



# **National Foot and Mouth Disease (FMD) Control Strategic Plan**

---

**August 2017**



Ethiopian  **ATA**  
Agricultural Transformation Agency

## Table of Contents

|                                                                                             |           |
|---------------------------------------------------------------------------------------------|-----------|
| <b>Acronyms used in this Document .....</b>                                                 | <b>3</b>  |
| <b>1 SITUATION ANALYSIS.....</b>                                                            | <b>5</b>  |
| 1.1 FMD situation in the country.....                                                       | 5         |
| 1.2 Impact of FMD on livestock and livelihoods.....                                         | 7         |
| 1.3 Identified risk hotspots.....                                                           | 8         |
| 1.4 Organization of FMD Control and the Veterinary Services .....                           | 9         |
| 1.5 Approach to FMD control to date .....                                                   | 11        |
| 1.6 Gap analysis.....                                                                       | 11        |
| <b>2 BENEFITS OF FMD CONTROL .....</b>                                                      | <b>13</b> |
| 2.1 Expected benefits related to livelihoods and food security .....                        | 13        |
| 2.2 Expected benefits related to improved financial conditions of private stakeholders..... | 13        |
| 2.3 Expected benefits related to the public sector.....                                     | 13        |
| 2.4 Expected benefits related to trade .....                                                | 13        |
| 2.5 Expected benefits to the regional and international communities .....                   | 13        |
| <b>3 NATIONAL CONTROL PROGRAM FOR THE PROGRESSIVE CONTROL OF FMD .....</b>                  | <b>15</b> |
| 3.1 Goal of FMD control.....                                                                | 15        |
| 3.2 Strategic objective.....                                                                | 15        |
| 3.3 Strategic approach .....                                                                | 15        |
| 3.4 Research and Development .....                                                          | 24        |
| 3.5 Risks and Assumptions of the proposed control plan .....                                | 25        |
| <b>4 Monitoring and evaluation of impact and implementation .....</b>                       | <b>25</b> |
| 4.1 Indicator(s), target and means of verification for the strategic objective.....         | 25        |
| <b>5 OPERATIONAL PLAN .....</b>                                                             | <b>28</b> |
| 5.1 Organization of FMD control .....                                                       | 28        |
| 5.2 Implementation Table.....                                                               | 30        |
| <b>6 Technical Assistance Plan .....</b>                                                    | <b>36</b> |
| 6.1 Technical Assistance Approach .....                                                     | 36        |
| <b>7 REFERENCES .....</b>                                                                   | <b>37</b> |

## ACRONYMS USED IN THIS DOCUMENT

|             |                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------|
| ADNIS       | Animal Disease Notification and Investigation System                                                       |
| AU-IBAR     | African Union – Inter African Bureau for Animal Resources                                                  |
| BMGF        | Bill and Melinda Gates Foundation                                                                          |
| DOVAR       | Disease Outbreak and Vaccination Reporting system                                                          |
| ELISA       | Enzyme-Linked Immunosorbent Assay                                                                          |
| EU-FMD      | European Union Foot and Mouth Disease                                                                      |
| FAO / ECTAD | Food & Agriculture Organization of the United Nations / Emergency Centre for Transboundary Animal Diseases |
| FMD/FMDV    | Foot and Mouth Disease/Virus                                                                               |
| GALVMED     | Global Alliance for Livestock Veterinary Medicines                                                         |
| IGAD        | Inter-Governmental Authority on Development                                                                |
| ILRI        | International Livestock Research Institute                                                                 |
| LITS        | Livestock Identification and Traceability System                                                           |
| LMP         | Livestock Master Plan                                                                                      |
| MENA        | Middle East and North Africa                                                                               |
| MoLF        | Ministry of Livestock and Fisheries                                                                        |
| NAHDIC      | National Animal Health Diagnostic and Investigations Centre, Sebeta                                        |
| NSP         | Non-Structural Protein                                                                                     |
| NVI         | National Veterinary Institute, Bishoftu                                                                    |
| NGO         | Non-Governmental Organization                                                                              |
| OIE         | World Organization for Animal Health                                                                       |
| PCP-FMD     | Progressive Control Pathway for FMD                                                                        |
| PCR         | Polymerase Chain Reaction                                                                                  |
| PMU         | Program Management Unit                                                                                    |
| PPR         | Peste des Petits Ruminants (goat plague)                                                                   |
| SNNP        | Southern Nation, Nationalities and People Regional State                                                   |
| SPS         | Sanitary & Phytosanitary Standards                                                                         |
| STSD        | Surveillance of Trade Sensitive Diseases Project                                                           |

|        |                                                               |
|--------|---------------------------------------------------------------|
| TAD    | Transboundary Animal Diseases                                 |
| USAID  | United States Aid for International Development               |
| VS     | Veterinary Services                                           |
| VDFACA | Veterinary Drug and Feed Control and Administration Authority |
| WB     | World Bank                                                    |
| WRL    | World Reference Laboratory for FMD                            |

## Tables

|                                                                                            |                                     |
|--------------------------------------------------------------------------------------------|-------------------------------------|
| Table 1: FMD outbreaks in Ethiopia 2014 - 2016 .....                                       | 5                                   |
| Table 1: Activities to achieve OIE Stage 2 and support moving to OIE Stage 3 by 2022 ..... | 16                                  |
| Table 2: Activities to achieve OIE stage 3 by 2022 and support moving to stage 4 .....     | 17                                  |
| Table 3: Identified tests for capacity building and designated responsibility .....        | 20                                  |
| Table 4: Identified major risks associated with the control plan.....                      | 25                                  |
| Table 5: Major assumptions of the proposed control plan .....                              | 25                                  |
| Table 6: Monitoring and evaluation tools .....                                             | <b>Error! Bookmark not defined.</b> |

## Figures

|                                                                                          |    |
|------------------------------------------------------------------------------------------|----|
| Figure 1: Map showing FMD outbreak investigated since 2015 and serotype identified ..... | 6  |
| Figure 2: Location of regional labs.....                                                 | 10 |
| Figure 3: Short and Long Term Control Plan.....                                          | 18 |
| Figure 4: Detailed short term plan.....                                                  | 19 |
| Figure 5: Organization structure for the proposed Program Management Unit .....          | 29 |

## 1 SITUATION ANALYSIS

### 1.1 FMD situation in the country

FMD is endemic to Ethiopia and known to be widely distributed in the country, with significant variation in prevalence across different farming systems and agro-ecological areas. The disease is widely prevalent and occurs frequently in pastoral areas of the country. Extensive movement of livestock, and high rate of contact among animals at commercial markets, in communal grazing areas and at watering points, are undoubtedly the main risk factors of FMD spread in Ethiopia (Zewudie, et al., 2006). Currently little beef and live cattle are being exported due to the FMD infection in the country.

#### 1.1.1 Clinical FMD

All cloven-hoofed animals are invariably susceptible to FMD infection, it is however recognized that clinical effects of the disease vary with the species & breed of animal, the viral strain concerned and epidemiological circumstance. Hence, in contrast to intensively farmed cattle and pigs of temperate countries, in most parts of sub-Saharan Africa severe clinical effects of FMD infection is not found (Thomson G. a., 2004). There have been instances however where exceptional situation has been appreciated; for example, the FMD outbreak of 2011/2012 in Tigray regional state where sheep and goats generally develop milder and less apparent disease than cattle. Generally, Sheep and goats develop milder and less apparent disease than cattle. Regarding wildlife antelope species, such as impala in the Kruger National Park in South Africa, have been found to suffer a high proportion of subclinical infections; that is certainly also the case for African buffalo infected with the SAT serotypes of FMD virus (Thomson G. a., 2004).

Given the endemic nature of FMD in Ethiopia, the disease occurs regularly across different production systems with its resultant negative impact especially, in dairy sector where improved breeds are kept. An average of 53 outbreaks were reported in the period of three years i.e. From 2014 to 2016. However, considering the low rate of passive reporting across the country which is estimated to be 40%, the outbreak figures provided are potentially underestimated and therefore do not reflect the full reality of the epidemiological situation in the country. Table 1 below shows number of FMD outbreaks recorded in different years and few descriptive parameters.

*Table 1: FMD outbreaks in Ethiopia 2014 - 2016*

|         | Disease | Species | OBn | PAR       | Cases  | Morb Rate | Deaths | Mort Rate | CFR  |
|---------|---------|---------|-----|-----------|--------|-----------|--------|-----------|------|
| 2016    | FMD     | Bov     | 40  | 235,879   | 5,234  | 2.2       | 81     | 0.03      | 1.55 |
| 2015    | FMD     | Bov     | 74  | 1,055,637 | 25,602 | 2.4       | 66     | 0.01      | 0.26 |
| 2014    | FMD     | Bov     | 45  | 759,960   | 4,710  | 0.6       | 94     | 0.01      | 2.00 |
| Sum     |         |         | 159 | 2,051,476 | 35,546 | 5.3       | 241    | 0.05      | 3.80 |
| Average |         |         | 53  | 683,826   | 11,849 | 1.8       | 81     | 0.02      | 1.27 |

### 1.1.2 Serotypes and strains

FMD virus exists as seven different serologically distinct types, these are: serotype - O, A, C, SAT1, SAT2, SAT3 and Asia 1. There are 7 regional pools of FMD viruses in the world, Ethiopia along with Eritrea, Kenya, Burundi, Somalia, Djibouti, Sudan, South Sudan, Tanzania, Uganda, Rwanda Comoros, Congo D. R., Egypt, Libya and Yemen are in pool 4. Specific genotypes are independently circulating and evolving, affecting multiple countries within the regional pool. From the serotypes that are found in pool 4 only SAT3 is not found in Ethiopia (Eu-FMD, 2017).

FMD outbreaks were reported from all regions of Ethiopia except Dire Dawa and Hareri regions. The most dominant serotype is O (Serotype O is mostly encountered in East and South East of the country), accounting for 70% of the investigated outbreaks occurring in the country, followed by SAT2 (20%, SAT 2 is in central and western part of the country). The remaining are A and SAT1. Serotype C has not been reported in Ethiopia since 1983. Seven topotypes are identified within the four serotypes of FMD viruses that have been reported in Ethiopia (Eu-FMD, 2017).

Phylogenetic analysis of the virus protein (VP 1) region of FMD viruses has been used extensively to investigate the molecular epidemiology of the disease worldwide. It helps to define genetic relationships between FMDV isolates and geographic distribution of lineages and genotypes; they have also helped to establish genetically and geographically linked topotypes and trace the source of outbreaks (Sahle et al 2004). These topotypes include EA-3 and EA-4 within serotype O; G-VII (Africa topotype) within serotype A; IV, XIII and XIV within serotype SAT 2; and IX within serotype SAT 1 (Wudu, 2016).

