

FMD Control Strategy for Balochistan, ITC- EU Funded Growth for Rural Advancement & Sustainable Progress (GRASP)

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Executive Summary

FMD is endemic in Pakistan and has been reported in cattle, buffaloes, yak, sheep, goats, feral swine, and wild ruminants (FAO). The disease has been reported from all agro-ecological zones and livestock production systems. Its prevalence has been found to be the highest in urban and peri-urban dairy production systems (FAO). More than 50% of the outbreaks have been reported from dairy colonies especially in Sindh from 2015-20 (FAO). FMD used to have a seasonal pattern in Pakistan and was reported twice a year i.e., at the beginning of summer and winter. However, for the last two decades the disease is being reported all around the year.

FMD is the most economically damaging infectious disease of cattle and buffaloes in Pakistan. The disease results in production losses, mortality in animals and the added cost of treatment of animals once infected. Since FMD is a transboundary disease, it is also trade limiting and export of livestock and livestock products is prohibited to many countries which are at a higher FMD-PCP stage. To tap into international meat and meat product markets, Pakistan under the WTO agreement must comply with the trading country's SPS requirements. Which means that Pakistan cannot export livestock and livestock products to any country which is at a higher FMD Progressive Control Pathway (PCP). Therefore, Pakistan is currently exporting meat to only around 10 countries. According to the FAO, FMD causes annual losses of US\$ 692.9 million to the economy of Pakistan. A large proportion of this loss is suffered in Sindh where the peri-urban and dairy colonies bear the brunt of this disease.

Pakistan has adopted vaccination against FMD along with zoo-sanitary measures as its main policy for control given the geographical location of the country, livestock farming systems, infrastructure, and resources of veterinary services. Pakistan first signed onto the OIE's FMD PCP in 2008. Since then, Pakistan progressed to Stage 2 in 2014, however, since then, the country has been at Stage 2 and has been unable to progress to Stage 3.

To sustain at Stage 2 and move to Stage 3 of the FMD-PCP, actions are required at both the Federal and Provincial levels. At the Federal level, a National FMD Control Program is needed duly approved by the provinces and the Council of Common Interests (CCI). Such a program has been developed and approved by all provinces. It is currently in the process of being presented to and endorsed by the CCI as required by the OIE. Based on the National FMD Control Program it is the responsibility of each province to develop their own FMD Control Strategy. Devolution was undertaken after the passage of the 18th constitutional amendment in 2010. With it, several powers were decentralized and given to the provinces. These included most public services related to agriculture and livestock, including veterinary services which are now the sole purview of the provinces. Since then, it is solely the responsibility of the provinces to develop and implement an FMD control strategy. The governments of both Sindh and Balochistan have taken the lead and are developing the FMD Control Strategy with the assistance of the EU/ITC funded GRASP.

The FMD control strategy developed for Balochistan and contained in the forthcoming sections has the following main components:

- I. FMD Control Strategy Harmonized with National FMD Control Program
- II. Formulation and enactment of provincial animal health regulation harmonized with the Federal Animal Health Law
- III. Close coordination and implementation liaison between Federal and authorities in the provinces
- IV. Provincial FMD implementation and monitoring body

- V. Provinces to upgrade veterinary infrastructure in line with OIE requirements including a multi-year training and capacity building program for veterinary staff
- VI. Multi-year financial commitment by provinces for programs to implement FMD Control through effective surveillance, veterinary services, vaccination program and strong coordination and surveillance system linked with the Federal Government
- VII. Provinces to ensure quality FMD vaccines based on local strains either through imports or local production along with proper production distribution/ cold chain facilities
- VIII. Identification, notification and developing FMD control zones and compartments in provinces in line with OIE guidelines including implementation of the animal identification and tagging system especially in the zones and compartments
- IX. General awareness amongst stakeholders in provinces in the livestock entire value chain (farmers, academia, public and private service providers, exporters etc.)
- X. Develop in the provinces, public and private stakeholders' ownership, coordination, and involvement in the implementation of the FMD Control strategy
- XI. Getting benefits from the FMD control compartments and zones in provinces by linking them with slaughterhouses and using this model to attract investments in the sector through establishing special Dairy production and investment zones in various pockets and clusters in Sindh

In summation, the eradication of FMD is a global issue which is driven by the World Organization for Animal Health (OIE). The program developed by the OIE for FMD eradication and control is known as the Foot and Mouth Disease Progressive Control Pathway (FMD-PCP). Pakistan a signatory of this regime. Therefore, FMD is a coordination and cumulative responsibility of the Federal Government and the Provinces. To create coordination with the OIE, the National FMD Program and Federal Regulatory Framework (Animal Health Act) needs to be approved and enacted as soon as possible. Based on both these elements, the provincial governments need to enact their own law as well as a FMD Control Strategy. The funding for FMD control measure is a national responsibility, therefore funding should be done in a combined manner. Since FMD, is a transboundary disease and limits exports, Federal government should lead this effort and give funding through the annual PSDP.

It is the responsibility of the Balochistan government to develop and implement the FMD Control strategy. To do so, based on the strategy, the GoB should: notify provincial FMD implementation cell, notify identified zones/ compartments and initiate implementation on them, conduct gap analysis, and upgrade veterinary infrastructure and staff and link FMD free compartments/ zones with abattoirs/ processors for meat and meat product exports.

Overview of Foot and Mouth Disease (FMD)

FMD is caused by a virus of the genus *Aphthovirus* and it belongs to the *Picornaviridae* family. There are seven serotypes of the FMD virus, namely O, A, C, SAT 1, SAT 2, SAT 3, and Asia 1. Being infected with any one serotype of FMD does not confer any protection against another. Within each of the seven serotypes, there are many strains.

The disease is an acute, highly contagious viral infection in cattle, buffaloes, sheep, goats, swine, deer, etc. FMD is endemic in most of sub-Saharan Africa and large parts of Asia. Annual global economic cost of FMD has been estimated by the FAO as being between US \$6.5 and US \$21 Billion. The disease has a disproportionate impact on poor farmers who in these regions are dependent on livestock for both income and food security. All these animals are susceptible to the disease and can be infected in a herd or one location. Once infected, the sick animal can recover in two weeks (if the case does not become complicated). The infected animals do, however, remain carriers of FMD for at least for 28 days. The infectious period can also be 3-5 years depending upon the animal involved (the African buffalo can carry the virus for at least for five years) (Pakistan Ministry of National Food Security and Research). The disease is characterized by excessive forth and salivation and the formation of vesicles in the mouth, on the inter-digital space in the feet and occasionally on the teats and on the udder (FAO). Once infected with FMD, milk production may drop by 50% to 70% with mastitis being a common consequence of the infection ((Pakistan Ministry of National Food Security and Research). Clinical signs of FMD are severer in cattle than buffaloes, with sheep and goats usually showing milder signs. Exotic cattle and crossbred cattle are particularly susceptible, with these animals generally showing severe clinical symptoms and even mortality in many cases. The infection also results in an abortion in crossbred and exotic cattle. Young calves are also more susceptible to FMD and have a 10% to 22% mortality rate (Pakistan Ministry of National Food Security and Research).

FMD Progressive Control Pathway (FMD-PCP)

The Progressive Control Pathway for FMD (FMD- PCP) was first applied in 2008 by the EuFMD and FAO and endorsed by the OIE in 2011. The FMD-PCP is a multi-staged tool to assist endemic countries to progressively reduce the impact of disease and virus circulation with the possibility of achieving a disease-free status (with or without vaccination) endorsed by the OIE. The guidelines were updated in 2018 based on lessons learned. In the PCP Stage 1, activities are undertaken to understand the epidemiology and impact of FMD alongside a thorough analysis of production systems and value chains with stakeholder engagement to identify risk hotspots and target control measures to reduce the impact of disease. All these activities culminate in the creation of a Risk Based Control Plan (RBSP), which once endorsed by the Regional Advisory Group (RAG) on advice from the GF-TADs FMD working group, allows the country to progress to PCP Stage 2. Progression to PCP stage 3 involves the creation of an Official Control Plan (OCP) with the aim of reducing virus circulation. To enter PCP Stage 3, a significant amount of investment is required which demonstrates that the country intends to progress further towards FMD freedom and associated trade benefits. The graphics below shows the overall FMD PCP framework, objectives, and outcomes for each of the six PCP stages.

Figure 1: FMD-PCP Framework and Stages



Source: FAO

Figure 2: FMD- PCP Objectives and Outcomes by Stage

PCP stage	Stage objective(s)	Indicator outcome
0	FMD risk not controlled, no reliable information	• To move to Stage 1: Comprehensive plan to study FMD epidemiology
1	Identify risk and control options	• To move to Stage 2: Risk-based Strategic Plan developed
2	Implement Risk-based control	• To move to Stage 3: Aggressive strategy to eliminate FMD developed
3	Implement control strategy to eliminate virus circulation	• To move to Stage 4: No endemic FMD in domestic livestock
4	Maintain zero circulation and incursion	• To move to Stage 5: Apply for official status (OIE) "free with vaccination"
5	Maintain zero circulation and incursions, withdraw vaccination	• Apply for official status (OIE) "free without vaccination" and finish PCP

Source: FAO

The FMD- PCP is not prescriptive, and each country decides their own course in FMD control which can be applied on a national or zonal level. Any decisions on implementation and progression are to be supported through baseline studies on disease impact (implemented in PCP Stage 1), and evidence of

benefits through rigorous monitoring and evaluation (implemented in PCP Stage 2). Due to the high investment needed to enter PCP stage 3, it is critical that before this, an economic assessment is undertaken to ensure that resources are being appropriately allocated along with a long-term vision to achieve disease freedom. It is important to note that such an economic assessment can also indicate that remaining in PCP stage 2 is the preferable option if sufficient benefits are not likely to be realized from the additional investment.

FMD PCP Regional Status

The FMD status of Southeast Asian countries can be found in the table below.

Table 1: FMD Status of S.E. Asian Countries

Country	FMD Status	Remarks
Afghanistan	PCP-FMD Stage 1 (2016)	
India	PCP- FMD Stage 3 (control of virus circulation by active immunization)	Indian FMD control program is endorsed by the OIE
Iran	PCP- FMD Stage 2 (2015)	Iran reported 1044 FMD outbreaks from Jan- Nov 2020. FMD outbreaks are mostly reported at the end of winter and beginning of spring, due to the combination of more intense livestock movements, increased number of small ruminants (newborns) and more suitable climatic conditions.
Cambodia	PCP-FMD Stage 1	455 outbreaks have been reported from all provinces across Cambodia in 2020
China	OIE Endorsed National FMD Control Program	China is currently working to establish FMD free zones with vaccination and will apply for official recognition by the OIE.
Myanmar	PCP-FMD stage 2	Risk-based vaccination in the central area and conducting surveillance and outbreak investigations. Myanmar is also trying to establish FMD control zones near China border (Northern Shan State) for trade purpose.
Lao PDR	PCP-FMD stage 2	FMD Endemic
Vietnam	PCP-FMD stage 3	FMD Endemic
Thailand	OIE Endorsed National FMD Control Program	206 FMD outbreaks were reported in 2020, mainly caused by serotype O. Illegal animal movement had been indicated as the main source of FMD outbreak leading

		to the need for stronger cooperation with other sub-regions
Malaysia (peninsular)	PCP-FMD stage 3	FMD is endemic in peninsular Malaysia and control by vaccination is the main strategy
Mongolia	OIE Endorsed National FMD Control Program	
Philippines	OIE official status of FMD free without vaccination since 2015	Having followed a strict zoning approach since 2002. To maintain its freedom status, Philippines focuses on vigilance, preparedness, and risk-based surveillance.
Singapore	Have been FMD free since its official recognition in 1995.	Remain vigilant through active and passive surveillance on susceptible animals in its livestock farms and wildlife population and maintain import controls on animals and animal products.

Source: FAO and OIE

FMD free zones in Southeast Asian countries where vaccination is not practiced and where it is practiced can be found in the tables below.

