feed Quality Control state ministry of the former MoLF. The importance of this process has recently been highlighted by the emphasis placed

⁶ Pastoralists also continue using incorrect treatment procedures such as administering penicillin-streptomycin by intravenous injection.

on the involvement of the private sector in realizing the challenging targets expected in the various livestock value chains detailed in the Livestock Master Plan.

Evidence of moves towards the rationalization of livestock services in Ethiopia include:

- The piloting of sanitary mandates in a series of EVA managed trials in Ethiopian Somali and Borana (Oromia) regions.
- Export abattoirs and feedlots are all privatized and public private partnerships (PPP) are now being addressed for the management and operation of quarantine facilities.
- PPP for management and inspection of municipal abattoirs are being promoted by veterinary services. Currently these are the responsibility of municipal authorities and the standards are very poor.
- Import, distribution and sale of veterinary drugs was fully liberalized in the late 1990s, however the regional government is still involved in the purchase of large amounts of cheap veterinary drugs which flood the market and offer little choice.
- CAHWs are accepted in the pastoralist areas and work with NGOs and FAO to extend the coverage of veterinary services to remote communities. A successful model is a network of CAHWs linked to a private pharmacy that is run by a veterinarian or AHA.

Management and supply of veterinary drugs

Livestock owners understand the effectiveness of modern veterinary drugs and are willing to pay for curative services, but efficient veterinary drug supply systems do not exist in most of the regions: Neither public veterinary services nor private veterinary services including CAHWs are able to function properly. In order to improve the availability of quality, affordable veterinary drugs to pastoralists and agro-pastoralists, a rationalization of veterinary services is needed that reviews public and private sector responsibilities, establishes a clear government policy, and removes unfair competition to allow public employees the option of transferring to the private sector.

The growing demand for improved animal health delivery, so as to increase livestock products both in terms of quality and quantity, requires the establishment of a new statutory authority for veterinary drugs. The task of veterinary drugs control is currently entrusted to the Veterinary Drug and Feed Administration Control Authority (VDFACA). Previously the Drug Administration and Control Authority (DACA), was responsible for administration and control of both human and veterinary drugs. The newly established authority was mandated to carry out the following tasks:

1. Prove the quality, safety and efficacy of veterinary drugs to be produced, imported and/or exported into/from, and to be used in, Ethiopia.
2. Veterinary drug use rationalization and prevention of drug resistance development.
3. Prevention and control of illegal products circulation and others.

Disease diagnostic facilities

Regional and national veterinary laboratories for disease diagnosis and investigation under the National Animal Health Diagnostic and Investigation Center (NAHDIC) support animal health service delivery. In addition, the National Veterinary Institute provides diagnostic services, though not as its primary mandate. The regional laboratories serving the pastoral regions are located strategically in major towns in Semera, Jigjiga, Yabello, Wolayita Sodo and Jinka; and are mandated with disease surveillance and investigation, including outbreak investigation, in their respective operational areas supported by NAHDIC (NAHDIC, 2012). NAHDIC is an ISO 17025:2005 certified facility for 6 diseases and 13 tests that also serves as a referral laboratory both for regional veterinary laboratories in Ethiopia for several tests, and as a regional referral laboratory for East African countries for highly pathogenic avian influenza and Newcastle disease.

While the presence of these laboratories is necessary for the provision of timely outbreak investigation and continuous livestock disease surveillance to shape disease prevention and control activities, and the strategies of national veterinary services, several challenges hinder their contributions towards their stated objectives. Some of the main challenges identified include:

- Weak structural and working relationships between the regional veterinary laboratories and NAHDIC as regional laboratories are accountable to regional livestock and Agricultural Bureaus while NAHDIC is accountable to the federal (formerly named) MoLF.
- Poor capacity of regional veterinary laboratories, both in terms of facilities and technical competence.
- Lack of reliable systems for the acquisition of laboratory consumables, biologicals and reagents.
- Insufficient budgets, limited transportation facilities and inefficient administration systems particularly in regional laboratories.
- Poor data storage and communication among stakeholders.
- Failure of storage of identified disease-causing agents for future research and vaccine development.

The private sector – pharmacies and vendors

While the delivery and privatization of veterinary services is relatively successful in urban centers or high potential areas, private animal health services are more difficult to deliver in remote areas where, due to economies of scale, services are not offered by the market-dependent private sector. The private sector in pastoral regions of the country is exclusively engaged with selling veterinary drugs and other inputs, and the vendors are AHAs, AHTs or CAHWs. Private veterinary pharmacies are most established in the Ethiopian Somali region and Borana zone. (There are 45 private pharmacies in Somali region, 29 in Borana zone, 18 in south Omo, and 15 in Afar region). Practically no privately owned veterinary clinics are known to operate in pastoral areas of Ethiopia. In some areas the private sector

is financially supported by national and international NGOs working in the area with local government (EVA, 2010a).

The field study conducted by the consultants assessed the presence of private veterinary pharmacies (PVPs) as one of the important animal health service providers in the districts studied. They sold the majority of animal health inputs in the areas visited, providing 47% of non-injectable and 58% of injectable drugs. While these service providers do increase access to modern animal health provision for pastoralists, they also sell all types of drugs to herders directly without any limitation i.e. without consideration given to the rational use of the drugs. In the long run this may result in development of antimicrobial resistance for both internal and external parasites. Drugs may also gain access to consumers through milk and meat, resulting in adverse health consequences and affecting export of animal products. There is therefore a need to regulate activities of PVPs.

Barriers to the expansion of private veterinary pharmacies include limited financial capacity, fear of insecurity, and cultural bias which prevents expansion into remote stations; as well as absence of basic facilities like electricity, and unnecessary competition from NGOs and government distributing heavily subsidized/free drugs purchased from external sources.

Community – based animal health services

Treating all the animal diseases in pastoral areas is beyond the present capability of the public veterinary services: The pastoral regions are vast, mountainous and harsh; pastoralists move around with their herds frequently and range widely; and public veterinary services are centralized and serving settled pastoralists and urban dwellers. The difficulties faced by animal health services in physically accessing communities who may be hundreds of kilometers from the nearest urban center, and who can only be reached by poor roads or on foot, are a huge practical challenge. CAHWs have been widely used in Ethiopia in an attempt to improve the coverage and sustainability of basic veterinary services and a desire of NGOs to work more closely with communities.

Significant numbers of CAHWs had been trained in Ethiopian pastoral areas such as Borana zone and Somali region over the last 20 years. According to the field survey, of the 400 CAHWs trained in Borana around 70% were still active. In the Ethiopian Somali region, around 66% of the 2500 CAHWs trained were still active in some way. The strength of the CAHW system is the fact that CAHWs are drawn from their community and are trusted. NGOs who started scaling up the system of CAHWs were key in the eradication of rinderpest in Afar regional state. In 2004 the MoA developed a CAHW training manual, and the minimum standards and guidelines for the design and establishment of CAHWs was revised in 2009.

As the training of CAHWs is limited in terms of time and scope, they need to be supervised, mentored and monitored by qualified government, private or NGO veterinarians. Some organizations are linking private vets to networks of CAHWs to develop a sustainable funding methodology for the system. Three clear systems are practiced at different locations in Ethiopia: (1) CAHWs linked to

government clinics or health posts and utilizing revolving funds, (2) CAHWs linked to private veterinary pharmacies, and (3) groups of CAHWs forming cooperatives. Threats to the success of a privatized CAHW network include distribution of free services during emergencies and competition with subsidized government drugs at health posts. In the pastoral areas of Oromia and the Ethiopian Somali regions the most sustainable model appears to be CAHWs linked to the private veterinary vendors/pharmacies, and supervised by private veterinary practitioners and or the *woreda* AHA. These approaches recognize the relatively high transaction costs of delivering services in remote areas and the reality that for most PVPs, the volume of drug turnover is the main determinant of business viability.

Despite the application of minimum standards and guidelines for the design of a CAHW system being in place, there are still some limitations to the sustainability and quality of the system. These include:

- Absence of a clear policy and legislative support.
- Lack of a system to assure a regular drug supply.
- Weak and inefficient CAHW supervision and monitoring.
- Lack of integration into the existing veterinary service delivery system.
- Absence of certification of trained trainers.
- Absence of an annual certification of trained CAHWs.

In 2008, the then Ministry of Agriculture and Rural Development (MoARD) published a national guideline for livestock relief interventions in pastoralist areas of Ethiopia (MoARD, 2008). The assessment team noted that most NGOs were now working through regional veterinary authorities, however the level of coordination at *woreda* level remains very weak.⁷

The supervision of CAHWs includes ongoing field monitoring of CAHW performance and a regular schedule of refresher trainings, which are critical to the success of a CAHW program. However, the level of supervision has drastically fallen in areas where NGOs have either ceased working or handed supervision over to government veterinary services or private pharmacies. This lack of supervision appears to be contributing to a gradual erosion of CAHW technical knowledge. The lack of drugs and poor supervision / monitoring of the CAHW systems needs to be corrected before further CAHW training is considered. Without drugs most CAHWs will cease to function and communication between them and their host project will be lost. In terms of developing CAHW capacity, there is also a need to coordinate public and NGO training courses and enforce the use of the national minimum guidelines, the training curriculum and the approach used by all parties.

⁷ With the support of ECHO and OFDA, NGOs such as VSF Swiss and Save the Children have built significant experience with voucher schemes. The modalities of voucher schemes have been described in FAO, 2001 and Regassa, 2010.

SECTION THREE: STAKEHOLDER REVIEW, SWOT ANALYSIS AND GLOBAL STANDARDS

3.1 Development partners working in animal health

A large number of national and international NGOs operating in pastoral areas are providing targeted assistance to *woredas* and communities by introducing new technologies, approaches and techniques of development; or by establishing community-based institutions and enhancing their capacities. NGOs in the livestock sub-sector include:

- *Action Contre la Faim*
- Afar Pastoral Development Association (APDA)
- Agency for Cooperation and Research in Development (ACORD)
- Agricultural Cooperative Development International /Volunteers Overseas Cooperative Assistances (ACDI/VOCA)
- CARE- International Ethiopia
- Community Development Service Association (CDSA)
- Cooperazione Internazionale (COOPI)
- Hararghe Catholic Secretariat (HCS)
- International Rescue Committee (IRC)
- Islamic Relief Ethiopia (IRE)
- Lay Volunteer International Association (LVIA)
- Mercy Corps
- Ogaden Welfare Development Association (OWDA)
- OXFAM GB
- Pastoralist concern (PC)
- Save the Children International
- VSF Germany and VSF Suisse.

Most of the NGOs/CSOs are operating in pastoral regions of the country—particularly in the Southern region, Oromia, Afar and the Ethiopian Somali regional state—and animal health service delivery has been part of their project/program based relief or development interventions in their respective operational areas. Activities include veterinary input supply, capacity building in terms of logistics and training, sponsoring vaccination campaigns, CAHW training, infrastructure development like clinic and animal health post construction, and clinical service deliveries. In times of drought emergency services are delivered free of charge, but there are also reports of partial and full cost recovery attempted by a few of the NGOs.

The professional associations dedicated to livestock development include:

- Ethiopian Society of Animal Production (ESAP)
- Ethiopian Veterinary Association (EVA)
- Ethiopian Animal Health Professional Association

- Pastoralist Forum Ethiopia (PFE).

Despite the existence of cooperatives in businesses focused on livestock production and marketing, there are no pastoralist pressure groups (or associations) at any level that are raising veterinary issues and addressing the service delivery mechanisms. The professional associations and forums identified are trying to voice the concerns and rights of livestock producers and influence policies and practices in favor of pastoralist and agro-pastoralists.

3.2 Multilateral and bilateral support to livestock development

The role and contribution of multilateral/bilateral donors and financial institutions to livestock development in Ethiopia, in the form of investment programs and projects, has been significant. The history of livestock development has been strongly supported by many development partners (DPs). Major multilateral agencies active in supporting livestock development in the pastoral areas of the country include:

- USAID
- World Bank
- Bill & Melinda Gates Foundation (BMGF)
- African Development Bank
- International Fund for Agricultural Development (IFAD)
- European Union (EU)
- Department for International Development (DFID)
- Canadian International Development Agency (CIDA)
- GIZ
- FAO

Various institutions will also collaborate for a particular livestock health intervention in the pastoral areas, as shown in table 6.