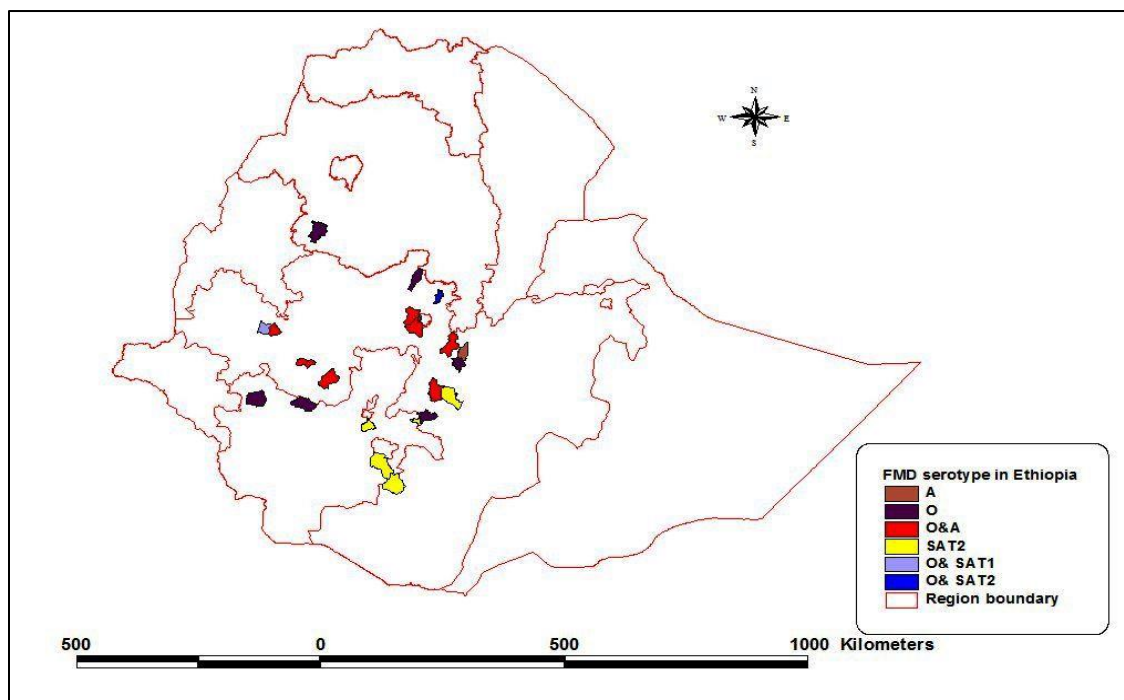


Figure 1: Map showing FMD outbreak investigated since 2015 and serotype identified

### 1.1.3 FMD infection

To inform the baseline FMD situation, 11,000 serum samples have been collected as part of the STSD project (AU-IBAR funded). Samples were taken from 300 randomly selected Kebeles across the country including the mixed agriculture highlands and lowland pastoralist areas. Currently, nearly 6,000 samples have been tested for NSP antibodies using the 3ABC-ELISA test, of which 19.7% (1,138 of 5,789) tested positive. The highest sero-prevalence was seen in south of the country with 34.2% (360 of 1,050 prevalence in the Gamo Gofa, Wolaita, South Omo, Kambata, Dawuro, Alaba, Hadiya, Konta and Amaro Special Zone (Lyons & Paton, 2017).

## **1.2 Impact of FMD on livestock and livelihoods**

### **1.2.1 Value chain, stakeholders and impact**

Livestock production in Ethiopia can be broadly classified into three systems. The dominant production system is the crop-livestock mixed (CLM) system that is mainly found in the central highlands of the country. This system accounts for about 80 - 85% of the cattle population and 40% of the land area of the country. The use of livestock in this farming system include providing draft power for crop production, manure for fertilizer and cooking fuel, meat and milk for household consumption, and household earning up to 85% of the total farm income through sales of cattle, meat and dairy (Tegegne, 2010). The second most dominant farming system is the pastoral production system, which is practiced in the arid and semiarid peripheral parts of the country, and accounts for about 15 - 20% of the cattle population and 60% of the land area of the country (Otte, 2002). The function of livestock in this system is to provide farm cash income through sales of livestock products, food (milk and meat) for subsistence, and other social functions such as social prestige, dowry, ritual slaughter etc. 95% of the export of animal and animal products in Ethiopia is sourced from this system (Legese, 2008). The third type of production system is the small but growing market oriented production system in urban and peri-urban parts of the country. This system primarily consists of dairy farms keeping improved breeds and some feedlots, and accounts for less than 1% of the total cattle population (Wudu, 2016).

Ethiopia's beef export value chain starts in the markets located in pastoral low land area of southern part of the country wherefrom 3-5 year-old bulls are procured and transported to feedlots via holding ground where they are fattened for 2-3 months before slaughter and processing for production of beef or exported as live animal (Thomson G. , 2014). The majority of the export of beef and live animals is to the MENA region. Currently little beef are being exported due to the FMD infection in the country. Mile quarantine has recently started to operate and the Amadle quarantine (Fafan Zone) is 95 % complete. These two facilitates will enable the country to increase in export volume of live animals. In the dairy sector there are approximately 10 million dairy cows of which only 0.5 million are cross bred cows. Most of producers operate at small scale and their farming systems are often mixed, i.e. involve having other types of animals in the establishment concerned. FMD outbreaks affect the dairy production greatly as well, decreasing the productivity of dairy cattle (Wudu, 2016).

### **1.2.2 Prioritizing importance of FMD control in relation to other animal diseases**

FMD is endemic in Ethiopia with several outbreak reports every year (Table 1 above). The national prioritization exercise for animal diseases of socio-economic & trade significance including humans conducted by MoLF identified the following priority diseases in order of their hierarchy based on scores i.e. PPR, FMD, Anthrax and Brucellosis (MoLF, 2016). PPR control is currently underway in pastoral areas which is being implemented jointly by MoLF and FAO. Furthermore the national aligned strategy to control and progressively eradicate PPR has been developed.

The Ethiopian Livestock Master Plan also ranks FMD as the top disease in terms of its impact on farmers, markets and value chains (Barry I Shapiro, 2014). Moreover, the growing trend of private investments in the livestock sector and the increased export of live animals and meat in the past decade, coupled with growing international concerns on the zoo sanitary importance of FMD, has prompted increased attention to the disease in Ethiopia (Barry I Shapiro, 2014).

## **1.3 Identified risk hotspots**

### **1.3.1 Working hypothesis**

Foot and mouth disease is endemic in Ethiopia and outbreaks are reported throughout the year. Most of the samples are collected from cattle where clinical signs are more evident than what is observed in small ruminants. Overall, the national prevalence rate in cattle is close to 17% and, where measured, herd prevalence exceeded 50%. The available evidence suggests that prevalence of infection was generally higher in lowland areas than in the highlands (Ayelet, 2012). This is possibly due to greater mobility and therefore higher contact rate between cattle herds in pastoral areas. Uncontrolled cross border animal movement to neighboring countries is also a factor for increased prevalence of FMDV in the pastoral areas.

### **1.3.2 Risk hotspots**

- Pastoral areas are semi-arid, conditions fluctuate widely (specifically during draught periods) such that a grazing land and water point that is extremely attractive at one time becomes virtually unusable in another, making animal movement frequent and unpredictable. These seasonal mobility of cattle across woreda, zone, region and national boundaries yields the opportunity for uncontrolled mixing of cattle and greater chance of FMD transmission and spread.
- Animals are purchased/sold in live-animal markets, where frequent mixing gives ample opportunities to be infected. Presently live animal markets are considered to be the major hotspot for virus transmission and difficult to be put under control. This dynamic system of animals moving in and out for markets certainly contributes to maintain and further spread the virus.
- Trade route, holding ground and Feedlots / prequarantine stations are risk hotspots due to the mixing of animals from different parts of the country. In addition younger animals are

more susceptible to disease infection when mixing with aged cattle due to lower level of natural immunity to FMD.

#### **1.4 Organization of FMD Control and the Veterinary Services**

Ethiopia has a tiered government system consisting of a federal government overseeing ethnically based regions, comprising zones, districts (Woredas), and neighborhoods' (Kebele or peasant associations). Ethiopia is divided into nine ethnically based administrative regions subdivided into seventy zones and two chartered cities (Addis Ababa and Dire Dawa). It is further subdivided into 685 Woredas and several special Woredas.

This basic command structure is reflected in Ministry of Livestock and Fisheries (MoLF, which was established in October 2015) which is decentralized, where regions and Woredas have autonomy, but efforts have been made by the MoLF to coordinate responsibilities and activities and improve line management, for example, through the signing of MoUs. In these MoUs, MoLF has the overall leadership and technical support responsibilities to regions on issues relating to coordination of TADs prevention and control including FMD, and full leadership and implementation responsibilities for quarantine and inspection, import and export certification for animals and animal products, and to represent the country at regional and international forums.

There are three State Ministers at the MoLF which includes State Minister for Animal Production, State Minister for Animal Health & Feed Quality Control and State Minister for Livestock Marketing. The State Minister of Animal Health and Feed quality control has six technical directorates and 4 centers/institutions located outside the premise of the MoLF:

- Disease Prevention and Control Directorate
- Epidemiology Directorate
- Export Quarantine Inspection and Certification Directorate (EQICD)
- Export Abattoir Inspection and Certification Directorate (EAICD)
- Veterinary Public Health Directorate (VPH)
- Livestock Identification, Traceability and Welfare Directorate (LITS)
- National Animal Health Diagnostic and Investigation Center (NAHDIC)
- National Veterinary Institute (NVI)
- Veterinary Drug and Feed Control and Administration Authority (VDFACA)
- National Tsetse and Trypanosomiasis Prevention and Eradication Institute (NTTIC)

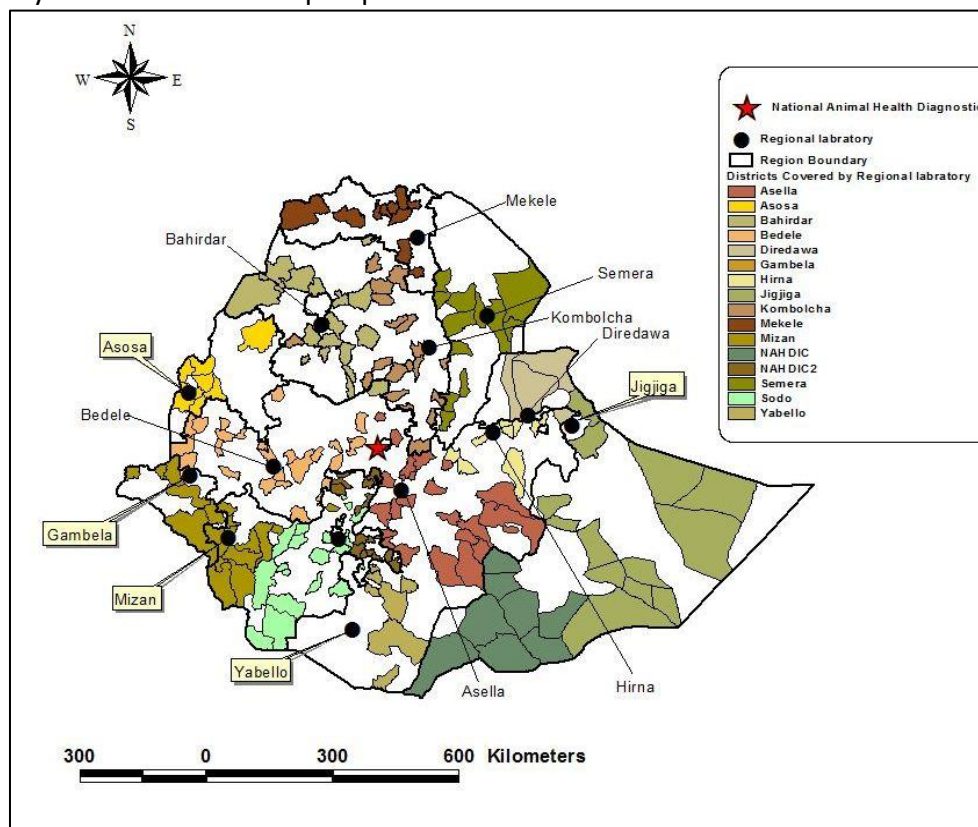
The EQICD and EAICD focus on sanitary export facilitation (inspection and certification for live animals and meat), while the epidemiology and disease control and preventions directorates develops disease control and related policy and strategies. VPH focus on control and prevention of public health and important zoonotic animal diseases. LITS directorate tries to identify and trace livestock resources destined for export from the primary market to the export destinations. NAHDIC not only does laboratory diagnosis but has a strong role in designing surveillance programs, undertaking technical capacity building and outbreak disease investigation when required. NVI is largely mandated for the production and distribution of animal vaccines

including FMD for the country and other African countries (other than FMD vaccines). NVI produces trivalent FMD vaccines for in country consumption against FMD strain O, A and SAT2.