Table 2: FMD Free Zone Where Vaccination Is Not Practiced

Chinese Taipei	One zone covering Taiwan, Penghu and Matsu areas, as designated by the Delegate of Chinese Taipei in a document addressed to the Director General in September 2019
Kazakhstan	Five zones as designated by the Delegate of Kazakhstan in a document addressed to the Director General in August 2018 consisting of as follows: – Zone 1 consisting of West Kazakhstan, Atyrau, Mangystau and south-western part of Aktobe region; – Zone 2 including north-eastern part of Aktobe region, southern part of Kostanay region and western part of Karaganda region; – Zone 3 including northern and central parts of Kostanay region, western parts of North Kazakhstan and Akmola regions; – Zone 4 including central and eastern parts of North Kazakhstan region and northern parts of Akmola and Pavlodar regions; – Zone 5 including central and eastern parts of Karaganda region and southern parts of Akmola and Pavlodar regions;
Malaysia	One zone covering the provinces of Sabah and Sarawak as designated by the Delegate of Malaysia in a document addressed to the Director General in December 2003
Russia	One zone designated by the Delegate of Russia in documents addressed to the Director General in August 2015 and March 2016

Source: FAO and OIE

Table 3: FMD Free Zone Where Vaccination is Practiced

Chinese Taipei	One zone consisting of Kinmen County as designated by the Delegate of Chinese Taipei in a document addressed to the OIE Director General in September 2017
Kazakhstan	Five separate zones designated by the Delegate of Kazakhstan in documents addressed to the Director General in August 2016 as follows: <ul style="list-style-type: none"> – one zone consisting of Almaty region; – one zone consisting of East Kazakhstan region; – one zone including part of Kyzylorda region, northern part of South Kazakhstan region, northern and central parts of Zhambyl region; – one zone including southern part of Kyzylorda region and south-western part of South Kazakhstan region; – one zone including south-eastern part of South Kazakhstan region and southern part of Zhambyl region;
Russia	Two zones of Russia as designated by the Delegate of Russia in documents addressed to the Director General in August 2020 as follows: <ul style="list-style-type: none"> – Zone-South including Southern and North Caucasian Federal Districts, consisting of 13 Subjects: Rostov Oblast, Stavropol Krai, Krasnodar Krai, Volgograd Oblast, Astrakhan Oblast, Republic of Kalmykia, Chechen Republic, Republic of Ingushetia, Republic of Dagestan, Kabardino-Balkarian Republic, Karachay-Cherkess Republic, Republic of North Ossetia-Alania, Republic of Adygea; – Zone-Sakhalin consisting of the Island of Sakhalin and the Kurile Islands;
Turkey	One zone as designated by the Delegate of Turkey in a document addressed to the Director General in November 2009.

Source: FAO and OIE

FMD in Pakistan (Serotype and Prevalence)

FMD in Pakistan has been reported in animals since pre-independence, however until the 1970s, due to the seasonality, mild nature (1-5% mortality) and mainly subsistence nature of livestock farming, the disease was not on the national agenda. Since the 1970s as livestock farming has shifted from conventional subsistence farming to some commercial dairy and feedlot farming, the disease has come into more focus in Pakistan. Furthermore, as the local livestock industry has developed, to tap into international markets, Pakistan under the WTO agreement must comply with the trading country's SPS requirements. Which means that Pakistan cannot export livestock and livestock products to any country which is at a higher FMD Progressive Control Pathway (PCP). Therefore, Pakistan can only export meat to around 10 countries.

FMD is endemic in Pakistan and has been reported in cattle, buffaloes, yak, sheep, goats, feral swine, and wild ruminants (FAO). The disease has been reported from all agro-ecological zones and livestock production systems. Its prevalence has been found to be the highest in urban and peri-urban dairy production systems (FAO). More than 50% of the outbreaks have been reported from dairy colonies from 2015-20 (FAO). FMD used to have a seasonal pattern in Pakistan and was reported twice a year i.e., at the beginning of summer and winter. However, for the last two decades the disease is being reported all around the year.

As per the FAO's analysis, from 1952–2020, in Pakistan, serotype O was found to be the most prevalent followed by serotype A and Asia-1. Given the FMD serotypes present in Pakistan, experts believe that to control FMD, serotypes A, O and Asia-1 need to be tackled. Molecular characterization of FMDV serotype A showed the presence of four sub-lineages (Iran 05AFG-07, Iran-05FAR-11, Iran-05SIS-12 and Iran-05BAR-08). For serotype O three sub-lineages (PanAsia-02ANT-10, PanAsia-02PUN-10 and PanAsia-02unnamed) and for serotype Asia 1 only one sub-lineage (Sindh-08) was reported. A serotype that is specific to an Indian strain of serotype O (Inde 2001) has also recently been detected in some districts of KPK and Punjab (Nowshera, Rashakai, Attock and Rawalpindi) (Pakistan Ministry of National Food Security and Research).

The total number of FMD outbreaks in Pakistan and Punjab province as per field veterinary staff are listed in the table below. Data for other provinces is not available as they lack any mechanism for FMD reporting and surveillance.

Figure 3: Reported FMD Outbreaks and Serotypes- Nationally (Punjab)

Year	Total outbreaks Reported Nationally (Punjab outbreak data in brackets)	Serotypes identified Nationally (Punjab data in brackets)				
		O	A	Asia-1	Mixed	Negative
2019	1501 (700)	349 (184)	89 (31)	412 (185)	42 (34)	609 (266)
2018	384 (311)	118 (114)	109 (97)	42 (16)	3 (3)	112 (81)
2017	762 (481)	22 (17)	448 (298)	21 (9)	11 (4)	260 (153)
2016	1656 (614)	604 (233)	200 (57)	380 (145)	38 (13)	434 (166)
2015	1055 (202)	339 (74)	325 (39)	77 (33)	141 (0)	167 (56)

Source: FAO and Planning Commission of Pakistan

According to a country wide sero-surveillance study conducted in 2010-11, there was an overall prevalence of 42% NSP positive cattle and buffalo aged 6-18 months (FAO). The highest prevalence (50%)

was reported from Baluchistan followed by 49% from Sindh, 41% from Punjab, 35% from KPK and 25% from GBT (FAO). According to a sero-surveillance study of two dairy production systems carried out in 2012-13, the prevalence of NSP antibodies was high in dairy colonies production system with an overall prevalence of 74% (FAO). In smallholder dairy production, the prevalence of NSP antibodies was 25.6% (FAO). NSP antibodies were found to be 12.2% in cattle to 64.1% in buffaloes according to a 2016-17 study which was conducted in eight of the highest livestock density districts of Pakistan (FAO).

Significance of FMD in Pakistan (Economic and Trade Limiting Losses)

FMD is the most economically damaging infectious disease of cattle and buffaloes in Pakistan. The disease results in production losses, mortality in animals and the added cost of treatment of animals once infected. Since FMD is a transboundary disease, it is also trade limiting and export of livestock and livestock products is prohibited to many countries which are at a higher FMD-PCP stage.

The FMD virus not only damages the animals but also significantly impacts the livelihoods of poor farmers. These poor farmers in Pakistan depend upon their animals both for income and for food security. According to the FAO, FMD causes annual losses of US\$ 692.9 million to the economy of Pakistan. A large proportion of this loss is suffered in Sindh where the peri-urban and dairy colonies bear the brunt of this disease. The following table gives the economic loss incurred in Pakistan due to FMD across different parameters.

Figure 4: Economic Loss Due to FMD in Pakistan

Parameter	Average loss per animal (US\$)	Affected cattle & buffalo (# Million)	Loss (US\$ Million)
Milk production loss	130	2.7334	355.342
Treatment cost	25	7.9524	198.810
Body condition loss	10	7.9524	79.524
Death in calves	20	0.3864	7.728
Draught power loss	15	3.432	51.480
Total Annual Losses (US\$ Mn)			692.884

Source: FAO Pakistan

FMD is the most important economic animal disease for individual farmers in Pakistan since it can result in both acute and chronic drop in milk production and loss of livestock. The disease is also a major cause for concern amongst the growing number of commercial dairy farmers in Pakistan whose herds of expensive breeds are at high risk.

Besides these losses, FMD is also a major trade limiting disease. Pakistan exported only US\$ 233 million of meat in 2019-20, which is far below neighboring India which has similar conditions but has a higher

FMD-PCP status and thus enjoys meat exports of over US\$ 3 Billion (Pakistan Economic Survey). Due to FMD, exports of livestock and livestock products from Pakistan are currently confined to only 10 countries. To which Pakistan exports fresh, no value-added bovine meat. Total meat exports from Pakistan are less than 0.2% in international trade of over US\$128 billion.

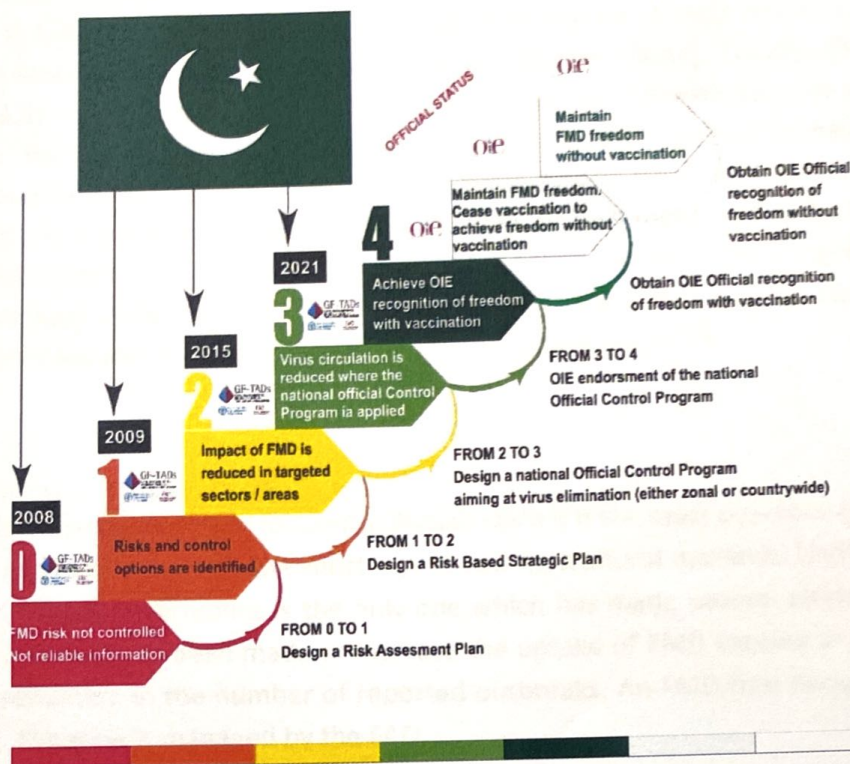
Status and History of FMD in Pakistan

Prior to 2008, Pakistan was at Stage 0 of the PCP when although it was recognized that FMD was endemic in the country however, there was no formal data on the prevalence and distribution of the disease. To address this issue, the FAO in 2008 in collaboration with Federal government initiated several projects during which serological testing was undertaken. This testing allowed the identification of livestock markets and the dairy colonies of Sindh as FMD hotspots. This tentative understanding of the prevalence and distribution of FMD in at least one production system (Dairy) allowed Pakistan progress to Stage 1 in 2009.

From 2009 to 2015, the Federal Veterinary Authorities (FVA) of Pakistan (Animal Husbandry Commissioner) with technical backstopping of the FAO and the USDA accumulated sufficient epidemiological information on FMD. Based on this, a working hypothesis was developed which was then used to develop a Risk Based Strategic Plan (RBSP) in 2014. The RBSP was endorsed by the veterinary authorities of all the provinces. The RBSP for FMD control was presented by the FAO Pakistan team during a joint FAO/OIE FMD Secretariat Meeting. After which Pakistan progressed to Stage 2 of the PCP.