Table 6: Institutional partnership and specific roles and functions on PPR control program

Institute	Responsibility
MoLF	Government cooperation project implemented by (former) MoLF together with regional states
NAHDIC	Sero-monitoring, sero-surveillance, outbreak investigation, virus characterization
NVI	Vaccine production
RVC	Capacity building Participatory Disease Surveillance (PDS) and syndromic surveillance
VSF Suisse and VSF Germany	Training, PDS and vaccination
FAO Ethiopia	Technical support

Source: PPR Project report (MoLF, 2018)

For the resource poor public veterinary sector, the support acquired from these donors and development partners is highly valued especially during emergency relief operations. Nevertheless, the lack of strategic approaches to utilize the available resources for sustainable veterinary service development has brought about growing community dependency tendency and donor fatigue (FAC CAADP, 2012).

3.3 Analysis of stakeholders involved in animal health services delivery

Effective animal health services delivery requires that all actors work together: local, global, private, public, non-government and government. A stakeholder analysis exercise was conducted to identify the roles and responsibilities of these key actors in animal disease outbreak prevention and control programs. The identified stakeholders were classed as important and influential, important and less influential, less important and influential, and less important and less influential stakeholders.

Table 7: Institutional partnerships for disease prevention and control programs

<i>Important and influential</i>	<i>Less important and influential</i>
Government veterinary service providers NGOs Donor Groups	Zonal, District and Kebele administrative bodies Civil society
<i>Important and less influential</i>	<i>Less important and less influential</i>
Pastoralists and CAHWs Private drug vendors	Ordinary shops CSOs

Government veterinary services were classified as important and influential while pastoralists including CAHWs were grouped under important but less influential stakeholders. Having thoroughly analyzed their roles in the past vaccination programs, it was concluded that active and meaningful participation of these stakeholders in the planning and implementation of livestock disease control program is a critical determinant of success. Although the district and *kebele* administrative bodies can potentially play a critical role in mobilizing the community to participate in vaccination programs, they were classed as influential and less important stakeholders based on their roles so far, and it is suggested that vaccination campaign implementers should be aware and deal with them carefully. Ordinary shops selling animal drugs were classed as less important and less influential stakeholders.

Interestingly the NGOs' position in the quadrant varied according to their roles in animal health service provision. The logistic support and training provided to vaccination campaigns and CAHWs made them an important stakeholder that should be involved in the planning process. However their roles in drought early warning systems, that often trigger uncoordinated vaccination and treatment

campaigns implemented during droughts, moved them to being an influential stakeholder that should be carefully monitored. The private veterinary vendors were considered important but less influential stakeholders for their role in supplying drugs and vaccines required for mass treatment in the event of outbreaks, as well as mobilizing and supervising CAHWs on behalf of NGOs and district veterinary units—although they have not been involved in vaccination programs so far.

During the stakeholder analysis, veterinary services were split according to public and private goods. The primary role of the government veterinary service was defined as provisioning public goods, meaning the planning and coordinating of animal disease control programs and ensuring quality of private veterinary goods provided from different sources including private animal drug vendors. The analysis also examined the current partnership between the district veterinary service and NGOs that required the latter party to divert part of the resources tagged for other activities to sub-optimal livestock vaccination programs with little or no livelihood impact.

Table 8: Classification of veterinary activities by type of economic good

Activity	Type of economic good		Measures to correct for:		Sectoral delivery	
	Public	Private	Externality	Moral hazard	Public	Private
Curative						
Diagnosis		X*				YY
Treatment		X**				YY
Prevention						
Vaccination		X*			Y	YY
Vaccine production		X				YY
Vector Control						
Tick		X*			Y	YY
Tsetse	X	X*			Y	YY
Surveillance	X				YY	
Diag. support		X*			Y	YY
Quarantine			X		YY	
Drug quality ctrl				X	YY	
Vet. Research	X	X			YY	YY
Human Health						
Food hygiene / Inspection				X	YY	
Vet supplies						
Produce		X				YY
Distribute		X				YY

X* Private goods with externalities. X** Private goods with externalities only in case of infectious disease
Y Economically justified under special circumstances. YY Economically justified
(Source: Umali et al., 1992)

3.4 Analysis of community perceptions on veterinary services

As part of the field survey, 10 *woredas* were visited and community members were interviewed. A number of participatory appraisal exercises were also completed. In all locations the main service providers were identified as government veterinary services, pharmacies selling medicines, itinerant traders selling medicines, traditional healers, and CAHWs established mainly through NGO projects. The results of the matrix scorings were consistent across the four regions with a higher preference for the price (affordability) of drugs offered by government health posts. An average score also indicated that in both accessibility and availability parameters, level of preference for services provided by CAHWs was very low. This could be explained by the CAHWs' lack of veterinary kits and the CAHWs preferring to move to district stations where they wait for vaccination and emergency veterinary campaigns. Although urban-based and less accessible, private pharmacies always have medicines in their pharmacies and so herders visiting the district town can usually buy drugs for sick animals, and they are therefore seen as the most available animal health service providers.

Though scoring relative well both for affordability and quality indicators, the government veterinary services had low availability relative to private pharmacies due to their inconsistent and insufficient supply of medicines and high staff turnover. Similarly the CAHWs' score for availability of medicines and services remained low although they performed relatively well for accessibility, affordability and quality indicators. Pastoralists were not willing to pay for drugs kept at veterinary posts in areas where NGOs supplied free drugs to CAHWs and to emergency veterinary campaigns run by *woreda* veterinary units. CAHWs were generally the most trusted services providers: despite having few drugs and being seen as relatively expensive, they remain part of the community. Government services provide vaccinations, but infrequently, and are not seen outside of these vaccination campaigns. Traditional healers did not score well in general as livestock owners recognize that they are limited to a fairly narrow range of effective treatments. Currently, almost all assessment veterinary pharmacies were sourcing their drugs from Addis Ababa, suggesting the need to promote the establishment of whole sellers in regional or *woreda* towns.

3.5 SWOT Analysis

The strengths, weaknesses, opportunities and threats (SWOT) analysis carried out on the current pastoral veterinary services delivery system was as follows:

Table 9: SWOT analysis of existing veterinary services in pastoral and agro-pastoral areas

Strength	Limitation
– The presence of veterinary department at regional level under livestock and pastoral development in Somali regional state – Presence of regional veterinary diagnostic laboratories – Expansion of private veterinary pharmacies and drug vendors – Availability of trained qualified human resource – Federally recognized and approved community-based animal health services – Introduction of one health project operating in Moyale and Miyo districts – Existence of a Federal animal health strategy for the year 2013-2015 – The existence of the Livestock Master Plan (LMP) that has been approved by government and envisages an increase in privatized veterinary services as a strategy to increase production. – Approved career progression scheme in existence and ready for implementation by regional states	– High livestock mortality and morbidity – Limited capacities to deliver veterinary services and regulatory functions – Weak enabling environment for private service delivery expansion – Lack of a clear technical co-ordination chain of command between Federal, Regional and <i>woreda</i> veterinary authorities – Lack of basic budget required for regional veterinary service delivery – Absence of appropriate structure for regulatory enforcement – Shortage of high skilled manpower – High turn-over of qualified staff at all level – Poorly equipped and non-functional clinics and health posts – Lack of adequate enabling environment and weak private sector expansion – Critical shortage of budgets, veterinary inputs, consumables and equipment – Low and irregular disease reporting rate – Lack of uniformity in CAHW training – Lack of formal/legal status of Community Animal Health (CAH) service delivery and CAHWs – Inadequate capacity, knowledge & skills of technical and administration staff – Poor efficiency and low geographical coverage of clinical services – The lack of tactical treatment and strategic vaccination program and low vaccination coverage – Poor logistical and financial support for all services such as regional veterinary laboratories and clinics – Delayed vaccination responses following outbreaks – Absence of cold chain facility in remote areas – Absence of regulatory mechanism to follow the implementation of strategies, minimum standards and guidelines at federal and region levels

Opportunity	Threat
– Presence of development partners – The ongoing government transformation plan (GTP II) – Recent OIE evaluation and gap analysis – Expansion of public financed infrastructure – The use of mobile network for diseases reporting – Federal state and development partner's commitment for TAD control – Community experience and awareness of veterinary services – The ongoing pilot 'one health approach' – Decentralized government structure that has encouraged public participation – Growing investment by the private sector – Improved infrastructure development – An increased demand for livestock and livestock products – Increased numbers of people qualified/trained in the market – Existence of special initiatives such PCDP, PRIME, RPRLP, DRLSP, etc.	– Conflict: international, national and regional dimensions – Uncoordinated drought emergency veterinary programs working against private veterinary services – Growing climatic shock – Dependency tendency – The presence of several contagious and vector borne diseases – Unforeseen distribution of free veterinary drugs by government and NGOs – Presence of widespread use of veterinary drugs by pastoralists – Antimicrobial and anthelmintic resistance – High human resource turn over

3.6 Global standards

Veterinary service provision in pastoral areas is both a national and international issue. The international standards governing the safe trade in livestock and livestock products are set by the Office International des Epizootics (as delegated by the World Trade Organization) and documented in the OIE Code. The OIE Code provides guidance on the management and regulation of national veterinary services that is required in order to ensure confidence in the disease status reports issued by countries. Countries which cannot demonstrate a clear, central, 'command and control' of certain veterinary functions and personnel, have credibility problems with the OIE (and therefore the WTO) and their trading partners. This does not mean that all veterinary service delivery and surveillance tasks have to physically implemented by government employees, but that private sector veterinary workers should be licensed by regulated veterinary legislation, and ideally by a professional statutory body such as a veterinary council. It follows that well-regulated, privatized veterinary services are supported by the international standards for livestock trade. Similarly, well-trained and supervised CAHWs are recognized by the same international standards.

Under its global mandate the veterinary service delivery system of Ethiopia was recently evaluated by OIE for its compliance with the required minimum standards. Out of the 40 critical competencies discussed under the PVS Gap Analysis framework, no less than 29 were earmarked for one or two-tier increases in performance. This corresponds to considerable expected advances in the remaining 6 critical competencies that constitute the actual outcome of the analysis (Bastiaensen *et al.*, 2012). Among these critical competencies, a number were identified as needing to be considered in the development of the veterinary strategy for the pastoral and agro-pastoral production system. The pastoral regional veterinary service is advised to work on the following strategic priorities over the next five years:

- To strengthen consultation mechanisms in the pastoral and agro-pastoral areas to foster heightened public-private partnerships and to adopt a cost recovery approach in various areas to contribute to sustainability;
- To strengthen the coordination and leadership role of regional veterinary authorities for a more effective and harmonized regional approach towards, for instance, disease surveillance and control, early detection and emergency response; and to properly link regional authorities to *woreda* and field level structures and inversely, tie field level structures and activities to food security and trade facilitation;
- To improve management by deploying a management style that is participatory and based on science, and by implementing merit-based recruitment guidelines and protocols;
- To strengthen capacity development efforts for a more technically competent veterinary service delivery in pastoral regions;
- To improve cross-sectoral and transversal cooperation with relevant regional bureaus and/or agencies;
- To expedite the passage of outstanding region-focused legislative proclamations and regulations; and, where possible, review legislation for harmonization with national standards;
- To maintain structured collaboration with relevant regional and international inter-governmental organizations so as to actively review and comment on draft standards; and to ensure (active) participation in regional and international fora, specifically with neighboring counties, as most of the pastoral regional states share boundaries with them.

SECTION FOUR: VISION, MISSION AND OBJECTIVES OF THE STRATEGY

The situation analysis of veterinary service delivery in the pastoral areas identified key strategic bottlenecks and categorized them under six major categories:

- (i) Insufficient accountability, institutional structures and systems;
- (ii) Inadequate capacity to deliver animal health services;
- (iii) Unequal access to economic activities and opportunities;
- (iv) Limited voice, influence and participation of women; and
- (v) Poorly developed intra- and inter-sectoral linkages, partnerships and collaboration.

Understanding the bottlenecks facing animal health services delivery in the pastoral areas, and how these can be overcome, is critical to achieving the objectives and production targets of GTP II. The main objective is to ensure that the veterinary services delivery strategy for the pastoral areas of the country provides a framework for how to ensure accessible, affordable, available, quality services as a means of transforming the livestock sector and its increasing role in Ethiopia's economic development. The strategy will guide the overall approach to addressing animal health issues in the work of regional governments, MoALR and its affiliated institutions, development partners, the private sector and civil society organizations (CSOs).

4.1 Vision

Enhance veterinary governance in line with the federal animal health services vision. Provide animal health services that comply with international standards; are conducive to a sustainable, globally competitive livestock industry; and contribute to the achievement of food security, poverty alleviation, public health and socio economic growth.

4.2 Mission

To create an enhanced veterinary services delivery system that complies with international standards, and enables Ethiopian pastoralists to have effective and efficient services with the capacity to prevent, detect, contain and eliminate animal and public health risks.