At the level of the regions and down to the field, organization of the veterinary services are the same for some regions and variable for others, but the general administrative arrangements are:

- Regional Bureaus of Livestock and Fishery (Oromia, SNNPR and Somali regions)
- Regional Bureau of Agriculture-Livestock Development and Health Agency,(Amhara region)
- Regional Bureau of Pastoral Agriculture Development (Afar)
- Pastoralist Area Development Commission(Oromia and SNNP)
- Zonal office of Livestock and Fishery Development
- Woreda office of Livestock and Fishery Development
- Sub-Woreda level animal health clinic/posts (Peasant/Pastoral Association)
- Regional Veterinary laboratories

The Regional livestock bureaus and agencies have responsibility to work closely with the MoLF on coordinating TADs control including FMD; surveillance and reporting, disease investigation, sampling, laboratory diagnosis and testing, information exchange, vaccination and stakeholder (farmer) awareness and communications. There are 16 regional laboratories across the country (Refer to map 2 below). The regional laboratories tend to take the lead technically providing capacity building for field staff at woreda level and also have a strong field role in disease investigations and sampling. The VS components of Regional Bureaus tend to coordinate activity from a policy and administrative perspective.



**Figure 2: Location of regional labs**

In addition, two regions, Oromia and SNNP, have divided governance and management structures at Pastoral Commission level based on geographical responsibility. The “bureau” component is responsible for highland areas and specialist Pastoralist Commissions are responsible for lowland, pastoralist areas. This division is in recognition of the special needs and forms of support people and livestock in such parts of these regions require. The Zones play coordination role with veterinarians or veterinary para-professionals employed, they collate information gathered from woreda level. The Woredas and the Kebeles are the smallest and key administrative divisions in the federal arrangement. There is at least 1 veterinary clinic per Woreda and 1 veterinary health post per 3 Kebeles. They provide clinical services, report disease occurrence, undertake general surveillance and control activities for TADs and other animal diseases, as well conduct meat inspection for domestic consumption.

### **1.5 Approach to FMD control to date**

While there have been several attempts to lay out a national level FMD Control Strategy in Ethiopia, an officially endorsed control plan for FMD has not been established, except for government coordinated vaccination activities in some market oriented dairy farms and feedlots in urban and peri-urban areas (Zewudie, et al., 2006). These vaccination efforts have either been reactive vaccinations in response to outbreaks or regular preventive vaccinations (Beyi, 2012). FMD infected cattle are also commonly treated with palliative antibiotics or traditional treatments in all types of production systems (Wudu, 2016).

A three year project running from 2016-2018 has been established under the Global OIE Laboratory Twinning program, between World Reference Laboratory for FMD, the Pirbright Institute (WRL) and National Animal Health Diagnostic and Investigation Center (NAHDIC) to build capacity and expertise in Ethiopia, a priority region for improving foot and mouth disease (FMD) control. This will strengthen NADHIC as OIE support veterinary laboratory for the East Africa region.

The surveillance approach to FMD previously adopted in Ethiopia (essentially outbreak investigation & prevalence studies based on NSP serology) has provided vital information. This now needs to be expanded to measure the interaction of FMDVs with the various value chains. A better understanding of the African buffalo populations and their FMD status in south-west Ethiopia is advisable.

### **1.6 Gap analysis**

Identified gaps are grouped into different categories as follows:-

#### **A. Surveillance and diagnosis**

- Disease reporting is not up to the standard as per OIE requirement in terms of percentage of districts reporting, sensitivity, timeliness and inclusion of laboratory and other information sources
- Weak capacity in conducting risk analysis

- Weak active disease surveillance, outbreak investigation and monitoring to identify circulating viruses and efficacy of vaccination campaign
- Limited capacity for lab equipment installation, calibration and maintenance
- Limited access to foreign exchange to procure lab consumables, reagents and diagnostic kits
- Low capacity on diagnostic techniques at the regional veterinary laboratories
- Absence of quality management system in the regional labs
- Limited information exchange and harmonization of activities among IGAD countries

#### B. Disease prevention and control

- Lack of an officially endorsed national FMD control plan
- Low capacity for FMD vaccine production both in quantity and quality
- Affordability of available vaccines and lack of willingness to pay among farmers and pastoralists
- Low level of understanding on bio-security measures among the producers
- Legal frameworks supporting disease prevention and control including movement control are not approved and enforced
- Weak cross- border coordination and harmonization of disease control activities
- Lack of capacity for rapid detection and investigation
- Limited infrastructure for cold chain maintenance

#### C. Extension, communication and awareness creation

- Weak capacity of the veterinary services to deliver effective extension and communication activities

#### D. Research and development

- Weak understanding of the role of wildlife and small ruminants in FMD transmission and spread
- Low level of understanding of the epidemiological situation and its socio-economic impact

The formulation of this national risk based FMD control program is to fill the prevailing gap which in turn will support the FMD control and prevention activities are carried out efficiently.

## **2 BENEFITS OF FMD CONTROL**

### **2.1 Expected benefits related to livelihoods and food security**

Cattle production in Ethiopia contributes significantly to food security for small-holders and pastoralists as milk and meat are important elements in the diet of people and access to high quality milk means access to high biological value proteins, minerals and vitamins. Cattle are also an important reserve of cash for when these families are in urgent needs. The implementation of an FMD control plan will support improved nutrition and increased incomes of smallholders and pastoralists through growth in the sale of milk and other livestock products, and potentially also bring down the price of dairy and beef products in the country thereby benefitting rural and urban consumers.

### **2.2 Expected benefits related to improved financial conditions of private stakeholders**

Ethiopian cattle product export currently has been restricted to only a few countries such as UAE, Saudi Arabia, Qatar, Egypt, indirectly through the port of its neighbouring country Djibouti, due to the endemic nature of FMD in the country. Producers and the broader private sector will benefit from the implementation of an FMD control plan, through obtaining access to lucrative markets in Asia and the Middle East and North Africa. This will generate higher revenues from export of livestock products and from increased milk sales in domestic markets.

### **2.3 Expected benefits related to the public sector**

Strengthening the veterinary system of the country is an essential element of effectively controlling FMD, as highlighted in the global strategy for the progressive control of FMD (Component 2). It is also widely remarked that strengthening the capacity of a veterinary system to control FMD will translate into an increased capacity to control other diseases because of the intrinsic complexity of FMD as a disease. In addition, the projected increase of cattle product exports will also produce additional benefits for the public sector in the form of tax revenues and increase foreign currency availability due to both increased exports and decreased import of dairy products.

### **2.4 Expected benefits related to trade**

FMD is a major constraint to trade, internationally, regionally and sometimes even within countries. Improved FMD control is expected to open new opportunities for Ethiopia's producers and industries by increasing the export of live animals, meat and leather goods. This will create the conditions to establish bilateral agreements with top livestock importing countries to promote increased trade in a prudential and sustainable manner.

### **2.5 Expected benefits to the regional and international communities**

FMD is commonly considered the most important trans-boundary animal disease. Incursions into FMD free countries occur, and are extremely costly to control. Even in countries where FMD is endemic, the incursion of a new strain or serotype has serious implications. As described in

chapter 1, in the last decade four serotypes of FMD virus have been identified in Ethiopia (O, A, SAT 2 and SAT 1) with serotypes O, A and SAT2 predominating. Within these serotypes at least 7 topotypes have been identified. Furthermore, there are other genotypes current in other East African countries that could presumably enter the country in the near future because most border areas are populated by communities with frequent uncontrolled movement. Regional cooperation through Intergovernmental Authority on Development (IGAD) and other regional bodies is imperative to create a platform in which Ethiopia and its neighbours can mutually benefit by aligning and collaborating on the implementation of a regional FMD control plan. Implementation of the control plan presented here will reduce the risk of transferring FMD viruses across the region.

### **3 NATIONAL CONTROL PROGRAM FOR THE PROGRESSIVE CONTROL OF FMD**

#### **3.1 Goal of FMD control**

Improve the livelihoods of livestock keepers and increase revenue from livestock and livestock products export through the control of FMD.

#### **3.2 Strategic objective**

To achieve Stage 2 of the PCP-FMD progressive control pathway in priority export sourcing areas by 2022 as a foundation to progress along subsequent stages of the OIE- Progressive Control Pathway.

#### **3.3 Strategic approach**

FMD has been a major obstacle to fulfilling Ethiopia's potential for livestock and specifically cattle export. The long term approach is to enable the areas of the country from where animals for export are sourced, to reach an FMD free (with/ without vaccination) status and thus be able to access to all global markets including high-end export markets such as EU, North America and East Asia. This will be addressed by adopting a progressive control pathway through scaling up disease prevention and control activities including surveillance to 100% coverage of the export sourcing areas of the country over a period of 25 years.

In the short term plan extending to 2022, implementation of critical prevention and control mechanisms across baseline mapping, surveillance, biosecurity including movement control, vaccination and traceability measures implemented across the cattle export value chain.

All these control activities will enable the country to achieve OIE Stage 2 while at the same time laying foundation to progress into OIE Stage 3, as summarized in Table 3.1 below. For the transition from stage 2 to stage 3, the country shall also develop an emergency preparedness plan to timely contain FMD incursion into control areas. Because the prioritized export sourcing areas are not with close proximity to national parks and therefore risk of FMD spread from wildlife does not seem important in the epidemiology of the disease, and due to the need to prioritize use of funds in FMD control, the initial focus of these mechanism will be on cattle rather than wildlife or small ruminants.

During this period, the country will also focus to improve its cattle and beef exports to markets in the Middle East, North Africa, Vietnam, Malaysia, Hong Kong and China through establishing commercial linkages and meeting Sanitary and Phytosanitary (SPS) requirements of priority importing countries. Public sector revenues generated from increased exports to higher value markets can contribute towards partially covering the costs of implementing the control plan in this period as well as investment towards expanding the geographic coverage of surveillance, prevention and control activities in future periods.