It is important to note that the working hypothesis upon which the RBSP was developed is based entirely upon an understanding of the epidemiology of FMD in commercial, semi-commercial and rural dairy industry. The hypothesis did not take into consideration the possibility of expanding access to livestock products in international export markets. This is extremely important, as Pakistan's main justification to move to stage 3 is the need to access international export markets for its livestock and livestock products. This additional and new strategic objective to facilitate access to international export markets will need to be clearly stated as a national livestock policy objective and will require a different approach towards FMD prevention and control than that which had been initially envisaged at the time Pakistan entered Stage 2.

Figure 5: Pakistan FMD PCP Status (FAO)



Source: FAO, 2020

Pakistan's Approach to FMD Control

Given the geographical location of the country, livestock farming systems, infrastructure and resources of veterinary services, Pakistan has adopted vaccination against FMD along with zoo-sanitary measures as its main policy for control. The main features of this policy are:

1. **Animal movement:** the existing veterinary legal framework does not cover animal movement. In cases of the occurrence of highly contagious disease, restriction on animals and animal product movements can be placed under section 144 of the Pakistan Penal Code. Such a restriction has never been applied for FMD control in the country. In case of FMD, livestock owners are advised against animal movement and animal access to livestock markets may be denied particularly at the time of Eid-ul-Azha.
2. **Biosecurity measures:** there is no legal binding on registration, construction, or design of livestock farms. Biosecurity measures for the livestock farms is only promoted through formal and informal education of farmers. Farmers with commercial interests are usually the only ones who tend to focus on improvement in biosecurity measures.
3. **Vaccination against FMD:** keeping in view the geographical location of the country, mainly subsistence livestock farming system and status of veterinary service of the country, Pakistan opted for disease control rather than eradication. Voluntary FMD vaccination is the current

vaccination policy adopted by all provincial/regional livestock and dairy development departments. To improve vaccination coverage against FMD, the current strategy calls for an increase in local production of vaccine and allowing import of FMD vaccines from FMD pool 3 countries through Drug Regulatory Authority of Pakistan (DRAP). Locally, the FMD vaccine is produced by the FMD Research Centre in Lahore and by the Veterinary Research Institute of Peshawar. Vaccine is produced using outdated technology and methods in these two centers and this the quality is not consistent. The price of these locally manufactured vaccines ranges from US\$ 0.2 to US\$ 1 per dose. While imported vaccines for FMD registered with DRAP cost from US\$ 1.25 to US\$ 2.5 per dose and are therefore out of the farmers reach. There is practically no subsidy on the purchase or inoculation of FMD vaccine. Which is one of the main reasons why the FMD vaccination coverage in cattle and buffaloes in Pakistan is under 5%.

FMD Control Program- Punjab Focus

The FMD control has been particularly focused in Punjab since it is the most populous province in Pakistan for both people and livestock, with the most developed agricultural systems. Unlike other provincial governments, the Punjab government is the only one which has made several strides towards tackling FMD. Since 2018, efforts have been made to increase the uptake of FMD vaccine in the province which has resulted in a reduction in the number of reported outbreaks. An FMD free zone was established in Cholistan, Punjab. The zone is managed by the FAO.

The following section lays out the issues and deficiencies faced by Pakistan both in meeting its commitments under Stage 2 of the FMD-PCP.

Deficiencies to be Addressed by Pakistan that were Committed to Achieve PCP Stage 2

The following is a summary of the main deficiencies that Pakistan still needs to address that it had committed to achieving in the Risk Based Strategic Plan (RBSP) when it moved to Stage 2 of the FMD-PCP in 2015.

- Lack of a multi-year National FMD control program
- Weak coordination due to a lack of a National Program Coordination Unit
- Diagnostic Labs not funded by international agencies like the FAO have become non-functional. VP1 is not being sequenced routinely and vaccine matching is not undertaken. The Livestock Information Management System (LIMS) established in 12 labs has become nonoperational after the end of FAO assistance.
- Outbreak surveillance is poor in 24 districts of Balochistan, all districts of interior Sindh, newly merged tribal districts (ex-FATA) of KPK, and Islamabad. No reports from Gilgit-Baltistan and Azad Jammu & Kashmir. Once FAO assistance end, the sampling and reporting also comes to an end as

provincial livestock departments have not been able to adapt. The web-based central information system for FMD at the federal level has still not been established

- No clear FMD vaccination policy in the provinces except for Punjab. Lack of government support due to which the situation in FMD risk hotspots identified in the RBSP (i.e., dairy colonies, livestock markets, livestock breeding places, milk collectors and service delivery personnel) remains practically the same.
- No progress on enactment of the required legal framework at the federal level or in the provinces except for in Punjab.
- Stakeholders' involvement in FMD control not at the required level. Most stakeholders remain uninvolved (actors in value addition not part of FMD control efforts).
- Lack of a province level Risk based Strategic Plan
- Lack of a monitoring and evaluation mechanism for the RBSP

The following table provides more details of the progress and deficiencies in the implementation of the RBSP that have been summarized above.

RBSP Component Objective	Progress and Deficiencies
#1. Strengthening the liaison between federal and provincial levels to harmonize the procedures for FMD control and prevention	<ul style="list-style-type: none"> • Since no national FMD control program was launched, the National Program Coordination Unit was not established leading to coordination gaps. The only exception are Steering Committees and Technical Working Groups (TWG) of ongoing FAO projects which have representation of all provinces. These groups have been meeting regularly to discuss FMD control activities on an annual basis.
#2. To further strengthen the diagnostic laboratory capacity at federal and provincial levels	<ul style="list-style-type: none"> • Provincial/ regional diagnostic labs not being funded by the FAO have become nonoperational. • FMD laboratory diagnostic services (virus confirmation and serotyping) are currently operational in one National Veterinary Lab (NVL) in Islamabad, 5 labs in Punjab (Lahore, Sargodha, Multan, DG Khan, and Bahawalpur), one lab in Sindh (Tandojam), one lab in KPK (Peshawar), and one Lab in Balochistan (Quetta). NVL also has facilities for PCR and

	<p>RT-PCR for FMD. NVL is also acting as the National Reference Lab for FMD.</p> <ul style="list-style-type: none"> • Although equipment and consumables are available however, due to the lack of manpower in NVL the sequencing of VP1 of FMD virus is not being done. • The Laboratory Information Management System (LIMS) established with FAO assistance in 12 labs has become defunct after the end of FAO support due to a lack of interest by the provinces.
#3. Strengthen the surveillance system for FMD and create a national FMD information Centre	<ul style="list-style-type: none"> • The project-based surveillance system is working well. However, there are two main issues with surveillance: <ul style="list-style-type: none"> ○ Very few or no reports from certain regions (i.e., 24 districts of Balochistan, all districts of interior Sindh, newly merged KPK districts, Gilgit-Baltistan and Islamabad capital Territory ○ Once the project ends, the reporting / sampling also stops immediately. The provincial livestock departments have so far not been able to adopt or develop an alternate to this. • The web-based central information system which was to be established at the Federal level at the Animal Husbandry Commissioner's Office has still not been developed. The system was to provide updates on FMD status in the country (in terms of outbreaks, their distribution, and serotypes) and release all relevant information (seminars, meetings, etc.) related to FMD and possibly other TADs.
#4. Promote more extensive use of good quality vaccine against FMD	<ul style="list-style-type: none"> • The FAO and Government of Punjab projects have clearly demonstrated that quality FMD vaccine provides good protection against FMD under local conditions. However, other provinces have so far not been able to develop a clear policy of FMD vaccination and government support is also lacking. If no

	<p>support is offered or vaccination is not subsidized, chances of getting FMD virus load to a manageable level will not be fulfilled.</p> <ul style="list-style-type: none"> • Under the plan, at least 30% of the animal population in the dairy colonies and 10 % of animal population in dairy animals breeding areas were to be enrolled for FMD preventive vaccination during the first three years of the control program implementation. However, after more than 7 years of approval of the RBSP, the ground situation in FMD risk hotspots identified in the RBSP (i.e., Dairy colonies, livestock markets, milk collectors and service delivery personnel) remains practically same. Only a slight improvement in FMD vaccination was seen in the Karachi Dairy Colonies however, it is still below the desired level. The situation in other hotspots has not improved. Until these risk hotspots are not managed, the possibility of FMD control in the country is not possible.
#5. Improving the legal framework for FMD control	<ul style="list-style-type: none"> • The Government of Punjab has enacted an Animal Health Act in 2020 and is in the process of framing rules for the implementation of the act. However, progress at the Federal levels and in other provinces to develop a harmonized legislation framework is currently in progress but needs accelerated actions.
#6. Promote a more intensive involvement of stakeholders' on FMD control and prevention	<ul style="list-style-type: none"> • Farmers' awareness programs have been implemented by various FAO executed projects and the Punjab Government has also attempted to educate farmers through mobile extension schools for villagers. However, progress in other provinces and with other stakeholders is lacking. • FAO projects has been regularly publishing Pakistan FMD Bulletins. The FMD bulletin is circulated among all major stakeholders. Most Policy and Decision makers in the country are now aware of the issue of FMD. However, there is a need for a national FMD control

Source: FAO, Ministry of National Food Security and Research, Animal Husbandry Commissioner and Planning Commission of Pakistan

Progress Against Requirements to Move to Stage 3 of the FMD-PCP

According to the OIE, the objective of Stage 3 of the FMD PCP is to implement a control strategy to eliminate virus circulation. To move from Stage 2 to Stage 3, the OIE requires "indicating progress towards elimination of FMD virus (whether at zonal or country level)" (OIE). Progress should precede the application for the official control program for FMD to be endorsed by the OIE. According to the OIE Terrestrial Code, demonstrating the effectiveness of the official control program is required for the endorsement.

The following lays out the steps and progress to date against meetings the requirements of progression to Stage 3:

1. **National FMD control program** in place which has been endorsed by all the federating units. The plan needs to be reviewed and updated annually. *The Ministry of Planning, Development and Special Initiatives (MoPDSI) has developed a national FMD control program after consultations with all stakeholders. The control program has now been duly endorsed by all provincial government and yet to be formally approved by the Council of Common Interests (CCI).*
2. **Strengthened surveillance and reporting on FMD situation and progress** including detailed investigation of every outbreak; accurate, timely and complete digital data management and laboratory quality assurance. *FMD surveillance and reporting in Pakistan has mostly been done under projects funded by international agencies like the FAO. Once these projects have ended, the provincial livestock departments have been unable to continue with them. To tackle this issue and to setup a robust mechanism, the federal government has approved a Public Sector Development Project to undertake the investment required. A consultant has been engaged to develop a detailed investment plan in line with OIE guidelines. Once the investment plan has been developed, the investments will be initiated. However, the government is having a hard time in attracting private investments in this sector.*
3. **Immunization of susceptible livestock** including targeted vaccination program, cost recovery, putting in place vaccine quality assessment program, and elaborate post-vaccination strategies. *Except for the Punjab Government, provincial governments have not focused on this aspect. The federal government is struggling to attract investors to setup FMD vaccine production units in Punjab and Sindh. Current local FMD vaccine production faces quality issues and total production stands at 6 to 8 Mn doses annually which is only sufficient for 3 Mn cattle (Pakistan has 95 Mn large ruminants for which 190 Mn doses are needed annually at a minimum).*
4. **Upgrades to veterinary services based on OIE assessment.** *Pakistan is struggling to attract investments to upgrade its veterinary services. According to the OIE to progress to stage 3, the country needs to upgrade its veterinary services in 22 (14 moderately and 8 significantly) out of 35 required critical competencies. The areas which require significant improvement include Risk analysis, Ante- and postmortem inspection at abattoirs and associated premises, Control of Veterinary medicines and biological, Identification and traceability of products, Communications,*

Implementation of legislation & stakeholder compliance and Zoning. Once progress has been made on these competencies, Pakistan can call a follow up mission of the OIE PVS or constitute a local team for self-evaluation who could visit all the provinces and record improvement made since OIE 2014 PVS mission and reassess the level of competency. These table below gives the core competencies, their status as assessed by OIE missions to Pakistan (OIE PVS mission in 2014 and PVS Gap Analysis in 2019) and the required level to move to stage 3.

