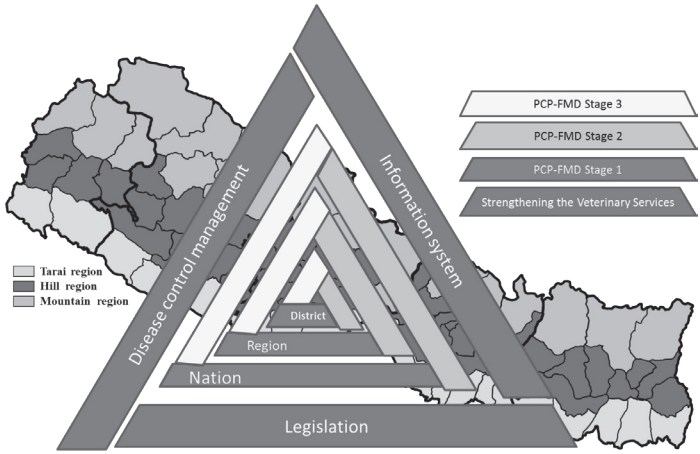
National Control Strategy for the Control of Foot and Mouth Disease in Nepal (2015-2025)



Government of Nepal
Ministry of Livestock Development

Approved by the Honorable Minister on 5th July 2016

Table of Contents

Acronyms

DAH	Directorate of Animal Health
DLS	Department of Livestock Services
DLSO	District Livestock Services Office
ELISA	Enzyme Linked Immunosorbant Assay
EuFMD	European committee for the control of Foot-and-Mouth Disease
FAO	Food and Agriculture Organisation
FAO-RSU	Food and Agriculture Organisation – Regional Support Unit (SAARC, Nepal)
FMD	Foot-and-Mouth Disease
FMD-WG	FMD working group
MOLD	Ministry of Livestock Development
NSP	Non Structural Protein
OIE	World Organization for Animal Health
OIT	Outbreak Investigation Team
PCP-FMD	Progressive Control Pathway for FMD
RDLS	Regional Directorate of Livestock Services
RVL	Regional Veterinary Laboratory
SP	Structural Protein
VEC	Veterinary Epidemiology Center
VS	Veterinary Services

Executive summary

This national control strategic plan (NCSP) for Foot-and-Mouth Disease (FMD) in Nepal has been formulated to implement FMD control in Nepal in a phase wise manner for 2015-2025.

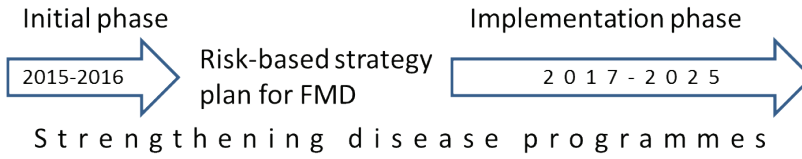
The overall objectives of the NCP are (1) to reduce the impact of clinical FMD in endemic areas of Nepal, (2) to reduce FMD virus introduction and spread in districts with sporadic outbreaks and (3) to increase the competency of the veterinary authority to control FMD. These objectives are in line with the global strategy on FMD control and the agreements made by Nepal within SAARC region.

To achieve these objectives this plan has following three main components:

1. An initial phase to develop a risk-based strategy plan for FMD control. This relates to the expected outcomes of the Progressive Control Pathway (PCP) FMD stage 1, detailed in section 3 and planned for 2015 - 2016.
2. Planning for the implementation of risk-based strategy for FMD control. It is envisaged that FMD control will start in some pilot districts and be scaled up to a region, followed by another region. Within a region, progress on FMD control in some districts may be faster than in other districts. As a result, some districts may move up

into PCP-FMD stage 3 after some years, whereas another district may remain in PCP-FMD Stage 2 longer. The start of the implementation is planned for 2017 and onwards (section 4).

3. Strengthening disease control programmes. This component is supportive to FMD control, however reflects the need to a genuine strengthening of the veterinary authority. Under this component, two projects are defined to be started at the same time as the initial phase (section 5).