4.3 Goal

Contribute significantly to the attainment of food and nutrition security, poverty reduction and wealth creation in the pastoral production system through the adoption and adaptation of improved technologies, and by delivering a market-oriented and demand-driven veterinary services delivery system.

4.4 Objective

The overall objective of the veterinary services delivery strategy is to transform the veterinary services delivery system in the pastoral areas of Ethiopia to enable it to contribute to food security and economic growth through reducing the negative impacts of animal diseases on livestock production, trade and public health.

4.5 Specific Objectives

- To improve service delivery governance so that it fits with the existing pastoral production system and improves the efficacy, efficiency and coverage of clinical services delivery.
- To enhance the expansion of private animal health services and the piloting and scaling up of public private partnerships through outsourcing certain public good activities.
- To improve and sustain the diagnostic capacities of regional laboratories and provide effective and timely diseases diagnostic services.
- To strengthen regional disease surveillance and reporting capacity through the direct implementation of guidelines on reporting systems.
- To enforce risk based strategic disease prevention and control of important livestock diseases that are of livelihood and trade importance.
- To reduce the impact of zoonotic diseases on public health by preventing and controlling zoonotic diseases and ensuring the safety of animal products.
- To ensure the mainstreaming of an accredited, coordinated, regionally harmonized and sustainable community-based animal health service.
- To ensure the mainstreaming of the Livestock Emergency Guidelines and Standards to improve the capacity for early detection and response to animal health emergencies.
- To build the capacity of existing veterinary technical staff at various levels on disease control and management, facilitation, communication skills and knowledge management.
- To improve the timely and regular supply of adequate and quality veterinary inputs.
- To introduce good practices and raise public awareness for animal welfare improvement.
- To establish and implement Performance and Results Based Monitoring, Evaluation and Learning to improve the effectiveness, efficiency and impact of the veterinary services delivery system.

4.6 Guiding Principles

The strategy is built on the following ten key guiding principles that are identified as being critical in order to provide a robust and strong platform, which will underpin all efforts to deliver high-level strategic outcomes:

1. **Abide by professionalism and ethical principles.**
2. **Act legally, responsibly and with accountability, both to the community and the government.**
3. **Work in partnership with other stakeholders to improve animal health standards.**
4. **Build on previous success and public-led diverse services:** The public veterinary services delivery will maintain its lead role in the provision of services but will provide an enabling

environment that motivates and encourages the involvement of the private sector and CAHWs in the delivery of services. A pluralistic approach is expected to maximize the reach of services into remote communities and provide a wide range of veterinary services through enhancing public private partnerships.

5. **Ensure clear roles and responsibilities of all stakeholders.**
6. **Consistently apply the principle of ‘prevention is better than cure’.**
7. **Establish competent and skilled human resources:** The development of a veterinary services delivery strategy for pastoral production systems requires a competent, energetic and dynamic workforce. In line with this, the roles played in the past and the current ongoing progress by different key veterinary professionals and para professionals, including CAHWs, is highly recognized. Continued efforts at achieving the required results through a competent skilled workforce that can respond to the diverse livestock health needs of pastoralists and agro-pastoralists will be critically important. There is a need for capacity-building programs by federal and regional institutes, and Continuous Professional Development (CPD) programs that will progressively equip individuals with the required knowledge, skills and attitudes to succeed in their careers as vets or technicians working within government structures.
8. **Undertake gender and youth mainstreaming:** The strategy will provide special attention and support to women and youth by encouraging their participation in the service delivery system, and ensure the services provided address their specific needs. In the pastoral areas of Ethiopia women play a vital role in livestock production, particularly concerning the responsibility of women for the household food supply, but in many instances development planners and government officials overlook their role. Women should also be more involved in the delivery of livestock services in pastoral areas. Women are often the first to identify sick animals—they spot parasites and note changes in milk productivity or dung, indicating that the animal is sick. Women are also often involved in preparing traditional remedies and treating sick livestock, even if in many pastoral societies modern medicine is bought and administered by the men. The young of all stock types are commonly kept in or near the pastoral homestead in the care of women and children. Therefore, a pastoral-wide veterinary strategy must take women's roles and needs into account and encourage a gendered perspective in livestock service delivery.

SECTION FIVE: VETERINARY SERVICES DELIVERY STRATEGY - PILLARS

The field survey and analysis, as outlined in the previous sections, identified the key systemic challenges facing veterinary services delivery in pastoral areas of Ethiopia. These gaps were then clustered into five broad categories to determine the key pillars needed for a transformed veterinary strategic framework for Ethiopia. This section identifies the systemic challenges that have been identified and analyzed for each pillar, and the corresponding strategic objectives and strategic interventions that are now proposed under each pillar.

The following strategic interventions have the potential to make a lasting and continuous improvement to the health of the livestock herds in the pastoral areas of Ethiopia. Their implementation will not only provide direct benefits to pastoralists but will benefit the livestock industry at local and national levels; and will protect society, the economy, and the environment from the negative impacts of animal diseases. The overarching requirement for all the pillars depicted below is the strengthening of the veterinary system towards better governance. A well-functioning system will require extensive human and capital investments in all pillars and their components. The five core strategies and their related constraints are:

1. Strengthening Veterinary Governance

- *Weak governance capacities to design and deliver veterinary services and regulatory functions.*
- *Low and irregular disease surveillance and reporting; and very low sensitivity, specificity and timeliness of reports.*
- *Absence of risk based, strategic and progressive disease prevention and control approaches.*
- *Limited laboratory staff capacity and lack of incentives for professionals, poor management systems, and poor logistical and financial support for regional veterinary laboratories.*
- *Insufficient linkages between federal and regional laboratories.*

2. Strengthening Competencies for Primary Animal Health Care

- *Poor efficiency and low geographical coverage of veterinary clinical services.*
- *Limited private sector expansion in the provision of veterinary service.*
- *Inadequate efficiency of CAHWs as veterinary service providers in pastoral areas.*
- *Weak veterinary care provision to crisis affected communities through livestock based interventions; and absence of coordination, preparedness and contingency plans for livestock emergencies as a result of disasters.*

3. Strengthening Competencies for Veterinary Public Health

- *Poor veterinary public health services to combat zoonotic diseases.*
- *Absence of frontline services to prevent and control zoonoses and food-borne diseases.*
- *Absence of inspection services for livestock products and by-products.*

4. Human Capacity Development, Resource Mobilization and Communication

- Limited capacity for communication and poor accountability among various institutions.
- Absence of a veterinary drugs and biologicals quality, safety and efficacy regulatory system.
- Limited involvement of veterinary professionals in providing veterinary extension services, and low cooperation and collaboration between public sector and NGOs in veterinary extension services.
- Weak capacity in preparing projects for capacity building programs, including physical facilities, human resources and targeted field activities.

5. *Strengthening Competencies for Animal Welfare*

- Limited professional capacity in animal welfare and its management.
- Absence of animal welfare guidelines tailored to pastoral production systems.

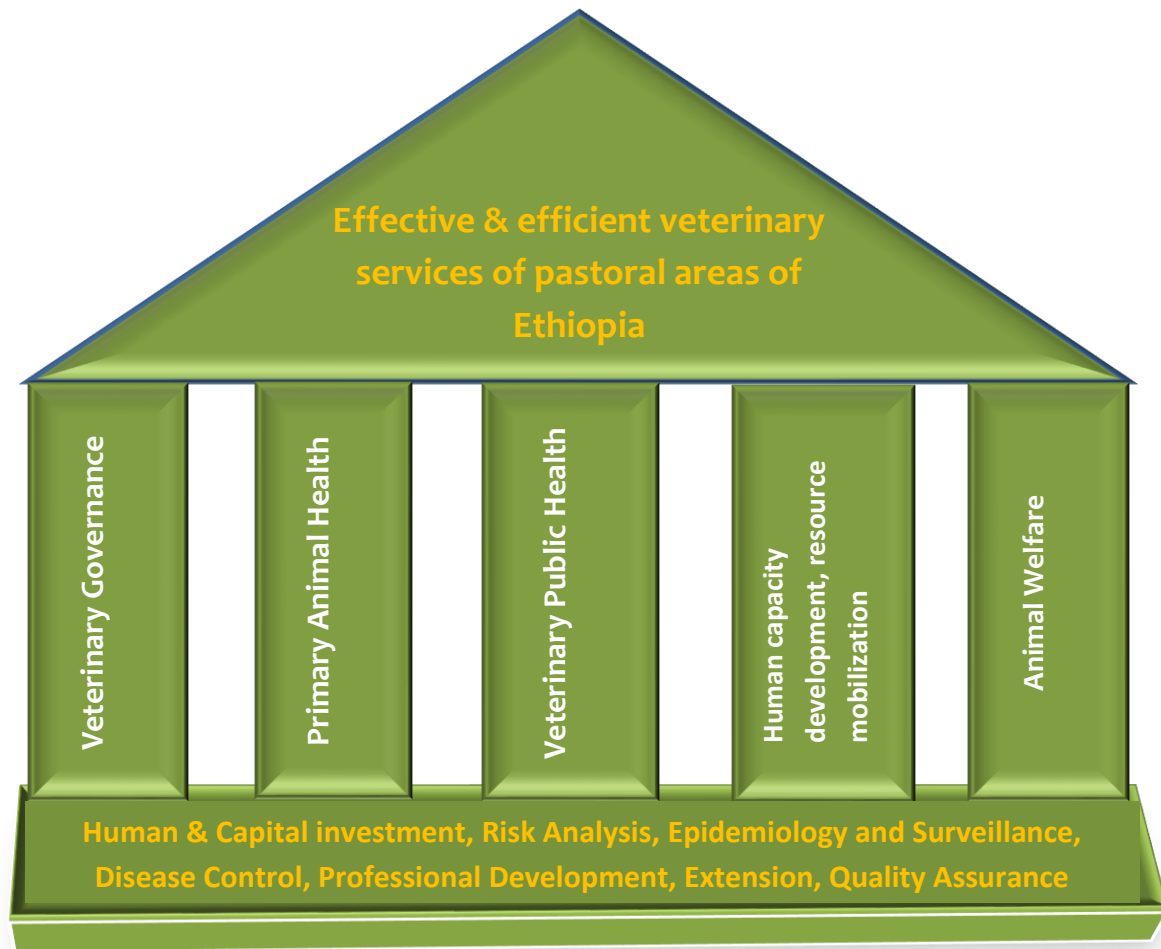


Figure 1. Schematic representation of the veterinary services delivery system for pastoral production areas

5.1 Pillar One: Strengthening Veterinary Governance

Systemic Bottleneck 1.1: Weak governance capacity for designing and delivering veterinary services and regulatory functions

The delivery of animal health services in pastoral areas of Ethiopia is a challenge because of the remoteness of the extensive production system, the harsh terrain and poor communications infrastructure, lack of facilities, weak monetary economy, low capacity of local organizations, high mobility of people and animals, and the frequently inappropriate approaches towards pastoral development. This situation has contributed to the weak delivery of services both in terms of coverage and quality. Currently the government is progressing in constructing fixed-point veterinary clinics and health posts. These clinics and health posts are located in major towns and provide services mostly to livestock owners residing around these towns and villages.

With their limited mobility, veterinary practitioners are struggling to venture outside their clinics to investigate disease outbreaks and render services. There is also a lack of operational budgets as well as incentive systems for clinicians to support effective delivery of animal health services compared to the magnitude of the problems in their regions. Budgets do not allow drug purchases that cover more than a small part of the annual need. In some regions a few registered private veterinary pharmacies have been introduced, although with varying distribution between regions; and community animal health systems supported by NGOs are not currently capable of providing the expected services to pastoralists. The following constraints have been identified as critically impacting veterinary governance and the service delivery system in pastoral areas.

- Lack of clear operational standards for quality assurance of the services delivered.
- Shortages in high-skilled workers due to the absence of regular on-the-job knowledge and skill-improvement training; lack of incentive mechanisms and high field staff turnover.
- Inadequate knowledge & skills of the technical and administration staff.
- Poorly equipped and non-functional clinics and health posts.
- Lack of an adequate enabling environment and weak private sector expansion.
- Critical shortages of budgets, veterinary inputs, consumables and equipment.

