



WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

Report of the 22nd Meeting of the OIE SEACFMD National Coordinators



Ulaanbaatar, Mongolia, 25-27 June 2019



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Excusive Summary

The 22nd meeting of the OIE SEACFMD National Coordinators

25-27 June 2019, Ulaanbaatar, Mongolia

The 22nd meeting of the OIE SEACFMD National Coordinators reviewed the past accomplishments of the SEACFMD Campaign and provided key directions for the next Roadmap 2021-2025. One of the key suggestions was for the countries and the SEACFMD Campaign to identify and develop synergies between FMD control and other priority TADs in the region. The meeting also discussed two key technical issues: FMD emergency vaccination for infected countries, and alternative surveillance to improve confidence of disease freedom in FMD-free countries.

The Meeting gathered around 50 participants, including SEACFMD National Coordinators from the members (ASEAN countries, China and Mongolia), representatives from neighbouring countries/territories, scientists from OIE FMD Reference Laboratories and research institutes, and representatives from international organisations and private sectors. In addition to traditional topics, a new dynamic was proposed for this meeting: interactive sessions and targeted training workshops were also organised.

The detailed review of the global and regional FMD situation highlighted the maintenance in the sub-region of O/ME-SA/Ind2001 strain, which now has similar detection frequencies as the historically endemic strains such as O/SEA/Mya-98 and O/ME-SA/PanAsia. Evidences of circulation of Serotype Asia1 in Myanmar via ELISA and VNT were also discussed and should be further explored, with the support of the OIE Reference Laboratories.

In the meantime, an assessment along the Progressive Control Pathway for FMD (PCP-FMD) was organised to assess progress since the 1st evaluation organised during the OIE SEACFMD Sub-Commission meeting in 2017. Countries in PCP Stage 1 & 3 were interviewed by 2 teams composed of OIE, FAO and an FMD expert.

For the first time, an interactive tool (Mentimeter) was used to get the inputs of the participants to share their perception about the progress/impact of the SEACFMD Campaign and their views about the next SEACFMD Roadmap. The outputs will be presented to the OIE Delegates of SEACFMD members at the next SEACFMD Sub-Commission Meeting to be organised at the margin of the 31st OIE Conference of the OIE Regional Commission for Asia, the Far East and Oceania in Japan in September 2019.

Acknowledging that the African swine fever (ASF) crisis will likely reduce the already scarce resources dedicated to animal disease control, a workshop was organised to brainstorm synergies of FMD control with other activities related to livestock health and production. Country representatives came up with practical proposals on synergised efforts in the country's own context.

Lastly, the participants drafted and prioritised the meeting's recommendations, identifying these three as of most relevance: 1. to improve the FMD diagnosis at national and regional level and to support the recommendations of the Regional Expert Group on enhancing molecular diagnosis and FMD sampling; 2. To identify and develop synergies between FMD

control and other TADs; 3. To strengthen continuous surveillance, including early warning systems, and consider retrospective surveys in case of late or insufficient reporting.

Opening Ceremony

H.E. Saule Janimkhan, Vice Minister of Ministry of Food, Agriculture and Light Industry of Mongolia gave a welcome speech. She underlined Mongolia joined the OIE in May 1989, and has been an active member since then, including hosting the 29th the OIE Regional Commission Meeting for Asia and the Pacific Region in 2015 and a GF-TADs meeting in 2017. She also indicated that the Parliament of Mongolia approved a new Law on Animal Health in 2017 which has become effective in 2018. The law supports the restructuration of the General Authority for Veterinary Services in order to enhance their capacity in the prevention and control of animal diseases, ensure food safety and security and support exports.

She highlighted the SEACFMD campaign that was initiated in the 1990s has provided a platform for countries to collaborate on FMD control in the region. She welcomed all participants and wished a successful and productive meeting.

Dr Ronello Abila, the OIE Sub-Regional Representative for South-East Asia, congratulated Mongolia for the new animal health law activation which would facilitate the enforcement of OIE standards of Veterinary Services. He presented the main objectives of the meeting and the 3-day meeting agenda.

Dr Tumendemberel, CVO of Mongolia, highlighted the expected benefits of the meeting. In Mongolia, food safety and security issues are of great concerns for the Government, which has strong desires to meet the demand of the consumers as well as to increase meat export.

Session 1: Set the Scene

1.1 Review of SEACFMD Campaign progress against the previous recommendations

[Dr Ronello Abila, OIE SRR-SEA]

Dr Ronello Abila, OIE Sub-Regional Representative for South-East Asia, presented the progress of the SEACFMD campaign during the 2018/19 period. In the technical field, the OIE Sub-Regional Representation for South-East Asia (SRR-SEA) continued supporting Member Countries in FMD outbreak reporting and investigating, and implementing FMD mass vaccination campaign and post-vaccination monitoring (PVM) in Southern Laos and Central Myanmar under the New Zealand project. Dr Abila also updated participants on the progress of China-funded safer cross-border trade project.

In the communication and advocacy field, various public awareness activities on FMD control and vaccination were launched in pilot areas in Southern Laos and Central Myanmar under the NZ funded FMD project.

In the coordination and programme management field, the TOR of SEACFMD Sub-Commission, Steering Committee and National Coordinators have been amended and circulated for comments. Participants were also informed that a special Sub-Commission meeting was organised in the margin of the 2019 OIE General Session at Paris, during which the revised TOR were presented to the OIE Delegates of SEACFMD Countries for discussions. During that meeting, the two vice-presidents were elected, namely the Delegates of China and the Philippines. In addition, the Delegates of Thailand and Myanmar were elected as two additional members of the SEACFMD steering committee. The next Sub-Commission meeting would be organised at the side of the Conference of the Regional Commission in September 2019 in Japan.

The OIE SRR-SEA updated the participants on the progress made on a compilation of key recommendations of the 24th SEACFMD Sub-Commission for meeting and the 22nd SEACFMD National Coordinators meeting..

1.2 Regional FMD Situation

[Dr Yu Qiu, OIE SRR-SEA]

The presentation summarised the FMD situation in the SEACFMD region in 2017 and 2018. In 2017, 330 FMD outbreaks were reported in mainland South-East Asian countries, China, and Mongolia. Amongst the reported outbreaks, 169 were due to serotype O, 15 were due to serotype A, 2 were due to serotype Asia-1 and the remaining 144 were not typed. The lineages of FMDV detected include O/SEA/Mya-98, O/ME-SA/Ind-2001, O/ME-SA/PanAsia, O/Cathay, A/Asia/Sea-97 and Asia 1/Asia/G-VIII. Significant epidemiological changes in 2017 include: 1) the 1st detection of serotype Asia-1 in SEACFMD region since 2009 in Rakhine state of Myanmar; 2) the continuous geographic expansion of O/ME-SA/Ind2001 which has been reported from almost all the endemic SEACFMD countries; 3) the 1st reported FMD field outbreaks in Northern Lao PDR since May 2013.

In 2018, 458 FMD outbreaks were reported in mainland South-East Asian countries, China, and Mongolia. Amongst the reported outbreaks, 211 were due to serotype O, 46 were due to serotype A, and the remaining 243 were not typed. The detected lineages of FMDV include O/SEA/Mya-98, O/ME-SA/Ind-2001, O/ME-SA/PanAsia, O/Cathay, and A/Asia/Sea-97. Significant epidemiological events in 2018 include: 1) detection of O/ME-SA/Ind2001 at endemic frequencies; 2) increased serotype A outbreak incidences in Thailand; 3) emergence of a genetic variant serotype A virus in Southern Lao PDR.

It is well recognised that FMD remains largely under-reported and/or under-detected in the region and thus very limited conclusions can be derived from the rather limited data.

1.3 Report of the Regional Reference Laboratory for South-East Asia (RRL-SEA): the OIE Reference Laboratory for FMD based in Pakchong, Thailand

[Dr Sahawatcharau, RRL-SEA, Thailand]

In 2019 (Jan-May), the RRL-SEA only received samples from Thailand (n=130). In 2018, samples had been received from Thailand (n=276) and Lao PDR (n=24). The predominant serotype detected in 2019 is serotype A, lineage A/Asia/Sea-97. In 2018, serotype O was predominant, with the most common viral lineage being O/ME-SA/Ind2001e, O/ME-SA/PanAsia and O/SEA/Mya-98. In 2019, the only viral lineage detected so far is O/ME-SA/Ind2001e. Recent sero-surveillance undertaken in Thailand indicates that approximately 2.5% of cattle population were positive for FMDV non-structural protein (NSP) antibodies. Liquid-Phase Blocking ELISA (LPBE) vaccine matching against the locally produced with O/189/87 vaccine strain shows that there is a good match against field serotype O viruses. However, for serotype A, locally produced A118/87 and A/Sakolnakorn/97 vaccine strains did not have a good antigenic match against field isolates from 2018-2019; but the locally produced A/Lopburi/2012 vaccine strain is good match against these viruses. Serotype Asia-1 has not been found recently in the region – since 2017 in Myanmar. A regional inter-laboratory proficiency test scheme on antigen and antibody ELISA continues being organised by the RRL-SEA. In Addition, RRL-SEA has continued to provide trainings for FMD diagnosis in collaboration with the International Atomic Energy Agency (IAEA). RRL-SEA has also collaborated with the Australian Animal Health Laboratory (AAHL) for developing new FMDV molecular diagnostic technique.

1.4 Report of the OIE Reference Laboratory for FMD from China

[Dr Hong Yin, Lanzhou Veterinary Research Institute (LVRI), China]

In China, there were 27 FMD outbreaks in 2018, 26 of them due to type O, and one caused by type A. By July 2019, four outbreaks have been reported. In the last 18 months, 139 samples (including epithelia, swab samples or OP fluid samples from field cases) were tested for virus isolation or Ag-ELISA, 37 of them were type O, 1 was type A, 60 were only molecular positive. A total of 2565 samples were collected from healthy animals for routine surveillance, and have been examined by real-time RT-PCR, and 44 were detected as FMDV RNA positive. In addition, 95 samples were used for gene sequencing, 90 were positive for type O and 5 were positive for type A. Also, 2820 sera were tested by LPBE, and positive rate was 70%. For FMDV

strain typing, it was found that O/CATHAY, O/Ind-2001, O/Mya-98, O/PanAsia were the causative agents of field outbreaks, and type A was caused by only one strain, A/Sea-97; the ratio of these 5 strain was 28.4%, 26.3%, 18.9%, 21.1%, 5.3%, respectively. Active surveillance was organised in pig abattoirs in 12 provinces, in North-Eastern China (where to establish FMD free zone with vaccination), and in border areas of South-Western and North-Western China. Vaccine matching test using the local vaccine strain O/MYA98/BY/2010 has also been carried out. LVRI also organized national PT jointly with China Animal Disease Control Center in April 2018, including FMD and SVA real-time RT-PCR testing. The laboratory also actively took part in the international activities.

Session 2: Country FMD Prevention and Control Activities

2.1 Mongolia – FMD surveillance and control in a pastoral production system

[Dr Batsukh Basan Saliman]

During 2017-2018, FMD outbreaks which affected Mongolian cattle and small ruminant were observed in the Eastern region, and near the Central area. Only serotype O viruses were detected, involving O/Mya-98, O/Ind2001, and O/PanAsia strains. NSP serosurveillance study showed a prevalence of 0.1% in the Western region, 1% in the Central region, and 15% in the Eastern region. The FMD vaccine used was the bivalent oil adjuvant vaccine composed of O/PanAsia and A/SEA-97 strains, imported from Russia. The presentation also summarised the challenges, including 1) weak movement control, including cross-border and domestic movements of livestock and wildlife; 2) significant delay in outbreak notification and detection; 3) low vaccine availability and vaccination coverage; 4) harsh weather in Winter preventing rapid control activities; 5) insufficient public budget.

2.2 China – Combine FMD control with ASF activities through enhanced farm biosecurity

[Dr Hao Dong and Dr Quangang Xu]

To prevent and control of FMD, the Ministry of Agriculture and Rural Affairs (MARA) of China developed a National FMD Prevention and Control Project (2016-2020), implemented via annual vaccination surveillance programme. In 2019, all cattle, sheep, pigs, camels, and deer should compulsory be vaccinated with type O FMD vaccine, and cows and breeding bulls should be vaccinated with type A FMD vaccine. The provincial animal disease control centres are responsible for the monitoring of FMD, and the National Reference Laboratory for FMD is in charge of FMD monitoring in high-risk areas.