**Table 2: Activities to achieve OIE Stage 2 and support moving to OIE Stage 3 by 2022**

| <b>Prevention and Control Mechanism</b>      | <b>Actions to achieve OIE Stage 2 and SPS requirements by 2022</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Additional actions to develop foundation to progress to OIE Stage 3 by 2027</b>                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Baseline Mapping, Surveillance and Diagnosis | <ul style="list-style-type: none"> <li>• Serological testing of randomly collected samples through STSD project, to identify circulating serotypes and map the distribution of FMD across the country</li> <li>• Rapid detection of, and investigation of all FMD outbreaks in priority export sourcing areas</li> <li>• Improve the diagnostic capacity of regional labs and NAHDIC</li> <li>• Regular notification of the FMD occurrence and progress on PCM activities to OIE</li> </ul>  | <ul style="list-style-type: none"> <li>• Progress to a well-developed surveillance system for outbreak investigation</li> <li>• Improve passive surveillance in remaining key export sourcing areas and markets through disease notification and reporting using ADNIS and DOVAR</li> <li>• Improve NAHDIC's capacity to identify FMD strains at topo-type level to improve vaccine matching</li> </ul> |
| Biosecurity                                  | <ul style="list-style-type: none"> <li>• Implementation of biosecurity measures at live animal markets, transportation, abattoirs and quarantines</li> </ul>                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Extend implementation of biosecurity measures in priority export sourcing areas and feedlots along the ones already implemented in live animal markets, transportation, abattoirs and quarantines</li> </ul>                                                                                                                                                   |
| Vaccination                                  | <ul style="list-style-type: none"> <li>• Import purified vaccine/ bulk antigen until vaccine production is established in the country</li> <li>• Establish the capacity to undertake quality control (safety, potency and efficacy) of the vaccines</li> <li>• Establish in-country purified vaccine production capacity</li> <li>• Carry out regular mass vaccination campaigns and develop vaccination delivery mechanisms and cold chains in prioritized export sourcing areas</li> </ul> | <ul style="list-style-type: none"> <li>• Diversify vaccine delivery solutions through sanitary mandate contracting (public private partnerships) involving NGOs and private players</li> <li>• Regular sero-monitoring to be carried out on cattle, post vaccination</li> </ul>                                                                                                                         |
| Traceability and movement control            | <ul style="list-style-type: none"> <li>• Enhance awareness of FMD transmission and need for movement controls among farmers/pastoralists in the focus export sourcing areas</li> <li>• Implement the livestock identification and traceability system, including health cards, in the primary markets in prioritized export sourcing areas</li> <li>• Develop legislative framework for animal movement controls</li> </ul>                                                                  | <ul style="list-style-type: none"> <li>• Enforce legislative framework for animal movement controls</li> </ul>                                                                                                                                                                                                                                                                                          |

Based on the experiences learnt from implementing the control plan in stage 2, a revised more aggressive control strategy that has aim of eliminating FMD in the control areas will be developed.

After 2022, the focus is to ensure continuity of the control activities already started in Stage 2 as well as to expand geographic coverage and additional prevention and control activities that aim

towards reaching OIE Stage 5 by 2042. The prevention and control mechanisms laid out in the short term plan will be intensified to cover all the remaining export sourcing areas in the country and progressively expanded towards nation-wide surveillance, mass vaccination, traceability to producer level and control of animal movement.

The capacity of the veterinary system for effective implementation will also be further strengthened, and additional SPS requirements including such as biosecurity measures at quarantines and at abattoirs to satisfy the requirements of importing countries, in line with OIE's TAHC (2013b) article 8.6.25 and to achieve access to more remunerative markets. The specific actions to achieve OIE Stage 3 and to progress to further stages are summarized in Table 3.2 below.

*Table 3: Activities to achieve OIE stage 3 by 2022 and support moving to stage 4*

| <b>Prevention and Control Mechanism</b> | <b>Actions to achieve OIE Stage 3 and SPS requirements by 2027</b>                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Additional actions to develop foundation to progress to OIE stage 4 by 2037</b>                                                                                                                                                                                                                      |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surveillance and Diagnosis              | <ul style="list-style-type: none"> <li>• Improve passive surveillance in remaining key export sourcing areas and markets through disease notification and reporting using ADNIS and DOVAR</li> <li>• Rapid detection, investigation and response to, all FMD outbreaks in focus sourcing areas of the country where the control program is implemented</li> <li>• Outbreaks should be fully traced back to generate reports that indicate source and spread of infection</li> </ul> | <ul style="list-style-type: none"> <li>• Incidence of clinical FMD is progressively eliminated in domestic animals</li> </ul>                                                                                                                                                                           |
| Biosecurity                             | <ul style="list-style-type: none"> <li>• Extend biosecurity practices to producer level in all export sourcing areas</li> <li>• Carry out documented inspections showing compliance with biosecurity and hygiene requirements</li> </ul>                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Develop the biosecurity accreditation and certificate framework and apply it to the exporting feedlots and abattoirs</li> </ul>                                                                                                                                |
| Vaccination                             | <ul style="list-style-type: none"> <li>• Carry out regular mass vaccination campaigns and develop vaccination delivery mechanisms and cold chains of remaining export sourcing areas</li> <li>• Progressively increase in-house purified vaccine production at NVI</li> </ul>                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Conduct serological surveys to assess vaccination coverage of the target population and enhance vaccination campaigns</li> </ul>                                                                                                                               |
| Traceability and movement control       | <ul style="list-style-type: none"> <li>• Introduce the livestock identification and traceability system including health cards in the primary markets of remaining of export areas</li> <li>• Enhance awareness of FMD transmission and need for movement controls among farmers/pastoralist in remaining export sourcing areas</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>• Introduce the livestock identification and traceability system including health cards in the producer level of all export areas</li> <li>• Develop an enabling environment to restrict the movement of animals to prevent the spread of an outbreak</li> </ul> |

As the country implements the short-term plan and progress to the long-term plan, lessons learnt from experience in the initially prioritized export sourcing areas will be applied as the control

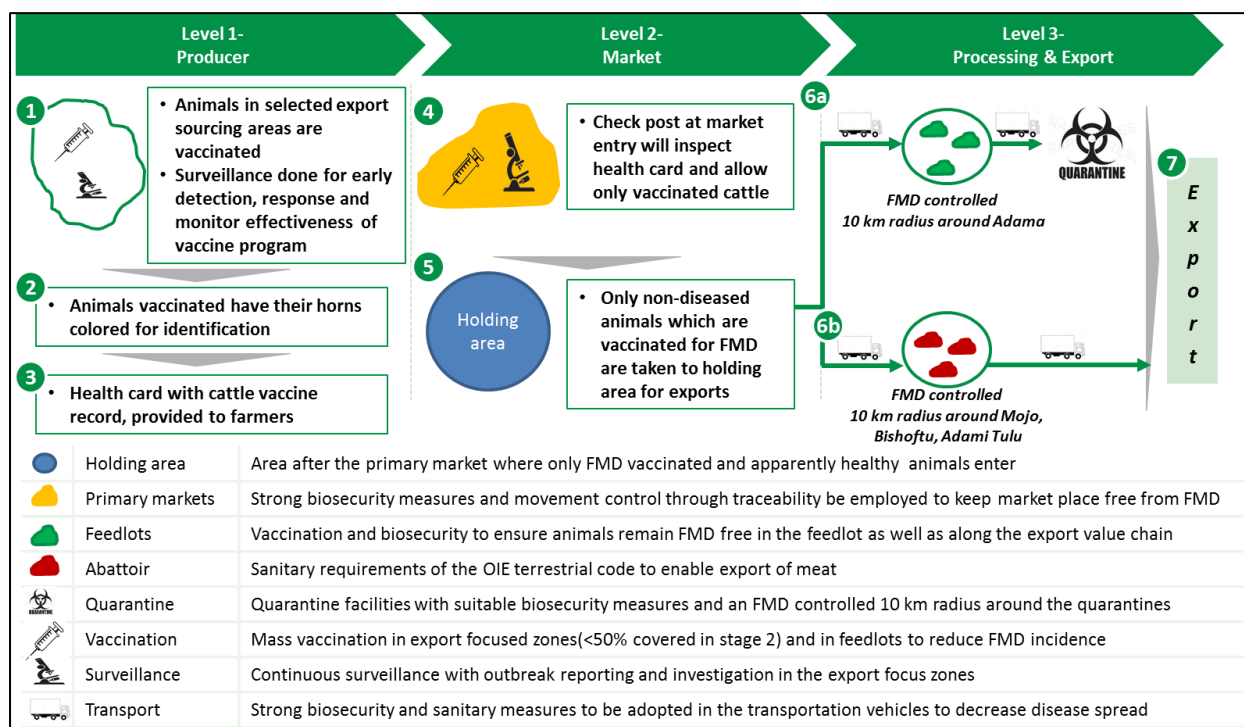
area and scope of prevention and control activities is gradually expanded. A schematic of the overall approach described above is shown in figure 1.

| Timeline                                                  | Short Term                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                  | Long Term                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                        |                                                                                                                                                                           |                                                                                                                                                                           |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                           | 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2023                                             | 2028                                                                                                                                                                                                                                                                                                                                                                          | 2033                                                                                                                                   | 2038                                                                                                                                                                      | 2043                                                                                                                                                                      |
| % of country's export sourcing areas covered by OIE stage | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | • Epi units of Borena, Guji and Liben in stage 2 | • Epi units of Borena, Guji, Liben reach stage 3<br>• Remaining areas reach stage 2                                                                                                                                                                                                                                                                                           | • Epi units of Borena, Guji, Liben reach stage 4<br>• Remaining areas reach stage 3                                                    | • Epi units of Borena, Guji, Liben reach stage 5<br>• Remaining areas reach stage 4                                                                                       | • All areas in stage 5                                                                                                                                                    |
| Potential export markets                                  | <ul style="list-style-type: none"> <li>• Middle East (2017)</li> <li>• North/ West Africa (2017)</li> <li>• China (2022)</li> <li>• South East Asia: Vietnam, Malaysia, HK</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                  | <ul style="list-style-type: none"> <li>• South East Asia <ul style="list-style-type: none"> <li>◦ Indonesia</li> </ul> </li> </ul>                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• To be explored: <ul style="list-style-type: none"> <li>✓ Latin America</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• To be explored: <ul style="list-style-type: none"> <li>✓ North America</li> <li>✓ East Asia</li> <li>✓ EU</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• To be explored: <ul style="list-style-type: none"> <li>✓ North America</li> <li>✓ East Asia</li> <li>✓ EU</li> </ul> </li> </ul> |
| SPS requirements                                          | <u>Biosecurity</u> <ul style="list-style-type: none"> <li>• (LIVE CATTLE): Animals kept in accredited quarantine station for 30 days</li> <li>• (MEAT): Approved abattoir with bone and lymph node removal and ante/post mortem</li> </ul> <u>Vaccination</u> <ul style="list-style-type: none"> <li>• Animals are tested for FMD infection and should have negative test results</li> <li>• Animals vaccinated for FMD annually</li> </ul> <u>Others</u> <ul style="list-style-type: none"> <li>• Halal requirement based on country</li> <li>• Vet system assessed by importer</li> <li>• Abattoirs in FMD controlled area</li> </ul> |                                                  | <u>Specific requirements (as applicable for importers)</u> <ul style="list-style-type: none"> <li>• The vet system pass assessment by relevant authority of importer</li> <li>• Regions where abattoirs are located should be FMD-controlled area</li> <li>• Each actor in the supply chain must be registered and included in the list of approved establishments</li> </ul> |                                                                                                                                        |                                                                                                                                                                           |                                                                                                                                                                           |

Figure 3: Short and Long Term Control Plan

The remainder of the document will focus on the short-term control plan through 2022 and the operational plan details. The focus will be on prioritized areas for sourcing cattle for exports in the southern part of the country, namely Borena, Guji and low lands of Bale in Oromia region and Liben in the Somali region. These sourcing areas have been prioritized over other export sourcing areas due to their higher export potential and receptivity of communities for control plan implementation. In these sourcing areas, the first step will be to identify the epidemiological units (which share similar epidemiological characteristics) and prioritize the control plan by first focusing on these epidemiological units and later moving to adjacent epidemiological units.

Major activities to be implemented in this stage includes strong surveillance, mass vaccination both at producer and market levels, biosecurity and animal identification and traceability at market level. Maintenance of FMD controlled areas near Feedlots in Adama, Abattoirs in Mojo, Bishoftu, Adami Tulu and quarantines will also be required to maintain a robust FMD control plan. Thus, the proposed control plan covers three levels in the livestock production and trade value chain. These are the producer level, the market/ transport level and the processing and export level. The producer level refers to farmers and pastoralist in the control areas. The market/ transport level represents the primary markets located in the control areas which are the access point for interested traders and others, and transport. The processing and export level refers to feedlots, abattoirs and quarantines which source cattle from the control area for further value add and export. A pictorial description of the proposed control strategy is shown in figure below.