Systemic Bottleneck 1.2: Low and irregular disease surveillance and reporting

Veterinary disease surveillance is the on-going systematic collection, collation, analysis and interpretation of animal health data; with the dissemination of the resultant information crucial for decision making. Timely and good-quality information about preventable disease events are needed in order to understand the disease situation, prevent potential disease incursion and respond quickly in an emergency situation. Without measures of the frequency and economic importance of a particular disease, the tasks of priority setting, disease control programs planning, implementation and monitoring are almost impossible. Important limitations include:

- Weak ability to undertake effective epidemiological investigations and reporting.
- Absence of epidemiological data collection and disease distribution mechanisms.
- Absence of clear working instructions that oblige regional and *woreda* animal health stations to report diseases to the federal animal health office; specifically, disease reporting is not included in the BSC of veterinary personnel at all levels.
- Weak communication services (limited internet access for data transfer, server problems, bandwidth issues, etc.) in most of pastoral *woredas* is prohibiting effective and timely animal health information sharing and outbreak reporting using new technologies such as the Animal Disease Notification and Investigation System (ADNIS) and Disease Outbreak Vaccinating Report (DOVAR II).
- Weak commitment and capacity of some *woreda* officers towards reporting.
- Limited materials, technical capacity or skills to fill out and send reports.
- Failure of the Federal animal health office to send timely responses to the reports.
- Absence of veterinary laboratories to back field activities, and lack of a structure that obliges them to report their research to the Federal veterinary directorates.

Systemic Bottleneck 1.3: Weak risk based, strategic and progressive disease prevention and control system

If strengthened, well organized and focused, regional veterinary services are at the very core of the system for the prevention and control of priority production diseases. Their role lies in developing and implementing effective prevention and control strategies, and collaborating with Federal veterinary services in implementing priority TAD control strategies. The regional system is responsible for early detection and rapid response to outbreaks of animal diseases, but in all the regions surveyed it was noted that provision of vaccinations is routinely reactive in response to disease outbreaks, with no vaccination calendars developed based on an understanding of disease epidemiology or risk of disease outbreak. This lack of emergency preparedness and response planning is coupled with either a very weak or absence of an animal disease early warning system. There is a need to employ strategies to shift the mind-set of pastoral producers, as well as professionals, towards preventing diseases rather than reacting to disease outbreaks after they have already caused loss of animals. Enhancing governance of regional veterinary services is required to optimize the quality and effectiveness of disease prevention and control functions. Current limitations include:

- Lack of coordination and information dissemination mechanisms among the pastoral regional states and neighboring countries.
- Absence of a risk based disease prevention and control strategy and implementation plan
 - Delayed response to any type of disease outbreak reports
 - Vaccine supply shortage for some diseases and low vaccination coverage
 - Failure to follow the vaccine manufacturer's recommendations
 - Low vaccine efficacy most likely as a result of incorrect storage and transportation.

- Lack of enabling environment and weak private sector engagement in disease surveillance activities.
- Weak line of command for disease surveillance and reporting between Federal, regional and *woreda* levels.
- Absence of clear job descriptions and protocols dedicated to disease surveillance and risk analysis.
- Vaccination is not undertaken using a risk based approach but rather tends to be based on livestock populations (i.e. achieving a certain % of animals vaccinated in a certain area).
- Absence of post vaccination survey on official vaccinations, except for PPR.

Systemic Bottleneck 1.4: Poor competencies for regional veterinary laboratories

Regional veterinary laboratories provide critical scientific capability and capacity in support of veterinary service delivery systems. Veterinary laboratories have a significant role to play in diagnostic investigation, disease surveillance and disease control programs; and in emergency preparedness and research to better understand animal health and disease. There are a few regional veterinary laboratories in the pastoral regions, each with the ability to carry out serological tests for FMD and PPR as well as bacteriology and parasitology investigations. While laboratories are physically present in most of the pastoral regions, the activities of these laboratories are constrained by limited resources including budgets, lack of quality consumables on the local market, lack of vehicles for efficient mobility, and lack of competent staff due to the better opportunities elsewhere or lack of incentives to keep them there longer. The veterinary services delivery strategy should ensure that all regional veterinary laboratories have relevant resources to conduct all animal disease diagnostics and ensure that they respond adequately to the need of the regional veterinary services as a reference laboratory. Current limitations include:

- Limited laboratory and technical staff capacity and lack of incentives for professionals.
- Poor management system and poor logistical and financial support for regional veterinary laboratories.
- Absence of national standard of regional Veterinary laboratories infrastructure.
- Insufficient linkages between NAHDIC, NVI and regional laboratories and others.

Proposed Strategic Interventions for Strengthening Veterinary Governance

Objective 1.1: To improve the overall governance of veterinary services to ensure the responsiveness of services delivery through a task-based structure

The restructuring of veterinary services in the pastoral regions of Ethiopia should help to increase the efficiency and effectiveness of animal health care delivery, and consequently increase livestock productivity, safeguard public health and contribute to national development. The end result should be (i) a regional public veterinary service better able to carry out its redefined responsibilities; (ii) a

functioning private sector and CAHW system; and (iii) the necessary supporting personnel, infrastructure and capability to contribute to the overall strategic objective. Animal health and diseases control activities also need to be regulated with specific tasks and responsibilities. Hence it is advisable to strengthen the structure of the system in such a way that it ensures the effective delivery of the anticipated service. This objective will be addressed through realization of the following strategic interventions:

Strategic Interventions:

- Assess extent of gap (availability and adequacy) with regards to an efficient and effective regional veterinary service operational structure that extends to *woredas* and health posts, and that is task-based with specific functions.
- The suggested model regional veterinary services structure should encompass the following:
 - Disease prevention and control case team
 - Veterinary extension, communication and resource mobilization case team
 - Private veterinary services support unit
 - Mobile veterinary clinic services support unit
 - Community-based Animal Health Workers support unit
 - Communication and resources mobilization support unit
 - Disaster risk management - livestock risk analysis support unit
 - Disease surveillance and epidemiology case team
 - Veterinary public health case team

This proposed structure is meant to be flexible and operative at regional level depending on the functional areas, with each level having its own distinct functions.

- Establish structures and allocate resources and qualified professionals and para-professionals.
- Conduct a needs assessment to determine projected veterinary requirements in the future (DVM and post graduate specialties to MSc and PhD levels).
- Enhance awareness and understanding on veterinary services responsive strategy preparation for key policy decision makers at all levels.
- Establish a clear technical co-ordination mechanism between Federal and regional veterinary authorities and a clear technical chain of command between regional and *woreda* veterinary services and health posts, private practitioners and CAHWs.
- Establish a regional emergency fund.
- Review and analyze regional animal health budgeting to assess levels of budgets allocated for the sector's mainstreaming activities.
- Review each implementation unit's plans and budgets with regard to compliance with the regional standards and assessment of the sector financing gaps.
- Conduct piloting of a mobile clinical services practice towards a progressively improved quality of service delivery in one or two selected *woredas* of the region.
- Explore approaches for making the required range and quality of veterinary drugs available in pastoral areas for sale by veterinary drug outlets.

- Ensure legal and administrative platforms for trans-national and regional animal health operations.
- Pilot the sanitary mandates using different models and for a range of activities and professionals encouraged to join the private sector. CPD is a crucial step to develop specialized veterinary skills, tailored for both the intensive and extensive systems.
- Conduct a needs-assessment on national research priorities related to animal health, and seek appropriate funding sources to implement them with national research institutions.
- Develop a plan leading to a tested and selected extension package for combating Young Stock Mortality tailored to pastoral production systems and livelihoods ecological zones.
- Set minimum IT standards required for all veterinary personnel and encourage the progression to intermediate and advanced IT competency levels.

Intermediate outcome: The regional veterinary structure is reviewed, revised and strengthened within the framework of regional priorities. The intervention will aid the veterinary department to set and enforce appropriate effective and efficient norms and standards for the pastoral areas, with regard to veterinary responsibilities and functions.

Outputs

- A review of the availability and efficiency of veterinary services will be completed.
- Regional veterinary services coordination structures strengthened at decentralized level (region to *kebele*).
- Equitable veterinary services access to pastoralists ensured.
- Mobile clinical service provision piloted and mainstreamed.
- Sanitary mandate scheme introduced and implemented.
- Institutional arrangements, coordination and linkages among key animal health partners enhanced.

Indicators

- % Livestock owning pastoralists (male, female and youth) expressing their satisfaction in receiving accessible, available, affordable and quality services.
- # Of mobile veterinary clinics piloted and mainstreamed.
- % Increase in pastoralists that use clinical services, vaccinations, tactical and strategic disease control schemes and practices, across agro-ecologies.
- Functional veterinary service is in place and effectively delivering on its mandate.
- Veterinary programs are appropriately funded.

Objective 1.2: To improve the overall physical structure of the veterinary services

Strategic Interventions:

- Introduce an integrated earmarked and multipurpose mobile veterinary clinic (preventive, diagnosis and treatment) mounted on one vehicle for each zone.
- Allocate earmarked vehicles to regional veterinary services and regional laboratories to improve the mobility of the service delivery.

- Suspend the construction of new clinics and health posts and devise capacity activity to fully furnish and equip them with basic infrastructure and facilities and improve the functionality of the non-functional ones.
- Handover the renovated health posts to local private practitioners under a franchised scheme.
- Revise the number of clinics and health posts to be built to ensure and improve geographical coverage.
- Establish a strategic vaccine depot and emergency drugs storage facilities per regional state.

Objective 1.3: To improve access to financial (operational and capital expenditures) resources

Strategic Interventions:

- Improve operational funding at regional, woreda and health posts level in line with increased demands on the service delivery.
- Introduce a piloted cost recovery scheme where possible—such as for clinical, field services and input supplies.
- Ensure the political and administrative backing for necessary resource allocation.

Objective 1.4: To strengthen the capability of regional veterinary services to ensure that stakeholders are in compliance with legislation and regulations under their mandates

Strategic Interventions:

- Undertaken actions through Standard Operating Procedures (SOPs) to ensure implementation and compliance with legislation, regulations and directives.
- Conduct training for existing law enforcement and prosecution procedures.
- Coordinate activities regarding collaboration with regional and zonal government law enforcement institutions.

Objective 1.5: To improve capacity of the regional epidemiology unit in the analysis and interpretation of data (building database and capacities of staff)

Strategic Interventions:

- Utilize Federal expertise to develop a comprehensive disease reporting system that includes training veterinary staff at both regional and woreda level.
- Deliver training to veterinarians and para-professionals at the woreda level on disease diagnosis (sampling) and reporting.
- Carry out extension to pastoralists on their role in the timely reporting of diseases in livestock.

Objective 1.6: To increase and enhance capacity of field staff in data and sample collection and submission to the laboratory

Strategic Interventions:

- Assign a dedicated epidemiology and surveillance case team with basic facilities and adequate human resources tasked with:
 - Collection, collation and analysis of data for enabling disease prevention and control and enhancing public confidence in the management of animal health issues.
 - Report disease situation of the region to stakeholders for informed decision making.
- Roll out the DOVAR II and ADNIS and continue efforts to improve levels of monthly reporting to at least 80% per annum from woredas through training and public reporting of results.
- Ensure regional vaccination interventions are delivered according to evidence based geographical disease risks.
- Continue publishing disease reporting rates, and make them more visible in an attempt to generate competition between woredas.
- Enhance the timely and accurate confirmation of suspected disease outbreaks.
- Introduce and implement electronic disease information systems for ease of data collation and analysis.
- Improve the use of mobile devices in animal disease reporting and information management should be encouraged, in line with modern trends in IT developments.
- Promote the use of PDS and participatory epidemiology (PE) in disease investigation.
- Prepare a temporal and spatial livestock disease distribution map to help to develop an appropriate strategic prevention and control strategy.

Intermediate outcome: Functional and strengthened disease surveillance and information system established.

Outputs:

- Veterinary surveillance in place to enable risk management practices to be introduced.
- Improved levels of monthly reporting rate for both DOVAR II and ADNIS.
- Vaccination interventions are delivered on evidence based geographical disease risks.
- Regular monthly disease reporting conducted.
- Electronic disease information systems for ease of data collation and analysis introduced.
- The use of PDS and PE in disease investigation mainstreamed.
- Temporal and spatial livestock disease distribution map prepared.

Indicators:

- % Monthly reporting rate for DOVAR II and ADNIS conducted.
- # Of disease investigations conducted.
- # Of temporal and spatial livestock disease distribution maps.