From August 2018 to June 2019, a total of 136 African swine fever (ASF) outbreaks, including 3 outbreaks in wild boars, were reported by Chinese veterinary authority to the OIE. The Chinese government paid great attention to the prevention and control of ASF, and took effective measures in ASF control, including knowledge education, strengthening pig quarantine, transportation supervision, releasing and reporting outbreaks, improving the diagnostic capacity of ASF, as well as enhancing the capacity of emergency response, so on and so forth.

2.3 Thailand – Experience learnt from the OIE FMD/PPR expert group mission

[Dr Sith Premashthira]

Thailand has been recognised free from PPR by the OIE in 2014 and has its FMD Official Control Programme endorsed by the OIE in 2016. In 2018, there was a comprehensive review of Thailand's annual reconfirmation of PPR free status and official control programme by the OIE Scientific Commission for Animal Diseases. It has been followed by an OIE expert mission from 18 to 22 March 2019. The presenter detailed the preparation process by a working group (WG) chaired by Deputy Director-General on Animal Health. The WG drafted a 5-day programme to cover all objectives and facilities to be visited in the TOR, while ensuring biosecurity for the places to visit. The venues of the visit were DLD Headquarter, Pakchong (FMD laboratory and FMD vaccine production plant), Eastern Region (FMD free zone

establishment), National Institute of Animal Health (PPR laboratory), Tak province (border area), and Animal Quarantine Stations (Nakhonratchasima, Tak, and Bangkok Seaport). During visiting DLD HQ, experts had an opportunity to visit Emergency Operation Center (EOC) room for animal disease control that now DLD mainly uses as African swine fever prevention center.

The WG also planned for the logistics during the mission and organized a pre-visit to ensure that the local authorities and stakeholders would provide the right information in a short time during the visit.

At the mission closing, the OIE experts provided the main preliminary observations and suggested recommendations. Then, the OIE sent the Draft Report of the OIE Expert Mission to Thailand with regard to PPR and FMD for DLD's comment back. The final version of the mission report would be forwarded to the OIE Scientific Commission for Animal Diseases for its consideration.

Recommendations cover areas such as small ruminant import procedure, lab test for PPR, PPR surveillance, FMD vaccine testing and contingency planning strategies for livestock market, slaughterhouse, and animal quarantine camp. This mission has also been an opportunity for Thailand to review regulations, practices, barriers, and solutions together. Progress on the implementation of the recommendations and improvements would be reported to the OIE via the annual reconfirmation for PPR and FMD in November 2019.

2.4 Global FMD situation

[Dr Donald King, World Reference Laboratory for FMD (WRLFMD), Pirbright, UK]

Dr Donald King, head of WRLFMD, gave a video presentation to provide participants with a global overview of the samples received and tested from 2017 to 2019, with a special focus on viruses from pool 1 which the SEACFMD region belongs to. Endemic strains normally found in South-East Asia have continued to be detected in the region. In addition, the emergence and spread of O/ME-SA/Ind2001 lineage since 2015 in the region and the detection of serotype Asia-1 in Myanmar in 2017 were highlighted.

Dr King also presented the recent Asia-1 sero-surveillance results from Myanmar samples, which were firstly tested against Asia-1 by LPBE at RRL-SEA and then re-tested at WRLFMD by virus-neutralisation-tests (VNT). The 1st set of 151 sera were collected from Rakhine, Mage and Shan states in early 2018 and all tested positive by LPBE; only 2 samples were positive in VNT. In the 2nd set of samples, 51 samples collected in Mandalay and Sagaing states in January 2017 were tested by VNT and only 6 were positive, compared to 42 positive reactors in LPBE. Dr King explained that the discrepancy between LPBE and VNT is at least due to the fact that structure protein antibodies measured by LPBE and VNT target different epitopes. FMD virus capsids are easily degraded; serotypic determinants are on the outside of the capsid, while many internal epitopes are shared between serotypes. Host polyclonal responses are directed at antigenic sites (contribute to neutralising responses), other surface "binding" epitopes and epitopes exposed after capsid degradation. When VNT only detects neutralising antibodies

(surface exposed at defined sites), LPBE detects a wider-range of epitopes and cannot distinguish between external and internal epitopes.

Discussions focused on the need for quality assurance of serological tests used in the region and a guideline on how to use serological tests properly to address different objectives. Participants were informed that the OIE SRR will consider to include this topic in the next Regional Expert Group (REG)-FMD meeting to be held in October/November 2019.

2.5 Presentations from Lao PDR & Myanmar

[Lao PDR & Myanmar]

The representatives of Lao PDR and Myanmar, currently in PCP Stage 1 requested to be assessed for progression to PCP Stage 2. They reported on the FMD situation in their country, the progress made in FMD surveillance, control measures and presented their Risk-Based Strategic Plan (RBSP). Synergies between FMD control and other transboundary animal diseases (TADs) activities in the areas of veterinary services and laboratory capabilities were also described. The presentations as well as the narrative descriptions are available on the OIE Website and in Annex 5 of this report respectively.

Session 3. Assessment of countries' FMD Progressive Control Pathway (PCP) Stage

As part of the process to progress along the PCP and provide evidence of maintenance in a previously accepted PCP Stage, countries in PCP Stage 1 & 3 were interviewed by 2 teams composed of OIE, FAO and an FMD expert.

Lao PDR and Myanmar were interviewed with the aim to assess whether they were ready to progress to PCP Stage 2. It was concluded that their RBSPs were well-structured and robust and were lacking very few information to be ready to progress to PCP Stage 2. They were offered the possibility to review and finalise the RBSP before submitting it again to the SEACFMD Secretariat for consideration and possible presentation at the next meeting of the SEACFMD Sub-Commission.

Cambodia, currently in PCP Stage 1, did not request to be assessed against PCP Stage 2; however, the way forward for FMD control was lengthy discussed with regard to the situation in the Cambodian Veterinary Services and the occurrence of other major TADs in the country.

Malaysia and Vietnam, currently in PCP Stage 3, reported on the maintenance of their activities and it was concluded that they could remain in PCP Stage 3.

All five countries were encouraged to make use of the new PCP self-assessment questionnaire to better identify the remaining gaps to progress forward.

Session 4: Technical session in breakout group:

4.1 Emergency vaccination in FMD endemic countries

[Dr Michel Lombard]

Dr Michel Lombard was invited as a resource speaker to give practical insights on how to conduct emergency vaccination in FMD endemic countries. He began his presentation by reminding the recently developed chapter in the OIE *Terrestrial Animal Health Code* on vaccination and highlighted the definitions related to emergency vaccination.

After having presented the different categories of the emergency vaccination, he reminded the minimal infrastructure, technical capacity and prerequisites for mass vaccination. He insisted on the need to adapt ambition to available resources, and linked it to the Progressive Control Pathway. Focus was made on some key aspects of logistic preparedness, such as the cold chain; vaccine storage; management of the vaccination; accurate estimation of the population to be vaccinated. Finally, Dr Lombard insisted on the need to closely monitor the campaign.

The need to plan a revaccination campaign in an emergency setting was lengthy discussed, such as the criteria for decision-making to begin an emergency vaccination in an endemic setting.

4.2 Alternatives surveillance approaches to increase confidence in disease freedom

[Dr Ronello Abila]

Dr Ronello Abila facilitated a workshop on alternatives surveillance approaches to increase confidence in disease freedom. Members with FMD free status/zones (the Philippines, Chinese Taipei, Indonesia, Japan, Malaysia, Singapore and New Zealand) shared their experience on various components of surveillance such as clinical surveillance, slaughterhouse surveillance and virological/serological surveillance. Articles 1.4.6 and 8.8.40. of the OIE *Terrestrial Code* were discussed. The topics discussed were case reporting, risk assessment, stratified sampling approach, and sampling size. Some of the key areas highlighted by the Members were the assessment of surveillance system, confidence level and sensitivity to respond to suspected cases, early detection and response. It was also discussed that serological surveillance may not be very useful for early detection of suspected cases in a FMD Free country or zone. It was suggested that countries should develop a more robust risk-based surveillance to be able to detect suspected cases. It was also suggested that they submit the proposed risk-based surveillance plan in their next submission of the annual reconfirmation and inform OIE with proper justification of their intention to stop serological surveillance.

The other issues discussed at the workshop are summarized in the table below.

Members	Feedback
I. Early detection	
Chinese Taipei	FMD free zone with vaccination.
Indonesia	Strong farmer reporting system, timely and accurate information flow is through iSIKHNAS. All the suspected cases get investigated at the sub national level currently.
Japan	Has the policy to promote early detection, if the farmer report on time receives full compensation. The farmers who do not report on time will face penalty and eligible only for reduced compensation.

Philippines	Compensation schemes are important to encourage the farmers to report suspected cases as well as public awareness on recognition of the disease and reporting. The Philippines adopt both models.
Malaysia	No compensation policy for FMD but there is compensation for TB and Brucellosis.
New Zealand	Encourage veterinarian to notify and the government provides support to lab diagnosis, investigation and there is a compensation policy.
Singapore	Event-based serological surveillance.
II. Legal provision	
Indonesia	As per the law, for farmers/producers it is obligatory to report and authorities to investigate if fails both producers and authorities are subject to penalty.
Japan	Veterinary Preparedness Plan for FMD exists approved by Ministries.
Malaysia	There is no separate law for the free zone but Malaysian law is applicable.
III. Strategies	
Chinese Taipei	600 farm surveillance and 40,000 serum samples collected annually.
Indonesia	- Establish a screening system for virus family using universal primers (developed in own lab) and 8 investigation centers have been established. 1% of prevalence - 300 samples collected during sero - surveillance
Japan	Public awareness material regularly disseminated by the government to the farmers and producers.
New Zealand	- Training of 30 veterinarians from the South and North Islands have been trained. - The capacity of the laboratory is linked to the surveillance.
Philippines	30 samples /provinces and 90 sample /small Island
Singapore	Inspection of 3 farms, antemortem examination of imported animals from Indonesia, free zone of Malaysia.

Session 5: Partner Reports

5.6 Center for Policy Research, Mongolian non-governmental policy research institution

[A.Enkh-Amgalan]

The presentation was given by Dr A. Enkh-Amgalan, Director of Center for Policy Research (www.cpr.mn) to share the perspective of the future of Mongolia's livestock industry. The livestock industry is vital to the country's economy. It employs nearly 30% of the workforce and generates nearly 12% of GDP. The animal husbandry business in Mongolia is directly affected by the harsh weather and the fact that herders still follow the conventional pasture herding method, which makes them especially vulnerable to extreme climate events. The low

productivity, combined with existing gaps in the veterinary infrastructure and marketing system, has resulted in low prices for animal products and limit the exportation potential of the livestock industry.

Nowadays, the world animal food and raw materials market is dominated by products from intensive farms as a result of the competition for productivity growth in countries with favourable natural endowments. Meanwhile high-value markets for organic products are expanding because of health concerns over intensive farming products. Mongolia's harsh natural endowments mean that it has no competitive advantage in intensive farming and productivity growth. Instead it has comparative advantages of organic, free-range products from natural pastures. Mongolia needs to realize these advantages in order to compete in international markets. For this to happen it has to, firstly, keep pastures healthy and fresh, secondly, certify animal products on internationally acknowledgeable levels, and thirdly, access international niche markets.

5.6 FAO RAP

[Dr Shin YeunKyung and Dr Junxia Song]

The presentation introduced FAO's recent activities on FMD with focus on South-East Asia, especially on laboratory capacity building and networking.

Those activities include quality assurance programme such as laboratory mapping tool and proficiency testing programme, biosafety programme, bioinformatics capacity building programme, and laboratory networking activities among member countries and regional experts for information sharing on zoonotic and priority transboundary animal diseases.

As part of laboratory networking and collaboration, the establishment of a Regional Expert Group on FMD, by the FAO and OIE in Bangkok in May 2019, were also mentioned.