Figure 6: Competency Level of Pakistan's Veterinary Services

Critical Competency	Required level of competency for Stage 3	Pakistan' status as assessed by OIE PVS mission
I.1.A. Veterinarians and other professionals	3	4
I.1.B. Veterinary para-professionals and other technical personnel	3	3
I.2.A. Professional competencies of veterinarians	3	2
I.2.B. Competencies of veterinary para-professionals	3	3
I.3. Continuing education	3	2
1.4. Technical Independence	3	2
I.5. Stability of structures	3	3
1.6.A. Internal coordination (chain of Command)	3	2
I.7. Physical resources	3	2
I.8. Operational funding	4	2
I.9. Emergency funding	3	3
I.11. Management of resources and operations	3	2
II.1A Access to veterinary laboratory diagnosis	2	2
II.1B. Suitability of national laboratory infrastructures	3	3
II.2. Laboratory quality assurance	2	2
II.3 Risk analysis	3	1
II.4 Quarantine and border security	3	2

II.5.A. Passive epidemiological surveillance	3	3
II.5.B. Active epidemiological surveillance	3	2
II.6 Emergency response	3	3
II.7 Disease prevention, control and eradication	3	3
II.8B Ante- and post mortem inspection at abattoirs and associated premises	3	1
II.9. Veterinary medicines and biologicals	3	1
II.11 Animal feed safety	3	2
II.12.A. Animal identification and movement control	3	2
II.12.B Identification and traceability of products	3	1
III.1 Communications	4	2
III.2 Consultation with interested parties	3	2
III.3 Official representation	3	3
III.5.A. Veterinary Statutory Body authority	3	3
III.5.B. Veterinary Statutory Body capacity	3	3
III.6 Participation of producers and stakeholders in joint programs	3	2
IV.1 Preparation of legislation and regulations	3	2
IV.2 Implementation of legislation & stakeholder compliance	3	1
IV.6 Transparency	3	2
IV.7 Zoning	3	NA

Source: OIE

5. Contingency plan for FMD outbreak. Pakistan has an outbreak investigation SOP. However, given the large amount of FMD in the country, an outbreak is not presently considered an emergency. Preparedness for dealing with an incursion of a new serotype or strain is also lacking.
6. Harmonized Animal Health Law and regulations to allow veterinary services to enforce FMD control, including movement restrictions, identify and trace animals and animal products and

provide compensation for culled livestock. Punjab has passed an animal health law in 2020 and is working on its implementation. Similar animal health laws for Sindh and Balochistan are to be developed with technical assistance of the EU funded GRASP project being implemented by ITC in Pakistan.

7. Epidemiological and economic impact of establishing FMD-free zone is well understood and documented including:
 - In-depth analysis of changes to the food-system(s) and its drivers for socio- and economic impact by establishing an FMD-free zone
 - Risk assessment along various value-chain (milk, beef, mutton, animal by-products) including different production systems
 - Systematic cost-effectiveness analyses throughout the stages
 - Register and geo-reference all epi-units in zone and update regularly
 - Animal Identification feasibility and pilot study
8. Raised awareness with livestock owners on FMD-PCP.
9. Private sector is engaged with necessary aggressive FMD control measures for understanding willingness to progress FMD control through funding or other means; options for private investment into zoning and export of animal products; analyse cost-effectiveness of different scenarios for FMD control in the zone in Punjab; and elaborating cost-benefit analysis for location of abattoir.
10. Functional FMD-Task Force within PMU of Punjab livestock department with multi-year funds commitment.
11. Zoning requires increased biosecurity measures, fencing on one side and border inspection posts.
12. Integrated monitoring and evaluation of impact and effectiveness of FMD control strategy.

In summation, to sustain at Stage 2 and move to Stage 3 of the FMD-PCP, actions are required at both the Federal and Provincial levels. At the Federal level, a National FMD Control Program is needed duly approved by the provinces and the Council of Common Interests (CCI). Such a program has been developed and is in the process of being presented to and endorsed by the CCI. There also needs to be a Federal Animal Health law which is in line with OIE requirements. In addition to this, a National FMD Surveillance and Control Program is also needed. A federal development program for Surveillance has already been approved in 2021 development budget. The program has a total budget of PKR 4.6 Bn. A control program is being designed at the Federal level and is expected to be presented and approved in the 2022 budget.

Based on the National FMD Control Program it is the responsibility of each province to develop their own FMD Control Strategy. Devolution was undertaken after the passage of the 18th constitutional amendment

in 2010. With it, several powers were decentralized and given to the provinces. These included most public services related to agriculture and livestock, including veterinary services which are now the sole purview of the provinces. Since then, it is solely the responsibility of the provinces to develop and implement an FMD control strategy. So far, except for Punjab, none of the other provinces are making any strides towards this.

The actions that are needed at the provincial level in addition to an FMD Control Strategy include:

- Develop and strengthen surveillance and reporting of FMD. Including detailed investigation of every outbreak; accurate, timely and complete digital data management and laboratory quality assurance.
- Carry out a comprehensive vaccination campaign which includes the immunization of susceptible livestock. Campaign to include vaccine quality assessment program and elaborate post-vaccination strategies.
- Develop and put in place an Animal Health Law and regulations that are in harmony with the Federal and other provincial laws and that allows veterinary services to enforce FMD control, including movement restrictions, identify and trace animals and animal products and provide compensation for culled livestock.
- Develop FMD Control Zones and Compartments
- Develop and improve interprovincial and federal coordination

FMD Control Strategy for Balochistan

The following are the main components of the Balochistan FMD Control Strategy:

- I. Developing Baluchistan's FMD Control Strategy Harmonized with National FMD Control Program
- II. Formulation and enactment of animal health regulation for Balochistan harmonized with the Federal Animal Health Law
- III. Close coordination and implementation liaison between Federal and authorities in Balochistan and other provinces
- IV. Balochistan FMD implementation and monitoring body
- V. Balochistan to upgrade veterinary infrastructure in line with OIE requirements including a multi-year training and capacity building program for Baluchistan's veterinary staff
- VI. Multi-year financial commitment by Balochistan for programs to implement FMD Control through effective surveillance, veterinary services, vaccination program and strong coordination and surveillance system linked with the Federal Government
- VII. Balochistan to ensure quality FMD vaccines based on local strains either through imports or local production along with proper production distribution/ cold chain facilities
- VIII. Identification, notification and developing FMD control zones and compartments in Balochistan in line with OIE guidelines including implementation of the animal identification and tagging system especially in the zones and compartments
- IX. General awareness amongst stakeholders in Balochistan in the livestock entire value chain (farmers, academia, public and private service providers, exporters etc.)
- X. Develop in Balochistan, public and private stakeholders' ownership, coordination, and involvement in the implementation of the FMD Control strategy
- XI. Getting benefits from the FMD control compartments and zones in Balochistan by linking them with slaughterhouses and using this model to attract investments in the sector through establishing special Dairy production and investment zones in various pockets and clusters in Balochistan

Developing Baluchistan's FMD Control Strategy Harmonized with National FMD Control Program

The National FMD Control Program has been developed after exhaustive consultative sessions with all stakeholders. A National Workshop was recently organized in Islamabad by the MoPDSI and FAO and was attended by senior representatives from the Federal and all provincial governments. The National FMD Control Program has been endorsed by all provinces. MoPDSI is developing a summary which will be sent to the Council of Common Interests (CCI) for the endorsement of the National FMD Control Program in line with OIE requirements. Harmonized with this National FMD Control Program, it is the responsibility of each province to develop their own FMD Control Strategy. Balochistan like Sindh has taken the lead and is having there FMD Control Strategy formulated under the EU funded GRASP.

Formulation and enactment of animal health regulation for Balochistan harmonized with the Federal Animal Health Law

The Federal Animal Health Law is undergoing a consultative process and is being formulated. Punjab has already formulated and enacted an animal health law. The government of Balochistan like Sindh is currently in the process of getting an animal health law formulated with the technical assistance of the EU funded GRASP. While formulating the provincial animal health law, it is essential that be closely harmonized with the Federal law and those of other provinces as is required by the OIE.

Close coordination and implementation liaison between Federal and authorities in Balochistan and other provinces

To coordinate all matters between the Federal government and the provinces, a two-tier coordination system is recommended. In the first tier, a body like the National Command and Operation Center (NCOC) be established for FMD. This body can be called the National FMD Control Cell (NFMDCC). The NFMDCC should be headed by the Federal Minister National Food Security and Research (MNSF&R) and should include the Federal Animal Husbandry Commissioner (who is the focal person in Pakistan for the OIE) and the Provincial Livestock Ministers and Secretaries (it is proposed that one of these representatives is made the Provincial FMD Focal Person for each province). The NFMDCC should also include representatives from the FAO. The NFMDCC should meet quarterly on the official CCI endorsed National FMD Control Program and ensure its monitoring and implementation. The NFMDCC will also ensure interprovincial harmony and OIE compliance. The body will among other things also ensure that provinces have allocated adequate budgets in the ADP budget for vaccine (import and local manufacturing) and ensure vaccination in main outbreak spots and hotspots.

At the second tier, it is recommended that a National FMD Technical Working Group (NFTWG) be formed. The NFTWG will be chaired by the Federal Animal Husbandry Commissioner and consist of 1 representative from each of the provinces (DG Livestock recommended). The working group will meet monthly to oversee all technical matters including strategy implementation, FMD reporting, vaccination, surveillance, private sector integration, status and maintenance of zones/ compartments, and any other issues.

Balochistan FMD implementation and monitoring body

For FMD implementation and monitoring in Balochistan, it is proposed that a FMD Implementation Cell (BFIC) be formed under the Secretary Livestock and Fisheries, Balochistan. The BFIC will consist of the Provincial FMD Coordinator (DG Livestock), relevant and regional Directors as well as 3-4 representatives from associations of farmers, processors, and exporters (dairy and meat). The cell will be notified by the provincial government and will meet monthly to ensure implementation of SOPs, regulatory framework implementation, check on: tagging, vaccination etc.

Upgrading veterinary infrastructure in line with OIE requirements

The Government of Balochistan (GoB) needs to upgrade its veterinary infrastructure in line with OIE requirements. For this purpose, the GoB should conduct a gap analysis of existing infrastructure including

human resources, diagnostic labs, and veterinary services (mobile and fixed). Based on the gap analysis, projects need to be designed and funds allocated under the Balochistan ADP for upgradations. The GoB should also work with the Federal Government to ensure that funds are allocated for upgradation of its veterinary infrastructure in the Federal Surveillance and Control Projects.

Multi-year financial commitment by Balochistan for programs to implement FMD Control through effective surveillance, veterinary services, vaccination program and strong coordination and surveillance system linked with the Federal Government

The GoB needs to make a multi-year financial commitment in its annual development program (ADP) to implement FMD Control. For this purpose, projects should be initiated on effective surveillance, upgrading veterinary services in line with OIE requirements and an FMD vaccination program. The GoB should also effectively tap into the funds allocated by the Federal government for disease surveillance and control. In the 2021 budget, the Federal government has approved a PKR 4.6 Bn surveillance project and a control program for the 2022 budget is being designed.

All the GoB's efforts on FMD should be in close coordination with the Federal government and that of other provinces. For animal health surveillance, a web based real-time system should be established which will comprise of:

- Field infrastructure at provincial, district and local level for disease reporting, investigation and response;
- Core infrastructure for collection, collation and management of data;
- Diagnostic labs infrastructure for case confirmation of respective diseases under surveillance.
- Provincial Epidemiology & Surveillance Unit for data management, analysis and dissemination;

This system should be linked with the Federal surveillance system and that of other provinces (when developed). Balochistan should also develop lab networks at the divisional level including labs in provincial capitals and district labs for effective sample referral system for diagnosis of FMD from suspect to the stage of confirmation using various laboratory / field tests such as simple rapid test, ELISA, PCR, virus isolation and nucleic acid sequencing etc.