Objective 1.7: To increase and enhance capacity of field staff in disease prevention and control

Strategic Interventions:

- Create a dedicated disease prevention and control case team within the veterinary department to ensure that regional and woreda level livestock disease control programs are implemented through planning, coordinating and monitoring activities of the region and woreda offices.
- Liaison conducted with disease surveillance and epidemiology team to establish the regional disease ecology mapping, priorities, and feasible epidemiological calendar of the region; and prepare risk based and strategic and progressive disease prevention and control.
- Liaison with each regional veterinary department case team to formulate practical action plans for the implementation of the disease prevention and control strategy for each of the priority diseases.
- Draw up plans for implementation of region specific disease prevention programs; including staff, transport, equipment, consumables, vaccines, public awareness campaigning and monitoring.
- Liaison with Federal Disease Prevention and Control Directorate to develop and implement progressive control strategies for trade-limiting TADs such as FMD, PPR, SGP, CCPP, LSD and CBPP.
- Develop minimum standards for systematic vaccination interventions addressing issues related to targeting, timing and coverage of vaccinations—pre-planned or in response to risk analysis and outbreak reports.
- Introduce the implementation of sero-monitoring to determine the effectiveness of vaccination programs.
- Prepare generic and disease specific plans and operating procedures for animal health emergencies and a mechanism for coordinated and efficient stakeholder collaboration.
- Integration of disease prevention and animal health extension for maximum impact and efficient resource utilization.
- Establish DRM-livestock risk analysis unit and collaborate with disaster preparedness unit of the regional government to enhance the efficiency of early warning systems that involve all the stakeholders.

Outputs

- A sustainable and effective disease prevention and control case team and DRM livestock risk analysis unit established.
- Draft communication strategy developed to ensure the effectiveness of the veterinary response to disease outbreaks of regional importance.
- Cost recovery for the effective implementation and sustainability of some vaccination programs for endemic diseases introduced.
- Minimum standards for systematic vaccination interventions developed.

Indicators

- # Of risk based disease control strategies developed.
- % Morbidity and mortality of production related livestock diseases reduced.
- % Morbidity and mortality of TADs reduced.
- # Of cost recovery implementation modalities prepared.
- Proportion of herds involved in strategic and responsive treatment and vaccination events.

Objective 1.8: To enhance the regional laboratory diagnostic capacity and management system

Strategic Interventions:

- Establish effective laboratory information and accredited quality management systems in close collaboration with NAHDIC and other reference laboratories.
- Review and build capacity of regional veterinary laboratories to meet demands for domestic and export testing, such as FMD, PPR, anthrax and brucellosis and disease surveillance.
- Ensure that the regional laboratories are well furnished and equipped with relevant resources to conduct all animal disease and food safety diagnostic services.
- Support the capacity development of field staff to undertake disease investigations and sampling.
- Strengthen and improve laboratory services/diagnostic capacity at all levels (regional, woreda).
- Ensure continuing education on testing and sensitivity, specificity and sampling in order to interpret test results.
- Establish the DOVAR II reporting system and continue efforts to improve levels of monthly reporting through training and a public reporting system.
- Organize a rapid response unit within the regional veterinary laboratory for emergency intervention capacity.

Intermediate Outcome: improved access to quality and efficient veterinary laboratory diagnosis services.

Objective 1.9: To improve the partnership and intra – and inter laboratory collaboration and linkages

Strategic Interventions:

- Liaison with the epidemiology and information system case team to support capacity development activities so as perform disease surveillance, disease outbreak investigation and reporting.
- Explore the possibility of cost recovery for some aspects of laboratory operations, to be determined by the authorities.
- Create strong linkage between veterinary clinics, health posts and mobile clinics to perform confirmatory disease diagnosis.
- Liaison to improve the linkages between NAHDIC, NVI, the regional laboratories and the Federal diagnostic and research system on laboratory consumables procurement, in professional capacity building, and animal disease related information sharing.
- Create a regional biannual coordination meeting between laboratory and other stakeholders.
- Establishing strong linkage between private sector and regional laboratories.

Objective 1.10: To ensure that diagnostic infrastructure and capacity of regional veterinary laboratories have uniformity

Strategic Interventions:

- Establish common regulation of regional veterinary laboratories in all pastoral regions.
- Prepare minimum standards for regional/district veterinary laboratory construction design/document nationally.
- Establish uniform SOP for similar diseases diagnosed in different veterinary laboratories.
- Establish uniform strategy of professional knowledge /skills and capacity development.

5.2 Pillar Two: Strengthening Institutional Competencies for Basic Animal Health Care

Systemic Bottleneck 2.1: Ineffective service and low geographical coverage of veterinary clinical services

In the past 25 – 30 years the provision of clinical services in the pastoral areas of Ethiopia has been focused on the expansion of public veterinary clinics and health posts, and the provision of therapeutic treatment to individual animals or herds. These clinics and health posts are found at varying levels of functionality and currently most of them are not capable of providing the expected services to pastoralists. Specially, issues of accessibility, quality and effective regular service delivery are insufficient; for example a considerable number of veterinary drugs are being administered without veterinary personnel' prescription and inspection, mostly because of remoteness of clinics/health posts or non-availability of adequate services in existing clinics. There is a lack of clear communication, role clarity, or accountability among various service providers.

Systemic Bottleneck 2.2: Limited private sector expansion in the provision of veterinary services

In the pastoral areas the private sector is exclusively engaged with veterinary drugs and selling other inputs. These drug vendors/PVPs are owned either by veterinarians, AHA, AHT or CAHWs. PVPs were found to be providing 47% of non-injectable and 58% of injectable drugs. While these service providers increase access to modern animal health provision for the pastoralists, they sell all types of drugs to herders directly with no consideration given to the rational use of veterinary drugs. A new approach in pastoral areas is required to define the different steps to be followed by regional states to re-organize their regional veterinary services delivery system and create space for the enhancement of the private sector. There is a pressing need to adopt an animal health system that both relieves the burden on regional states and optimizes the delivery of services. Ethiopia has not yet established an official system of sanitary mandates, and the private sector is not well developed to take up sanitary mandates.

Systemic Bottleneck 2.3: Inefficient CAHWs as veterinary service providers in pastoral areas

Community-based animal health workers have been widely used in Ethiopia in an attempt to improve the coverage and sustainability of basic veterinary services and a desire to work more closely with communities. Although CAHWs can provide very useful primary animal health care to livestock keepers, these public veterinary services have failed to address important technical, logistical and sustainability issues. Common problems include:

- Weak enforcement of approved national guidelines and standards, and absence of clear SOP support to CAHWs and DPs.
- Weak and inefficient CAHWs supervision and monitoring.
- Lack of integration into the existing veterinary service delivery system.
- Absence of certification of trained trainers.
- Lack of a mechanism to assure a regular drug supply.
- Absence of an annual certification of trained CAHWs.
- Subsidized services and drug supply.
- Vast geographic areas leading to high cost of services delivery.

Formulating and institutionalizing an effective guidance strategy and model to demonstrate how to ensure CAHWs are effectively supervised, coordinated and trained remain vital activities of this strategy. The current assessment has demonstrated that the livestock disease situation on the ground requires their immediate interventions in every way possible. Almost all regional states have, at one time or another, used CAHWs to address their challenges in the short term, pending the development of a fully trained work force, but the issue now is how to ensure that CAHWs satisfy a set of agreed minimum standards and that there is mutual recognition of their services. There is a need to ensure that CAHWs do their work under the close supervision and guidance of the *woreda* veterinary department or regional veterinary department. A further challenge for regional and Federal veterinary services is to work with neighboring countries to ensure mutual recognition of CAHWs who work across borders. Such recognition would ensure that CAHWs could provide disease information to veterinary authorities regardless of their location at a particular time.

Systemic Bottleneck 2.4: Weak veterinary care provision to crisis affected communities / Absence of LEGS and national guidelines mainstreaming and implementation

For many years Ethiopian pastoralists have faced repeated droughts and experienced emergency interventions that have often undermined development programs. Most recently the severity and frequency of drought in some pastoral areas has increased, creating an urgent need to improve disaster risk management (DRM) and support development policies in which drought is anticipated and properly managed. The provision of veterinary services during drought or other disasters is an important strategy for assisting pastoralists to protect their livestock and maintain the benefits of livestock ownership or access. In pastoral communities where livestock are highly regarded as a capital asset, veterinary care can help to prevent sudden loss of livestock due to acute diseases that cause high mortality. An important consideration during drought is to work through the private sector where possible, while also supporting public sector veterinary functions where necessary. There are two main issues in veterinary intervention during drought: (i) limitations of the private sector for primary clinical veterinary care – the prevention and treatment of livestock diseases that cause high mortality or substantial production losses; and (2) weakness of the government veterinary services, particularly for disease surveillance, veterinary public health and other functions as needed. Other constraints include:

- Lack of awareness and knowledge among sufficient numbers of staff at all levels of government and non-government organizations, and in all areas.
- Weak contingency plan and budget allocation for the emergency problems.
- Changes in staff positions and staff turnover.
- Lack of institutionalization of LEGS / National Guidelines into the public service delivery system.
- Insufficient support from donors to promote the use of LEGS / National Guidelines.
- Limited technical capacity and understanding of emergency livestock response.

Systemic Bottleneck 2.5: Absence of appropriate vaccine storage, transportation and management system

Proposed strategic interventions for strengthening competencies for basic animal health care

Objective 2.1: To improve the veterinary clinical services efficiency and improve geographical coverage

Strategic Interventions:

- Conduct evaluation of the existing woreda clinics and animal health posts and conduct maintenance, renovation and/or replacement, and furnish and equip them with basic infrastructure and facilities if the need arises as per their feasibility.
- Conduct a regular and systematic data collection and evaluation of veterinary facilities annually.
- Develop SOP and set categories and standards including design, facility, level and number of animal health staff required for veterinary clinics of pastoral areas.
- Improve coverage and efficiency of clinical services by providing adequate operational budget and transport for existing clinics.
- Promote the involvement of the private sector in the clinical service delivery as per the veterinary rationalization principle.
- Regulate veterinary clinics and veterinary pharmacies and control illegal practices and professional malpractices.
- Enhance the institution of mobile and station based veterinary service delivery based on the community needs.
- Allocate the necessary logistical, technical and human resources facilities for standard diseases diagnosis and clinical service delivery.
- Develop treatment regime or project for the prevention and control of parasitic diseases (internal and external) appropriate for the pastoral and agro-pastoral areas (riverine settlements).

- Prevent free drugs provision during emergency interventions; and if they are important then involve local PVPs.
- Implement partial cost-recovery as a pilot, leading gradually to full cost-recovery and finally self-sustained clinical services by public and private veterinary clinics.

Intermediate Outcome: Veterinary clinical services are available, accessible and used appropriately.

Outputs

- Increased access to veterinary services (animal health care services).
- Set categories and standards including design, facility, level and number of animal health staff required for veterinary clinics of pastoral areas.
- New veterinary clinics constructed and functionality ensured.
- Adequate operational budget and logistics for existing clinics allocated and improved functionality.
- Treatment regime for the prevention and control of parasitic diseases is developed and implemented.
- SOP and set of categories and standards for veterinary clinics developed.

Indicators

- % Increase in pastoralists that use clinical services, vaccinations, tactical and strategic disease control scheme and practices across agro-ecologies.
- # Of documented requirements of various livestock infrastructure per *woreda*.
- # Of *woreda* clinics and health posts evaluated, maintained, renovated and / or replaced, furnish and equipped.
- % Of technical staff trained at various levels and training conducted and equipped to perform their duties.

Objective 2.2: To introduce veterinary mobile clinical services and ensure accessibility, availability and quality services

The needs of a mobile community can be addressed through a mobile system of strategic diseases prevention and control. A mobile clinic is a facility that delivers a limited range of services, such as clinical practices, simple diagnostic practices, mass and individual treatment and prevention practices, which is transported or moved from one location to another following a mobile herd/flock.

Strategic Interventions:

- Promote mobile clinic services on a pilot basis in an attempt to bring veterinary services closer to pastoral communities through a vehicle equipped with special medical, surgical and diagnostic equipment.
- Define a specific area within which the mobile clinic will be started as a pilot. Introduce the mobile veterinary services by including the one health principles and approaches.

- Use the mobile veterinary vehicle itself as the best form of veterinary extension services promotion as it travels through pastoral rangeland.
- Develop a special package of the clinical services and identify their specifications for the examination and treatment of individual animals or herds, as well as tactical and strategic treatment or vaccination programs.