The background of the meeting, objectives, expected outputs and progress of the meeting were briefly presented. The final recommendations would be reported at the ASEAN Lab-TAG in September and at the SEACFMD LabNet meeting in October 2019.

5.6 New Zealand MPI

[Dr Andrew McFadden]

New Zealand's preparedness for FMD fits into three categories: firstly, hardware (work on the new PC3+ national containment laboratory due to be completed end of 2019, development of portable PCR diagnostics used for foot-and-mouth disease and its differential diagnoses), secondly, software and training (Response database "Tiaki", Tracing (improvements in the NZ NAIT system and increased compliance related activities), Review of NZ's passive surveillance system (using SurF surveillance evaluation methods), Review of biosecurity legislation (NZ Biosecurity Act 1993) and thirdly, government coordination (development of a whole of government response plan (<https://www.mpi.govt.nz/dmsdocument/32386-the-new-zealand-government-foot-and-mouth-disease-response-and-recovery-plan>), [Response exercises "Whakatau Korero"](#)). Preparedness over the previous 12 months and into the future

has been significantly influenced by recent biosecurity responses, particularly that to *Mycoplasma bovis*.

5.6 Massey University

[Dr Cord Heuer]

The first part of this presentation gave indication that risk-based vaccination in Myanmar may lead to the reduction of virus circulation in non-vaccinated area, close to vaccinated areas.

Three years of monitoring through a baseline survey and 2 years of post-vaccination monitoring (PVM), and a recent animal movement survey are the data sources for this update. A first trend was observed that vaccination was not only associated with a decrease of an antibody response to circulating virus in vaccinated areas (coverage >90%), but that a similar reduction was suggested in adjacent non-vaccinated areas (coverage <10%). This trend needs to be consolidated by further PVM in vaccinated and non-vaccinated areas.

The second part of the presentation described a movement study in Lao PDR and Myanmar. Interviews with 380 villagers (headmen, CAHWs) and 315 traders (middlemen, exporters, slaughterers) showed the following trends about movements between villages:

- Most small holders (68%) sourced their beef and draft cattle directly from other small holders of different villages. Only 18% were purchased from traders and 11% from markets;
- Most movements covered 5-30km distance within townships, very few were longer than 100km;
- However, traders often keep animals on their own properties for 4-6 months, hence such traders may be targets for extension and biosecurity measures;
- A large number of cattle move to a small number of villages, thus farmers and traders in those villages are likely to be effective targets for control measures;
- Relatively few animals are traded and moved through markets of which relatively few exist, thus addressing markets with biosecurity measures may have limited efficiency.

As for other, this presentations and the details of these studies are available on the OIE website.

5.6 Sydney University

[Dr Peter Windsor]

The provision of clinically effective, easily deliverable and readily affordable pain relief and antisepsis, without antimicrobials, for animals suffering with clinical FMD, is an important intervention for FMD management that until recently, has largely been ignored. The presentation suggested that spraying FMD-related wound with a formulation inducing analgesia, antisepsis and reduced healing times could help cattle to recover from FMD. A product, developed and registered in Australia, was tested in a recent FMD outbreak in northern Laos, on 136 large ruminants presenting clinical FMD. The formulation was applied to their oral and pedal lesions. The presentation described an improvement in the

demeanour of the treated animals. This clinical trial suggested that this treatment would improve animal welfare and may encourage livestock farmers to report FMD outbreaks as they seek supplies of therapeutics.

5.6 Australian Animal Health Laboratory

[Dr Wilna Vosloo]

The FMD *READY* project aims to ensure preparedness for a disease incursion in Australia by bringing together scientists across disciplines and working closely with stakeholders in different areas. It is important to ensure an exotic disease is recognised promptly to enable a fast response, and this depends on effective passive surveillance, with farmers playing a critical role. By developing farmer-led partnerships across the supply chain using innovation platforms we can improve surveillance. Access to laboratory diagnostics, efficacious vaccines and pre-border knowledge of disease epidemiology is equally important to ensure a successful response. Furthermore, there is a need for tools to support decisions regarding control options and for post outbreak surveillance. The financial impact of these control options is being evaluated by economic modelling. In addition, an application that relies on big data is investigating the role of wind dispersion on virus movements as well as using virus genome sequence data to forensically trace the path of virus spread. Together these tools will ensure better disease control with less economic and social impact and could be equally applicable to endemic situations.

Session 6: Synergizing FMD control with other activities

6.1 Synergized efforts on controlling FMD and activities to promote livestock health and production.

[Dr Jim Young]

Dr Jim Young presented the benefits of synergized efforts on controlling FMD and activities to promote livestock health and production. The opportunity to initiate actions that will have beneficial consequences far beyond the control of FMD was described by examples. It was emphasized that FMD control can also benefit from other diseases control endeavours or other livestock health or production activities. Animal health activities conducted at village level such as antiparasitic and other treatments, surveillance for priority disease, sampling vaccination against HS, anthrax, brucellosis, biosecurity can be examined for the synergies. The other activities which exist in local context, such as artificial insemination or feed delivery, can be explored too. Moreover, stakeholder mapping and appropriate engagement with such actors for examples role and responsibilities of farmers, para veterinarians, community animal health workers (CAHWS), veterinarians, Livestock production officers, traders, markets / slaughterhouse personnel should be assessed to identify effective and feasible approaches and opportunities synergizing FMD control with other activities and vice versa.

6.2 Workshop: combining FMD control with the other activities to promote livestock health and production on the country level

Dr Laure Weber-Vintzel and Dr Jim Young jointly facilitated workshop with a task to identify a current non-FMD agricultural priority and non-FMD focused activity where Members could possibly extend to FMD control. In addition, participants were also encouraged to identify how to integrate and achieve synergized FMD control into the prioritized programme. The participants also discussed current opportunities and areas to extend a current FMD focused activity to other diseases. All countries had the opportunity to present their workshop output and to describe one pragmatic activity they could develop to improve synergies.

Session 7: SEACFMD Roadmap 2021-2025

7.1 Evaluation of the impacts of the SEACFMD campaign and visions for the new OIE SEACFMD Roadmap 2021-2025

[Dr Ronello Abila]

Dr Ronello Abila, Sub-Regional Representative for South East Asia, provided a retrospective description of the evolution of the SEACFMD Campaign. The past goals and their evolution were described, as well as the main components of each roadmap.

7.2 Workshop: pillar components for the new Roadmap- country discussions and mapping

Participants were invited to share their perception on the SEACFMD campaign since its beginning, via an interactive tool (Mentimeter). While the detailed and complete feedback is available in the presentation named “SEACFMD Roadmap (2021-2025)”, the table extracts some important feedbacks:

Main achievements	Main strengths	Main weaknesses
• Platform for coordination and information sharing - Increased transparency • Better understanding of the FMD epidemiology • Maintenance of FMD freedom • Mapping of animal movement	• Collaboration • Platform for shared information • Regional holistic approach • Political, technical and financial support • Safe trade facilitation • In line with OIE standards and ASEAN Animal Health Cooperation	• Resource availability and continued reliance on external funding • Difficult implementation of the strategy • Limited engagement • Too much focus on FMD only • Biosecurity

Then, participants were invited to think and share their views about what should be the next Roadmap of the SEACFMD covering the 2021-2025 period. Here again, the table below only shows extracts from the extensive feedback received on the opportunities that can be harnessed to improve the SEACFMD Campaign, the threats to overcome and some objectives for the 2021-2025 Roadmap.

Opportunities	Threats to overcome	Objectives for the 2021-2025 Roadmap
• Network, Coordination, cooperation • Combination with other TADs (e.g. ASF) • ASEAN commitment to rationalising animal movement control and biosecurity procedure • Increased public-private partnership • Extension to other countries	• Funding • Complacency/Loss of interest/commitment • Compete with other TADs • Perception of key stakeholders • Incursion of new exotic strains • Veterinary Service resources/capability	• Increased reporting and shared samples • Reduced incidence • PCP stage improvement • Maintenance and increase of FMD free areas • Improved regional and national FMD laboratory diagnostic • Improved synergies with other TADs/ non-FMD activities • Improve outbreak investigation • Prevention of new strains incursion • Better vaccination • Animal movement management and tracking system

Finally, opportunity was given to participants to propose what could be the recommendations of this meeting, during which 42 recommendations were collected in total.

Session 8: Recommendations and closing

8.1 Recommendations

The OIE SRR-SEA consider carefully the 42 recommendations proposed by the participants for this meeting. They were combined so that 16 recommendations were eventually proposed and endorsed in plenary: 6 for all countries, 4 for FMD-infected countries, 2 for FMD-free countries or having an endorsed official control programme and 4 for the OIE SRR-SEA. The recommendations are in [Annex 3](#).

When asked to prioritise them, participants identified the following recommendations as the most important for all countries: 1. to improve the FMD diagnosis at national and regional level and to support the recommendations of the REG on enhancing molecular diagnosis and FMD sampling; 2. To identify and develop synergies between FMD control and other TADs; 3. To strengthen continuous surveillance, including early warning systems, and consider retrospective surveys in case of late or insufficient reporting.

8.2 Countries action plan for 2019-2020

Considering a previous feedback that some recommendations were difficult to implement in some countries and acknowledging the heterogeneity between countries in terms of resources and priority, a last workshop was proposed for countries to identify up to 5 activities that they would conduct or initiate in the next 12 months to implement the recommendations of the meeting. While these listed activities are not binding, they reflect the areas of priority and recommendations that are implementable in each country, and will ease the follow-up of the implementation of the recommendations until the next meeting of the National Coordinators.

Closing Ceremony

Dr Ronello Abila, OIE Sub-Regional Representative for South-East Asia, thanked the Veterinary Service of Mongolia for hosting the meeting. He informed the participants that the SRR office will refine the recommendations and circulate them to all the participants for comments. The SRR will also develop an action plan based on the recommendation, closely monitor the implementation till the next NC meeting March 2019. The survey results for input into the SEACFMD Roadmap 2021-2025 will be shared to the all member countries later for additional input and comments.

He also highlighted that current ASF crisis in the region may lead some countries to reduce funds on FMD activities, and synergies between FMD and other TADs should be explored for maximum use of the existing resources.

On behalf of the Mongolian Government and GAVS, Dr Batsukh Basan Saliman expressed his sincere appreciation to the participants for their presence at 22nd NC Meeting in Mongolia and to the OIE for holding this important event in Mongolia.

Annex-1: Programme

Day 1		
08:30 – 09:00	Registration of participants	
09:00 – 09:30	Opening ceremony	
	- Welcome speech by hosting country - Speech by OIE representatives - Official opening by the OIE Delegate of Mongolia	
	Group photo	
Session 1: Set the scene Chair: Mongolia		
09:30 – 10:30	Review of SEACFMD Campaign progress against the previous recommendations	Dr Ronello Abila
10:30 – 10:50	<i>Coffee break</i>	
10:50 – 11:10	Regional FMD situation	Dr Yu Qiu
11:10 – 11:25	Regional Laboratory Report -SEA	Dr Sahawatcharau
11:25 – 11:40	Regional Laboratory Report - China	Dr Yin Hong
11:40 – 12:00	Q&A and Discussion	
12:00 – 13:00	<i>Lunch</i>	
Session 2: Country FMD Prevention and Control Activities Chair: Vietnam		
13:00 – 14:00	Country presentation on selected topics: - Mongolia – FMD surveillance and control in a pastoral production system - China – Combine FMD control with ASF activities through enhanced farm biosecurity - Thailand – Experience learnt from the OIE FMD/PPR expert group mission - Q&A and Discussion	Country Rep
14:00 – 14:30	Global FMD situation (presentation via skype)	Dr Donald King
14:30 – 15:00	- Reports of applicant countries for PCP-2 - Q&A and Discussion	
15:00 – 15:30	<i>Coffee break</i>	
Session 3: Parallel sessions Chair: Dr Ronello Abila		
15:30 – 17:30	For Myanmar, Laos, Cambodia, Malaysia, Vietnam PCP Status evaluation (break-out group interview)	
	For Philippines, Brunei, Indonesia, Singapore, Malaysia, China, Thailand, Mongolia - Feedback from the OIE annual reconfirmation of official status/endorsed control programme - Contingency planning & simulation exercise	
18:30 – 21:00	OIE-hosted dinner	All