**Figure 4: Detailed short term plan**

Various components of the short term control plan for the country to achieve OIE Stage 2, along with their expected outputs and required activities to achieve these outputs, are further detailed in the following sub-sections

### 3.3.1 Component objective 1: Set-up Program Management Unit for the implementation of control plan

The FMD control plan will be a complex multi-year undertaking that will require diligent coordination of many activities and management of multiple stakeholders across numerous organizations. A program management unit is thus proposed to be established for implementation of this control plan

#### Output 3.3.1.1- Recruit and capacitate the unit

Activity 3.3.1.1.1- Recruit the staff required for the unit

Activity 3.3.1.1.2- Procure and establish the office facility at federal and regional level

Activity 3.3.1.1.3- Procure the vehicles, field and lab equipment for the overall program (as listed in the respective sections)

Activity 3.3.1.1.4- Procure the consumables and reagents required for the overall program (as listed in the respective sections)

### 3.3.2 Component objective 2: Strengthening the diagnostic capacity at both NAHDIC and regional laboratory level

Currently the diagnostic system is based on the following methods: (i) 3ABC ELISA for serum testing; (ii) Liquid Phase Blocking ELISA for serum testing; (iii) Antigen detection ELISA; (iv) PCR and (v) Virus Isolation. NAHDIC is also sending samples periodically to the World Reference Laboratory (WRL) at Pirbright institute for confirmation, for further genetic characterization and also for vaccine matching. The tests which will be considered for the capacity building of NAHDIC and regional laboratories is listed in Table 3

*Table 4: Identified tests for capacity building and designated responsibility*

| S. No. | Prescribed Test           | Responsible Organization                                                                                        |
|--------|---------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1      | 3 ABC ELISA               | <ul style="list-style-type: none"><li>• NAHDIC for exports</li><li>• Regional laboratories for others</li></ul> |
| 2      | Liquid phase ELISA        | NAHDIC                                                                                                          |
| 3      | PCR for antigen detection | NAHDIC                                                                                                          |
| 4      | Virus Neutralization      | NAHDIC                                                                                                          |

The major challenges observed in the diagnostics system are around equipment and human capacity at the regional and federal laboratories. The activities listed below are geared towards strengthening the veterinary diagnostic system of the country to effectively diagnose and analyse FMD reports.

Output 3.3.2.1 – Capacitate NAHDIC to conduct and coordinate FMD diagnosis, surveillance and outbreak investigations

Activity 3.3.2.1.1 – Annually assess the consumable and reagent requirements of NAHDIC and regional laboratories

Activity 3.3.2.1.2 – Consumables and reagents required by NAHDIC and regional laboratories for effective FMD diagnostics will be procured and disseminated

Activity 3.3.2.1.3– Logistical gaps of NAHDIC to be addressed by provision of additional vehicles for transportation.

Activity 3.3.2.1.4 – Support the implementation of quality management systems in the regional laboratories

Activity 3.3.2.1.5 – Prepare training content and provide training to regional laboratories on disease investigation, sample collection, handling and testing

Activity 3.3.2.1.6 – Organize regular epidemiology-laboratory network meeting to steer the surveillance and diagnostic activities of control plan

Activity 3.3.2.1.7 – Regularly attend the laboratory network meeting organized for the IGAD region

Output 3.3.2.2 – Capacitate regional laboratories to conduct FMD diagnosis, surveillance and outbreak investigations

Activity 3.3.2.2.1 – Equipment required by regional laboratories will be procured

Activity 3.3.2.2.2 – Prepare training content and provide training for veterinary field staff on disease investigation, sample collection and submission to regional laboratories

Activity 3.3.2.2.3 – Implement quality management systems in the regional laboratories

Activity 3.3.2.2.4 – Ensure reliable internet and power supply is available for the regional laboratories

### **3.3.3 Component objective 3: Strengthen and improve the ongoing surveillance system for FMD**

The objective of a surveillance system is to improve the epidemiological understanding of FMD, timely detection and investigation of outbreaks for rapid response as well as monitoring the progress of the proposed control plan.

To understand the epidemiological situation of FMD in the country, the following activities are currently being carried out:

- Disease reporting system for FMD is based on monthly disease outbreak reports coming from the woredas to the regional veterinary laboratories (RVL). RVLs then enter the monthly disease outbreak reports received from the woredas in their operational areas, into the Disease Outbreak and Vaccination Reporting (DOVAR II) database system. Low rate of monthly outbreak reports from woredas is a major challenge in this system.
- Besides the monthly outbreak reports, a mobile phone based animal disease notification and investigation system (ADNIS) is used for real time disease notification of outbreaks in the field. Lack of 24/7 access to server infrastructure, approved modalities for incentive scheme to ADNIS focal persons and the limited geographic coverage, are major challenges facing the system.
- Based on the information collected from the field, animal health professional at kebele and woreda level contact the regional labs for immediate disease and epidemiological investigation, and sample collection. The regional laboratories send the samples to NAHDIC for testing. Limitations on the number of outbreaks investigated and samples submitted to NAHDIC, and delays in feedback dissemination are some major challenges.

In addition to the above identified challenges, lack of integration between the passive surveillance and outbreak investigations, lack of strong linkage between NAHDIC and regional laboratories and lack of obligation for the field staff to report outbreaks are hindering surveillance activities.

To attain the objectives indicated above, the following activities will be implemented

Output 3.3.3.1 – Improve the understanding of epidemiological situation of FMD across the country

Activity 3.3.3.1.1 – Develop baseline serotype distribution maps based on the results obtained from STSD project

Activity 3.3.3.1.2 – Conduct baseline survey to determine the immunity level and identify the circulating serotypes in the target export sourcing areas

Activity 3.3.3.1.3 – Identify the epidemiological units in export sourcing areas and prioritize the control plan by first focusing on these epidemiological units and later moving to other parts of sourcing areas

Activity 3.3.3.1.4 – Annually update the distribution maps based on the epidemiological information obtained from the outbreak investigations

Activity 3.3.3.1.5– Develop and implement standard operating procedures for sample collection, outbreak investigation and diagnosis procedures

Activity 3.3.3.1.6 – Train Kebele and woreda animal health workers on disease recognition, participatory disease surveillance and reporting

Activity 3.3.3.1.7 – Train CAHWs on disease recognition, reporting and awareness creation among the communities

Activity 3.3.3.1.8 – Active surveillance (outbreak investigation) result entry features of DOVAR II will be improved and checked for proper functionality

Activity 3.3.3.1.9 - ADNIS expanded across the country to provide real time disease outbreak notifications to the relevant stakeholders

Output 3.3.3.2 – Monitor the progress of the control program through surveillance

Activity 3.3.3.2.1 – Enhance sero-monitoring to assess sero-prevalence of the identified target population

Output 3.3.3.3 – Define the FMD control zone that meets OIE zoning standards

Activity 3.3.3.3.1 – Establish a team and define the terms of reference for the exercise

Activity 3.3.3.3.2 – Conduct detailed assessment of epidemiological characteristics of the export sourcing areas and define a zone including proposed intervention plan that meets the requirements of OIE TAHC so as to enter stage 3 of PCP

### **3.3.4 Component objective 4: Strengthen the prevention and control system in prioritized sourcing areas**

The main focus of the control plan is to implement mass vaccination, as well as implement biosecurity, traceability and movement control along the value chain, in the identified

epidemiological units of export sourcing areas as well as around feedlots, abattoirs and quarantines for further value addition and export. The specific required activities are listed below.

Output 3.3.4.1 – Target population is protected against FMD through mass vaccination campaigns

Activity 3.3.4.1.1 – At the beginning of the control plan the country will import the required vaccines for 5 years<sup>1</sup>. MoLF will tender the amount of vaccine required, the amount of vaccine will be determined based on the cattle population in the focus areas and also the number of annual doses to be administered per cattle. Negotiations will be conducted with an international vaccine producer to supply on a year to year basis the required FMD doses.

Activity 3.3.4.1.2 – During this period, in house vaccine production plants will be established at NVI. NVI will be responsible in the production of the vaccines based on the FMD virus serotypes that have been identified through the surveillance and monitoring activities. Capacity building including training and knowledge transfer to be facilitated for the new production technology including internal quality control

Activity 3.3.4.1.3 – Explore the potency of vaccines administered during the mass vaccination campaigns and based on the results decide on the appropriateness of vaccination schedule

Activity 3.3.4.1.4 – Develop and implement standard operating procedures for storing, handling, transporting and administering vaccines

Activity 3.3.4.1.5 – Three preventive mass vaccination campaigns including booster for the first year, two preventive mass vaccination campaigns for the remaining years, will be implemented each year targeting cattle in identified epidemiological units of the export sourcing areas and other FMD controlled areas around feedlots, abattoirs and quarantines, preferably through sanitary mandate contracting.

Activity 3.3.4.1.6 – Two booster vaccination campaigns per year for young stock, each one month after the mass vaccination campaigns, will be implemented in identified epidemiological units of the export sourcing areas, and other FMD controlled areas around feedlots, abattoirs and quarantines, preferably through sanitary mandate contracting.

Activity 3.3.4.1.7 – MoLF to establish the procedures and protocols and use the animal health professional network to monitor the execution of mass vaccination contracts

Activity 3.3.4.1.8 – Use the animal health professional network to monitor the execution of mass vaccination contracts

---

<sup>1</sup> can be shorter if in-house production is established soon

Activity 3.3.4.1.9 – At the beginning a cold chain that cascades to Woreda level will be rolled to ensure the potency and quality of vaccines are not compromised

Output 3.3.4.2 – The governance for biosecurity and animal movement control will be established and implemented at primary market level, feedlots, abattoirs and quarantines.

Activity 3.3.4.2.1 – Develop SOPs for biosecurity measures and animal movement control all along the value chain

Activity 3.3.4.2.2 – Enforce and implement the developed biosecurity and animal movement control standards at feedlots, abattoirs, quarantines and primary markets

Activity 3.3.4.2.3 – Deploy livestock identification and traceability system at primary markets of the export sourcing areas

Activity 3.3.4.2.4 – Raise awareness in the community for animal movement control employing a communication strategy that utilizes mass media (radio), pamphlets/ brochures and CAHWs

Activity 3.3.4.2.5 – Support the cooperation and involvement of IGAD countries, especially Kenya, in aligning and harmonizing the respective national FMD programs

Activity 3.3.3.2.6 – Develop an emergency preparedness plan to timely contain FMD incursion into control areas

### **3.3.5 Component objective 5: Improve the legislation framework**

Output 3.3.5.1 – Legislations for implementation of animal health programs are enacted and enforcements are established

Activity 3.3.5.1.1 – Endorse primary and secondary legislations related to disease control, movement control, livestock identification and traceability and establishment of veterinary statutory body

Activity 3.3.5.1.2 – Prepare a ministerial directive for control of FMD in the country

Activity 3.3.5.1.3 – Train legislative and executive organs on developed legal framework

Activity 3.3.5.1.4 – Create awareness among the public on the animal health legislations

## **3.4 Research and Development**

Research and development activities over the next five year period will focus on:

- Study the role of small ruminants and wildlife in the transmission of FMD. These studies will better inform the future changes required in the control plan as the country progresses from PCP stage 2 to stage 3

- Study socio-economic benefits of controlling FMD on the country and its value chain actors
- Research on improving the efficiency and cost-effectiveness of vaccine delivery systems

### 3.5 Risks and Assumptions of the proposed control plan

Major risks and assumptions considered for the proposed control plan are listed in tables 4 & 5.