Objective 2.3: To promote the expansion of private veterinary services delivery

Experience from many countries indicates that clinical veterinary service delivery by the private sector, financed by a normal commercial relationship between the provider and the customer, seems to be the most successful and economically viable option. As more private companies and individuals become involved, service coverage will increase and government expenditure will be reduced. This allows public veterinary services to concentrate on core functions and to divest non-core functions to the private sector. The following strategic interventions are proposed:

Strategic Interventions:

- Create truly enabling environments for private practice to take off, develop and become progressively financially viable in the diverse pastoral production systems.
- Support private practitioners with the requisite skills to serve the needs of the emerging business-minded livestock producers, and in line with the targets for increased production and productivity desired in meeting GTP II goals.
- Provide public sector veterinarians with the requisite skills to regulate and quality control privatized animal health service provision, and provide them with sufficient remuneration to properly reward and motivate the sector to perform to required standards and outputs.
- Delineate tasks and geographical areas between private and public veterinary services based on economies of scale principles. It is widely accepted that the private sector is very well placed to efficiently deliver a number of services which are pure or near-pure private goods (see Table 8 above on the suggested classification of veterinary activities by type of economic good).
- Establish a credit guarantee scheme for expanding veterinary practices to the remote pastoral areas.
- Remove unfair competition between the public and private services provision through cost-recovery.
- Gradually withdraw public services from health post clinical services and hand them over to the private practitioners.
- Contract certain public goods activities to the private sector through sanitary mandates.
- Support existing vets and new graduates to set up private clinics and drugstores (including selling vet supplies, artificial insemination, pesticides and other agricultural inputs).
- Private veterinary practices in the pastoral areas must make full use of networks of properly trained and supervised CAHWs.

Objective 2.4: To strengthen veterinary services in the remote and inaccessible areas through an integrated, supervised and sustainable CAH system

As the training of CAHWs is limited in terms of timeframe and scope, their abilities and limitations must be recognized in their deployment. CAHWs need to be supervised, mentored and monitored by a *woreda* veterinarian or AHA, or qualified private or NGO veterinarians. Some organizations are already linking private vets to networks of CAHWs to develop a sustainable funding methodology for the system. The most sustainable model appeared to be the linkages to a private veterinary pharmacy or drug vendor. Sharing cost of fixed assets such as a house, drug shelf, dispensary desk, and equipping the PVPs with solar panels and refrigerators (needed for vaccines and to provide staff with electric power and cold drinks) would be an incentive for college graduates wanting to establish pharmacies close to communities.

Strategic Interventions:

- Enforce and roll out the implementation of the revised national minimum guidelines and standards; and disseminate the manual and materials issuing a directive requiring their direction/support by veterinarians and supervision /training by veterinary-paraprofessionals.
- Prohibit unlicensed and unofficial CAHW deployment by NGOs.
- Develop a database of CAH practitioners and various stakeholders and use it to facilitate linkages.
- Suspend the training of CAHWs until the number of CAHWs that are actively functioning is determined.
- Promote the interaction of existing CAHWs and the expanding network of veterinarians and para-professionals.
- Link community-based animal health service delivery systems to private pharmacies for regular drug supply and monitoring.
- Coordinate the activities of agencies involved in CAH to harmonize approaches.
- Facilitate linkages between pharmaceutical companies, livestock keepers and CAHWs.
- Continue to improve the standard of CAHWs and consider offering them training at their respective regional Technical and Vocational Education Training (TVET) College.
- Develop objective and transparent systems for the accreditation, monitoring and supervision of CAHWs.
- Incorporate community-based animal health delivery systems into existing regional and *woreda* animal health delivery systems.
- Introduce and formulate an ideal veterinary vouchers scheme practice to be used by CAHWs, and ensure flexibility within the mechanism as a best option for the delivery of emergency services. The purpose of a veterinary voucher system is to ensure poor herders have access to curative treatment services provided by CAHWs against disease throughout the drought period.

- Develop best practice on exit strategies for voucher schemes, on targeting recipients of vouchers, when to commence the voucher scheme, and how to build flexibility into implementation building on local coping mechanisms.

5.3 Pillar Three: Strengthening Veterinary Public Health

Systemic Bottleneck 3.1: Poor veterinary public health services to combat zoonotic diseases

The close association of pastoralists with their livestock poses a huge challenge as several diseases transmissible between humans and animals often infect livestock in pastoral areas. The public good function of animal health services is often neglected in the pastoral areas. The prevention and control of zoonotic and food-borne diseases is related to abattoir construction, meat inspection, environmental and food safety issues; and there is a need to handle issues related to licensing and certification. These functions can be better managed by supporting and strengthening the institutions, where available, and by providing enforceable regulations. Rabies control and other zoonotic diseases should be addressed in collaboration with the public health departments that are supposed to work in collaboration with disease prevention and control departments on animal health information and other related matters.

Systemic Bottleneck 3.2: Weak collaboration between veterinary and public health as well as the wildlife authority

Proposed strategic interventions for strengthening veterinary public health

Objective 3.1: To strengthen veterinary public health services to combat zoonotic diseases

There is a need to strengthen prevention and control systems for enhanced public health, and particularly to strengthen the safety of food of animal origin, feed and zoonosis control. The inclusion of dairy products and eggs in veterinary public health should be also considered. The intention is to strengthen both ante- and post-mortem meat inspections in local abattoirs of regional dimension. The expansion of extension and public awareness services with regards to illegal slaughter is also a priority issue needing to be considered.

Strategic Interventions:

- Create a veterinary public health case team and assign responsible professionals tasked with public health and zoonosis control.
- Create strong links with the public health sector in zoonosis control.
- Promote the construction of new slaughterhouses under the PPP arrangement.
- Review and organize meat inspection service provision at all local abattoirs at regional and woreda levels.
- Ensure the presence of government meat inspection personnel at each of the abattoirs to monitor implementation. It should be understood that the role of the public veterinary

services is not to run or manage slaughter facilities, but to approve them and to conduct meat inspection (ante and post-mortem).

- Develop mechanisms to audit the services rendered by meat inspection personnel.
- Undertake awareness creation using various mediums for disseminating information.
- Develop food safety standards for primary animal products such as milk, fish, egg and honey.
- In consultation with the Federal Veterinary Public Health Directorate, facilitate the establishment and implementation of minimum standards of design, facility and staffing for domestic abattoirs.
- Progressively improve the hygiene and inspection standards of domestic slaughterhouses.
- Extend food safety awareness, measures and regulations to animal products, such as milk and milk products, with a priority focus on zoonotic risks, particularly brucellosis and tuberculosis from raw milk.
- Establish mechanisms for joint engagement of bureaus responsible for livestock and for human health to control zoonotic diseases.
- Develop a regional specific 'One Health' scheme for the control of zoonotic disease in pastoralist herds as indicated by surveillance for potential conditions, inclusive of brucellosis, rabies, cysticercosis, echinococcosis and anthrax; followed by a vet/med collaboration to diagnose, investigate, treat and prevent zoonotic disease found prevalent in pastoralist communities.
- Liaise with the Federal Livestock Identification and Traceability System (LITS) directorate to develop a cost effective and sustainable livestock identification and registration system that has the capacity to trace selected animals and products from the farm of origin to the retail outlet.

Strategic Outcome: Improved meat inspection and abattoir food safety standards complying with national standards.

Outputs:

- Inspection of animal products, by-products and abattoir food safety standards improved.
- The incidence of zoonotic diseases such as rabies, tuberculosis, brucellosis, salmonellosis, anthrax and cysticercosis is reduced.
- Collaboration with the bureau of public Health on 'One Health' related issues strengthened.
- Regular and systematic data collection and evaluation of veterinary facility is conducted annually.

5.4 Pillar Four: Human Capacity Development, Resource Mobilization and Communication

Capacity limitations have a more severe impact at Regional and *woreda* and *kebele* level. There is a need to build capacity regularly, document best practices and reward achievements. The key constraints needing to be addressed include:

- Limited capacity for communication and poor accountability among various institutions.
- Lack of quality veterinary drugs and biological, or safety and efficacy regulatory systems.
- Limited involvement of veterinary professionals in providing veterinary extension services, and low cooperation and collaboration between the public sector and NGOs in veterinary extension services.

Additional constraints are: absence of a dedicated communication unit and staff within regional veterinary departments; lack of stakeholder representation as an avenue for disseminating communications messages; and an absence of animal health communication manuals, guidelines, planning or strategy documents.

Proposed strategic interventions for capacity development, resource mobilization and communication

Objective 4.1: To enhance human resources development and utilization for effective veterinary services delivery

Strategic Interventions:

- Recruit additional manpower according to their academic qualifications to fill the vacant positions at all levels.
- Ensure appointment procedures are transparent and take into account technical qualifications and previous experience.
- Support the veterinary and para-veterinary professionals through training in business skills, improved veterinary technical skills (applicable to veterinarians, para-veterinarians and CAHWs) through self-assessments and CPD.
- Introduce a staff evaluation and merit based promotion mechanism at the regional and *woreda* level.
- Enforce the federally approved career structure and develop and implement a regional remuneration model specific to pastoral production.
- Devise procedures for continuing education as a mandatory requirement for regional veterinary services.

Objective 4.2: To develop capacity within the veterinary services department to plan and implement veterinary programs and services

The interventions propose the development of institutionalized systems to develop capacities, share practices and award achievements. The intention is to better equip individuals and institutions in public and private extension and advisory services with the understanding, skills and methodologies needed to access information, knowledge and training to enable them to perform their mandates effectively.

Strategic Interventions:

- Assign qualified and equipped experts / human resources at all levels.
- Develop a regular annual formal capacity development program to enhance various competences of professionals and para-professionals at all levels.
- Establish regular partner meetings between the region and *woreda* veterinary services staff, private practitioners, NGOs and DPs, on agendas and recommendations for key animal health issues for better coordination and alignment of activities.
- Ensure that all veterinary personnel from both public and private sectors—who manage, educate, train, research and/or deliver services, inclusive of veterinary professionals and para-professionals, including CAHWs—receive CPD capacity building using relevant adult education, ‘learning by doing’ training and knowledge enhancement techniques. CPD efforts will be required for the following areas:
 - Veterinary clinics in sample collection, preservation, handling and submission to laboratories.
 - Field disease investigations and basic sampling to a higher level of quality, disease reporting; and strengthening *woreda* clinics to do basic laboratory diagnosis.
 - Disease prevention and control.
 - Early detection and effective and early response to diseases of regional and national importance.
 - Regional laboratory training (including sample collection and handling as it relates to epidemics and emerging diseases).
 - Regulatory control of veterinary drugs and other inputs; animal welfare/humane handling/humane transport.
 - Record keeping & use and business skills training.
- Promote and support the development of partnerships between public, private and associated actors.
- Prepare, facilitate and implement training manual production & multiplication, translation and rolling out manuals such as SOP, CAHW training manuals, LEGS manual and others, for field workers.

Intermediate Outcome: Capacity of veterinary services and professionals and para-professionals including CAHWs at all levels is developed.

Objective 4.3: To enhance pastoral oriented and multi actor veterinary extension services

Strategic Interventions:

- Establish a communication and resources mobilization team within the regional veterinary directorate, zonal, *woreda* and *kebele* levels to actively and regularly circulate information to stakeholders through workshops and training.
- Recruit a communication professional for the establishment of a Communication Desk to develop and manage all relevant communication tools (internet website, radio messages, posters, leaflets, etc.).
- Develop a veterinary communication and resources mobilization strategy and plan.
- Conduct awareness raising campaigns on various key issues, for example: disease control related matters; issues of illegal slaughter and slaughter of sick animals particularly in local abattoirs; milk safety; promotion of biosecurity; and residue risks from drugs, pesticides, hormones and heavy metals on farms.
- Improve regional and *woreda* IT infrastructure where feasible.
- Strengthen the new animal health information and production database for each region.
- Provide short term training/information seminars to producers and other stakeholders on varying topics to improve compliance:
 - Good livestock handling practices
 - Responsible use of veterinary products including residue avoidance and microbial resistance
 - Livestock identification and traceability
 - Food safety issues
 - Disease prevention and control including surveillance, early detection and rapid response
 - Vaccination programs
 - Animal welfare issues including transportation
 - Cost recovery measures.
- Organize veterinary field days to facilitate/allow contact and interaction between veterinary officers and other animal health services practitioners and producers.
- Prepare projects for capacity building programs that include physical facilities, human resources, and targeted field activities on risk-based disease control, zoonotic diseases, and vector-borne diseases control to combat public resource limitations.
- Develop specific projects that can address the major bottlenecks of veterinary services and fundraising.
- Promote a veterinary internship program to give graduate veterinarians and other paraprofessionals an opportunity to work in the field and learn from others.

Objective 4.4: To ensure the provision of quality and adequate animal health inputs

Many disease control strategies are achieved through therapeutic and targeted vaccination programs. Thus future disease control packages will require increased quantities and improved quality of drugs and animal disease vaccines, consumables, reagents and more effective distribution and marketing systems. The regional veterinary department must enhance coordination and communication with VDFACA in veterinary inputs control and administration. Illegal cross-border movement of veterinary drugs needs to be regulated/streamlined to avert possible use of adulterated and counterfeit drugs. The false allure of low prices needs to be addressed.