Day 2		
Session 4: Technical session Chair: Myanmar		
09:00 – 10:30	Breakout sessions For FMD free countries (Indonesia, Philippines, Brunei, Malaysia (zone)): how alternative surveillance (such as ante-post mortem inspection at slaughterhouses) can help in improving confidence in disease surveillance	Dr Ronello Abila
	For FMD infected countries (Cambodia, Myanmar, Laos, Thailand, Malaysia, Vietnam, China, Mongolia) • Implementation of emergency vaccination	Dr Michel Lombard
10:30 – 11:00	<i>Coffee break</i>	
Session 5: Partners report Chair: Laos		
11:00 – 12:30	• Herders Association of Mongolia • FAO • New Zealand MPI • Massey University • Sydney University • AAHL	
12:30 – 13:30	<i>Lunch Break</i>	
Session 6: Synergizing FMD control with other activities Chair: Cambodia		
13:30 – 13:50	Synergized efforts on controlling FMD and activities to promote livestock health and production	Dr James Young and Dr Laure Weber-Vintzel
13:50 – 15:30	Workshop: combining FMD control with the other activities to promote livestock health and production on the country level	
15:30 – 16:00	<i>Coffee break</i>	
Session 7: SEACFMD Roadmap 2021-2025 Chair: Thailand		
16:00 – 16:30	Evaluation of the impacts of the SEACFMD campaign and visions for the new OIE SEACFMD Roadmap 2021-2025	Dr Ronello Abila
16:30 – 17:30	Workshop: pillar components for the new Roadmap-country discussions and mapping	
18:30 – 21:00	Mongolia-hosted dinner	All

Day 3		
Session 8: Recommendations and Closing Chair: China		
09:00 – 10:00	Plenary discussion on the recommendation of the meeting	Dr Ronello Abila
10:00 – 10:30	<i>Coffee break</i>	
10:30 – 11:00	Action plan for 2019-2020	Dr Laure Weber-Vintzel
11:00 – 11:30	Closing Remarks	OIE and Mongolia
11:30 – 12:15	<i>Lunch Break</i>	
Afternoon	Field trip	All
Evening	Dinner hosted by private sector	All

Annex-2: List of Participants

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Annex-3: Recommendations

The 22nd OIE SEACFMD NC meeting:

Considering

- the accomplishments made in the region since the creation of the Sub-Commission for FMD control in South-East Asia in 1994, the launching of SEAFMD Campaign in 1997, its expansion to become a SEACFMD campaign following inclusion of China PR and Mongolia and the endorsement of the 3rd SEACFMD roadmap 2016-2020;
- the adoption of the FAO-OIE Global Strategy for the control of FMD (Bangkok, June 2012) with its three inter-related components: control of FMD, reinforcement of Veterinary Services and combined control of FMD with the control of other animal diseases;
- the importance of regional coordination for the effective control of FMD;
- the existence of the OIE Reference Laboratory in Pakchong Thailand, the SEACFMD Laboratory Network and the SEACFMD Epidemiology Network to support the regional and national FMD control effort;
- the challenges faced in the region to control FMD and other TADs; and
- the recommendations for safe international trade provided in the OIE *Terrestrial Animal Health Code* chapter on FMD.

The participating countries made the following recommendations for better implementation of the Global FMD Control Strategy in the Southeast Asia, China PR and Mongolia:

➤ **For all countries:**

1. to continue regular information sharing through WAHIS and ARAHIS, especially on FMD virus circulation that could assist the entire region in decisions on risk mitigation and, consequently, progress along the FMD Roadmap for the region;
2. to improve the FMD diagnosis at national and regional level and support the recommendations of the Regional FMD Expert Group on enhancing molecular diagnosis and FMD sampling;
3. to identify and develop synergies between FMD control and other TADs or other livestock production/health activities;
4. to develop communication and public awareness tools focusing on biosecurity and good vaccination practices;
5. to regularly monitor and evaluate the implementation of their national FMD control plan, in alignment with the Global FMD control strategy and the SEACFMD campaign;
6. to review national FMD preparedness/ contingency plan and identify gaps for discussion at the future SEACFMD meetings;
7. to strengthen continuous surveillance, including early warning systems, and consider retrospective surveys in case of late or insufficient reporting.

➤ **For infected countries**

8. to continue to regularly share information on FMD virus circulation that could assist the entire region in decisions on risk mitigation and, consequently, progress along the FMD Roadmap for the region; This include to increase the rate of samples characterisation with the support of FAO/OIE Reference Laboratories;
9. to regularly monitor and evaluate the implementation of their national FMD control plan, in alignment with the Global FMD control strategy and the SEACFMD campaign;
10. to engage with vaccine manufacturers to have access to >6 PD₅₀ vaccines at realistic costs and to consider using high potency vaccines;
11. to monitor the vaccination campaign via PVM studies, in accordance with the OIE/FAO guidelines;
12. to conduct immediate outbreak investigation and sampling for FMD to ensure that at least 90% of the outbreaks are serotyped by ensuring sufficient quantity and quality of sample collection, transportation and submission to the National laboratories in a timely manner.

➤ **For PCP Stage 1 countries**

13. for Lao PDR, Myanmar and Cambodia to review their Risk-Based Strategic Plan in accordance with the discussions of this meeting and submit it electronically to the SEACFMD Secretariat, accompanied by the filled-up PCP self-assessment questionnaire, for consideration and possible presentation at the following meeting of the SEACFMD Sub-Commission for regional acceptance of their PCP Stage 2;
14. for Vietnam and Malaysia (PCP Stage 3 countries) to maintain their level and possibly request the endorsement of their FMD official control programme by the OIE.

➤ **For FMD free countries**

15. to prepare and submit the annual reconfirmation of their disease-free status and endorsement of their FMD Control programme on time and with increased quality;
16. to assess whether the current risk linked to FMD would allow to reduce (and possibly cease) continuing sero-surveillance to demonstrate freedom.

➤ **For the OIE and its partners**

17. to map the resources available for implementation the new SEACFMD roadmap 2021-2025;
18. to continue building capacity in the region, and provide regional technical assistance/advise for emergency preparedness planning;

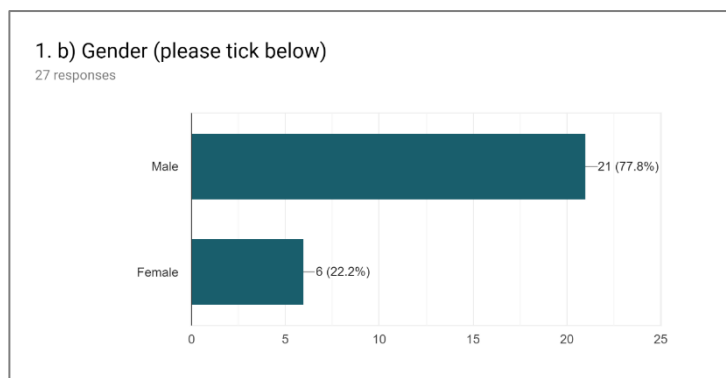
19. to support the OIE to conduct regional studies to better understand the animal movement pattern, traders' incentives for official trade, and risk assessment on transboundary spread of FMD;
20. to conduct studies to better understand sociological factors influencing farmers' and CAHW's incentives on disease reporting and disease control activities.

Acknowledgement:

21. All participants THANK the Government of Mongolia for its successful hosting of the 22nd meeting of the SEACFMD National Coordinators, and the Governments of China PR and New Zealand for the continuous financial support to the SEACFMD campaign.

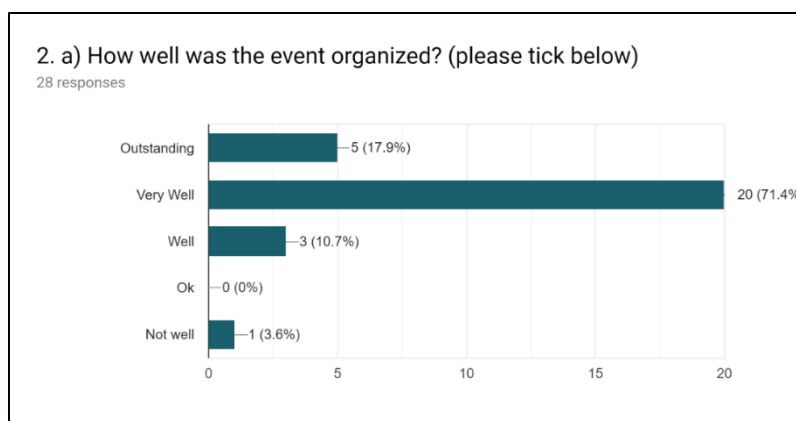
Annex-4: Event Evaluation

The event evaluation questionnaires of the meeting was conducted online by Google survey (<https://forms.gle/gzq13rvqbfdfwybq7>). Totally 27 feedback were received; respondents came from South-East Asian countries, Mongolia, Australia, China, New Zealand, and France.



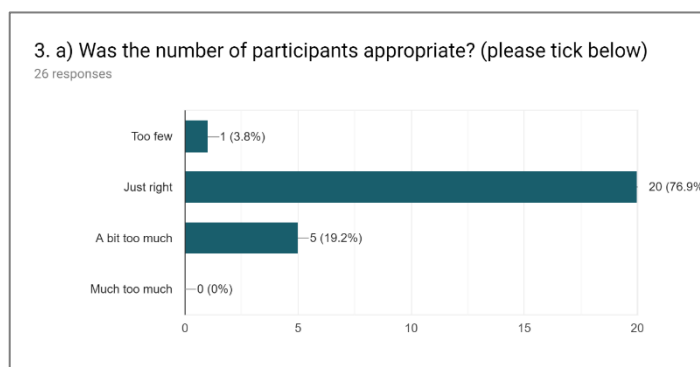
Regarding the feedback on the way the event organized, 71.4% of the respondents rated that the event was 'Very well' organized. The second was 'Outstanding' by 17.9% and 'Well' by 10.7%; 3.6% who responded 'Not well' in the survey.

The best rated part of the meeting was the use of interactive tool 'Mentimeter' to share and exchange information real-time during the meeting, which was followed by meeting venue, logistics, and meeting programs.

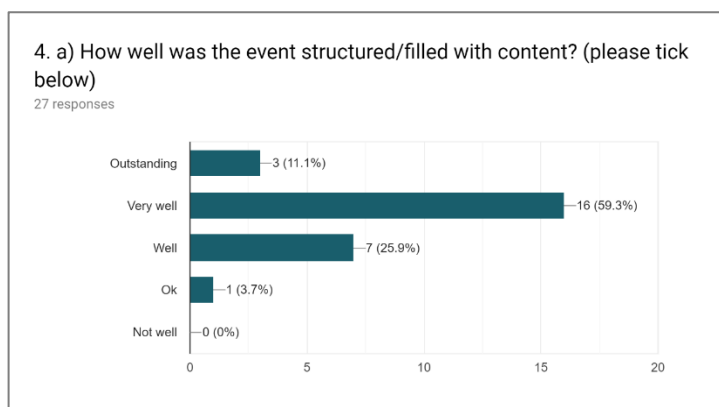


Re the areas for further improvements, suggestions received include the size of meeting room and time management for presentations.

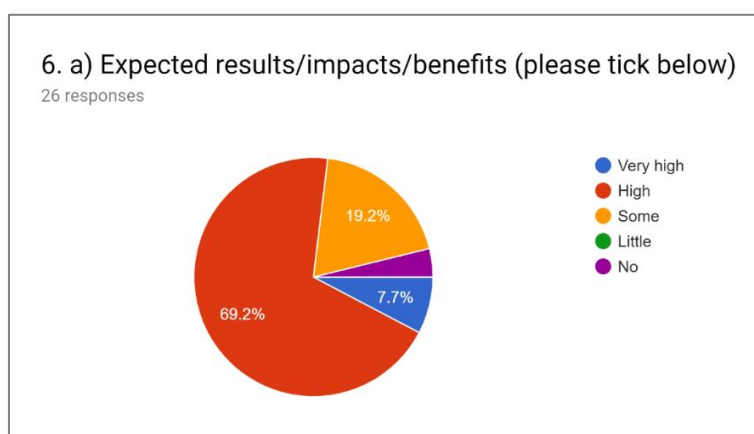
Some respondents suggested inviting more FMD experts with different expertise to the meeting.