Balochistan to ensure quality FMD vaccines based on local strains either through imports or local production along with proper production distribution/ cold chain facilities

Currently, FMD vaccination coverage in cattle and buffaloes in all of Pakistan is under 5%. The GoB should take measures to improve vaccination coverage against FMD by increasing local production of vaccine and allowing import of FMD vaccines from FMD pool 3 countries through Drug Regulatory Authority of Pakistan (DRAP). Currently, no FMD vaccine is being produced in Balochistan. The GoB should take steps to attract investors to setup FMD vaccine production units. Currently, FMD vaccine is only being produced in the FMD Research Centre in Lahore and by the Veterinary Research Institute of Peshawar. In both these facilities, the FMD vaccine is produced using outdated technology and methods, due to which the quality is not consistent. The price of these locally manufactured vaccines ranges from US\$ 0.2 to US\$ 1 per dose.

While imported vaccines for FMD registered with DRAP cost from US\$ 1.25 to US\$ 2.5 per dose and are therefore out of the farmers reach.

Besides ensuring local production or adequate imports of the FMD vaccine based on local strains, the GoB should also work on developing a proper storage and distribution system/network which includes cold chain facilities. The cold chain system will ensure that vaccines and other biological products that need special handling will be kept within the safe temperature range of +2 °C to +8 °C. The purpose of the vaccine cold chain is to maintain product quality from the time of manufacture until the point of administration by ensuring that vaccines are stored and transported within recommended temperature ranges. This is essential to ensure that the vaccine is stored, packed for distribution, and transported appropriately, and that any breakdowns in equipment or procedures are identified and rectified.

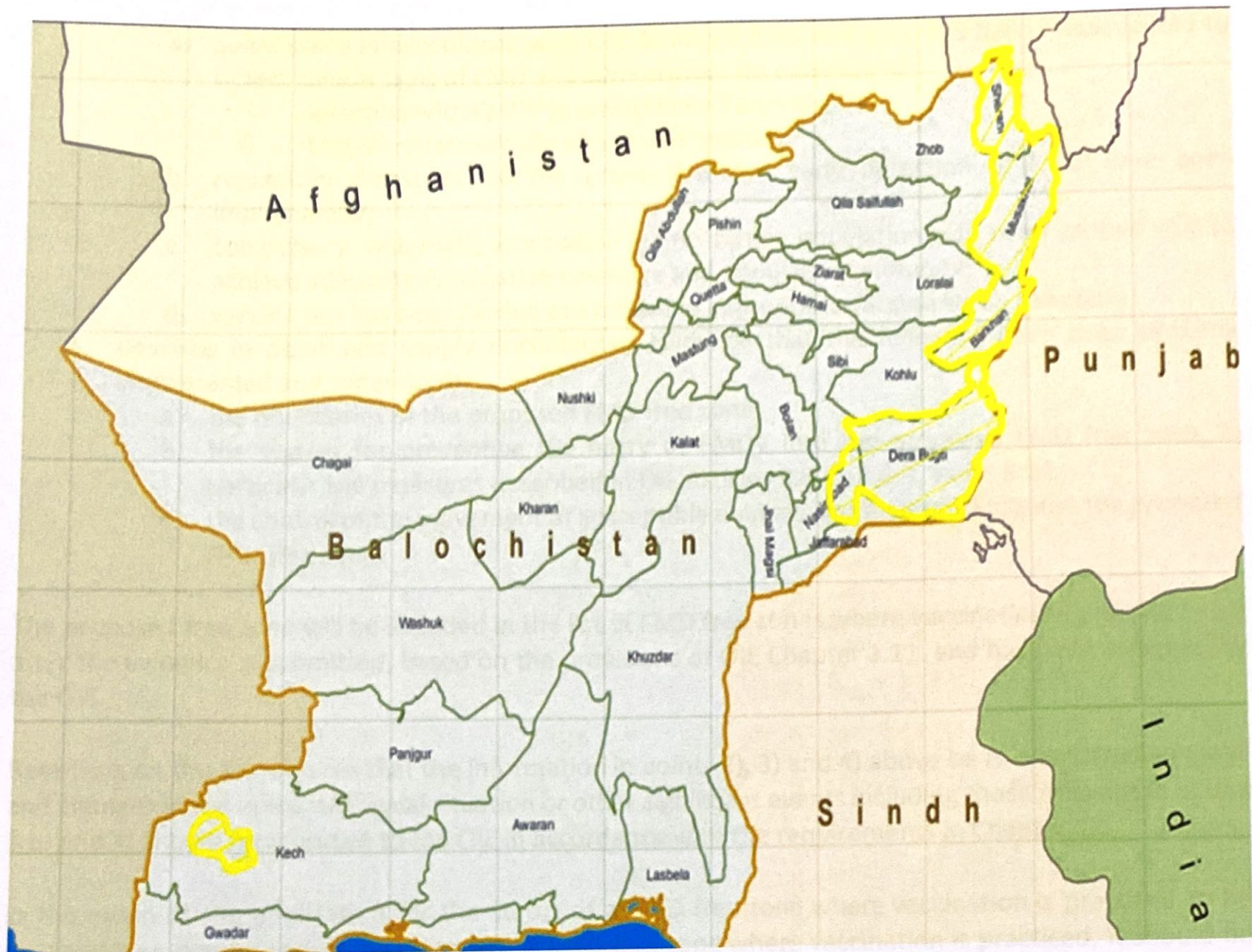
Identification, notification and developing FMD control zones and compartments in Balochistan

The GoB needs to notify and setup Foot and Mouth Disease (FMD) free zones and compartments where vaccination is practiced in line with OIE guidelines. According to the OIE, a zone is "a part of a country defined by the Veterinary Authority, containing an animal population or subpopulation with a specific animal health status with respect to an infection or infestation for the purposes of international trade or disease prevention or control" (OIE). Zones are separated from one another by a natural geographic boundary. While compartments have animal separation by "a common biosecurity management system, and with a specific animal health status with respect to one or more infections or infestations for which the necessary surveillance, biosecurity and control measures have been applied for the purposes of international trade or disease prevention and control in a country or zone" (OIE).

FMD Control Zones

After consultations with stakeholder and analysis of the OIE requirements for zones, the following areas are proposed for establishing zones in Balochistan (please refer to the map below- zones are in yellow shading).

- 1- FMD Control Zone to be established in the Meerani Dam Command Area in Turbat
- 2- FMD Control Zone to be established in the Command Area of the Kacchi Canal (in district Nasirabad) and districts adjacent to D.I. Khan in KPK and D.G. Khan in Punjab (both locations are proposed for FMD free zones) in Balochistan which are Sherani, Musakhel, Barkhan and Dera Bugti. These districts have a natural boundary with River Sindh on one side and the border with Afghanistan on the other.



The following lays out the relevant articles from the OIE Terrestrial Animal Health Code on the establishment of zones with vaccination.

As per the OIE's article 8.8.3 which is applicable to an FMD free zone where vaccination is practiced: "susceptible animals in the FMD free zone where vaccination is practiced should be protected by the application of biosecurity measures that prevent the entry of FMDV into the free zone. Taking into consideration physical or geographical barriers with any neighboring infected zone, these measures may include a protection zone. Based on the epidemiology of FMD in the country, it may be decided to vaccinate only a defined subpopulation comprised of certain species or other subsets of the total susceptible population. To qualify for inclusion in the list of FMD free zones where vaccination is practiced, Balochistan should:

1. Have a record of regular and prompt animal disease reporting;
2. Send a declaration to the OIE stating that, based on the surveillance described in point 3), within the proposed FMD free zone:
 - a. there has been no case of FMD during the past two years;
 - b. there has been no evidence of FMDV transmission during the past 12 months;
3. Supply documented evidence that:

- a. surveillance in accordance with OIE Articles 8.8.40. to 8.8.42. has been implemented to detect clinical signs of FMD and demonstrate no evidence of:
 - i. infection with FMDV in unvaccinated animals;
 - ii. FMDV transmission in vaccinated animals;
 - b. regulatory measures for the prevention and early detection of FMD have been implemented;
 - c. compulsory systematic vaccination in the target population has been carried out to achieve adequate vaccination coverage and population immunity;
 - d. vaccination has been carried out following appropriate vaccine strain selection;
4. Describe in detail and supply documented evidence that the following have been properly implemented and supervised:
- a. the boundaries of the proposed FMD free zone;
 - b. the system for preventing the entry of FMDV into the proposed FMD free zone, in particular the measures described in OIE Articles 8.8.8., 8.8.9. and 8.8.12.;
 - c. the control of the movement of susceptible animals and their products into the proposed FMD free zone.

The proposed free zone will be included in the list of FMD free zones where vaccination is practiced only after the evidence is submitted, based on the provisions of OIE Chapter 1.11. and has been accepted by the OIE.

Retention on the list requires that the information in points 2), 3) and 4) above be re-submitted annually and changes in the epidemiological situation or other significant events including those relevant to points 3 b) and 4) should be reported to the OIE in accordance with the requirements in Chapter 1.1.

In the event of the application for the status of a FMD free zone where vaccination is practiced to be assigned to a new zone adjacent to another FMD free zone where vaccination is practiced, it should be stated if the new zone is being merged with the adjacent zone to become one enlarged zone. If the two zones remain separate, details should be provided on the control measures to be applied for the maintenance of the status of the separate zones and particularly on the identification and the control of the movement of animals between the zones of the same status in accordance with Chapter 4.3" (OIE).

Based on the OIE's Article 8.8.3, the following is proposed for establishing zones in Balochistan:

The FMD free zones will be clearly demarcated by the physical and natural barrier to restrict the movements of animals. Check points and sign boards will be installed. Pickets will be setup at the entry and exit points of each zone. These will have a quarantine/inspection station. The station will have a boundary wall and fencing. The station will have the facilities of veterinary services, diagnostic laboratory, dipping stations and launching stations for trucks, spraying facility for vehicles at entrance and mobile veterinary facility to mitigate any emergency. The station will have different sheds with respect to the age and disease status of animals. Veterinary staff will be present at the station to implement the animal management system. At these stations, every entering animal will be tagged, vaccinated, and then released into the FMD free zone.

Within these zones, the following will be undertaken:

- Mass scale vaccination of animal population (if 70% of animals in the zone are vaccinated then herd immunity will be obtained)
- Fencing / natural boundaries will be assessed for likely entry of unregulated animal movement. These entry points will be manned and only authorized entries will be admissible
- All the susceptible animals (cattle, buffaloes, sheep, goats and camel etc.) will be identified, vaccinated and certified
- The vehicle entering the zone will be disinfected at the checkpoints
- Monitoring of animals, animal products, feed, fodder etc. entering into zone viz a associated risk of FMDV in to the zone
- Slaughtering will be regulated to prevent pilferage of waste and spread of FMDV through meat and fomites
- Major livestock marketing or collection centers will be regulated
- Awareness for the public will be ensured for biosecurity
- Surveillance system will be put in place with compulsory reporting of FMD suspected and confirmed cases via SMS and other means of communication
- All outbreaks will be investigated to understand the source & epidemiology of infection and virus will be characterized for further research and analysis
- Post vaccination monitoring will be done to assess the efficiency and effectiveness of vaccine and vaccination in the zone
- The zone will be progressively expanded subject to availability of financial and technical resources
- Upon attaining the almost zero disease burdens in the zone for the last twenty-four months, OIE may be requested to assess the FMD free zone for their formal recognition.
- Regulation of pathogens, research institutes and veterinary hospital/dispensaries etc.
- Certification mechanism for vaccinated animals in and outside the zone as well as the maintenance of vaccination record
- Animal identification, registration, traceability, and movement control mechanism with or without private sector's partnership
- Cautious import of un-vaccinated animals subject to quarantine and testing and or their products from FMD infected countries subject to OIE guidelines

FMD Compartments

It is proposed that FMD free compartment with vaccination be setup in Baluchistan.