With regard to the first component, the initial phase will focus to gather more information on

- understanding the reasons why, the directions, the volume and the seasonal fluctuations of animal movements. Additionally it needs consultation of private and public stakeholders on reasons for animal movements throughout Nepal
- detailed investigations of reported outbreaks of FMD to determine the risk factors for outbreaks, the impact of FMD outbreaks on animal health and livelihoods, and the local response to clinical FMD outbreaks

- extent of recent FMD infection (as opposed to clinical disease) in large, small ruminants and possibly pigs through serological surveys

This information will allow development of a risk-based strategy plan on FMD control, with the aim to focus the limited resources available as effectively as possible.

With regard to the implementation phase, initially the risk-based strategy plan will be applied to two districts in the Eastern region, Ilam and Jhapa, starting in 2016. These adjoining districts constitute different FMD situations with sporadic FMD incidences in Ilam while FMD is considered endemic in in Jhapa. The primary focus will be on the dairy sector. In Ilam, the focal points will be with dairy cooperatives as many dairy farmers are organised within such cooperatives. Whereas in Jhapa, the focus will be on Village Development Committees (VDCs), as only 3% of dairy farmers are members of a dairy cooperative. This pilot approach in these districts will allow to build up its organisational capacity on disease control and partnerships with private stakeholders gradually. It is foreseen that Ilam can move from PCP-FMD Stage 2 into Stage 3 relatively quickly, while for Jhapa district, this may take longer, related to the progress of FMD control in others regions of Nepal.

The third component – strengthening disease control programmes refers in particular to adaptation of the veterinary law with regard to making FMD a notifiable disease in the

whole of Nepal and to strengthen decision making, implementation and evaluation of FMD control.

This plan is in line with the agreements made during the first (2011) and second (2013) regional roadmap meetings for SAARC countries and the global strategy on FMD control. International support for FMD control seems currently within reach. Recently, a MoU was signed between India and Nepal including support to FMD control and this plan is complementary to the current FMD control being undertaken in India.

It needs to be stressed that this plan NCP is a living document and will evolve as new information becomes available as the FMD Control Program is implemented in Nepal over the years to come.

Rationale

Foot-and Mouth Disease is a contagious disease of all cloven footed animals. The disease is endemic in Nepal and frequent outbreaks have been reported in the country throughout the year. This disease is causing substantial economic loss to livestock industry due to morbidity, mortality and impairments of draft power of bullocks thereby threatening the food security and international trade of livestock and its products.

The situation of FMD is similar in most of the SAARC countries. All member countries of SAARC including Nepal has agreed to control FMD from the region by adopting joint FAO and OIE PCP-FMD control approach. Thus this Strategic plan for FMD control has been developed for its implementation in phase-wise manner in the country.

1. Context of FMD control in Nepal

1.1 Progressive Control of FMD

Control of FMD is considered a public good, as FMD affects the livelihoods through high morbidity and some mortality in young animals (calves and kids). The progressive control pathway (PCP) for FMD control is a framework to support countries to define a risk-based strategy plan for FMD control, which takes into account potential shortages of resources (money, manpower and means) by allowing a staged approach to FMD control. It has five defined stages (FAO and OIE joint global strategy on FMD control, 2012) and Nepal is currently considered to be at PCP-FMD Stage 1.

The FMD PCP has been accepted internationally (including by SAARC countries) as providing an appropriate approach to FMD control. The principles of PCP include that it:

- describes rather than prescribes how to control FMD
- uses Risk Analysis principles to promote control activities
- starts with risk/critical control point or sectors identification
- progressively increases the surveillance requirements

Progress in PCP programs depends on the level of resources allocated. The plan can be implemented in stages as per resource availability.

1.2 FMD Situation in the SAARC region

The second regional roadmap meeting on FMD control in SAARC was conducted in India in October 2013. During this meeting, SAARC countries updated the time frame for the implementation of

different stages of PCP-FMD (see Table 1). India has claim to progress from PCP-FMD Stage 3 to Stage 4 by the end of 2014 with the strategy based on mass vaccination throughout the country. The progress of FMD control in Nepal will depend heavily on the progress made in India because of open border and trade of livestock between Nepal and India.