The combination of using interactive tool (Mentimeter) and presentations were particularly welcomed. Also, separate technical sessions for free countries and infected countries were commented positively in respondents' comment.



Some feedback expressed the wishes to receive output from the Mentimeter immediately after the survey. It was also mentioned that the OIE should ensure strong scientific basis of the presentations, avoid auto-promotion of individual trademarks/products at the meeting, and balance the contributions from different countries/partners.



Re the given examples from the respondents relating to the use lessons learned, tools and materials from the meeting in the work, feedback include: 1) country participants will share the information to their colleagues as a guide to improve the surveillance activities, preparation of OIE annual reconfirmation reports, and FMD risk-based strategical plan; 2) private sector participants will improve dialogues with partner countries on FMD control and treatment innovations, including productivity enhancements and welfare. Also, they will explore opportunities to co-design R&D actions and projects with country members.

With regards to further suggestions about the SEACFMD meetings, feedback received mainly focus on the recommendations. It was suggested to keep the number of recommendations small but contents manageable, and to evaluate the progress against previous recommendations at each meeting rather than always develop new ones. The ranking of recommendations may be useful as it provides a good perspective on their relative importance to members.

CAMBODIA

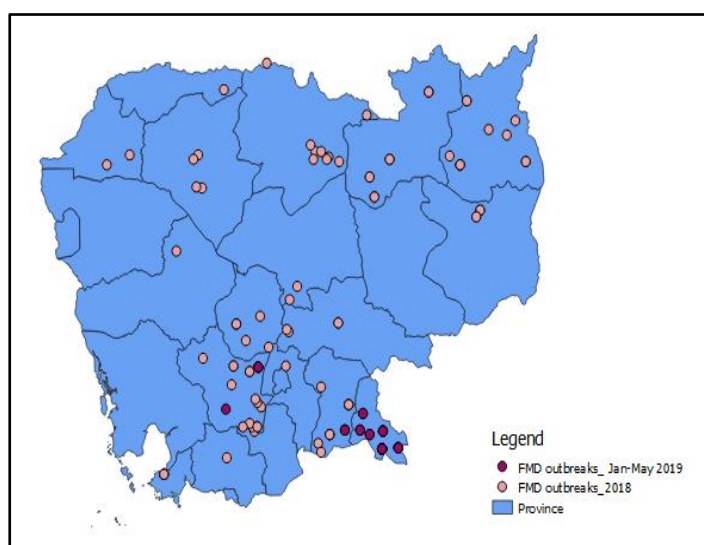


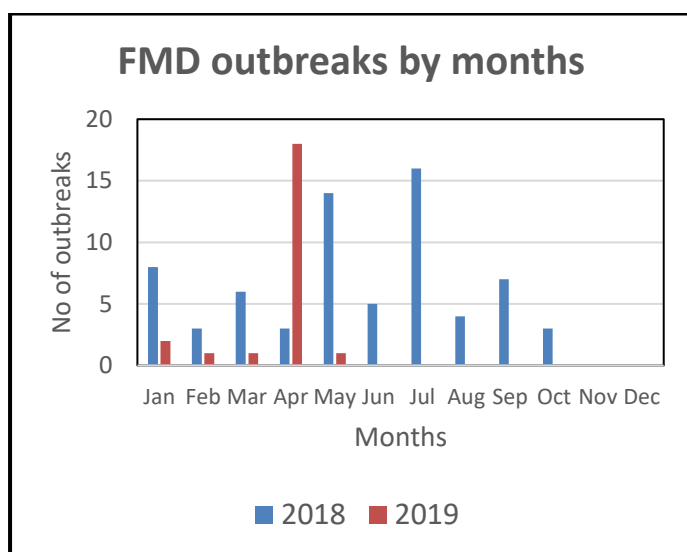
I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

In 2018, there were 69 FMD outbreaks reported from 17 provinces such as Banteay Meanchey (2), Kampong Cham (3), Kampong Chhnang (6), Kampong Speu (17), Kampong Thom (2), Kampot (1), Mondulkiri (2), Phnom Penh (1), Preah Vihea (8), Prey Veng (7), Pursat (1), Rattanakiri (7), Siem Reap (4), Preah Sihanouk (1), Steung Treng (5), Svay Rieng (1) and Oddor Meanchey (1) and caused 3,007 heads of cattle, 399 heads of buffaloes and 56 heads of pigs shown clinical signs of FMD and among that there were 69 heads of cattle, 4 heads of buffaloes and 21 heads of pigs were dead. A total of 82 samples had been collected and the laboratory results were sero-types O with SEA/Mya-98 and ME-SA/PanAsia strains.

From January to May, 2019, there were 23 FMD outbreaks reported from 3 provinces such as Kampong Speu (2), Prey Veng (1) and Svay Rieng (20) and caused 2,624 heads of cattle and 717 heads of buffaloes shown clinical signs of FMD and among that there were 60 heads of cattle were dead. A total of 37 samples had been collected. The laboratory results confirmed that sero-types O was detected in Kampong Speu and Prey Veng and sero-type A was detected in Svay Rieng.





FMD morbidity and mortality in 2018

Species	Susceptible	Morbidity	Mortality
Cattle	27,001	3,007	69
Buffalo	2,786	399	4
Pig	718	56	21

FMD morbidity and mortality (Jan-May, 2019)

Species	Susceptible	Morbidity	Mortality
Cattle	19,376	2,624	60
Buffalo	12,277	17	0
Pig	0	0	0

B. VALUE CHAIN MONITORING

No value chain study had been conducted during 2018 and 2019.

C. CONTROL STRATEGIES

- Vaccination and post-vaccination monitoring
- During 2018 and 2019, no post-vaccination monitoring was performed.
- In 2018 : GDAHP received 300,000 doses (Japan & OIE) and distributed 298,900 doses to 25 provinces and conduct vaccination program

Province Name	Districts	Communes	Villages	Vaccinated cattle (Head)	Vaccinated Buffaloes (Heads)
Banteay Meanchey	8	22	79	13085	310
Battambang	14	29	76	13936	582
Kampong Cham	7	24	161	23710	1664
Kampong Chnang	8	24	64	17133	3908
Kampong Speu	7	22	199	20141	
Kampong Thom	6	39	116	12136	2822
Kompot	8	29	103	12916	930
Koh kong	6	9	13	469	359
MondulKiri	2	3	6	704	257
Phnom Penh	3	3	5	725	0
Preah Vihear	7	35	78	5208	434
Prey Veng	3	7	55	12634	463
Pursat	2	13	114	19866	8981
Ratanak kiri	5	8	14	4572	569
Siemreap	7	24	153	12548	1042
Preah Sihanouk	1	1	2	105	125
Stung Treng	6	12	19	2001	1557
Svay Rieng	8	39	117	6513	6689
Takeo	7	26	109	19720	242
Oddor Meanchey	5	20	73	7705	162
Kandal	10	65	N/A	20129	1513
Pailin	2	5	19	1,356	
Tboung Khmum	2	10	58	11269	1231
Total	134	469	1633	238,581	33,840

In 2019: a total of 35,382 heads of cattle and 7,438 heads of buffaloes are vaccinated for FMD

Province Name	Vaccinated cattle (Head)	Vaccinated Buffaloes (Heads)
Banteay Meanchey	3,086	160
Battambang	2,733	0
Kampong Cham	1,805	101
Kampong Chhnang	3,679	2,154
Kampong Speu	2,012	0
Kampong Thom	80	120
Kompot	2,983	506
Koh kong	0	0
MondulKiri	0	0
Kratie	1,813	446
Phnom Penh	0	0
Preah Vihear	453	80
Prey Veng	6,554	588
Pursat	532	403
Ratanak kiri	100	0
Siemreap	0	16
Preah Sihanouk	126	86
Stung Treng	1,566	964
Svay Rieng	1,252	1,348
Takeo	1,482	0
Oddor Meanchey	0	0
Kandal	3,505	312
Kaeb	0	0
Pailin	1,375	0
Tboung Khmum	246	154
Total	35,382	7,438

- Other control measures
 - District and provincial veterinarians work closely with village animal health workers and local authority to treat sick animals with antibiotic and distribute the blue methylene to farmers, separate sick animals from healthy animals, and disinfection in the premises
 - Organize the meeting with farmers to advise them on how to control and prevent the spread of FMD virus in their districts
 - Conduct ring vaccination around the infected villages
 - Strictly control animal movements from infected village or infected district or infected province
 - Conduct public awareness in the infected villages and also distribute FMD leaflets and posters to farmers
 - Advise farmers on how to take care their animals during FMD outbreaks and how to prevent their animals from FMD

II. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

- Coordination with EU funded Programme and this programme completed in December 2018
- Assist the OIE Mission Teams for Veterinary Legislation Support Program (VLSP) on Veterinary Legislation Identification Mission in Cambodia from 29 January 2018 to 2 February 2018
- Assist the OIE PVS Follow-up Mission in Cambodia from 7 May 2018 to 18 May 2018
- Assist the OIE Veterinary Paraprofessional Curricula Mission in Cambodia from 25 June 2018 to 29 June 2018
- Coordinate with CAVET to conduct surveillance, outbreak investigation and research
- With financial support from DTRA-BTRP and strong support from Ministry of Agriculture, Forestry and Fisheries especially support from General Directorate of Animal Health and Production, the Sixth Cambodian Applied Veterinary Epidemiology Training Course (CAVET-6) has been conducted from May 27, 2019 to June 28, 2019 at Kampong Cham National School of Agriculture, Kampong Cham province. There are 28 CAVET-6 Trainees participated in introductory course and field practices and only 10 trainees will be selected to conduct research activities their provinces from July 2019 to December 2019



B. ADVOCACY

- Animal Disease Surveillance Strategy for implementation in Cambodia

III. GOVERNANCE AND POLICY

A. DEVELOPMENT OF LEGISLATION

- Law on Animal Production and Health
- FMD National Plan
- Revise/update sub-degree
- Revise/update prokas
- Revise/update announcements
- Revise/update PCP plan

B. FUNDING

- EU funded Programme and this program was completed in December 2018
- General Directorate of Animal Health and Production (GDAHP) (government fund)

IV. Constraints and Solutions

- Lack of reagents and kits for sample testing
- Involvement of private sectors in the reporting of animal diseases
- Limited implementation of biosecurity at farms and village level
- The budget to purchase the vaccines from government is limited
- Limited budget for sample collection and investigation

V. Future Plans

- Conduct FMD vaccination activity in provinces
- Continue to organize the extension workshop of Law on Animal production and Health
- Continue to implement the Law on Animal production and Health and the national FMD control plan
- Strengthen animal disease surveillance, outbreak investigation and response; and disease reporting system
- strengthen disease diagnosis and proficiency testing
- Continue to conduct the public awareness for all stakeholders on Foot and Mouth Disease and its impact
- Conduct FMD research in target provinces through activities with relevant veterinary officers and CAVET Graduate Trainees

CHINA



I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

The Ministry of Agriculture and Rural Areas releases the National FMD Surveillance Program every year with the main purpose to understand the distribution of FMD pathogen infection and the disease status of high-risk areas, to track the characteristics and trends of the mutation and variation of FMD virus, to find out the risk factors for transmission, to assess the vaccination efficacy of herds, and to know the vaccination status at herd level.

From January 2018 to June 2019, there were 31 FMD outbreaks occurred in China, including 1 type A FMD outbreak and 30 type O FMD outbreaks. No Asia I outbreak occurred in China. The only case of type A FMD outbreak occurred was caused by the strain of Sea-97. Of the 30 cases of O-type FMD outbreaks, 3 were Mya-98, 7 were PanAsia, 12 were Ind2001, and 8 were Cathy strains. So far, there has no occurrence of type C, SA 1, SA 2, and SA 3 FMD in China.



Figure 1. The geographical distribution of FMD outbreak in China (From Jan 2018 to Jun 2019)



FMD surveillance results:

During 2018, 44 virological positive samples including OPF or lymph nodes detected from healthy animal.