*Table 5: Identified major risks associated with the control plan*

| Risks                                                                                  | Mitigations                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Zone identified for the stage 3 control plan in stage 3 is not accepted by OIE | Early and frequent engagement of OIE and FAO in the development of the control plan                                                                                                                                                                                                                                                                                        |
| Delay in the promulgation of the drafted laws                                          | Continuous engagement and consultation with government and parliamentary officials                                                                                                                                                                                                                                                                                         |
| An interruption in the supply of quality assured vaccines                              | <ul style="list-style-type: none"> <li>• Stringent quality and delivery clauses incorporated in the procurement contract</li> <li>• Alternative supplier is identified, in case of defaults</li> </ul>                                                                                                                                                                     |
| Willingness of organizations for transferring vaccine production technology to NVI     | <ul style="list-style-type: none"> <li>• Carry out higher level negotiations involving top government delegates</li> <li>• Leverage development partners to mediate the discussions</li> <li>• Promote the establishment of vaccine production facility by the relevant organization in the country</li> <li>• Explore options of bulk importations of antigens</li> </ul> |
| Drought can impact the effectiveness of the control program                            | To schedule the vaccination campaigns in the appropriate phase of the drought cycle                                                                                                                                                                                                                                                                                        |
| Influx of livestock from Kenya into the control areas during drought                   | Vaccinating the incoming animals                                                                                                                                                                                                                                                                                                                                           |

*Table 6: Major assumptions of the proposed control plan*

| Assumptions                                                                                   |
|-----------------------------------------------------------------------------------------------|
| Budget and resources for the control plan are available on time                               |
| Livestock-keepers are willing to get their cattle vaccinated                                  |
| Movement of animals from non-control zones into the control zones is regulated and controlled |

## 4 MONITORING AND EVALUATION OF IMPACT AND IMPLEMENTATION

### 4.1 Indicator(s), target and means of verification for the strategic objective

| Activity description  | Description                                                                                         | Indicator                                                   | Target                                                              | Means of verification                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategic objective   | Achieve PCP-FMD Stage 2 in 2023 by implementing Risk Based FMD Control Strategy                     | PCP-FMD stage 2 achieved for priority export sourcing areas | PCP-FMD stage 2 achieved for priority export sourcing areas by 2023 | <ul style="list-style-type: none"> <li>• PCP-FMD self-assessment Stage 2</li> <li>• PCP-FMD assessment at regional roadmap meeting in 2023</li> </ul> |
| Component objective 1 | Strengthening the diagnostic capacity at both NAHDIC and regional laboratory level                  |                                                             |                                                                     |                                                                                                                                                       |
| Tactic 1.1            | Capacitate NAHDIC to conduct and coordinate FMD diagnosis, surveillance and outbreak investigations | % of FMD cases from RVLs tested and confirmed               | 100% of reported FMD cases from RVLs tested and confirmed           | <ul style="list-style-type: none"> <li>• Monthly outbreak reports</li> <li>• Lab results from NAHDIC</li> </ul>                                       |
| Tactic 1.2            | Capacitate regional laboratories to conduct FMD diagnosis, surveillance and outbreak investigations | % of reported FMD cases investigated and screened           | 100% of reported FMD cases investigated and screened                | <ul style="list-style-type: none"> <li>• Monthly outbreak reports</li> <li>• Lab results from RVL</li> </ul>                                          |
| Component objective 2 | Strengthen and improve the ongoing surveillance system for FMD                                      |                                                             |                                                                     |                                                                                                                                                       |
| Tactic 2.1            | Improve the understanding of epidemiological situation of FMD across the country                    | % of outbreaks reported                                     | 100% of outbreaks reported                                          | <ul style="list-style-type: none"> <li>• Analytical report of the epidemiological situation</li> </ul>                                                |
|                       |                                                                                                     | # of sero-monitoring survey conducted annually              | 2 sero-monitoring survey conducted annually                         | <ul style="list-style-type: none"> <li>• Sero-monitoring survey report</li> </ul>                                                                     |
|                       |                                                                                                     | # of research papers produced on FMD annually               | 1 research papers produced on FMD annually                          | <ul style="list-style-type: none"> <li>• Research paper reports</li> </ul>                                                                            |
| Tactic 2.2            | Monitor the progress of the control program through surveillance                                    | # of sero-monitoring surveys conducted annually             | 2 sero-monitoring surveys conducted annually                        | <ul style="list-style-type: none"> <li>• Sero-monitoring survey report</li> </ul>                                                                     |
| Tactic 2.3            | Define the FMD control zone that meets OIE zoning standards                                         | FMD control zone defined and approved                       | FMD control zone defined and approved by 2023                       | <ul style="list-style-type: none"> <li>• Control zone approval by OIE</li> </ul>                                                                      |
| Component objective 3 | Strengthen the prevention and control system in prioritized sourcing areas                          |                                                             |                                                                     |                                                                                                                                                       |

|                       |                                                                                                               |                                                                                |                                                                                                                                          |                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Tactic 3.1            | Target population is protected against FMD through mass vaccination campaigns                                 | % cattle vaccinated, including booster dose                                    | 100% of cattle have received vaccination and booster dose                                                                                | <ul style="list-style-type: none"> <li>• Vaccination progress report</li> </ul>                             |
|                       |                                                                                                               | % of the target cattle with protective immunity from FMD                       | 80% of the target cattle have developed protective immunity FMD infection                                                                | <ul style="list-style-type: none"> <li>• Sero -monitoring report on sampled cattle</li> </ul>               |
| Tactic 3.2            | Biosecurity will be established and implemented at primary market level, feedlots, abattoirs and quarantines. | % of identified facilities along the value chain implementing biosecurity SOPs | 100% of identified facilities along the value chain (primary markets, feedlots, abattoirs and quarantines) implementing biosecurity SOPs | <ul style="list-style-type: none"> <li>• Inspection report of facilities based on developed SOPs</li> </ul> |
| Component objective 4 | Improve the legislation framework                                                                             |                                                                                |                                                                                                                                          |                                                                                                             |
| Tactic 4.1            | Legislations for implementation of animal health programs are enacted and enforcements are established        | # of endorsed and enforced proclamation and regulations                        | 1 endorsed and enforced proclamation and 7 regulations                                                                                   | <ul style="list-style-type: none"> <li>• Proclamation and regulation document</li> </ul>                    |
|                       |                                                                                                               | Ministerial directive developed on FMD control                                 | Ministerial directive developed on FMD control and rolled out by July, 2019                                                              | <ul style="list-style-type: none"> <li>• Ministerial directive</li> </ul>                                   |

## 5 OPERATIONAL PLAN

### 5.1 Organization of FMD control

The organization of the FMD national control program relies on strong coordination of various stakeholders at federal and regional level. In addition, the success of surveillance and control activities relies on building capacity and linkages across National Animal Health Diagnostics and Investigation Centre (NAHDIC), NVI, regional laboratories and MoLF.

In order to implement the execution of this national control program, a program management unit (PMU) that is overseen directly by the state minister shall be setup. A steering committee, technical advisory committee and regional committees will be established, which will meet regularly to review the execution of control plan and also to steer, provide guidance to PMU. These meeting will be organized by the PMU. A pictorial representation of the governance structure is shown in figure 5.

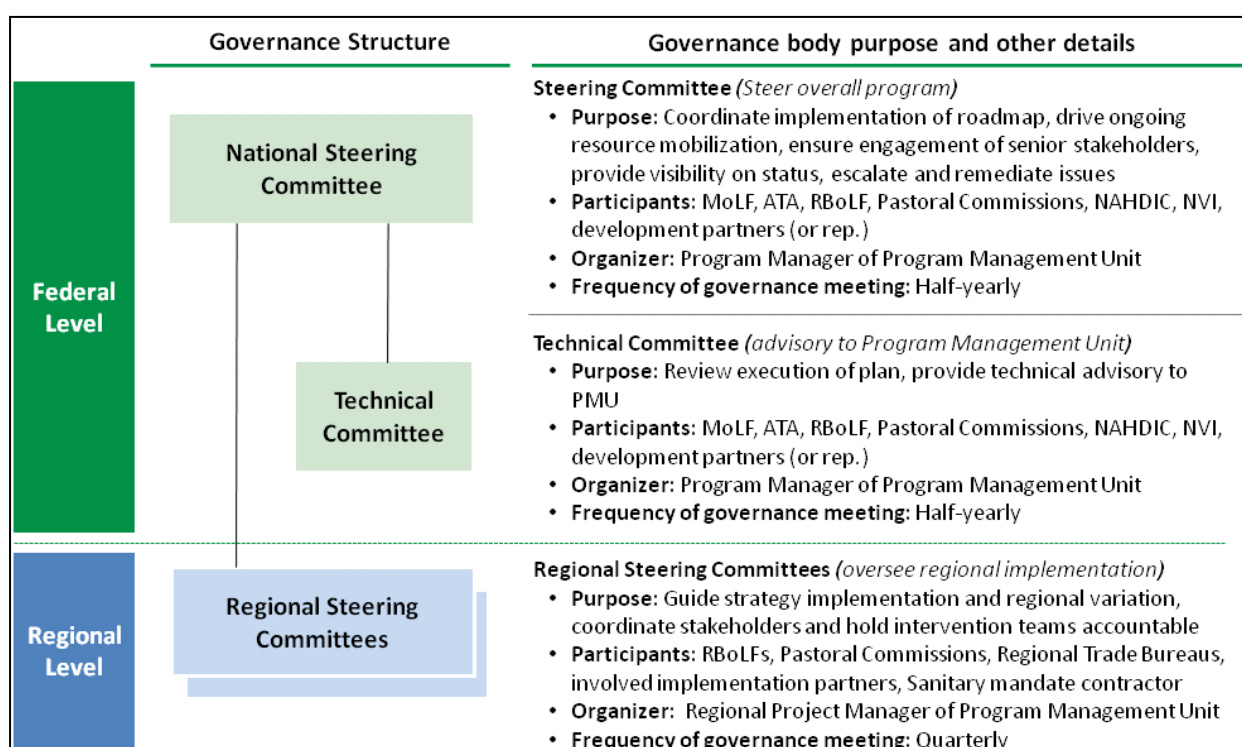
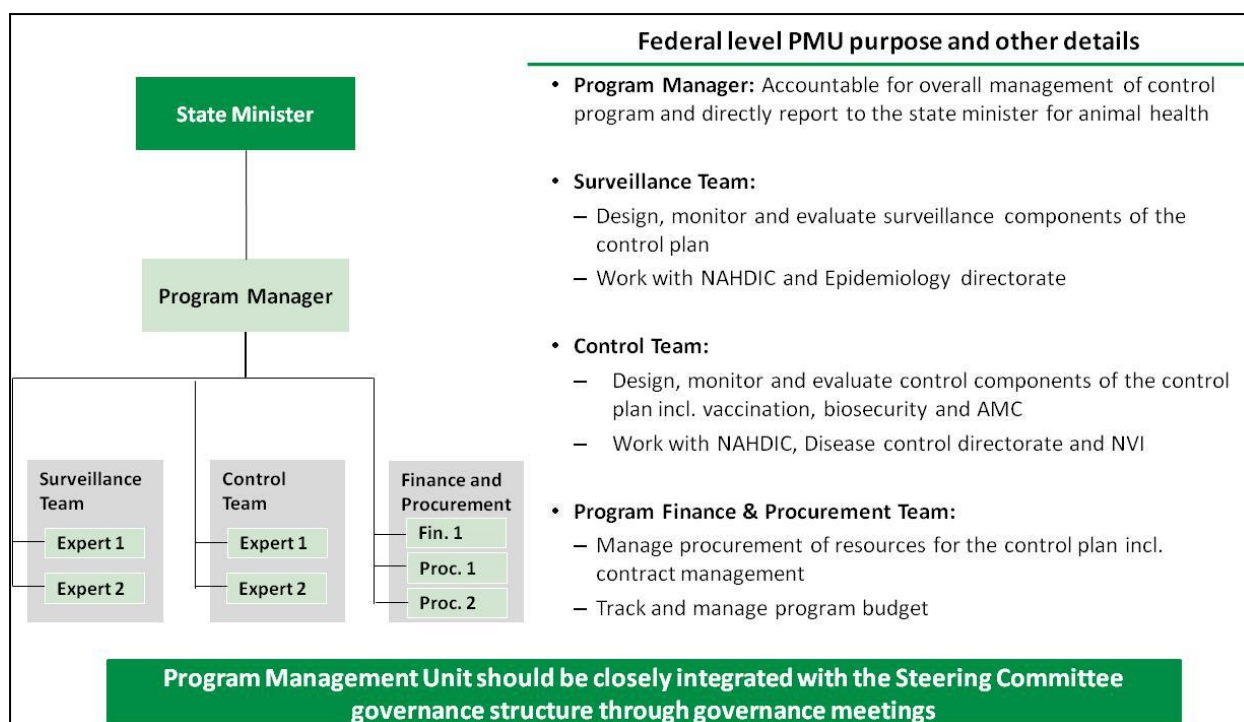