The following lays out the relevant articles from the OIE Terrestrial Animal Health Code on the establishment of compartments with vaccination.

As per the OIE's article 8.8.4 which is applicable to an FMD free compartment where vaccination is practiced: "susceptible animals in the FMD free compartment should be separated from any other susceptible animals by the application of an effective biosecurity management system.

An FMD free compartment should:

1. Have a record of regular and prompt animal disease reporting and, if not FMD free, have an official control program and surveillance system or FMD in place in accordance with OIE Articles 8.4.40 to 8.8.42 that allows knowledge of the prevalence, distribution and characteristics of FMD in the zone;
2. Declare for the FMD free compartment that:
 - a. there has been no case of FMD during the past 12 months;
 - b. no evidence of infection with FMDV has been found during the past 12 months;
 - c. vaccination against FMD is prohibited;
 - d. no animal vaccinated against FMD within the past 12 months is in the compartment;
 - e. animals, semen, embryos and animal products may only enter the compartment in accordance with relevant articles in this chapter;
 - f. documented evidence shows that surveillance in accordance with Articles 8.8.40 to 8.8.42 is in operation;
 - g. an animal identification and traceability system in accordance with OIE Chapters 4.2 and 4.3 is in place;
3. describe in detail:
 - a. the animal subpopulation in the compartment;
 - b. the biosecurity plan to mitigate the risks identified by the surveillance carried out in accordance with point 1.

The compartment should be approved by the Veterinary Authority. The first approval should only be granted when no case of FMD has occurred within a ten-km radius of the compartment during the past three months" (OIE).

Based on the OIE's article 8.8.4, the following is proposed for establishing FMD free compartments in Balochistan:

Compartments need to be fenced/ have a boundary to restrict animal movement as well as entry and exit. A commercially viable farm can be declared a compartment. Each compartment will have a quarantine area. In the quarantine area, the animals coming from outside the compartment will be monitored, tagged, and vaccinated before being introduced into the FMD free compartment. To ensure that the area is FMD free, it is also advisable that a buffer zone be created in the area around the FMD free

compartment. Animals in the buffer zone will also need to be vaccinated to ensure that there is no virus exposure in the environment. Whenever any animal is moved from the FMD free compartment, its FMD status should be checked, and it should only be moved if it is FMD free. For new animals, they need to be vaccinated three times in the first year (1st vaccination upon entry/ tagging, second vaccination after 21/22 days and third vaccination after six months) and two times every year after that.

For compartments, the GoB will develop a criterion, advertise, and invite applications from farmers for setting up FMD free compartments. It is important to note that these compartments can be setup both inside and outside of an FMD control zone. Those farmers who are willing to accept the criterion will be shortlisted. After shortlisting, inspections will be conducted to ensure that the farmers who have applied meet the criterion and to ensure their willingness to develop and maintain compartments. Capacity building measures for farmers to setup and maintain these compartments will also be conducted. Once the relevant authorities are satisfied, they will register and notify the compartment. After which it becomes their responsibility to ensure compliance through monitoring. The notified compartments will also be linked with abattoirs to ensure market access and benefits for the farmers for setting up the compartments.

General awareness amongst stakeholders in Balochistan in the livestock entire value chain (farmers, academia, public and private service providers, exporters etc.)

A mass public awareness and education campaign is an integral part of the FMD control effort and is critical to its success. A campaign should be developed by the GoB for all stakeholders in the livestock value chain. The campaign should mainly be targeted at rural and peri-urban communities that will be affected by the disease and FMD control actions and sustainability of the FMD free zone. Campaigns should inform stakeholders about the nature of the disease and what to do if they see suspected cases and the benefits of getting rid of FMD. Campaigns should also emphasize that through FMD control, the primary beneficiary are livestock producers. Customized awareness material should be developed which targets specific groups of stakeholders. In addition to targeting livestock and dairy farmers, it is essential to also sensitize and raise awareness amongst the media, politicians, and bureaucrats.

Develop in Balochistan, public and private stakeholders' ownership, coordination, and involvement in the implementation of the FMD Control strategy

As stated earlier, it is proposed that an FMD Implementation Cell (BFIC) be formed under the Secretary Livestock and Fisheries, Balochistan. The BFIC will also have 3-4 representatives from associations of farmers, processors, and exporters (dairy and meat). The cell will meet monthly to ensure implementation of SOPs, regulatory framework implementation, check on: tagging, vaccination etc. Through the private sector members of this cell, private sector ownership of the FMD strategy will be developed. In addition to being involved in the working of the BFIC, private sector engagement and awareness will be a key part of the FMD awareness raising campaign in Balochistan.

Maximizing benefits from the FMD control compartments and zones in Balochistan

To get benefits from the FMD control zones and compartments established in Baluchistan, the GoB will undertake measures by linking the farms in these zones/ compartments with processors/ slaughterhouses. FMD free status for all animals leaving the zone/ compartment will be ensured. Upon arrival at the abattoir/ processor, the status will be rechecked along with pre- and post-examinations. All the standard protocols given by the Animal Health Organization (OIE) will be followed. The animals certified as disease free will be then processed, packed, transported, and exported.

Special dairy and livestock production investment zones will also be established in various pockets of Balochistan and this model will be used to attract investments in the sector.

Balochistan FMD Control Strategy Action Matrix

Area	Responsibility
<ul style="list-style-type: none"> Developing Baluchistan's FMD Control Strategy harmonized with National FMD Control Program 	<ul style="list-style-type: none"> GoB to develop FMD Control Strategy harmonized with Federal FMD Control Program (GoB has taken the lead and is developing the FMD Control Strategy with technical assistance of the EU funded GRASP)
<ul style="list-style-type: none"> Formulation and enactment of Balochistan animal health regulation harmonized with the Federal Animal Health Law 	<ul style="list-style-type: none"> GoB to develop Animal Health Act harmonized with Federal Animal Health Law and that of other provinces. While the Federal Animal Health Act is still being developed, the GoB has taken the lead and is in the process of developing its own act with the technical assistance of the EU funded GRASP. Efforts must be made to ensure that Baluchistan's animal health act is harmonized with that of Punjab (which is the only province to date which has already developed and enacted a animal health law).
<ul style="list-style-type: none"> Close coordination and implementation liaison between Federal, Balochistan and other Provincial authorities 	<ul style="list-style-type: none"> Prime Minister of Pakistan to notify the National FMD Control Cell (NFMDCC) which will be headed by the Federal Minister National Food Security and Research (MNSF&R) and will include the Federal Animal Husbandry Commissioner, Provincial Livestock Ministers and Secretaries and a representative from the FAO. National FMD Technical Working Group (NFTWG) to be notified by MNFSR. The NFTWG will be chaired by the Federal Animal Husbandry Commissioner and consist of 1 representative from each of the provinces (DG Livestock recommended).

<ul style="list-style-type: none"> Balochistan FMD implementation and monitoring body 	<ul style="list-style-type: none"> CM Balochistan to notify FMD Implementation Cell (BFIC). BFIC to be formed under the Secretary Livestock and Fisheries, Balochistan. The BFIC will consist of the Provincial FMD Coordinator (DG Livestock), relevant and regional Directors as well as 3-4 representatives from associations of farmers, processors, and exporters (dairy and meat).
<ul style="list-style-type: none"> Balochistan to upgrade veterinary infrastructure in line with OIE requirements and multi-year training and capacity building program for Baluchistan's veterinary staff 	<ul style="list-style-type: none"> GoB to conduct veterinary services gap analysis in line with OIE requirements and develop ADP projects along with funding for necessary upgrades.
<ul style="list-style-type: none"> Multi-year financial commitment by GoB for programs to implement FMD Control through effective surveillance, veterinary services, vaccination program and strong coordination and surveillance system linked with the Federal Government 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> GoB to ensure quality FMD vaccines based on local strains either through imports or local production along with proper production distribution/ cold chain facilities 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Identification, notification and developing FMD control zones and compartments by Balochistan in line with OIE guidelines including implementation of the animal identification and tagging system especially in the zones and compartments 	<ul style="list-style-type: none"> GoB to identify, notify and develop zones in line with OIE requirements and communicate the same to the Federal Animal Husbandry Commissioner (who is the focal person for the OIE)
<ul style="list-style-type: none"> General awareness amongst stakeholders in Balochistan along the entire livestock entire value chain (farmers, academia, public and private service providers, exporters etc.) 	<ul style="list-style-type: none"> GoB to launch mass awareness campaigns
<ul style="list-style-type: none"> Develop in Balochistan public and private stakeholders' ownership, coordination, and involvement in the implementation of the FMD Control strategy 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Getting benefits from the FMD control compartments and zones in Balochistan by linking them with slaughterhouses and using this model to attract investments in the sector through establishing special Dairy production and investment zones in various pockets 	<ul style="list-style-type: none">

Annexures

Annex 1: Stakeholder Consultations in Balochistan

Stakeholder consultations on the FMD strategy and locations of the zones/ compartments in Balochistan were held in Quetta from the 22-24 September 2021.

On the 22nd of September, meetings were held with the Secretary Livestock and senior technical management of livestock department. The following was discussed during these meetings:

- Status of infrastructure, diagnostic setup, cold chain facilities for vaccines, disease reporting, and surveillance system, issues of legal and illegal trade of livestock-related products from Pakistan to Iran & Afghanistan and vice versa.
- The issue of detection/isolation of Iranian and Indian origin FMD virus stains. It was suspected the real source of transmission of foreign FMD virus strains and variants into Pakistan could be the illegal trade of slaughtered animal feet and visceral parts (kidney, liver, heart, etc.) from Iran and movement of live sheep/goat from Afghanistan.
- Commitment by the Federal and Balochistan Government to controlling FMD along with allocation of necessary funds.
- How to maximize efficiency and improve coordination and communication with the Federal and other provincial Governments as well as within various departments in Balochistan
- The Secretary Livestock, Balochistan stressed upon the need for funds from the Federal PSDP to control livestock infectious diseases i.e., FMD and PPR.

On the 23rd of September, the Livestock Department Balochistan arranged a broader consultative workshop on FMD. All regional and district level officers and experts on FMD/ Livestock from Balochistan were invited to the consultative session.

On the 24th of September, meetings were held with Transboundary Animal Diseases (TAD) officers and relevant experts of the Balochistan Livestock Department. During the meeting, FMD related issues and strategies to combat FMD were discussed. A special wrap up dinner meeting was also conducted with Seven Provincial Secretaries, the Balochistan Minister for Livestock, and other relevant senior political leaders to ensure that FMD was a top provincial priority.

The following is a summary of the main outcomes from the stakeholder consultations sessions in Quetta from the 22-24 September 2021:

- FMD Control Zone's in Balochistan should cover: 1) Command Area of the Kaachi Canal, 2) Meerani Dam Command Area in Turbat and 3) Districts adjacent to D.I. Khan (D.I. Khan is about to be declared as a FMD free zone by the government of KPK) in Baluchistan which are Musakhel, Zhob and Qila Saifullah. These districts have a natural boundary with River Sindh on one side and the border with Afghanistan on the other.
- Government needs to prioritize FMD control, and all provinces need to work together with the Federal government since FMD is a national issue.

- An effective tiered coordination mechanism is needed for coordination amongst all stakeholders. The stakeholders used the NCOC as a good example and suggested that an FMD coordination cell be formed at both the federal and provincial levels in addition to a technical working group. With each cell and technical working group have specifically defined tasks and responsibilities.
- There needs to be a mass level FMD control strategy implementation awareness raising campaign amongst all stakeholders in the livestock value chain
- It is essential that the GoB conduct a gap analysis of its veterinary capability in line with OIE's FMD requirements. Based on the gap analysis, the GoB should develop and fund infrastructure upgradation and capacity building of veterinary staff initiatives.
- The Federal Government should assist the GoB through the Federal PSDP to control livestock infectious diseases i.e., FMD and PPR.

Based on the epidemiology of FMD in the country, it may be decided to vaccinate only a defined subpopulation composed of certain species or other subsets of the total susceptible population.