Strategic Interventions:

- Establish a drug revolving fund at regional level to ensure adequate, regular and timely supply of drugs to public veterinary clinics.
- Establish and maintain an appropriate cold chain and establish cold depots in strategic locations of the regions to handle and transport vaccines.
- Support VDFACA in the control of illegal/informal veterinary drugs marketing practices, malpractices and handling of drugs by people that are not allowed to do. In so doing pastoralists benefit from accessing quality services and drugs from known and licensed sources.
- Liaison with the primary veterinary care case team to ensure that withdrawal periods are enforced with the aid of residue monitoring.
- Ensure that veterinary extension messages contain awareness messages to pastoralist and consumer on withdrawal periods.
- Establishment of communication structures within the regional VS and woredas.

5.5 Pillar Five: Animal Welfare

Animal welfare is the requirement that all animals under human care or influence are healthy, properly fed and comfortable; and that all efforts are made to improve their well being and living conditions. Ensuring humane treatment of animals is the professional duty of veterinarians to safeguard the welfare of animals at all times. When engaged in field activities the humane treatment of animals should always receive attention, and remedial action should be taken in cases where animals are made to suffer unnecessarily. Acceptable standards of welfare are important at markets and during transport in relation to injuries, stocking densities, feeding and watering arrangements, tethering of animals, etc., and should receive attention. All guidelines and standards covering the humane slaughter of animals should be enforced.

The inclusion of animal welfare in the veterinary services delivery strategy recognizes the ever-increasing public and scientific attention being given to the topic, and the need for interregional leadership in the development of science-based animal welfare policies and guidelines tailored to the pastoral production system. The need for a pastoral region-wide requirement for science based welfare standards and their effective implementation cannot be underestimated. Including animal welfare as a key strategic issue will help towards the development of animal welfare guidelines as part of guidelines for Good Farming Practice and SOP's for transport and slaughter. Current constraints are:

- Limited professional capacity on animal welfare and its management.
- Absence of animal welfare guidelines tailored to the pastoral production system.
- Absence of legal enforcement of animal welfare

Proposed strategic interventions for animal welfare

Objective 5.1: To position veterinarians and para-professionals as advocates for animal welfare and then to extend those principles to producers and processors in the region

Strategic Interventions:

- Collaborate with MoALR to ensure animal welfare guidelines and standards are developed.
- Integrate animal welfare guidelines into the pastoral regional veterinary practice guidelines and develop SOP.
- Educate veterinary students on animal welfare issues, including transportation.
- Include animal welfare/humane handling/humane transport as part of the global core of continuing education.
- Develop a communication strategy to include and address the importance of animal welfare.
- Create awareness for traders on safe loading and unloading during transportation.
- Authorize professionals to follow up and take action when animal welfare guidelines have been abused anywhere.
- Establish animal welfare units at regional, zonal and district levels.

SECTION SIX: IMPLEMENTATION FRAMEWORK

The implementation of this strategy requires the involvement of many key organizations including the public sector, DPs, NGOs and the private sector at various levels. The Regional Livestock Resources and Pastoral Development Bureau will take the lead in the coordination of these organizations for effective implementation. The successful implementation of the veterinary services delivery strategy depends on the active participation and commitment of these actors. Moreover, addressing the identified constraints and ensuring the implementation of the strategic objectives and interventions will require synergistic and integrated approaches across all the organizations engaged in veterinary services. This implementation framework outlines the major roles and responsibilities of the different organizations at various levels from regional to *kebele*. It also identifies the priority processes and interventions.

6.1 Roles and responsibilities at various levels

Ministry of Agriculture and Livestock Resources

The State Ministry for Veterinary Services and Feed Quality Control of the (renamed) Ministry of Agriculture and Livestock Resources is to be responsible for reviewing and incorporating this strategy into the Federal level veterinary strategy, and support its further implementation through the provision of technical backstopping, availing the necessary funding and other inputs including monitoring & evaluation. Some of the roles and responsibilities of MoALR are defined as follows:

- Conduct a national workshop for familiarization of the veterinary services delivery strategy for pastoral areas;
- Facilitate cross learning among pastoral and adjacent regions;
- Collect and document, as well as design and implement, the scaling up of good practices from these regions and abroad to improve further implementation;
- Provide Federal level coordination, in particular on TADs and other trade related interventions;
- Create an enabling environment for the provision of Federal specific required inputs, such as vaccines, consumables, campaign materials, etc.;
- Strengthen and lead linkages with relevant public and private organizations to access knowledge and services at Federal level;
- Develop projects to mobilize resources to support the pastoral veterinary strategy; and
- Conduct impact assessment and lessons learned.

Regional Bureau of Livestock Resources and Pastoral Development

The Regional Bureau of Livestock Resources and Pastoral Development is to be responsible for managing the integration and harmonization of activities outlined in the strategy document during its implementation. It is expected to facilitate the coordination and alignment of the intervention among development collaborators at regional levels so that a coordinated veterinary strategy is delivered at zonal, *woreda* and *kebele* levels. The regional bureau is to be responsible for the preparation and approval of annual plans and required budgets related to the implementation of interventions outlined in the strategy. It will also review the quarterly, biannual and annual progress reports related to the implementation of agreed interventions at regional level. In addition the bureau will:

- Ensure approval and endorsement of the veterinary strategy;
- Ensure that veterinary services delivery activities are properly integrated into the various livestock case teams;
- Evaluate the impact of veterinary related activities in the region;
- Ensure that all stakeholders are informed of their roles and responsibilities and interact adequately in livestock development issues;
- Develop indicators for evaluation and monitoring veterinary services delivery activities in line with the developed strategy;
- Promote capacity development of veterinary services as stipulated in the strategy;
- Allocate the necessary budget and logistics required to implement the strategy;
- Conduct regional level workshops to familiarize the strategy among regional and *woreda* key stakeholders;
- Create an enabling environment for the expansion of private sector engagement;
- Strengthen linkages with relevant NGOs within the region for effective implementation of the strategy; and
- Conduct supervision to provide technical assistance.

The Regional Veterinary Directorate

At the regional level the Veterinary Services Directorate will provide overall strategic direction, guidance and oversight of the strategy's implementation. Taking over the main responsibility for implementation of the strategy considerably enlarges the current remit of the department, and it will require additional resources and powers to fully discharge its mandate. The key role and tasks of the regional veterinary directorate will include:

- Overall leadership and coordination of the Strategy;
- Production of periodic action plans for implementation;
- Coordination of the veterinary services delivery strategy planning, monitoring, review and learning processes at region, *woreda* and *kebele* levels;
- Carrying out capacity development trainings / CPDs for staff at regional, *woreda* and *kebele* levels;

- Forging partnerships with development partners, NGOs, CSOs, research institutes, CBOs, veterinary academic institutions; and establishing and maintaining a network of private practitioners;
- Horizontal coordination of the implementation of the Strategy by strengthening the regional bureau's mechanism within its affiliated bodies at regional level;
- Vertical coordination of the implementation of the strategy by strengthening the veterinary services coordination, harmonization mechanisms in the Bureau, Directorates at Federal level, case teams and project offices;
- Documentation and dissemination of best practice in animal health-responsive planning and implementation.

6.2 Priority areas for immediate action

While the full implementation of the veterinary services delivery strategy will be done as part of the GTP II, there are areas that are a prerequisite for the sustainable development of the livestock sector and need immediate attention. Table 10 presents the key priority activities for implementation in the time period 2018 – 2022.

Table 10: Proposed key priority activities and their tentative schedule /2018-2022 (five years)

No	Proposed activities	Implementation period					Responsibility
		2018	2019	2020	2021	2022	
1	Approval of the document	XXX					ATA, MoALR & RLPDB
2	Familiarize the strategy among key stakeholders at various levels (from Federal to woreda)	XXX					ATA, MoALR & RLPDB
3	Prepare revised and updated working documents, guidelines and manuals such as SOP, CAHWs manual etc.	XXX	XXX				RLPDB
4	Develop technical coordination mechanism and MoU between Federal and Regional and Woreda Veterinary Authorities		XXX				ATA, MoALR & RLPDB
5	Conduct assessment of the woreda clinics and health posts efficiency and capacity	XXX	XXX				RLPDB
6	Prepare performance based M & E guidelines	XXX	XXX				RLPDB and woredas
7	Strengthen existing human resources by recruiting additional personnel to fill the vacant positions at all levels		XXX	XXX			RLPDB and woredas
8	Conduct staff capacity building for the knowledge and skills required by each case team and develop training materials (from region to woreda and health posts)	XXX	XXX	XXX	XXX	XXX	MoALR & RLPDB
9	Prepare detailed annual work plans of the approved strategy at regional, woreda and kebele levels	XXX	XXX	XXX	XXX	XXX	RLPDB and woredas
10	Follow up technical support on the implementation of the activities of the strategy		XXX	XXX	XXX	XXX	ATA, MoALR & RLPDB
11	Enforce the approved career structure and develop and implement a regional remuneration model specific to pastoral areas	XXX					ATA, MoALR & RLPDB
12	Organize to procure a multipurpose mobile veterinary clinic mounted on a vehicle	XXX					ATA, MoALR & RLPDB
13	Piloting mobile veterinary clinical services		XXX				ATA, MoALR & RLPDB

Table 11 Pillars, core strategic objectives and strategic interventions

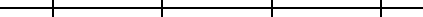
Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
1. Strengthen Veterinary Governance and Service Delivery						
(1) Improve the overall governance of VS to ensure responsiveness of services delivery through a task based structure.	Strengthen an efficient and effective regional veterinary service operational structure that extends to woredas and health posts based on task based and specific functions.					
	Establish a clear technical co-ordination mechanism between Federal and Regional and woreda Veterinary Authorities					
(2) Enhance human resources development and utilization for effective veterinary services delivery	Recruit additional manpower according to qualifications to fill the vacant positions at all level					
	Support the veterinary and para veterinary professionals through training in business skills, improved veterinary technical skills (applicable to veterinarians, para-veterinarians and CAHWs) through self-assessments, CPD					
	Introduce a staff evaluation and merit based promotion mechanism at the regional and woreda level					
	Enforce the federally approved career structure and develop and implement a regional remuneration model specific to pastoral production					
	Devise procedure for the Continuing Education a mandatory requirement for the regional veterinary services					
(3) Improve the overall physical structure of veterinary services	Introduce an integrated earmarked and multipurpose mobile veterinary clinic (preventive, diagnosis and treatment) mounted on one vehicle					
	Allocate earmarked vehicles to the regional VS and regional laboratory to improve the mobility of the service delivery					
	Suspend construction of new clinics and health posts and devise capacity activity to fully furnish and equip with basic infrastructure and facilities and improve the functionality of the non-functional ones					
	Revise the number of clinics and health posts to be built to ensure and improve geographical coverage					
	Establish a strategic vaccine depo & emergency drugs storage facilities per regional state.					
	Transfer the renovated health posts to local private practitioners under franchised scheme					
(4) Improve access to financial resources	Improve operational funding at regional, woreda and health posts level in line with increased demands on the service delivery					
	Introduce a piloted cost recovery scheme where possible, such as for clinical, field services and input supplies.					