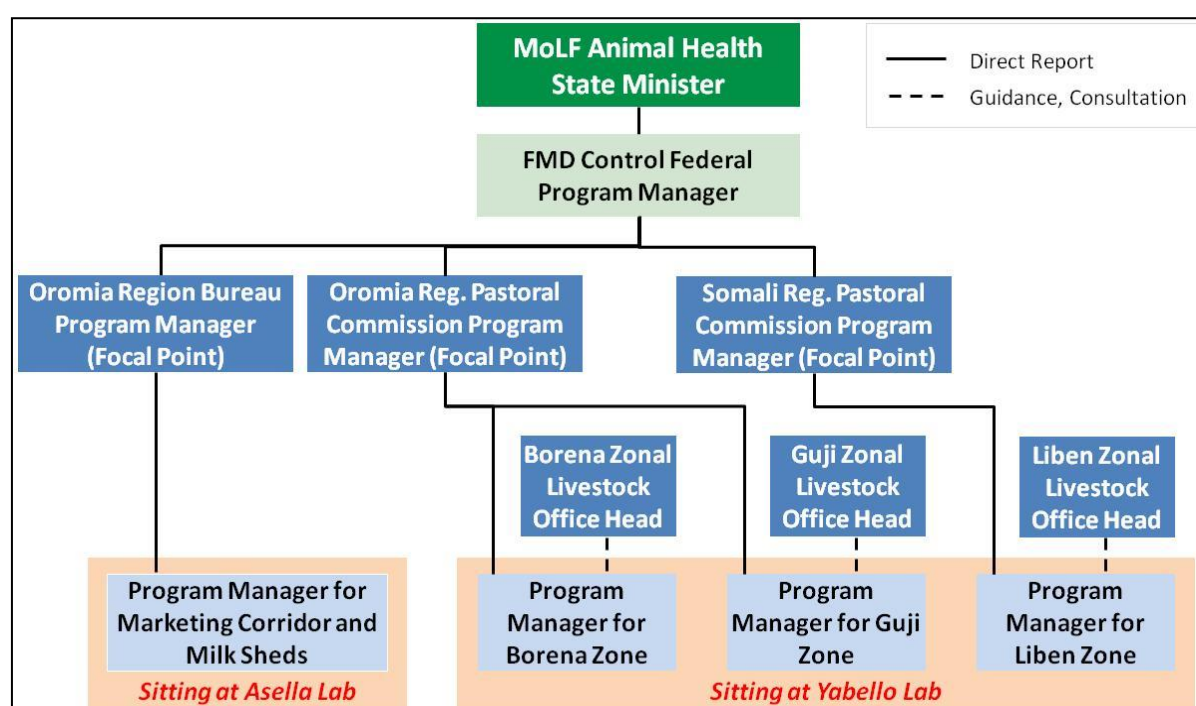
Figure 5: Governance structure for the proposed national control program

PMU will consist of a program manager and four internal teams for surveillance, disease control, regional coordination for on-ground implementation and finance and procurement. The surveillance team will closely work with NAHDIC and the Epidemiology directorate at MoLF to execute effective surveillance through the control period. A close coordination of the control team with NAHDIC, NVI and disease control directorate at MoLF is required to ensure all control activities are effectively carried out. A schematic of the organizational structure of PMU at the federal level is shown in figure 6.



**Figure 6: Organization structure for the proposed Program Management Unit at Federal Level**

Program Managers should be located in the zones where the control plan is implemented and will work with regional laboratories, zonal and woreda veterinary structures to coordinate and manage the overall implementation of control plan. The administrative zones where the control plan will be implemented should be decided based on the epidemiological study at the beginning of the program. At regional level, program managers coordinating implementation will report to federal program manager and respective zonal bureau heads. A schematic of organizational structure at regional level is shown below in figure 7 for illustration.



**Figure 7: Organization structure for the proposed Program Management Unit at Regional Level**

Implementation of vaccination campaign shall be outsourced to a sanitary mandate contractor and only the execution of this contract will be monitored by PMU.

The next section details the implementation activities required for executing the country's initial five year control plan described earlier.

## 5.2 Implementation Table

| <b>Component objective 1: Set-up Program Management Unit</b>                                                                        |                      |                   |                    |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|
| Output 1: Recruit and capacitate the unit                                                                                           |                      |                   |                    |
|                                                                                                                                     | <b>Timeline</b>      | <b>Cost (USD)</b> | <b>Responsible</b> |
| <b>Activity 1.1.1:</b> Recruit the staff required for the unit                                                                      | Mar - Jun '18        |                   | MoLF               |
| <b>Activity 1.1.2:</b> Procure and establish the office facility at federal and regional level                                      | Mar - Jun '18        |                   | MoLF               |
| <b>Activity 1.1.3:</b> Procure the vehicles, field and lab equipment for the overall program (as listed in the respective sections) | Jul – Dec '18        | -                 | PMU                |
| <b>Activity 1.1.4:</b> Procure the consumables and reagents required for the overall program (as listed in the respective sections) | Annually (recurring) | -                 | PMU                |
| <b>&lt;Operating expenses for PMU&gt;</b>                                                                                           |                      | 0.3 MN            |                    |
| <b>&lt;Salary for PMU &gt;</b>                                                                                                      |                      | 0.4 MN            |                    |

| <b>Component objective 2: Strengthening the diagnostic capacity at both NAHDIC and regional laboratory level</b>                                                  |                      |                   |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|-----------------------------------|
| Output 1: Capacitate NAHDIC to conduct and coordinate FMD diagnosis, surveillance and outbreak investigations                                                     |                      |                   |                                   |
|                                                                                                                                                                   | <b>Timeline</b>      | <b>Cost (USD)</b> | <b>Responsible</b>                |
| <b>Activity 2.1.1:</b> Annually assess the consumable and reagent requirements of NAHDIC and regional laboratories                                                | Annually (recurring) | -                 | NAHDIC (in coordination with PMU) |
| <b>Activity 2.1.2:</b> Consumables and reagents required by NAHDIC and regional laboratories for FMD diagnosis and surveillance will be procured and disseminated | Refer Activity 1.1.3 | 0.4 MN            | PMU (disseminated by NAHDIC)      |
| <b>Activity 2.1.3:</b> Logistical gaps of NAHDIC to be addressed by provision of additional vehicles for transportation                                           | Refer Activity 1.1.3 | 50,000            | PMU                               |

|                                                                                                                                                                                     |                                                                      |                |                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------|
| <b>Activity 2.1.4:</b> Support the implementation of quality management systems in the regional laboratories                                                                        | Quarterly (recurring)                                                | -              | NAHDIC                                                                                    |
| <b>Activity 2.1.5:</b> Prepare training content and provide training to regional laboratories on disease investigation, sample collection, handling and testing                     | Annually (recurring)                                                 | 1,300          | NAHDIC                                                                                    |
| <b>Activity 2.1.6:</b> Organize regular epidemiology-laboratory network meeting to steer the surveillance and diagnostic activities of control plan                                 | Bi-annually (recurring)                                              | 6,800          | NAHDIC; Epidemiology directorate                                                          |
| <b>Activity 2.1.7:</b> Regularly attend the laboratory network meeting organized for the IGAD region                                                                                | Annually (recurring)                                                 | 28,000         | NAHDIC                                                                                    |
| Output 2: Capacitate regional laboratories to conduct FMD diagnosis, surveillance and outbreak investigations                                                                       |                                                                      |                |                                                                                           |
| <b>Activity 2.2.1:</b> Equipment required by regional laboratories will be procured                                                                                                 | Refer Activity 2.1.2                                                 | 130,000        | PMU                                                                                       |
| <b>Activity 2.2.2:</b> Prepare training content and provide training for veterinary field staff on disease investigation, sample collection and submission to regional laboratories | Dec '18 -Jan '19 for content preparation; Feb – Jun '19 for training | -              | NAHDIC (supported by PMU) prepare the content; Regional laboratories deliver the training |
| <b>Activity 2.2.3:</b> Implement quality management systems in the regional laboratories                                                                                            | Continuous                                                           | 5000/ yr./ lab | Regional Laboratories with support from NAHDIC                                            |
| <b>Activity 2.2.4:</b> Ensure reliable internet and power supply is available for the regional laboratories                                                                         | Jul-Dec '18                                                          | 5000           | Regional Laboratories with support from PMU                                               |

|                                                                                                                    |                 |                   |                          |
|--------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|--------------------------|
| <b>Component objective 3:</b> Strengthen and improve the ongoing surveillance system for FMD                       |                 |                   |                          |
| Output 1: Improve the understanding of epidemiological situation of FMD across the country                         |                 |                   |                          |
|                                                                                                                    | <b>Timeline</b> | <b>Cost (USD)</b> | <b>Responsible</b>       |
| <b>Activity 3.1.1:</b> Complete the analysis of samples obtained from STSD project                                 | Sep – Dec '17   | 116,500           | NAHDIC                   |
| <b>Activity 3.1.1:</b> Develop baseline serotype distribution maps based on the results obtained from STSD project | Jan – Apr '18   | -                 | Epidemiology Directorate |