1) FMD outbreaks distribution from January 2018 to June 2019 in China



Type O red dot n=30; type A blue dot n=1

2) Viruses identification

No.	year	Report Date	Type	Location-Province	Viruses identification
1	2018	08/01/2018	A	GUIZHOU	A/Sea-97
2	2018	08/01/2018	O	GUIZHOU	O/CATHAY
3	2018	29/01/2018	O	NINGXIA	O/Mya-98
4	2018	05/03/2018	O	HENAN	O/Mya-98
5	2018	13/04/2018	O	GANSU	O/PanAsia
6	2018	21/04/2018	O	GUANGXI	O/CATHAY
7	2018	21/04/2018	O	XINJIANG	O/PanAsia
8	2018	19/05/2018	O	HUBEI	O/Ind-2001
9	2018	12/06/2018	O	ANHUI	O/PanAsia
10	2018	12/06/2018	O	SHANXI	O/Ind-2001
11	2018	15/06/2018	O	HUBEI	O/PanAsia
12	2018	25/06/2018	O	GUIZHOU	O/Ind-2001
13	2018	04/07/2018	O	YUNNAN	O/CATHAY
14	2018	04/07/2018	O	GUANGXI	O/CATHAY
15	2018	26/07/2018	O	GUANGDONG	O/CATHAY
16	2018	30/07/2018	O	Inner Mongolia	O/Ind-2001
17	2018	14/08/2018	O	HENAN	O/CATHAY

18	2018	23/08/2018	O	XINJIANG	O/Ind-2001
19	2018	29/08/2018	O	Inner Mongolia	O/Ind-2001
20	2018	14/09/2018	O	GANSU	O/Ind-2001
21	2018	30/09/2018	O	GUANGDONG	O/Mya-98
22	2018	30/09/2018	O	YUNNAN	O/CATHAY
23	2018	19/10/2018	O	Inner Mongolia	O/Ind-2001
24	2018	02/11/2018	O	XINJIANG	O/PanAsia
25	2018	20/11/2018	O	XINJIANG	O/Ind-2001
26	2018	27/11/2018	O	XINJIANG	O/PanAsia
27	2018	29/11/2018	O	GUANGDONG	O/CATHAY
28	2019	22/02/2019	O	Inner Mongolia	O/Ind-2001
29	2019	27/03/2019	O	XINJIANG	O/PanAsia
30	2019	16/04/2019	O	XINJIANG	O/Ind-2001
31	2019	06/06/2019	O	XINJIANG	O/Ind-2001

B. VALUE CHAIN MONITORING

Recent years has witnessed rapid progress on scaled animal production in China, resulting in steady increase of industrial concentration. In 2016, the proportion of scaled livestock and poultry production reached to about 56%. The level of intensive production of pigs, dairy cows, beef cattle, sheep and goats has increased rapidly; the number of back yard and small-scale farmers has declined sharply. This leads to a fast rising trend for scaled animal production. Comparing the status of pig production in 2010 and 2016, we discover that the number of small-scale farmers in China has been greatly reduced, and the number of large-scale farms has continued to increase. In 2016, the number of farms with 1-49 animals was reduced by nearly 32% compared to 2010, while the number of farms with more than 50,000 animals per year increased by 157%. This profound change in the mode and structure of animal production will exert huge impact on the marketing, movement and distribution of pigs, cattle, sheep, goat and their products.

Table. Data reflecting the change in the number of different scale pig farms in 2010 and 2016

Annual Slaughtered Number (Heads)	No. of pig farms		Growth Rate
	2010	2016	
1-49	59086923	40205599	-31.96%
50-99	1685279	1428631	-15.23%
100-499	742772	718590	-3.26%
500-999	145175	167224	15.19%
1000-2999	53876	64436	19.60%
3000-4999	11721	13301	13.48%
5000-9999	5915	7079	19.68%
10000-49999	3558	4261	19.76%
>50000	121	311	157.02%

Table. Data reflecting the change in the number of different scale dairy cow farms in 2010 and 2016

Annual Inventory Number (Heads)	No. of dairy farms		Growth Rate
	2010	2016	
1-4	1750895	1024237	-41.50%
5-9	345667	160244	-53.64%
10-19	138246	63820	-53.84%
20-49	49450	30656	-38.01%
50-99	14758	11251	-23.76%
100-199	4604	5024	9.12%
200-499	3579	3261	-8.89%
500-999	2061	1924	-6.65%
>1000	898	1479	64.70%

Table. Data reflecting the change in the number of different scale beef cattle farms in 2010 and 2016

Annual Slaughtered Number (Heads)	No. of beef cattle farms		Growth Rate
	2010	2016	
1-9	13007393	10006303	-23.07%
10-49	436634	409539	-6.21%
50-99	76310	82857	8.58%
100-499	20917	24380	16.56%
500-999	3162	3214	1.64%
>1000	884	948	7.24%

Table. Data reflecting the change in the number of different scale sheep and goat farms in 2010 and 2016

Annual Slaughtered Number (Heads)	No. of sheep & goat farms		Growth Rate
	2010	2016	
1-29	19795206	13486121	-31.87%
30-99	1602030	1593380	-0.54%
100-499	246336	445083	80.68%
500-999	17358	35223	102.92%
>1000	3655	10140	177.43%

C. CONTROL STRATEGIES

- Vaccination and post-vaccination monitoring

Animals have been vaccinated with FMD vaccines across the country in accordance with the National Animal Disease Compulsory Vaccination Program. All pigs, cattle, sheep and goats, camels and deer were required to be compulsorily vaccinated against type O FMDV. All dairy cow and breeding bulls were required to be compulsorily vaccinated against type A FMDV. Sheep and goats, camel, deer at the border areas together with all cattle of Inner Mongolia, Yunnan province, Tibet autonomous region, Xinjiang autonomous region and Xinjiang production and construction corps have been vaccinated against type A FMDV. Cattle and sheep at border areas in Guangxi autonomous region have been vaccinated against type A FMDV. All cattle in Jilin, Qinghai and Ningxia have been vaccinated against type A FMDV. And cattle in key areas in Liaoning province and Sichuan province have been vaccinated against type A FMDV. Province is responsible for deciding whether to vaccinate pigs against type A

FMD according to its situation. In particular, it should be noted that Asian I FMD vaccination was withdrawn around the country since July 1, 2018.

According to the requirements of the National FMD Immunization Program, the immunization rate of all animals that should be immunized is 100%, and the immune density of the animal population should be greater than 90%. In addition, the qualification rate of antibody should be above 70% all around the year. All cattle, sheep, pig and camels have to be immunized with FMD type O vaccine. All cow and breeding bull have to be immunized with FMD type A vaccine.

The immune antibody of pigs should be detected at 28 days after immunization, while that of other animals should be detected at 21 day post immunization. For detection of FMD immune antibody level of Type O, the methods of Liquid-phase blocking ELISA or indirect Hemagglutination Test should be used. For the FMD (type O) synthetic peptide vaccine, the ELISA method detection of VP1 structural protein should be used. For detection of FMD immune antibody level of type A, the methods of Liquid-phase blocking ELISA should be used.

The Provincial Animal Disease Control Center is responsible for the monitoring of immune antibodies in their own provinces. China Animal Disease Control Center will randomly select one county in each province for post-vaccination monitoring on June and November every year.

In the year of 2018, the post-vaccination monitoring results of Provincial Animal Disease Control Centers and China Animal Disease Control Center showed FMD immunization in each province met the requirements of the national immunization program.

- Other control measures

In addition to compulsory vaccination, China has also adopted comprehensive prevention and control measures such as surveillance, quarantine, inspection, supervision, culling, and zoning management, and strives to do a good job in prevention and control of FMD.

1. Surveillance and early warning. The Chinese government has established a four-level disease surveillance system covering the central, provincial, prefecture and county levels. The Ministry of Agriculture and Rural Affairs designated the Lanzhou Veterinary Research Institute of the Chinese Academy of Agricultural Sciences as the National FMD Reference Laboratory, which has established FMD diagnostic techniques consistent with prescribed methods of OIE and has the ability to diagnose FMD and conduct epidemiological surveillance. The Ministry of Agriculture and Rural Affairs, together with local government have invested in the construction of 31 provincial-level disease testing laboratories with bio-safety level ranging from Grade 2 or Grade 3, and experienced PCR detection technology. Animal disease prevention and control centers for all cities and counties in China have veterinary laboratories,

which can be used for conducting serological test of FMD. Veterinary laboratories at all levels carry out surveillance in accordance with the National FMD Surveillance Program and issue early warning information in a timely manner.

2. Quarantine, inspection and supervision. In 2010, the Ministry of Agriculture and Rural Affairs revised the "Measures for the Administration of Animal Quarantine and Inspection" to regulate animal quarantine and inspection. At present, a mechanism for quarantine and inspection at the place of origin has been established based on laboratory testing to clarify the conditions for the movement and importation of animals, encourage slaughtering and product transportation at local areas, and prohibit the exportation of animals and related animal products from infected areas. For the Inter-provincial transportation of breeding and dairy animals, the animals can only be transported and the veterinary inspection certificated can be issued after tested negative by related laboratories. After reaching the destination, such animals can only be mixed with other animals after confirmed negative by isolation observation and laboratory testing.

3. Emergency response and disposal. In the event of an outbreak, all local government shall immediately initiate the contingency plan according to the "Contingency Plan for FMD Prevention and Control" and "Technical Specifications for Prevention and Control of FMD", to quickly delineate the infected points, infected areas and threatened areas, cull infected animals and animals at the same herd, and dispose carcasses of such animals in a bio-safety way in order to put the outbreak under control. At the same time, according to the results of surveillance and epidemiological survey, the susceptible animals in the threatened area shall be subject to emergency vaccination, and tracing-back and tracing-forward investigation and evaluation shall be immediately carried out to ensure the good performance of outbreak response.

4. Regionalization management. China has actively built FMD free zones with reference to the WTO/SPS Agreement and the OIE standards. After years of efforts, FMD free zones with vaccination in Hainan Province, Jilin Province and Jiaodong Peninsula have passed national acceptance inspection.

E. PROCEDURE FOR OFFICIAL RECOGNITION [for countries with OIE official status or with an endorsed official control programme]

In May 2015, the 83rd OIE World Assembly recognized the Official Control Program for FMD of Chinese Mainland. Since then, in accordance with OIE requirements, an annual progress report on the official control plan has been submitted to OIE at the end of each year. Regarding the annual progress report of the official control plan, the reference outline provided by OIE is its outline. If the annual progress report is prepared with reference to this outline, the content of the report will be numerous and complex without priority. Besides, most of the content will be duplicated with the official control plan.

VI. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

Meetings:

Experts from LVRI participated in 6 international conferences during 2018.

- 1) 2nd East Asia NCP Meeting and 2018 SEACFMD Epidemiology Network Meeting, 5th-6th April 2018, Yogyakarta, Indonesia;
- 2) The Symposium on Prevention and Control of FMD & AI, 21st-22nd June 2018, Seoul, Republic of Korea;
- 3) 21st SEACFMD NCP Meeting, 17th-19th July 2018, Penang, Malaysia;
- 4) 2018 ASEAN Regional Animal Health Laboratory Technical Advisory Group (Lab-TAG) Meeting, FAO, 29th-31st October 2018, Singapore;
- 5) The 13th OIE/FAO FMD Reference Laboratories Network Annual Meeting, 6th – 8th November 2018, UK
- 6) The 24th OIE SEACFMD Sub-Commission Meeting, 27th-30th November 2018, Ho Chi Minh City, Vietnam.

Training Courses:

11 series of straining courses focused on FMD diagnosis, epidemiology, vaccination, surveillance, PVM and field training, jointly organized by FMDRL and Diagnosis Centre, LVRI, during 2018. More than 1 000 stuffs from 15 provincial ACDC participated in.

An international training course on diagnosis and testing techniques of FMD, PPR and Goat/sheep pox held in Nov, 2018, in LVRI. The TRC is supported by International S&T Training Programme, MoST, China. 23 participators from 8 countries, including Pakistan, Bangladesh, Sudan, Egypt, Nigeria, Korea, Nepal and Ethiopia, participated in.