Table 1. Revised time frame for PCP-FMD Road map (2011-2020) for SAARC countries developed in 2013

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bangladesh	1	1	1	2	2	2	3	3	3	4
Bhutan	1	1	1	1	1	2	2	3	3	3
India	3	3	3	3	4	4	4	4	4	4
Nepal	1	1	1	1	1	2	2	2	2	3
Sri Lanka	1	1	1	2	2	2	3	3	4	4

1.3 FMD situation in Nepal

Information on FMD in Nepal is based on reported outbreaks of clinical FMD. In 2013, a total of 266 reports were received with 100 reports from Central, 12 from Eastern, 17 from Far-Western, 21 from Mid-Western and 116 from Western region (Figure 1). Proportionally most outbreaks were from hilly districts (69%). Additionally 20% were from Terai and 11% from Mountain zones. The majority of outbreaks were reported in large ruminants (186), 66 in small ruminants and 13 in pigs. In Eastern region, there was 1 outbreak reported in Ilam district and 5 in Jhapa. When comparing the last 10 years (2004-2013), the number of reported outbreaks in Ilam was 12 compared with 169 in Jhapa.

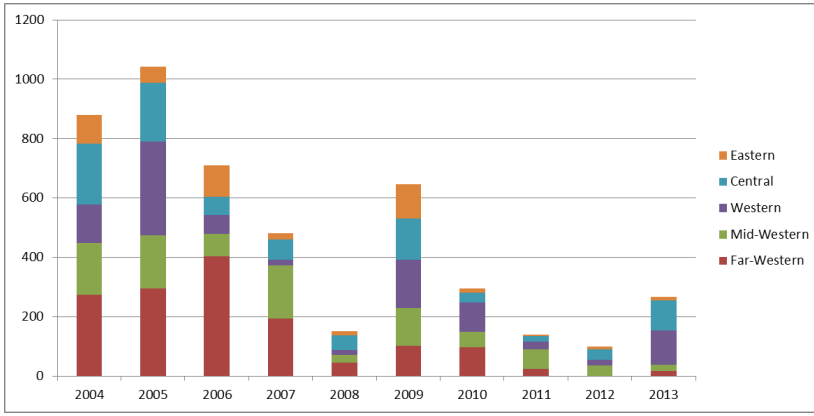


Figure 1. Number of FMD reported outbreaks by year and region between 2004 and 2013

The district with most outbreaks reported in 2013 was Parbat in Western region while the following districts reported FMD outbreaks every year between 2004 and 2013: Kathmandu (C), Dhading (C), Makwanpur (C), Kaski (W) and Jhapa (E) and 9 times during this 10 year period: Doti (FarW), Jumla (MidW), Tanahun (W), Chitwan (C), Rautahat (C), Bhaktapur (C) (red colour in Figure 2). It needs to be noted that the level of reporting is the result of the presence of clinical FMD in a district in combination with the performance of the reporting functionality in that district.

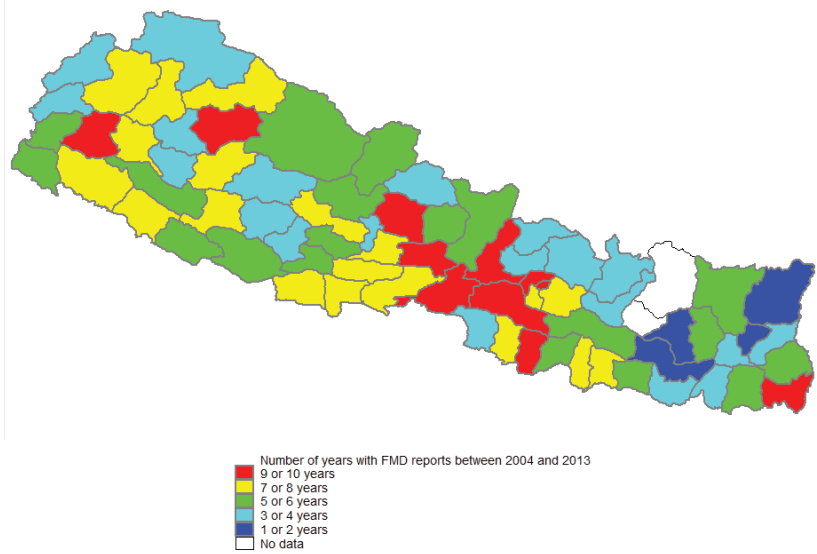


Figure 2. Map of districts indicating the number of years between 2004 and 2013 when FMD was reported.