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
Objectives						
(5) Strengthen the capability of regional veterinary services so stakeholders are in compliance with legislation						
(6) Improve capacity of regional epidemiology unit						
(7) Increase capacity of field staff in data and sample collection	Assign a dedicated epidemiology and surveillance case team with basic facilities and adequate human resources					
	Roll out the DOVAR II and ADNIS and continue efforts to improve levels of monthly reporting at least 80% per annum from woredas					
	Ensure the regional vaccination interventions are delivered according to evidence based geographical disease risks					
	Continue publishing disease reporting rates and make them more visible, in an attempt to generate competition between woredas, or to generate infamy in having very low levels of monthly reporting performance					
	Enhance the timely and accurate confirmation of suspected disease outbreaks which is currently very low.					
	Introduce and implement electronic disease information systems for ease of data collation and analysis.					
	Improve the use of mobile devices in animal disease reporting and information management should be encouraged, in line with modern trends in IT developments					
	Promote the use of participatory Diseases Surveillance (PDS) and PE in disease investigation					
	Prepare a temporal and spatial livestock disease distribution map to help to develop an appropriate strategic prevention and control strategy					
(8) Increase capacity of field staff in disease prevention and control	Create dedicated disease prevention and control case team					
	Prepare risk based and strategic and progressive disease prevention and control					
	Formulate action plans for the implementation of the disease prevention and control strategy for each of the prioritized diseases					
	Liaison with Federal Disease prevention and Control Directorate to develop and implement progressive control strategies for trade-limiting TADs					
	Develop minimum standards for systematic vaccination interventions					
	Introduce the implementation of sero-monitoring to determine the effectiveness of vaccination programs					
	Introduce cost recovery for the implementation vaccination programs for endemic diseases					

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
Objectives	Prepare generic and disease specific plans and operating procedures for animal health emergencies					
	Establishing DRM-livestock risk analysis unit and collaborate with disaster preparedness unit					
(9) Enhance the regional laboratory diagnostic capacity and management system	Establish effective laboratory information and accredited quality management systems, in close collaboration with NAHDIC and other reference laboratories					
	Review and capacitate the regional veterinary laboratories to meet demands for domestic and export testing such as FMD, PPR, anthrax and brucellosis and disease surveillance					
	Ensure that the regional laboratories are well furnished equipped with relevant resources to conduct all animal disease and food safety diagnostic services					
	Support the capacity development of field staff to undertake disease investigations and sampling					
	Strengthen and improve laboratory services /diagnostic capacity at all levels (Regional, Woreda level)					
	Ensure continuing education on testing and sensitivity, specificity and sampling in order to interpret test results					
	Establish the DOVAR II reporting system and continue efforts to improve levels of monthly reporting through training and public reporting system					
	Organize a rapid response unit within the regional veterinary laboratory for emergency interventions capacity					
	Liaison with the epidemiology and information system case team to support the capacity development activities to be able perform disease surveillance, disease outbreak investigation and reporting					
(10) Improve intra and inter laboratory collaboration and linkages	Explore the possibility of cost recovery for some aspects of laboratory operations to be determined by the authorities					
	Create strong linkage between veterinary clinics, health posts and mobile clinics and perform confirmatory disease diagnosis					
	Liaison to improve the linkages between regional labs and the Federal diagnostic & research system on laboratory consumables procurement					
2. Strengthening basic animal health care						

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
(1) Improve veterinary clinical services efficiency and improve geographical coverage	Conduct evaluation of the existing woreda clinics and animal health posts and conduct maintenance, renovation and / or replacement and furnish and equip with basic infrastructure and facilities if the need arises as per their feasibility					
	Develop SOP and set categories and standards including design, facility, level and number of animal health staff required for veterinary clinics of pastoral areas					
	Improve coverage and efficiency of clinical services by providing adequate operational budget and transport for existing clinics					
	Promote the involvement of the private sector in the clinical service delivery					
	Regulate veterinary clinics and veterinary pharmacies and control illegal practices and professional malpractices,					
	Enhance the Institution of mobile and station based veterinary service delivery based on the community need					
	Allocate the necessary logistic, technical and human resource facility for standard diseases diagnosis and clinical service delivery,					
	Develop treatment regime or project for the prevention and control of parasitic diseases (Internal and External) appropriate for the pastoral and agro-pastoral areas (riverine settlements)					
	Develop Prevent free drugs provisions during emergency interventions and if they are important, then involving local PVPs,					
	Implement partial cost-recovery as pilot and leading gradually to full cost-recovery and finally self-sustained clinical services by public and private veterinary clinics.					
(2) Introduce veterinary mobile clinical services and ensure accessibility, availability and quality of services	Introduce the a mobile clinic services on a pilot bases					
	Define a specific area within which the mobile clinic will be started as pilot to provide the service					
	Use the mobile veterinary vehicle itself as best form of veterinary extension services promotion as it travels through the local route of the pastoral rangeland					

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
	Develop a special package of the clinical services and identify their specifications for the examination and treatment of individual animals or herds, and, tactical and strategic treatment or vaccination program					
(3) Promote the expansion of private veterinary service delivery	Create enabling environments for private practice expansion					
	Delineate tasks and geographical areas between private and public veterinary services based on economic scale principle					
	Gradually withdraw the public services from health posts clinical services and handover to the private practitioners.					
	Remove unfair competition between the public and private services provision through cost-recovery					
	Contract certain public goods activities to the private sector through sanitary mandates					
	Support existing vets and new graduates set up private clinics and drugstores					
	Handover some of the health posts to local private practitioners under franchised scheme					
(4) Strengthen services in remote areas through an integrated, supervised and sustainable CAH system	Enforce and rolling out the revised national minimum guideline and disseminate the manual and materials and issue directive requiring their direction / support by Veterinarians and supervision / training by veterinary-paraprofessionals					
	Develop a database of CAH practitioners and various stakeholders and use it to facilitate linkages					
	Discontinue the training of CAHWs until the number of CAHWs that are actively functioning is known					
	Conduct refresher training for CAHWs actively working					
	Promote the interaction of existing CAHWs and the network of veterinarians and para-professionals,					
	Link community-based animal health workers to private pharmacies for regular drug supply and monitoring					
	Coordinate the activities of agencies involved in CAH to harmonize approaches					

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
Objectives	Facilitate linkages between pharmaceutical companies, private practitioners and CAHWs,					
	Develop specific guidelines and systems for the accreditation, monitoring and supervision of CAHWs					
	Integrate community-based animal health delivery systems into existing regional and woreda animal health delivery systems					
	Introduce and formulate the veterinary vouchers schemes practice to be used by CAHWs and ensure flexibility within the mechanism					
	Develop best practice on exit strategies for voucher schemes, on targeting recipients of vouchers					
	Continue to improve the standard of CAHWs and consider offering them to undergo training at the respective regional TVET					
3. Strengthening veterinary public health						
(1) Strengthen veterinary public health services to combat zoonotic diseases	Create a veterinary public health case team and assign responsible professional tasked with public health and zoonosis control					
	Create strong link with the public health sector in zoonosis control					
	Promote the construction of new slaughterhouses under the PPP arrangement					
	Review and organize meat inspection service provision at all local abattoirs at region and woreda level					
	Ensure the presence of government meat inspection personnel at each of the abattoirs to monitor the implementation					
	Develop mechanism to audit the service rendered by meat inspection personnel					
	Awareness creation using various mediums for disseminating information					
	Develop food safety standards for primary animal products such as milk, fish, egg and honey					
	In consultation with Federal Veterinary Public Health Directorate, facilitate the establishment and implementation of minimum standards of design, facility and staffing for domestic abattoirs					
	Progressively improve the hygiene and inspection standards of domestic slaughterhouses					

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
Objectives	Extend food safety awareness, measures and regulations to animal products such as milk and milk products, with a priority focus on zoonotic risks, particularly brucellosis and tuberculosis, from raw milk					
	Establish mechanisms for joint engagement of bureaus responsible for livestock and for human health to control zoonotic diseases					
	Develop a regional specific “One Health” scheme for the control of zoonotic disease in pastoralist herds as indicated by surveillance for potential conditions inclusive of brucellosis, rabies, cysticercosis, and echinococcosis, anthrax followed by a vet /med collaboration to diagnose, investigate, treat and prevent zoonotic disease found prevalent in pastoralist communities					
4. Capacity Development, Resource Mobilization and Communication						
(1) Develop capacity to plan and implement veterinary programs and services	Assign qualified and equipped expert / human resource at all level					
	Develop a regular annual formal capacity development program to enhance various competences of professionals and par-professionals at all level					
	Establish regular partners meetings between the region and woreda veterinary services staff, private practitioners, NGOs and DPs on agendas and recommendations on key animal health issues for better coordination and alignment of activities					
	Ensure that all veterinary personnel, from both public and private sectors, who manage, educate, train, research and/or deliver services, inclusive of Veterinary Professionals, Veterinary Para-professionals including Community Based Animal Health workers receive continuing professional development [CPD] capacity building using relevant adult education, “learning by doing”, training and knowledge enhancement techniques .					
	Conduct in-service trainings and formal CPD programs to enhance skills and knowledge required for both public and private sectors					
	Devise a standard procedure to assess impacts of capacity-development investments					
	Promote and support the development of partnership between the public, the private and the associative actors					
	Prepare, facilitate and implement training manuals production & multiplication, translation and rolling out such as SOP, CAHWs training manuals, LEGs manual and others for field workers					

Pillar	Strategic Interventions	Implementation period				
		2018	2019	2020	2021	2022
(2) Enhance pastoral oriented and multi-actor veterinary extension services	Establish a communication and resources mobilization team within the regional veterinary directorate, zonal, woreda and kebele level to actively and regularly circulate information to stakeholders through workshops and training					
	Appoint a dedicated communication and resources mobilization officers / contact point within regional Veterinary Services Directorate					
	Develop veterinary communication and resources mobilization strategy and plan					
	Improve regional and woreda IT infrastructure where feasible					
	Strengthen the new animal health information and production database per region					
	Organize veterinary field days to facilitate allow contact and interaction between veterinary officers and other animal health services practitioners, producers, and animals					
	Develop specific projects that can address the major bottlenecks of the veterinary services and fundraising					
	Promote a veterinary internship program which will give graduate veterinarian and other paraprofessionals an opportunity to work in the field and learn from others					
(3) Ensure the provision of quality and adequate animal health inputs	Establish a drug revolving fund at regional level, to ensure adequate regular and timely supply of drugs to public veterinary clinics					
	Establish and maintain an appropriate cold chain and establish cold depots in strategic locations of the region to handle and transport vaccines					
	Collaborate with VDFACA in the control of illegal/informal veterinary drugs marketing practices, malpractices and handling of drugs by people that are not allowed to do. In so doing pastoralists benefit from accessing quality services and drugs from known and licensed sources					
	Liaison with the primary veterinary care case team to include withdrawal periods be enforced with the aid of residue monitoring					
	Ensure that the veterinary extension message contains awareness messages to Pastoralist and consumer on withdrawal periods					
5. Animal welfare (1) Position veterinarians and para-professional as advocates for animal welfare	Establish communication structures within the regional VS and Woredas					
	Collaborate with MoALR to ensure the animal welfare guideline and standard is developed					

Pillar	Strategic Interventions	Implementation period				
Objectives		2018	2019	2020	2021	2022
and extends principles to producers and processors						
	Integrate animal welfare guidelines into the pastoral regional veterinary practice guidelines and develop SOP					
	Educate veterinary students on animal welfare issues including transportation					
	Include animal welfare/humane handling/humane transport as part of the global core of continuing education					
	A communication strategy to include and address the importance of animal welfare					

SECTION 7. MONITORING, EVALUATION AND LEARNING

Monitoring, Evaluation and Learning (MEL) is essential for analyzing and assessing the efficiency and effectiveness of the implementation of this veterinary services delivery strategy. MEL is also essential to assess progress, and generate relevant and timely information to make informed decisions. Decisions are changed into actions when they are based on facts and realities on the ground. Efforts to undertake MEL at regional veterinary services level is non-existent at present and consideration for how to strengthen MEL at regional and *woreda* levels is missing. The veterinary services directorate will not conduct a separate M&E, but rather each intervention of the strategy will have its own M&E indicators to measure performance and inform the individual case team on issues pertaining to best practice—encouraging selection of simple and more affordable indicators and ensuring the usability of the results. To improve the MEL system for the Strategy, the following interventions are suggested:

- Review the current GTP II MEL system at the Livestock Resources and Pastoral development Bureau level and try to mainstream the veterinary services MEL within the epidemiology and information case team;
- Develop an effective and efficient MEL system with participation of other line Directorates, and harmonize and standardize the information to be collected at all levels. This should indicate the outputs, outcomes and impacts of veterinary services;
- Prepare MEL guidelines with clear roles, duties and accountability mechanisms, and build the capacity of professionals on MEL and its implementation.

Table 12: Performance indicators at Impact, Outcome and Outputs levels

Performance indicators (Impact, Outcome and Outputs levels)	
Impact	Impact indicators at different phases
Incomes of smallholder farmers	% veterinary services coverage and accessibility to pastoralists
Outcome	Outcome indicators at different phases
Increased productivity and productivity	% of production and productivity increment by pastoralists herds attributable to veterinary services delivery
Output	Output indicators at different phases
Effective, efficient, accessible, quality task based veterinary services will be provided to ensure the responsiveness of the services to pastoralists in a wider geographic areas	% livestock owning pastoralists (male, female and youth) express their satisfaction in receiving accessible, available, affordable and quality services
	% increase in pastoralists that use clinical services, vaccinations, tactical and strategic disease control scheme and practices across agro-ecologies
	# of documented requirements of various livestock infrastructure per woreda
	% of veterinary clinics and health posts renovated and upgraded to best functionality levels (pre-basic to basic, basic to intermediate, and intermediate advanced)
	% of technical staff trained at various levels and training conducted and equipped to perform their duties
	# of veterinary extension beneficiaries (male, female and youth)
	# of CAHWs linked with sustainable drug sources and able to function well
	# of CAHWs received supervision and received refresher training
	# of workshops, seminars held and # of pastoralists participating
	# of professionals used ICT/digitalized extension communication
	# linkage platforms established at various levels

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