The Minjiang-Mekong River Cooperation Special Fund Project of the Ministry of Foreign Affairs and the Ministry of Agriculture and Rural Affairs, undertaken by the Yunnan Provincial Institute of Animal Husbandry and Veterinary, “TADs Prevention and Control Technology Exchange and Cooperation in the Lancang-Mekong Region” (LMC).

- 1) From June 11 to 24, 2018, technicians from five national veterinary laboratories in Cambodia, Laos, Myanmar, Thailand and Vietnam were invited to carry out animal diagnostic technology training and technical demonstrations at the border areas between Kunming and Yunnan;
- 2) From August 26th to September 7th, 2018, the Yunnan Provincial Institute of Animal Husbandry and Veterinary sent technical experts to Laos to carry out training and demonstration of diagnostic and detection technology for TADs diagnostic laboratory;

3) From December 4th to 12th, 2018, Yunnan Academy of Animal Husbandry and Veterinary sent technical experts to Myanmar and Thailand to carry out the task of exchange and cooperation on prevention and control technology of TADs in the Lancang-Mekong region.

Yunnan Provincial Department of Commerce's assistance project for Myanmar "Myanmar cattle FMD diagnosis and testing technology training"

From January 6th to 19th, 2019, Yunnan Provincial College of Animal Husbandry and Veterinary, Yunnan Provincial Key Laboratory of Tropical and Subtropical Animal Virus Diseases, and National Laboratory for FMD (Kunming) formed a team of experts to conduct training on the diagnosis and testing of cattle FMD in Myanmar. He went to Yangon, Nebi, and other places to carry out training on live oesophageal pharyngeal fluid (OPF) and FMD laboratory diagnostic testing technology. In 14 days, a total of 23 veterinary technicians were trained in Myanmar.

B. ADVOCACY

There is no relevant work plan at the Central Government level.

At the local government level, relevant publicity work was carried out according to the needs of prevention and control of FMD in various places, as follows:

1. Yunnan Academy of Animal Husbandry and Veterinary has applied for the Foreign Aid Project of the Ministry of Commerce of Yunnan Province in 2019, "China-Burma Beef Cattle Raising and Disease Prevention and Control Technology Training", with a special fund of 300,000 yuan RMB, inviting Myanmar Naypyidaw, Mandalay, Shan State, and Ke Qinzhou engaged in beef cattle raising technicians and animal epidemic prevention and control technicians to Yunnan to carry out 12-day training.

2. In 2018, the Yunnan Academy of Animal Husbandry and Veterinary was recognized by the Provincial Science and Technology Department as the "National Research and Development Cooperation Base for TADs Prevention and Control Technology in Southeast Asia and Southeast Asia". The special fund was 500,000 yuan RMB, and on February 25 and March 5, 2019, the new achievements since the base was recognized were reported in the "Yunnan Regional Innovation and Technology Transfer WeChat Public No.".



C. PROMOTION OF CAMPAIGN AWARENESS

In recent years, the animal husbandry and veterinary departments at all levels have strengthened the publicity and education of FMD prevention and control knowledge through networks, television, radio, newspapers, books, and the issuance of publicity materials to raise awareness of FMD among farmers and the general public.

VII. GOVERNANCE AND POLICY

A. DEVELOPMENT OF LEGISLATION

No new content to provide.

B. FUNDING

In 2018, the Central Government invested about 2.17 billion yuan RMB in FMD vaccines, 38.35 million yuan RMB in surveillance and epidemiological investigations, and 7.46 million yuan in compensation for comprehensive animal culling. In addition, the provincial, prefecture-level and county-level government budgets also include funds for prevention and control of FMD every year. The specific figures are not counted.

VIII. Constraints and Solutions

Challenges:

1. The FMD in China's neighbouring countries is serious. According to the OIE notification, FMD in some countries around China is endemic and the circulating virus strains are complex. The circulating virus strains include: O-type and A-type FMD in Southeast Asia, type O, type A and Asia1 FMD in South Asia, main popular strains of O Type PanAsia-2, Type A Iran-05, and Type Asia1 Sindh-08 in West Asia and Central Asia which are currently main serious FMD area, and O-type and A-type FMD in East Asia and Northeast Asia.

2. The epidemic virus strains are complex. In recent years, there have been many epidemic virus strains of FMD in China, including O/Ind-2001, O/Mya-98, O/PanAsia, O/Cathay, A/Sea-97 and other strains. Molecular epidemiological analysis showed that the strains that caused FMD in China in recent years were highly homologous to those in neighbouring countries, and it was suggested that the strains were introduced from abroad. Each time a new strain is introduced, it will trigger a staged epidemic peak.

Solutions:

Under the SEACFFMD framework, countries in the region should strengthen cooperation, share surveillance and epidemic information timely, master the development trend of circulating virus strains, and share the successful experiences of prevention and control of FMD. International organizations such as OIE and FAO should further strengthen technical and financial support for member countries in the region, and promote practical and cooperation in the prevention and control of FMD on the multilateral platform.

IX. Future Plans

Funding projects: Continue to implement subsidies for animal epidemic prevention, support compulsory vaccination, and force compensation for animal culling. There are also projects to support the FMD surveillance and epidemiological investigation.

INDONESIA



I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

Indonesia recognised as a FMD free country where vaccination is not practiced, according to the provisions of Chapter 8.8. of the *Terrestrial Code, Edition 2018* reconfirmed in the Resolution No. 15 (87th General Session of World Assembly, May 2019). No outbreak recorded after last occurrence in 1983.

Indonesia's veterinary services conduct FMD surveillance. The aims are to ensure early detection (in case of incursions of FMDV infection) and to document evidence for annual reconfirmation of its free status. In order to ensure early detection Indonesia applies passive surveillance by enhanced farmer reporting system using an improved animal health information system (iSIKHNAS) and its early warning system. An epidemiological/ laboratory investigation must be conducted in the event of suspicion of FMD cases. During this period 3 suspects excluded from FMD.

Suspect of FMD is define as susceptible animal that shows lameness, blisters on the tongue and lips, in and around the mouth, and excessive salivation. Farmer/ producer/ animal health worker may report directly to district veterinary authority or send standardized short message into iSIKHNAS gateway. Special code PPL (for lameness, vesicular, excessive salivation) in short message will encoding by system as suspect of FMD and automatically forwarded by system to responsible official for epidemiology investigation and early response as well as to designated laboratory for further laboratory investigation. Every community Animal Health Center (PUSKESWAN) and Veterinary Laboratory are required to observe (clinical surveillance) and to report any FMD syndrome as part of routine their daily job.

Every suspect of FMD is subject for investigation. Initial investigation carry out by district veterinarian, then further epidemiological investigation conducted by Regional Disease Investigation Centers (DICs) and laboratory investigation conducted by PUSVETMA as FMD national laboratory. There were 4 (four) reports from of suspected FMD from during January 2018 to June 2019.

First suspect case, sign of FMD was reported in Bulungan District, North Kalimantan on May 2018. Six sheep was observed with blisters around the mouth and 1 of them observed to have wound on the hoof. Virus isolation test was conducted from skin scrap and resulted found parapox virus (Orf disease) and FMD antibody test found negative result.

Second, sign of FMD in cattle was reported in Central Java through iSIKHNAS system on March 2018 and all registered stakeholders on the network received the report. Investigation found that it was a miss-report by field staff when conducted disease report training.

Third, FMD suspect reported in cattle in Madura Island of West Java Province on March 2019 but excluded FMD by field and laboratory investigation.

Fourth, FMD suspect was reported in Jakarta Pigs Abattoir during ante mortem examination on May 2019. Field and laboratory investigations conclude that the animals infected by vesicular exanthema.

Clinical surveillance also conducted by DICs and Animal Quarantine staffs when they conducting field activities. Up to Oktober 2018, DIC reported that there were no sign of FMD observed in 8.159 swine; 3.534 sheep; 695 goat; 8 deer; 2.159 buffalo and 57.537 cattle from 276 districts. Meanwhile, Animal Quarantine also reported that there were no sign of FMD observed in 230.726 swine; 163.415 sheep; 8.624 goat; 98 deer; 10.281 buffalo; and 672.083 which was passing through Quarantine facilities throughout Indonesia.

iSIKHNAS platform also has capacity to manage negative reporting from the field. In addition, 149 negative reports also recieved from 149 village reporters in 28 districts in 13 provinces. Negative reporting for FMD is define as no PLL syndrome specific for FMD was observed in the village within reporting period. Implementation of negative reporting is being expanding nationwide.

As a complementary to farmer reporting system and negative reporting system, DGLAHS conduct annual active sero-surveillance. Annual targeted sero-surveillance program are implemented using risk based approached to demonstrate freedom from infection. A risk assessment was incorporated as part of design of a risk based surveillance. Several risk factors for the introduction of FMD are considered i.e:

- 1) Bordering/ close proximity with infected countries;
- 2) Existence of international port/ airport in particular which connected with FMD infected country
- 3) Illegal importation of beef and meat product;
- 4) High population and high density of cattle and pigs and
- 5) Pigs farming practicing swill feeding.
- 6) Distribution Province/area of imported meat from India.

Active sero-surveillance design in 2018:

- Target of animal are cattle and pig
- Type of sample is blood serum
- Testing method is ELISA NSP for FMD
- 95% Confidence interval
- 1% design prevalence
- 2 stage sampling:
 - o 1st stage is district which has highest probability to detect
 - o 2nd stage is farm or household
- Target: 53 districts in 33 provinces with 2544 samples
- Active surveillance result up to November 2018 was:
 - o 53 districts (100%) were visited

- 3.625 samples (124.4%) were tested
- All laboratory result in 2018 are NEGATIVE

Year	Sampled District	Sample Size	Species	Type of Sample	Testing Methods	Result
2019	54	3240	Cattle, Swine	Blood Serum	ELISA NSP for FMD	On going
2018	64	3625	Cattle, Swine	Blood serum	ELISA NSP for FMD	All negative
2017	66	3333	Cattle, Goat, Swine	Blood serum	ELISA NSP for FMD	All negative
2016	63	3402	Cattle, Swine	Blood serum	ELISA NSP for FMD	All negative
2015	94	2358	Cattle, Swine	Blood serum	ELISA NSP for FMD	All negative
2014	84	2423	Cattle, Swine	Blood serum	ELISA NSP for FMD	All negative

Serology screening test also conducted by DIC's as part of routine annual sampling. Two samples from DIC Denpasar was tested using ELISA Ab resulted positive sent to Pusvetma for confirmation and both samples was Negative. Another sample from DIC Banjarbaru resulted positive using ELISA Ab, the sample also sent to PUSVETMA for confirmation and final result was Negative.

B. CONTROL STRATEGIES

Indonesian Agricultural Quarantine Agency (IAQA) published circular letter to entry point/ border post to strengthen border control. IAQA are also working closely with port authority to manage aircraft/ vessel waste as part of risk mitigation. A serial farmer seminar were conducted by DGLAHS in collaboration with provincial livestock and animal health services, pigs farmers association and swine veterinarian association to rise farmer awareness on biosecurity including the risk of FMD and ASF exposure through swill feeding.

II. COORDINATION AND ADVOCACY

A serial epidemiology capacity building has been carrying out, such as outbreak investigation training for frontliner (district/ field veterinarian in targeted provinces), 1 cohort Field Epidemiology Training Program for Veterinarian (FETPV) non degree has been completed, and ongoing 1 cohort of FETPV MSc program in Gadjah Mada University which expected to be completed in September 2020. FMD is being used as one of case study within these training.

Two info-graphic on FMD clinical sign in cattle and pigs published in DGLAHS Facebook fan-page consider as an efficient public awareness in particular to reach animal health worker then they are able to use it to educate farmers. SEACFMD National Coordinator manages a Whatsapp group to engage key stakeholders (mainly within epidemiology and laboratory group) in discussion regarding FMD and ASF and to sensitize them with FMD and ASF situation in the region.