1.4 Economic losses due to FMD in Nepal

The economic losses due to clinical FMD have been crudely estimated to be 94806 NRS per affected household, mainly due to loss of milk production (HERC, 2014). Similar results were estimated based on rapid assessments during the real-time training program on FMD jointly organized by Department of Livestock Services, Nepal, Department of Agriculture, Australia and FAO/EUFMD (2012-2014). An overall estimate of economic losses per year for Nepal is difficult to assess as it requires detailed recording of the number of affected households per reported outbreak. It is estimated that between 20 and 40% of households within an (village) outbreak suffer clinical FMD. However the number of households may vary from 50 to 200 per village.

Mitigation of the impact of FMD is possible at relatively low cost through a well-designed control strategy, including training of technical staff at VDC and district level and awareness campaigns for livestock holders.

2. Overall objectives of FMD control strategy

The overall objectives for FMD control strategy shall be

- To reduce the impact of clinical FMD in endemic areas of Nepal,
- To reduce FMD virus introduction and spread in districts with sporadic outbreaks,
- To increase the competency within Nepal to control FMD.

3. Initial phase of the National Control Plan

This phase refers to the activities needed to support the risk analysis to define risk hotspots in order to develop a risk-based strategy plan for FMD control. During its 2-year phase (2015-2016) the following subjects are prioritized for further elaboration:

3.1 Outbreak investigation and local response

The objectives for outbreak investigation and local response are to establish the capacity to conduct full outbreak investigations in order to describe the magnitude, pattern, impact and risk factors of clinical FMD and to swiftly mitigate the direct loss due to an FMD outbreak.

The expected outcomes are that outbreak investigations will commence within 48hrs of the first report of clinical FMD, followed by the submission of good samples for serotyping, virus isolation and characterisation, and the collation of accurate information, including the quantification of the impact due to FMD.

Based on defined procedures for an outbreak response, enhanced biosecurity, farmer awareness, emergency vaccination and movement control will be implemented. It is stressed that controlling FMD is both in the hands of the veterinary authority as well as the local community.

These activities shall be achieved by

- *development of Standard Operating Procedures (SOP) for conducting outbreak investigations and training staff in their use*
- *installation of an outbreak investigation team (OIT) at regional/district level with back up from central level*
- *additional training of local staff (district and VDC level) on specific aspects of outbreak investigation and response, including biosecurity*
- *effective communications with all stakeholders about the outbreak*
- *restriction of animal movements out of outbreak areas*
- *emergency vaccination, through farmer groups/dairy cooperatives.*

3.2 NSP serological survey

The objectives for serological surveys shall be to

1) access the level of FMD infection as a baseline for further implementation of the FMD control strategy and
2) evaluate the impact of the FMD control strategy over time.

The expected outcomes include quantification of the level of FMD infection in the different species, age groups, production systems and locations for use as reference to monitor the impact of the FMD control strategy over time and the quantification of putative risk factors for FMD infection.

This activity shall be achieved by selection of animals between 6 and 24 months of age, as indication for recent FMD infection

- *collection of additional data on animal characteristics (age, species, introduction), household (feeding practices, GPS coordinates) and unit characteristics (vaccination and FMD outbreak history)*
- *NSP testing at regional or FMD laboratory*
- *proficiency testing between laboratories to ensure consistency of laboratory results*
- *training of technicians on sampling, collection of outbreak investigation data and biosecurity.*

3.3 Value chain analysis

The objective of this activity shall be to understand the FMD risk in relation to animal distributions, animal movements, animal products, animal management systems and feed. It includes all FMD susceptible species in particular large ruminants (cattle and buffaloes), small ruminants (sheep and goats) and pigs.

The expected outcome is to have information on animal movements in terms of numbers, species, directions and animal distribution available to further support development and implementation of the FMD strategy.

This activity shall be achieved by:

- *discussion with traders (at district and service centre level) to understand the pattern of animal trading (direction, numbers, species, age groups)*

- *requesting traders to keep the information on a weekly basis (numbers of animals, species, origin, destination)*
- *establish inter-ministerial coordination between the Ministry of Agriculture Development and the Ministry of Local Development to facilitate record keeping by traders*
- *collection of information on animal population distribution from the service centres*
- *mapping the movements of animals to and from markets, the distribution of animal species and the milk collection centres.*

3.4 Risk analysis and developing a risk-based strategy plan for FMD control

The objective of this activity shall be to develop a risk-based strategy plan from information generated from previous sections by identifying areas of higher incidence of infection with FMD.