To qualify for inclusion in the list of FMD free countries or zones where vaccination is practised, a country should:

1. have a record of regular and prompt animal disease reporting;
2. send a declaration to the OIE stating that, based on the epidemiological description in point 1), within the proposed FMD free country or zone:
 - a. there has been no case of FMD during the past two years;
 - b. there has been no evidence of FMDV transmission during the past 12 months;
3. supply documented evidence that:
 - a. surveillance in accordance with Articles 2.2.52, 2.2.53, 2.2.54, 2.2.55, 2.2.56, 2.2.57, 2.2.58, 2.2.59, 2.2.60, 2.2.61, 2.2.62, 2.2.63, 2.2.64, 2.2.65, 2.2.66, 2.2.67, 2.2.68, 2.2.69, 2.2.70, 2.2.71, 2.2.72, 2.2.73, 2.2.74, 2.2.75, 2.2.76, 2.2.77, 2.2.78, 2.2.79, 2.2.80, 2.2.81, 2.2.82, 2.2.83, 2.2.84, 2.2.85, 2.2.86, 2.2.87, 2.2.88, 2.2.89, 2.2.90, 2.2.91, 2.2.92, 2.2.93, 2.2.94, 2.2.95, 2.2.96, 2.2.97, 2.2.98, 2.2.99, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.3.7, 2.3.8, 2.3.9, 2.3.10, 2.3.11, 2.3.12, 2.3.13, 2.3.14, 2.3.15, 2.3.16, 2.3.17, 2.3.18, 2.3.19, 2.3.20, 2.3.21, 2.3.22, 2.3.23, 2.3.24, 2.3.25, 2.3.26, 2.3.27, 2.3.28, 2.3.29, 2.3.30, 2.3.31, 2.3.32, 2.3.33, 2.3.34, 2.3.35, 2.3.36, 2.3.37, 2.3.38, 2.3.39, 2.3.40, 2.3.41, 2.3.42, 2.3.43, 2.3.44, 2.3.45, 2.3.46, 2.3.47, 2.3.48, 2.3.49, 2.3.50, 2.3.51, 2.3.52, 2.3.53, 2.3.54, 2.3.55, 2.3.56, 2.3.57, 2.3.58, 2.3.59, 2.3.60, 2.3.61, 2.3.62, 2.3.63, 2.3.64, 2.3.65, 2.3.66, 2.3.67, 2.3.68, 2.3.69, 2.3.70, 2.3.71, 2.3.72, 2.3.73, 2.3.74, 2.3.75, 2.3.76, 2.3.77, 2.3.78, 2.3.79, 2.3.80, 2.3.81, 2.3.82, 2.3.83, 2.3.84, 2.3.85, 2.3.86, 2.3.87, 2.3.88, 2.3.89, 2.3.90, 2.3.91, 2.3.92, 2.3.93, 2.3.94, 2.3.95, 2.3.96, 2.3.97, 2.3.98, 2.3.99, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.4.5, 2.4.6, 2.4.7, 2.4.8, 2.4.9, 2.4.10, 2.4.11, 2.4.12, 2.4.13, 2.4.14, 2.4.15, 2.4.16, 2.4.17, 2.4.18, 2.4.19, 2.4.20, 2.4.21, 2.4.22, 2.4.23, 2.4.24, 2.4.25, 2.4.26, 2.4.27, 2.4.28, 2.4.29, 2.4.30, 2.4.31, 2.4.32, 2.4.33, 2.4.34, 2.4.35, 2.4.36, 2.4.37, 2.4.38, 2.4.39, 2.4.40, 2.4.41, 2.4.42, 2.4.43, 2.4.44, 2.4.45, 2.4.46, 2.4.47, 2.4.48, 2.4.49, 2.4.50, 2.4.51, 2.4.52, 2.4.53, 2.4.54, 2.4.55, 2.4.56, 2.4.57, 2.4.58, 2.4.59, 2.4.60, 2.4.61, 2.4.62, 2.4.63, 2.4.64, 2.4.65, 2.4.66, 2.4.67, 2.4.68, 2.4.69, 2.4.70, 2.4.71, 2.4.72, 2.4.73, 2.4.74, 2.4.75, 2.4.76, 2.4.77, 2.4.78, 2.4.79, 2.4.80, 2.4.81, 2.4.82, 2.4.83, 2.4.84, 2.4.85, 2.4.86, 2.4.87, 2.4.88, 2.4.89, 2.4.90, 2.4.91, 2.4.92, 2.4.93, 2.4.94, 2.4.95, 2.4.96, 2.4.97, 2.4.98, 2.4.99, 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2.6.29, 2.6.30, 2.6.31, 2.6.32, 2.6.33, 2.6.34, 2.6.35, 2.6.36, 2.6.37, 2.6.38, 2.6.39, 2.6.40, 2.6.41, 2.6.42, 2.6.43, 2.6.44, 2.6.45, 2.6.46, 2.6.47, 2.6.48, 2.6.49, 2.6.50, 2.6.51, 2.6.52, 2.6.53, 2.6.54, 2.6.55, 2.6.56, 2.6.57, 2.6.58, 2.6.59, 2.6.60, 2.6.61, 2.6.62, 2.6.63, 2.6.64, 2.6.65, 2.6.66, 2.6.67, 2.6.68, 2.6.69, 2.6.70, 2.6.71, 2.6.72, 2.6.73, 2.6.74, 2.6.75, 2.6.76, 2.6.77, 2.6.78, 2.6.79, 2.6.80, 2.6.81, 2.6.82, 2.6.83, 2.6.84, 2.6.85, 2.6.86, 2.6.87, 2.6.88, 2.6.89, 2.6.90, 2.6.91, 2.6.92, 2.6.93, 2.6.94, 2.6.95, 2.6.96, 2.6.97, 2.6.98, 2.6.99, 2.7.1, 2.7.2, 2.7.3, 2.7.4, 2.7.5, 2.7.6, 2.7.7, 2.7.8, 2.7.9, 2.7.10, 2.7.11, 2.7.12, 2.7.13, 2.7.14, 2.7.15, 2.7.16, 2.7.17, 2.7.18, 2.7.19, 2.7.20, 2.7.21, 2.7.22, 2.7.23, 2.7.24, 2.7.25, 2.7.26, 2.7.27, 2.7.28, 2.7.29, 2.7.30, 2.7.31, 2.7.32, 2.7.33, 2.7.34, 2.7.35, 2.7.36, 2.7.37, 2.7.38, 2.7.39, 2.7.40, 2.7.41, 2.7.42, 2.7.43, 2.7.44, 2.7.45, 2.7.46, 2.7.47, 2.7.48, 2.7.49, 2.7.50, 2.7.51, 2.7.52, 2.7.53, 2.7.54, 2.7.55, 2.7.56, 2.7.57, 2.7.58, 2.7.59, 2.7.60, 2.7.61, 2.7.62, 2.7.63, 2.7.64, 2.7.65, 2.7.66, 2.7.67, 2.7.68, 2.7.69, 2.7.70, 2.7.71, 2.7.72, 2.7.73, 2.7.74, 2.7.75, 2.7.76, 2.7.77, 2.7.78, 2.7.79, 2.7.80, 2.7.81, 2.7.82, 2.7.83, 2.7.84, 2.7.85, 2.7.86, 2.7.87, 2.7.88, 2.7.89, 2.7.90, 2.7.91, 2.7.92, 2.7.93, 2.7.94, 2.7.95, 2.7.96, 2.7.97, 2.7.98, 2.7.99, 2.8.1, 2.8.2, 2.8.3, 2.8.4, 2.8.5, 2.8.6, 2.8.7, 2.8.8, 2.8.9, 2.8.10, 2.8.11, 2.8.12, 2.8.13, 2.8.14, 2.8.15, 2.8.16, 2.8.17, 2.8.18, 2.8.19, 2.8.20, 2.8.21, 2.8.22, 2.8.23, 2.8.24, 2.8.25, 2.8.26, 2.8.27, 2.8.28, 2.8.29, 2.8.30, 2.8.31, 2.8.32, 2.8.33, 2.8.34, 2.8.35, 2.8.36, 2.8.37, 2.8.38, 2.8.39, 2.8.40, 2.8.41, 2.8.42, 2.8.43, 2.8.44, 2.8.45, 2.8.46, 2.8.47, 2.8.48, 2.8.49, 2.8.50, 2.8.51, 2.8.52, 2.8.53, 2.8.54, 2.8.55, 2.8.56, 2.8.57, 2.8.58, 2.8.59, 2.8.60, 2.8.61, 2.8.62, 2.8.63, 2.8.64, 2.8.65, 2.8.66, 2.8.67, 2.8.68, 2.8.69, 2.8.70, 2.8.71, 2.8.72, 2.8.73, 2.8.74, 2.8.75, 2.8.76, 2.8.77, 2.8.78, 2.8.79, 2.8.80, 2.8.81, 2.8.82, 2.8.83, 2.8.84, 2.8.85, 2.8.86, 2.8.87, 2.8.88, 2.8.89, 2.8.90, 2.8.91, 2.8.92, 2.8.93, 2.8.94, 2.8.95, 2.8.96, 2.8.97, 2.8.98, 2.8.99, 2.9.1, 2.9.2, 2.9.3, 2.9.4, 2.9.5, 2.9.6, 2.9.7, 2.9.8, 2.9.9, 2.9.10, 2.9.11, 2.9.12, 2.9.13, 2.9.14, 2.9.15, 2.9.16, 2.9.17, 2.9.18, 2.9.19, 2.9.20, 2.9.21, 2.9.22, 2.9.23, 2.9.24, 2.9.25, 2.9.26, 2.9.27, 2.9.28, 2.9.29, 2.9.30, 2.9.31, 2.9.32, 2.9.33, 2.9.34, 2.9.35, 2.9.36, 2.9.37, 2.9.38, 2.9.39, 2.9.40, 2.9.41, 2.9.42, 2.9.43, 2.9.44, 2.9.45, 2.9.46, 2.9.47, 2.9.48, 2.9.49, 2.9.50, 2.9.51, 2.9.52, 2.9.53, 2.9.54, 2.9.55, 2.9.56, 2.9.57, 2.9.58, 2.9.59, 2.9.60, 2.9.61, 2.9.62, 2.9.63, 2.9.64, 2.9.65, 2.9.66, 2.9.67, 2.9.68, 2.9.69, 2.9.70, 2.9.71, 2.9.72, 2.9.73, 2.9.74, 2.9.75, 2.9.76, 2.9.77, 2.9.78, 2.9.79, 2.9.80, 2.9.81, 2.9.82, 2.9.83, 2.9.84, 2.9.85, 2.9.86, 2.9.87, 2.9.88, 2.9.89, 2.9.90, 2.9.91, 2.9.92, 2.9.93, 2.9.94, 2.9.95, 2.9.96, 2.9.97, 2.9.98, 2.9.99, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 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4.85, 4.86, 4.87, 4.88, 4.89, 4.90, 4.91, 4.92, 4.93, 4.94, 4.95, 4.96, 4.97, 4.98, 4.99, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27, 5.28, 5.29, 5.30, 5.31, 5.32, 5.33, 5.34, 5.35, 5.36, 5.37, 5.38, 5.39, 5.40, 5.41, 5.42, 5.43, 5.44, 5.45, 5.46, 5.47, 5.48, 5.49, 5.50, 5.51, 5.52, 5.53, 5.54, 5.55, 5.56, 5.57, 5.58, 5.59, 5.60, 5.61, 5.62, 5.63, 5.64, 5.65, 5.66, 5.67, 5.68, 5.69, 5.70, 5.71, 5.72, 5.73, 5.74, 5.75, 5.76, 5.77, 5.78, 5.79, 5.80, 5.81, 5.82, 5.83, 5.84, 5.85, 5.86, 5.87, 5.88, 5.89, 5.90, 5.91, 5.92, 5.93, 5.94, 5.95, 5.96, 5.97, 5.98, 5.99, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20, 6.21, 6.22, 6.23, 6.24, 6.25, 6.26, 6.27, 6.28, 6.29, 6.30, 6.31, 6.32, 6.33, 6.34, 6.35, 6.36, 6.37, 6.38, 6.39, 6.40, 6.41, 6.42, 6.43, 6.44, 6.45, 6.46, 6.47, 6.48, 6.49, 6.50, 6.51, 6.52, 6.53, 6.54, 6.55, 6.56, 6.57, 6.58, 6.59, 6.60, 6.61, 6.62, 6.63, 6.64, 6.65, 6.66, 6.67, 6.68, 6.69, 6.70, 6.71, 6.72, 6.73, 6.74, 6.75, 6.76, 6.77, 6.78, 6.79, 6.80, 6.81, 6.82, 6.83, 6.84, 6.85, 6.86, 6.87, 6.88, 6.89, 6.90, 6.91, 6.92, 6.93, 6.94, 6.95, 6.96, 6.97, 6.98, 6.99, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 7.14, 7.15, 7.16, 7.17, 7.18, 7.19, 7.20, 7.21, 7.22, 7.23, 7.24, 7.25, 7.26, 7.27, 7.28, 7.29, 7.30, 7.31, 7.32, 7.33, 7.34, 7.35, 7.36, 7.37, 7.38, 7.39, 7.40, 7.41, 7.42, 7.43, 7.44, 7.45, 7.46, 7.47, 7.48, 7.49, 7.50, 7.51, 7.52, 7.53, 7.54, 7.55, 7.56, 7.57, 7.58, 7.59, 7.60, 7.61, 7.62, 7.63, 7.64, 7.65, 7.66, 7.67, 7.68, 7.69, 7.70, 7.71, 7.72, 7.73, 7.74, 7.75, 7.76, 7.77, 7.78, 7.79, 7.80, 7.81, 7.82, 7.83, 7.84, 7.85, 7.86, 7.87, 7.88, 7.89, 7.90, 7.91, 7.92, 7.93, 7.94, 7.95, 7.96, 7.97, 7.98, 7.99, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, 8.19, 8.20, 8.21, 8.22, 8.23, 8.24, 8.25, 8.26, 8.27, 8.28, 8.29, 8.30, 8.31, 8.32, 8.33, 8.34, 8.35, 8.36, 8.37, 8.38, 8.39, 8.40, 8.41, 8.42, 8.43, 8.44, 8.45, 8.46, 8.47, 8.48, 8.49, 8.50, 8.51, 8.52, 8.53, 8.54, 8.55, 8.56, 8.57, 8.58, 8.59, 8.60, 8.61, 8.62, 8.63, 8.64, 8.65, 8.66, 8.67, 8.68, 8.69, 8.70, 8.71, 8.72, 8.73, 8.74, 8.75, 8.76, 8.77, 8.78, 8.79, 8.80, 8.81, 8.82, 8.83, 8.84, 8.85, 8.86, 8.87, 8.88, 8.89, 8.90, 8.91, 8.92, 8.93, 8.94, 8.95, 8.96, 8.97, 8.98, 8.99, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12, 10.13, 10.14, 10.15, 10.16, 10.17, 10.18, 10.19, 10.20, 10.21, 10.22, 10.23, 10.24, 10.25, 10.26, 10.27, 10.28, 10.29, 10.30, 10.31, 10.32, 10.33, 10.34, 10.35, 10.36, 10.37, 10.38, 10.39, 10.40, 10.41, 10.42, 10.43, 10.44, 10.45, 10.46, 10.47, 10.48, 10.49, 10.50, 10.51, 10.52, 10.53, 10.54, 10.55, 10.56, 10.57, 10.58, 10.59, 10.60, 10.61, 10.62, 10.63, 10.64, 10.65, 10.66, 10.67, 10.68, 10.69, 10.70, 10.71, 10.72, 10.73, 10.74, 10.75, 10.76, 10.77, 10.78, 10.79, 10.80, 10.81, 10.82, 10.83, 10.84, 10.85, 10.86, 10.87, 10.88, 10.89, 10.90, 10.91, 10.92, 10.93, 10.94, 10.95, 10.96, 10.97, 10.98, 10.99, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14, 11.15, 11.16, 11.17, 11.18, 11.19, 11.20, 11.21, 11.22, 11.23, 11.24, 11.25, 11.26, 11.27, 11.28, 11.29, 11.30, 11.31, 11.32, 11.33, 11.34, 11.35, 11.36, 11.37, 11.38, 11.39, 11.40, 11.41, 11.42, 11.43, 11.44, 11.45, 11.46, 11.47, 11.48, 11.49, 11.50, 11.51, 11.52, 11.53, 11.54, 11.55, 11.56, 11.57, 11.58, 11.59, 11.60, 11.61, 11.62, 11.63, 11.64, 11.65, 11.66, 11.67, 11.68, 11.69, 11.70, 11.71, 11.72, 11.73, 11.74, 11.75, 11.76, 11.77, 11.78, 11.79, 11.80, 11.81, 11.82, 11.83, 11.84, 11.85, 11.86, 11.87, 11.88, 11.89, 11.90, 11.91, 11.92, 11.93, 11.94, 11.95, 11.96, 11.97, 11.98, 11.99, 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8, 12.9, 12.10, 12.11, 12.12, 12.13, 12.14, 12.15, 12.16, 12.17, 12.18, 12.19, 12.20, 12.21, 12.22, 12.23, 12.24, 12.25, 12.26, 12.27, 12.28, 12.29, 12.30, 12.31, 12.32, 12.33, 12.34, 12.35, 12.36, 12.37, 12.38, 12.39, 12.40, 12.41, 12.42, 12.43, 12.44, 12.45, 12.46, 12.47, 12.48, 12.49, 12.50, 12.51, 12.52, 12.53, 12.54, 12.55, 12.56, 12.57, 12.58, 12.59, 12.60, 12.61, 12.62, 12.63, 12.64, 12.65, 12.66, 12.67, 12.68, 12.69, 12.70, 12.71, 12.72, 12.73, 12.74, 12.75, 12.76, 12.77, 12.78, 12.79, 12.80, 12.81, 12.82, 12.83, 12.84, 12.85, 12.86, 12.87, 12.88, 12.89, 12.90, 12.91, 12.92, 12.93, 12.94, 12.95, 12.96, 12.97, 12.98, 12.99, 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 13.9, 13.10, 13.11, 13.12, 13.13, 13.14, 13.15, 13.16, 13.17, 13.18, 13.19, 13.20, 13.21, 13.22, 13.23, 13.24, 13.25, 13.26, 13.27, 13.28, 13.29, 13.30, 13.31, 13.32, 13.33, 13.34, 13.35, 13.36, 13.37, 13.38, 13.39, 13.40, 13.41, 13.42, 13.43, 13.44, 13.45, 13.46, 13.47, 13.48, 13.49, 13.50, 13.51, 13.52, 13.53, 13.54, 13.55, 13.56,