|                                                                                                                                                                                                                                                 |                            |                                |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------|-----------------------------------|
| <b>Activity 3.1.2:</b> Conduct baseline survey to determine the immunity level and identify the circulating serotypes in the target export sourcing areas                                                                                       | Sep – Dec '18              | 10,000 (assuming 1200 samples) | Epidemiology Directorate          |
| <b>Activity 3.1.3:</b> Identify the epidemiological units in export sourcing areas and prioritize the control plan by first focusing on these epidemiological units and later moving to other parts of sourcing areas                           | Jan- Mar '19               | 1600                           | Surveillance team in PMU          |
| <b>Activity 3.1.4:</b> Annually update the distribution maps based on the epidemiological information obtained from the outbreak investigations                                                                                                 | Annual (recurring)         | -                              | Epidemiology Directorate          |
| <b>Activity 3.1.5:</b> Develop and implement standard operating procedures for sample collection, outbreak investigation and diagnosis procedures.                                                                                              | Annual (monthly recurring) | 3000/yr.                       | PMU; NAHDIC                       |
| <b>Activity 3.1.6:</b> Train Kebele and woreda animal health workers on disease recognition, participatory disease surveillance and reporting                                                                                                   | Annual (recurring)         | 5000/yr.                       | Regional Coordination Unit        |
| <b>Activity 3.1.7:</b> Train CAHWs on disease recognition, reporting and awareness creation among the communities                                                                                                                               | Annual (recurring)         | -                              | Regional Coordination Unit        |
| <b>Activity 3.1.8:</b> Active surveillance (outbreak investigation) result entry features of DOVAR II will be improved and checked for proper functionality.                                                                                    | Continuous                 | -                              | Epidemiology Directorate          |
| <b>Activity 3.1.9:</b> ADNIS expanded across the country to provide real time disease outbreak notifications to the relevant stakeholders                                                                                                       | Continuous                 | 4,100                          | Epidemiology Directorate          |
| Output 2: Monitor the progress of the control program through surveillance                                                                                                                                                                      |                            |                                |                                   |
| <b>Activity 3.2.1:</b> Enhance sero-monitoring to assess sero-prevalence of the identified target population                                                                                                                                    | Bi-Annual (recurring)      | 46,000                         | NAHDIC                            |
| Output 3: Define the FMD control zone that meets OIE zoning standards                                                                                                                                                                           |                            |                                |                                   |
| <b>Activity 3.3.1:</b> Establish a team and define the terms of reference for the exercise                                                                                                                                                      | May'20                     | -                              | Surveillance team in PMU          |
| <b>Activity 3.3.2:</b> Conduct detailed assessment of epidemiological characteristics of the export sourcing areas and define a zone including proposed intervention plan that meets the requirements of OIE TAHC so as to enter stage 3 of PCP | Jun – Sep '20              | 3,600                          | Identified team in activity 2.4.1 |

| <b>Component objective 4:</b> Strengthen the prevention and control system in prioritized sourcing areas                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                          |                                                                                          |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------|
| Output 1: Target population is protected against FMD through mass vaccination campaigns                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                          |                                                                                          |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Timeline</b>                                                                                                          | <b>Cost (USD)</b>                                                                        | <b>Responsible</b> |
| <b>Activity 4.1.1:</b> At the beginning of the control plan the country will import the required vaccines for 5 years <sup>2</sup> . NVI with the support of MoLF will tender the amount of vaccine required, the amount of vaccine will be determined based on the cattle population in the focus areas and also the number of annual doses to be administered per cattle. Negotiations will be conducted with an international vaccine producer to supply on a year to year basis the required FMD doses. | May '18 – Dec '18 for negotiations and contract signing<br><br>Delivery expected by Aug '19; every half- year after that | 1.6 euro considered per vaccine (including contingency costs to cover processing by NVI) | PMU                |
| <b>Activity 4.1.2:</b> During this period, in house vaccine production plants will be established at NVI. NVI will be responsible in the production of the vaccines based on the FMD virus serotypes that have been identified through the surveillance and monitoring activities. Capacity building including training and knowledge transfer to be facilitated for the new production technology including internal quality control                                                                       | 2018-2023 (1 <sup>st</sup> year planning; followed by construction and operations start-up)                              | 18.5 MN                                                                                  | PMU; NVI           |
| <b>Activity 4.1.3:</b> Explore the potency and efficacy of vaccines administered during the mass vaccination campaigns and based on the results decide on the appropriateness of vaccination schedule                                                                                                                                                                                                                                                                                                       | Twice in five years                                                                                                      | 22000                                                                                    | NAHDIC; VDFACA     |
| <b>Activity 4.1.4:</b> Develop and implement standard operating procedures for storing, handling, transporting and administering vaccines.                                                                                                                                                                                                                                                                                                                                                                  | Mar – May '18                                                                                                            | -                                                                                        | NVI                |

---

<sup>2</sup> can be shorter if in-house production is established soon

|                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |                       |                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------|----------------------------------|
| <b>Activity 4.1.5:</b> Three preventive mass vaccination campaigns including booster for the first year, two preventive mass vaccination campaigns for the remaining years, will be implemented each year targeting cattle in identified epidemiological units of the export sourcing areas and other FMD controlled areas around feedlots, abattoirs and quarantines, preferably through sanitary mandate contracting. | 2019-2023                                            | 5 birr / vaccination  | PMU; Sanitary Mandate contractor |
| <b>Activity 4.1.6:</b> Two booster vaccination campaigns per year for young stock, each one month after the mass vaccination campaigns, will be implemented in identified epidemiological units of the export sourcing areas, and other FMD controlled areas around feedlots, abattoirs and quarantines, preferably through sanitary mandate contracting.                                                               | 2019-2023                                            | 15 birr / vaccination | PMU; Sanitary Mandate contractor |
| <b>Activity 4.1.7:</b> Establish the procedures and protocols to monitor the execution of mass vaccination contracts                                                                                                                                                                                                                                                                                                    | Apr – May '18 to establish procedures and protocols; | -                     | MoLF                             |
| <b>Activity 4.1.8:</b> Use the animal health professional network to monitor the execution of mass vaccination contracts                                                                                                                                                                                                                                                                                                | 2019-2023 ( 1 month per year)                        | 3600/ yr.             | PMU                              |
| <b>Activity 4.1.9:</b> Establish cold chain that cascades to woreda level, to be rolled to ensure the potency and quality of vaccines                                                                                                                                                                                                                                                                                   | Jul '18 – May '19                                    | 37,000                | PMU                              |
| Output 2: The governance for biosecurity and animal movement control will be established and implemented at primary market level, feedlots, abattoirs and quarantines.                                                                                                                                                                                                                                                  |                                                      |                       |                                  |
| <b>Activity 4.2.1:</b> Develop SOPs for biosecurity measures and animal movement control all along the value chain                                                                                                                                                                                                                                                                                                      | Jan – Feb '19                                        | -                     | PMU                              |
| <b>Activity 4.2.2:</b> Enforce and implement the developed biosecurity and animal movement control standards at feedlots, abattoirs, quarantines and primary markets                                                                                                                                                                                                                                                    | Mar – May '19                                        | 11,000                | MoLF                             |
| <b>Activity 4.2.3:</b> Deploy livestock identification and traceability system at primary markets of the export sourcing areas                                                                                                                                                                                                                                                                                          | Continuous                                           | -                     | LITS directorate of MoLF         |
| <b>Activity 4.2.4:</b> Raise awareness in the community for animal movement control employing a communication strategy that                                                                                                                                                                                                                                                                                             | Regular weekly communication before                  | 52,000/ year          | PMU                              |

|                                                                                                                                                                      |                                                                                                |                                                |                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------|
| utilizes mass media (radio), pamphlets/brochures and CAHWs.                                                                                                          | each vaccination campaign for one month through radio broadcasting and pamphlet distribution   |                                                |                                             |
| <b>Activity 4.2.5:</b> Support the cooperation and involvement of IGAD countries, especially Kenya, in aligning and harmonizing the respective national FMD programs | For the first two years, bi-annual regional meetings; remaining years annual regional meetings | 20,000                                         | MoLF; PMU;                                  |
| <b>Activity 4.2.6:</b> Develop an emergency preparedness plan to timely contain FMD incursion into control areas                                                     | Sep – Dec '22 plan is prepared; Validation meeting for 2 days at the end of planning           | 36,000 for consultant costs; 2900 for workshop | PMU (to hire a consultant for the activity) |

| <b>Component objective 5: Improve the legislation framework</b>                                                                                                                                          |                        |                   |                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------|--------------------------------------------|
| Output 1: Legislations for implementation of animal health programs are enacted and enforcements are established                                                                                         |                        |                   |                                            |
|                                                                                                                                                                                                          | <b>Timeline</b>        | <b>Cost (USD)</b> | <b>Responsible</b>                         |
| <b>Activity 5.1.1:</b> Endorse primary and secondary legislations related to disease control, movement control, livestock identification and traceability and establishment of veterinary statutory body | Jun' 17 - Dec '18      | -                 | MoLF                                       |
| <b>Activity 5.1.2:</b> Prepare a ministerial directive for control of FMD in the country and conduct the training                                                                                        | Mar – Jul '19          | 4000              | Prevention and Control directorate of MoLF |
| <b>Activity 5.1.3:</b> Train legislative and executive organs on developed legal framework                                                                                                               | Feb – May '19          | -                 | PMU                                        |
| <b>Activity 5.1.4:</b> Create awareness among public on the animal health legislations through mass media                                                                                                | Bi- Annual (Recurring) | -                 | MoLF; regional officers                    |

## 6 TECHNICAL ASSISTANCE PLAN

### 6.1 Technical Assistance Approach

At this stage technical assistance is required for the implementation of the national control program and support is requested from international development partners, Sub-regional organizations and local institutions.

International organizations that could potentially support implementation of the control plan include FAO, EU-FMD, OIE, BMGF, WB, GALVMED, USAID, ILRI and WRLs. These organizations could help in areas like:

- Reviewing progress in the implementation of the RBCP and recommending on how to proceed to the next OIE stage through mission support
- Providing assistance on conducting technical capacity building trainings for different stakeholders in the veterinary system
- Providing assistance in establishing disease free zone based on OIE standards
- Facilitating access to funding sources and providing funds
- Facilitating vaccine production technology transfer
- Supporting implementation of quality management systems in the regional laboratories

The sub-regional organizations to be requested for technical support include AU-IBAR, IGAD and FAO-ECTAD. These organizations could help in areas like:

- Aligning and harmonizing the respective national FMD programs of neighboring countries
- Supporting and strengthening national veterinary services including regional and referral diagnostic laboratories
- Supporting experience sharing activities on issues like the control of wildlife disease transmission
- Supporting regional baseline mapping and surveillance activities
- Organizing epidemiology and laboratory network meetings
- Supporting improvement ADNIS and DOVAR platforms

The local institutions to be requested for technical support include Universities and NGOs. These institutions could help in areas like:

- Conducting researches to understand the epidemiological situation of FMD in the country
- Supporting on vaccine delivery activities
- Supporting community awareness creation activities on the control plan

The above mentioned technical assistance requests will be made to the respective organizations after the gap analysis is completed by the government in terms implementing the proposed control plan.

## 7 REFERENCES

- Ayelet, G. G. (2012). Study on the epidemiology of foot and mouth disease in Ethiopia. *Rev. Sci. Tech*, 789-98.
- Barry I Shapiro, G. G. (2014). *Livestock Master Plan*. LMP team.
- Beyi, A. (2012). *Costs and benefits of foot and mouth disease vaccination practice in commercial dairy farms in central Ethiopia*. Wageningen : Wageningen University .
- Legese, G. T. (2008). *Live animal and meat export value chains for selected areas in Ethiopia*. Nairobi: ILRI.
- Lyons, N., & Paton, D. (2017). *Technical Support to the Development of a Risk-Based Strategic Plan for FMD Control*. Addis Ababa.
- Otte, M. C. (2002). *Cattle and small ruminant production Sub-Saharan Africa: a systematic review. Livestock information sector analysis and policy branch*. Rome: FOA.
- Tegegne, A. G. (2010). *Livestock input supply and service provision in Ethiopia. Challenges and opportunities for market oriented development*. Addis Ababa: ILRI.
- Thomson, G. (2014). *Development of a Progressive Control Strategy for Foot and Mouth Disease (FMD)*. Addis Ababa.
- Thomson, G. a. (2004). *Foot and mouth disease*. In: Coetzer, J.A.W. and R.C. Tustin (eds), *Infectious Diseases of Livestock, 2nd edn*. Cape Town, South Africa: Oxford University Press.
- Wudu, T. J. (2016). *Bioeconomic Modelling of Foot and Mouth Disease and Its Control in Ethiopia*. Wageningen: Wageningen University.
- Zewudie, S., Asfaw, W., Sahlie, M., Gopilo, A., G/Egziabher, B., Bogale, A., & Demissie, A. (2006). *Foot and Mouth Disease Control Plan*. Addis Ababa.