The expected outcome is identification of areas of high incidence of FMD and introduction of FMD, based on FMD occurrence and production systems (sectors). This will allow for the development of a risk-based strategy plan for FMD control which in turn will reduce the impact of clinical FMD in FMD endemic areas and prevent the introduction of FMD virus to areas with sporadic FMD outbreaks.

These activities shall be achieved by:

- *compilation of data and information generated by outbreak investigation, the NSP sero-survey and the value-chain*

analysis in order to identify risks for FMD virus introduction and spread

- *identification of critical control points for FMD virus introduction and spread.*

3.5 Awareness and extension

The objective of this activity shall be to create awareness about FMD and its prevention and control among stakeholders (farmers, technicians, traders, industry and security personnel) to ensure early reporting and so reduce transmission and the impact of FMD.

The expected outcomes are that clinical FMD is early reported allowing for swift response (initiated by local stakeholders) reducing transmission and impact of clinical FMD.

This activity shall be achieved by:

- *Use of training modules for:*
    - *farmers (including cooperatives, milk collectors, swine entrepreneurs) on the recognition of FMD, impact, best hygiene practices and preventive measures*
    - *technicians on recognition of FMD, stages of FMD lesions, sample collection (in relation to stage of lesion), personal and farm biosecurity measures, risk factors, reporting, vaccination*
    - *traders and market contractors on recognition of FMD, best hygiene practices for markets, economic impact, restrictions in case of FMD outbreak*

- *security personnel, local bodies on recognition of diseased livestock, health certification and their roles and responsibilities*

- *Development of extension resources with consistent key messages for dissemination through all available mediums*

3.6 Management of animal markets

The objective of this activity shall be to improve management of the animal markets to reduce the risk of disease spread through these locations by improving the design of the markets, implementation of biosecurity measures and restricting access of diseased animals to the market.

The expected outcomes are improved design and construction of animal markets based on principles of segregation and biosecurity and raised awareness of market managers plus traders of the risk of disease transmission through marketing of animals.

This activity shall be achieved by:

- *improved design and construction of the animal markets by private-public partnership model and/or market operators and traders*
- *registration of animals at entry*
- *compliance with health certificate issued by district of origin based on health/vaccination status*
- *facilities for clinical examination of each animal individually at entry point*

- *facilities for segregating animals by species*
- *provision of cleaning and disinfection facilities of market ground and vehicles used to transport animals*
- *facilities for the quarantine of disease-suspected animals and to treat or sample*
- *provision of live animal market management committee to manage the market*
- *reporting system for the number of animals sold, origin of animals, disease events, samples collected and sent, every month.*

4. Planning for the implementation of the FMD risk-based strategy

Based on outcome of the initial phase, it is envisaged that the FMD control programme shall be started in pilot areas and shall be further extended in stages across the country. The argument for the pilot approach is because of great variety of livestock production systems in Nepal while the capacities and resources are limited. This requires a gradual expansion of the risk-based strategy for FMD control across Nepal. As a result, the mid and long term strategy on FMD control foresees a stepwise implementation (see Table 2).

Pilot 1 in Eastern district

Once the initial phase is completed (end of fiscal year 2015/16), FMD control shall be implemented based on the risk-based strategy plan for these two districts (PCP-FMD Stage 2).

Pilot 2 in Far Western districts: Far-Western districts Kanchanpur, Kailali.

Again a preparatory phase of 2 years shall be conducted and when finished (2017/18), FMD control will be implemented in these districts. Extension of the programme to the rest of the country, based on current knowledge, is proposed to proceed in the following order:

Eastern region

Starting two years after the start of FMD control in Ilam and Jhapa, a one year preparatory phase is foreseen in Eastern region, followed by implementation of a risk-based strategy (2019/2020)

Far-Western region

Starting two years after the start of FMD control in Kanchanpur and Kailali, a one year preparatory phase is foreseen in the Far-Western region, followed by implementation of a risk-based strategy (2020/2021)

Mid-Western region:

One year preparatory phase shall start in 2020/21, followed by implementation of FMD control starting 2021/22

Western region*:*

One year preparatory phase shall start in 2021/22, followed by implementation of FMD control starting 2022/23

Central region:

One year preparatory phase shall start in 2022/23, followed by implementation of FMD control starting 2023/24

5. Strengthening Disease Control Programmes

Under this section, following two areas of work are foreseen. These relate to a genuine strengthening of the veterinary services to implement disease control and are in line with the 2nd component of the Global Strategy for FMD control.