Annex 2: OIE Chapter 8.8 (Infection with Foot and Mouth Disease Virus), Article 8.8.3 & 8.8.4

Article 8.8.3- FMD free country or zone where vaccination is practiced

"In defining a zone where vaccination is practiced the principles of Chapter 4.3 should be followed.

Susceptible animals in the FMD free country or zone where vaccination is practiced should be protected by the application of biosecurity measures that prevent the entry of FMDV into the free country or zone. Taking into consideration physical or geographical barriers with any neighboring infected country or zone, these measures may include a protection zone.

Based on the epidemiology of FMD in the country, it may be decided to vaccinate only a defined subpopulation comprised of certain species or other subsets of the total susceptible population.

To qualify for inclusion in the list of FMD free countries or zones where vaccination is practiced, a Member Country should:

1. have a record of regular and prompt animal disease reporting;
2. send a declaration to the OIE stating that, based on the surveillance described in point 3), within the proposed FMD free country or zone:
 - a. there has been no case of FMD during the past two years;
 - b. there has been no evidence of FMDV transmission during the past 12 months;
3. supply documented evidence that:
 - a. surveillance in accordance with Articles 8.8.40 to 8.8.42, has been implemented to detect clinical signs of FMD and demonstrate no evidence of:
 - i. infection with FMDV in unvaccinated animals;
 - ii. FMDV transmission in vaccinated animals;
 - b. regulatory measures for the prevention and early detection of FMD have been implemented;
 - c. compulsory systematic vaccination in the target population has been carried out to achieve adequate vaccination coverage and population immunity;
 - d. vaccination has been carried out following appropriate vaccine strain selection;
4. describe in detail and supply documented evidence that the following have been properly implemented and supervised:
 - a. in case of FMD free zone, the boundaries of the proposed FMD free zone;
 - b. the boundaries and measures of a protection zone, if applicable;
 - c. the system for preventing the entry of FMDV into the proposed FMD free country or zone, in particular the measures described in Articles 8.8.8, 8.8.9, and 8.8.12;
 - d. the control of the movement of susceptible animals and their products into the proposed FMD free country or zone.

The Member Country or the proposed free zone will be included in the list of FMD free countries or zones where vaccination is practiced only after the submitted evidence, based on the provisions of Chapter 1.11, has been accepted by the OIE.

Retention on the list requires that the information in points 2), 3) and 4) above be re-submitted annually and changes in the epidemiological situation or other significant events including those relevant to points 3 b) and 4) should be reported to the OIE in accordance with the requirements in Chapter 1.1.

If a Member Country that meets the requirements of a FMD free country or zone where vaccination is practiced wishes to change its status to FMD free country or zone where vaccination is not practiced, it should notify the OIE in advance of the intended date of cessation of vaccination and apply for the new status within 24 months of the cessation. The status of this country or zone remains unchanged until compliance with Article 8.8.2 is approved by the OIE. If the dossier for the new status is not provided within 24 months then the status of the country or zone as being free with vaccination will be suspended. If the country does not comply with requirements of Article 8.8.2, evidence should be provided within three months that it complies with Article 8.8.3. Otherwise the status will be withdrawn.

In the event of the application for the status of a FMD free zone where vaccination is practiced to be assigned to a new zone adjacent to another FMD free zone where vaccination is practiced, it should be stated if the new zone is being merged with the adjacent zone to become one enlarged zone. If the two zones remain separate, details should be provided on the control measures to be applied for the maintenance of the status of the separate zones and particularly on the identification and the control of the movement of animals between the zones of the same status in accordance with Chapter 4.3.

Article 8.8.4- FMD free compartment

A FMD free compartment can be established in either a FMD free country or zone or in an infected country or zone. In defining such a compartment the principles of Chapters 4.3 and 4.4 should be followed. Susceptible animals in the FMD free compartment should be separated from any other susceptible animals by the application of an effective biosecurity management system.

A Member Country wishing to establish a FMD free compartment should:

1. have a record of regular and prompt animal disease reporting and, if not FMD free, have an official control programme and a surveillance system for FMD in place in accordance with Articles 8.8.40 to 8.8.42 that allows knowledge of the prevalence, distribution and characteristics of FMD in the country or zone;
2. declare for the FMD free compartment that:
 - a. there has been no case of FMD during the past 12 months;
 - b. no evidence of infection with FMDV has been found during the past 12 months;
 - c. vaccination against FMD is prohibited;
 - d. no animal vaccinated against FMD within the past 12 months is in the compartment;
 - e. animals, semen, embryos and animal products may only enter the compartment in accordance with relevant articles in this chapter;

- f. documented evidence shows that surveillance in accordance with Articles 8.8.40. to 8.8.42. is in operation;
 - g. an animal identification and traceability system in accordance with Chapters 4.1. and 4.2. is in place;
- 3. describe in detail:
 - a. the animal subpopulation in the compartment;
 - b. the biosecurity plan to mitigate the risks identified by the surveillance carried out in accordance with point 1).

The compartment should be approved by the Veterinary Authority. The first approval should only be granted when no case of FMD has occurred within a ten-kilometer radius of the compartment during the past three months" (OIE).

Source: OIE