5.1 Legislation

Legislation will be prepared to support disease control programmes in line with OIE guidelines and to ensure their uniform application. The starting point will be to make FMD a notifiable disease. In addition, legislation will support identification and registration of the animal population (per holding, villages), the control of animal movements, and veterinary control of animal markets and strengthen the disease reporting system.

5.2 Organisation of disease control

DLS shall create an expert group (task force) in order to assist in the development and implementation of the FMD control programme. This task force ensures that technical expertise from across the different, yet relevant directorates and offices within the DLS are integrated. Effective control of animal diseases is with DAH, using the authority of DLS. The task force will draft SOPs required to implement the disease control strategies and the task force is required to forward scientifically sound disease control plans for policy

determination by a steering committee headed by the secretary of MoAD. DLS may seek technical, physical and financial support, after approval of the MoAD, from national or international organisations. DLS may contract out assigned tasks under the disease control programme.

Table 2. Overview of planned activities by pilot districts and regions by years. Planned activities refer to a preparatory phase (red color, similar to PCP-FMD Stage 1) and to an implementation phase (orange and green color, similar to PCP-FMD Stage 2 and 3).

REGIONs	PHASEs	PROGRESSION										
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Central	Implementation Central Region										Sporadic PCP 2	Endemic distr.- PCP 2	
	Preparation Central Region									PCP 1			
West	Implementation West Region										Sporadic	Endemic distr.- PCP 2	
	Preparation West Region								PCP 1				
Middle West	Implementation Middle West Region								Sporadic - PCP 2	Sporadic - PCP 3	Endemic distr.- PCP 2		
	Preparation Middle West Region							PCP 1					
Far West	Implementation Far West Region							Sporadic PCP 2		Sporadic - PCP 3	Endemic distr.- PCP 2		
	Preparation Far West Region						PCP 1						
East	Implementation East Region						Sporadic - PCP 2			Sporadic districts - PCP 3	Endemic districts PCP 2		
	Preparation East Region					PCP 1							
Far West *pilot*	Implementation phase Far West *pilot districts*						Sporadic - PCP 2			Sporadic distr - PCP 3	Endemic distr.- PCP 2		
	Preparation phase Far West *pilot districts*				PCP 1								
East *pilot*	Implementation phase (East) *pilot districts (Ilam and Jhapa)*				Sporadic - Ilam PCP 2				Sporadic Ilam - PCP 3				
	Preparation phase (East) *pilot districts (Ilam and Jhapa)*							Endemic Jhapa - PCP 2					
			PCP 1										

6. Requirements

The following are required for the successful implementation of this strategy document. These requirements shall be provided at the appropriate stages of the implementation:

In general:

- *Support for field technicians and veterinarians to undertake outbreak investigation including provision of sample collection kits, GPS devices, training and biosecurity materials.*
- *Data management software and training.*
- *Contract with technicians (for sampling and information collection to ensure quality data and within required timeframe).*
- *Support to FMD and regional laboratories to undertake the necessary testing, this will include proficiency testing, consumables and training.*
- *Training on risk analysis (qualitative and quantitative).*
- *Consultation with and support of stakeholders (private and public).*
- *Provision of appropriate extension materials on FMD recognition, prevention and treatment and biosecurity.*
- *Regional cooperation to improve cross-border disease control.*
- *Traceability of animals and other risk materials, animal identification, health certification compliance and movement controls.*
- *Availability of quality vaccine and its storage distribution and administration.*

***Measures in outbreaks**:*

- *Defining FMD as a notifiable disease in order to have timely notifications from farmers to technicians to district to higher authority.*
- *Official recognition of the outbreak investigation team as the primary investigation and response authority in case of FMD outbreak.*
- *Equipment for the outbreak investigation team and to support field technicians*
    - *Sample collection kit*
    - *Biosecurity kit*
    - *Standard investigation forms*
    - *GPS devices*
- *Data management (data entry, validation, analysis, reporting) skills through training and use of appropriate software*
- *Controls over the movements of animals*

***Risk based control plan**:*

- *The DLS shall develop and implement a risk based control plan based on this strategy*

The risk based control plan shall include: the number (percentage) of herds subject to control measures, the scheduled duration of the programme, the control and prevention measures implemented, the method for checking the effectiveness of the programme and the national budgetary allocation for the programme.