III. GOVERNANCE AND POLICY

An interagency simulation exercise was conducted in July 2018 using “The Guideline on Cross-sector Emergency Management System for Zoonosis and EIDs”, a high level inter-ministerial coordination mechanism particularly developed for zoonosis and EIDs published by Coordinating Ministry on People Empowerment and Culture. As Ministry of Agriculture seats as a member of the committee, DGLAHS utilize this One Health platform to build cross-sector coordination. Even though the cross-sector coordination mechanism is primarily for zoonosis, however it is expected the mechanism also work for non-zoonotic animal disease epidemic since they are considered as a disaster in Indonesia Law.

As complementary to the Ministry of Agriculture Regulation Number 61 /2015 on Animal Disease Eradication serves as the tertiary legislation or implementation guideline for Law No. 18/ 2009 on Livestock Production and Animal Health and Government Regulation Number 47/ 2014 on Animal Disease Control, DGLAHS submitted the Legal Draft of “Minister of Agriculture Regulation on Preparedness Plan, Early Warning System and Contingency Plan” and the draft on a review process in MoA Legal Bureau.

IV. Constraints and Solutions

There is an avoidable competition between FMD specific activities with other livestock development and endemic disease control program and activities at national as well as subnational level. It should take in account by DGLAHS to create more streamlined FMD specific activities within

Current Indonesian budgeting and financial system is not suitable to manage emergency fund for animal disease emergency response purpose within Ministry of Agriculture. For this reason Ministry of Agriculture and National Disaster Management Coordinating Board (BNPB) are continues working closely on draft Memorandum of Understanding on provisions and implementation of so-called “on call funds” (Dana Siap Pakai, DSP) for animal disease emergencies. To accelerate the process, Directorate General of Livestock and Animal Health Services (DGLAHS), an ongoing alignment between Animal Disease Preparedness & Contingency Plan and BNPB Preparedness Contingency Plan is conducted by DGLAHS to fulfill the BNPB’s requirements.

V. Future Plans

Current government administration term will be ended by October 2019 and Medium Term National Strategic Plan (RPJMN) will be implemented in 2020. A series of specific assessment FAO Laboratory Mapping Tools (LMT), FAO Epidemiology Mapping Tool (EMT) and Surveillance Epidemiology Tool (SET) are planned to be conducted in collaboration with EPT-2 USAID/ FAO in 2nd semester of 2019 as well as OIE PVS Follow-up mission to be conducted in early 2020 and expected will provide recommendations for improvement of Indonesia veterinary services including TADs control incorporated in the Ministerial Work Plan and DGLAHS Work Plan.

DGLAHS will continue to collaborate and strengthen partnership with national partners and developing partners to strengthen veterinary services and developing capacity to prevent, detect and respond to TADs and EIDs threats.



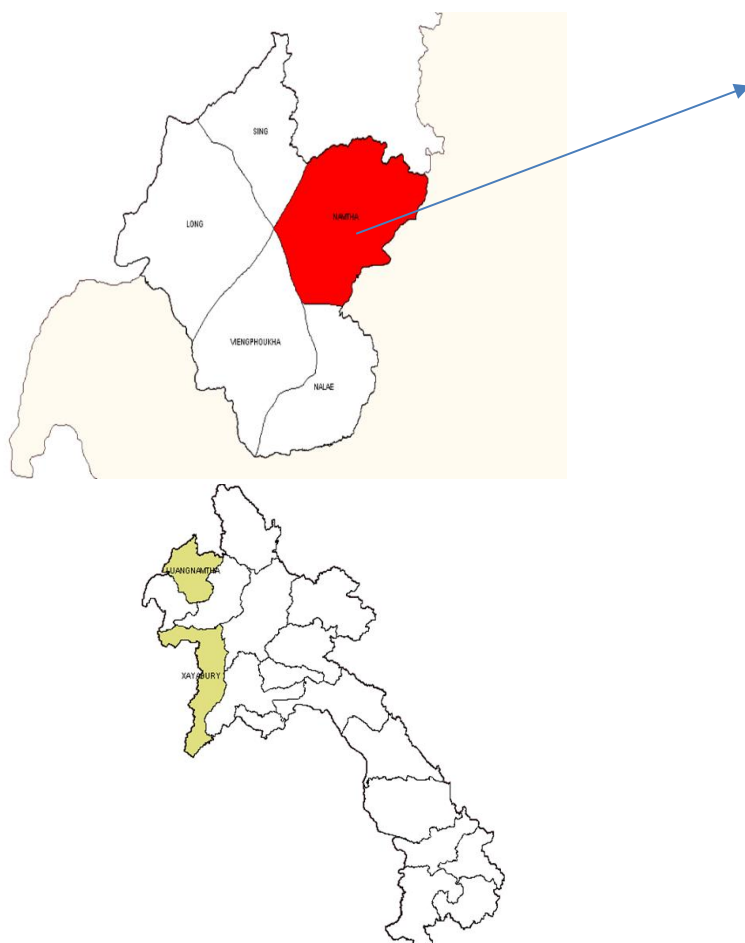
I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

A slaughterhouse sampling was trial in Vientiane, Lao PDR during a three-week period between 20 May and 7 June 2019, to determine whether samples obtained at post-mortem during slaughter could form a useful part of in-country surveillance for circulating foot-and-mouth disease (FMD) virus. Swab samples including three mucosal sites (nasal, oral, pharyngeal) and blood serum were collected from two Vientiane slaughterhouses.

A subset of samples was tested for the presence of FMD viral RNA at the DLF National Animal Health Laboratory (NAHL) in Vientiane using real time PCR. Epidemiological data about origin, species, sex, and other factors were also collected, to the finest granularity possible. Complete samples were obtained from 132 animals (48 buffalo and 84 cattle) from four provinces: Salavan, Bolikhamsai, Vientiane Province, and Vientiane Prefecture. Of the approximately 400 samples tested with RT-qPCR at the NAHL facility, up to six samples were suspected to be positives which require further confirmation. Duplicate samples (pharyngeal, oral and nasal swabs; to determine the most sensitive methods for collection at a slaughter plant) will be sent to The Pirbright Institute (PI) to test all 533 samples and confirm initial in country results, including genotyping of positives as appropriate. We conclude that slaughterhouse sampling using post-mortem swabs may be a potentially useful way of conducting surveillance for FMDV within endemic regions.

The active surveillance was carried out at Boten international Check point, Louangnamtha province 201 swab and serum samples from cattle were collected prior to Chinese New Year in 2018. All samples were test using NSP ELISA and Serum samples were positive 130 cover (64.67%). All samples were test using LPB ELISA (Spot Tests), 184 samples were positive type O cover (91.54%), 135 samples were positive for type A (67.16%), 143 samples positive for type Asia1 (71.14%).



2. FMD Outbreaks in Laos

FMD outbreaks, 2018-2019

Month	Provinces	Districts	Affected Villages	Serotype
Mar 2018	Houaphan	Samneua	22	O
May 2018		Houameung	10	Untyped
May 2018		Viengthong	11	Untyped
Apr 2018	Xayabouly	Xayabouly	2	O
Oct 2018	Attapeu	Sanamxay	10	A
Jan 2019	Louangphaban	Xiengngeune	7	Untyped
Feb 2019		Chomphet	22	Untyped
Feb 2019		Louangphab	7	Untyped
Mar 2019		Nan	16	Untyped
	4	9	107	



In second half of 2018, total 111 FMDV samples were submitted to National Animal Health Laboratory by investigation team which includes 88 Probang samples containing Oesopharyngeal (OP) fluids from Xayabuly, 23 epithelium and saliva samples which includes 11 samples from Attapeu and 12 from Champasak. National Animal Health Laboratory (NAHL) tested these suspected FMDV samples using Real Time PCR, ELISA technique. NAHL diagnosed 3 (out of 11) Attapeu Province samples with positive for Serotype 'A' and 4 samples (out of 12) from Champasak Province Serotype 'O' by Antigen ELISA. Following 'O' Pan Asia strain was diagnosed by Regional Reference Laboratory (RRL) from Houaphanh, 15 samples containing 10 OP fluids from Xayabuly and 5 epithelial and saliva samples from Attapeu were sent to RRL to help with the diagnosis of strain of the virus. December 2018, RRL report on Attapeu samples have found A- SEA-97 strain and virus A/Lao/22/2018 which is found to be distinct virus could be due to antigenic variation, also reconfirmed by Pirbright World Reference Laboratory (WRL).

B. VALUE CHAIN MONITORING

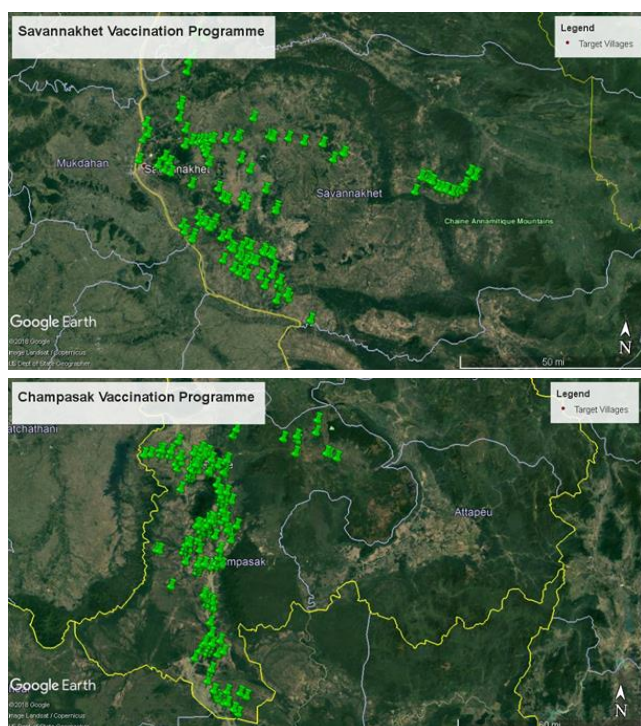
The value-chain developed as part of a RBSP chapter stakeholder-consultation workshop in January 2018 in Vientiane. The cattle and buffalo value chain is mainly based on small holders and a few big farms. For local consumption, cattle and buffalos trade is from the South and North to larger centres such as Vientiane, Louang Prabang and Xieng Khouang in central Lao PDR. A third farm type is a fattening unit or farm. These exist in Champasak and are related to transit of cattle from Thailand to Vietnam. Cattle from Thailand remain in Champasak province at fattening farms for a period of a few months to be fattened prior to export to Vietnam. Xiengkhouang province acts as a hotspot because of the presence of large number of animal traders. They engage in fattening of cattle and buffaloes from different parts of Laos, and export to Vietnam. A new trade route is for live pigs from Vietnam to Lao PDR for local consumption and transit through Lao PDR to go to China. It is estimated that 1-200,000 heads of pigs ranging from 100-200 kilograms live weight. Pigs are imported from two places - Phongsaly province and Bolikhamsai province. Trading routes and numbers of pigs into and across Lao PDR. Phonxaly: Coming from Vietnam, transit and then to China, estimated 1-200,000 in 2017; Savannakhet: Large density, cross border trade of pigs, Bolikhamsai: Import from Thailand and go Vientiane Capital, Vientiane capital: destination of in-country movement of pigs. An import trading route for goats is through Champasak with approximately 200-300 breeding and consumption heads per day.

C. CONTROL STRATEGIES

- Vaccination and post-vaccination monitoring

The routine vaccination has been conducted in Savannakhet, Champasak and Xieng Khouang during 2018-2019.

Following to the previous vaccination report, Round 5 (R5) completed in first quarter of 2018 reported vaccination of 77,788 in Southern Laos. In Xieng Khouang province has reported 41,871 animals vaccinated for FMD and HS which increases the total tally from 104,520(from the last report) to 119,559. Round 6 (R6) vaccination campaign conducted during June - September 2018 in Southern Laos has reported total of 71,792 large ruminant vaccinations. Round 7 (R7) vaccination in Southern Laos was carried by without the operation funding support of the project, the vaccination reported were 39,036. Post Vaccination Monitoring will be carried out in August 2019. In November 2018, DLF has received 150,000 doses of bivalent vaccine from OIE to continue vaccination programme in 3 provinces.



- Other control measures

FMD outbreak investigation in both Northern Laos namely in Xayabuly (August 2018) and Southern Laos Attapeu (October 2018) and Champasak Province (December 2018) kept the in-country staff engaged in the coordination, field investigation, sample collection and response. These investigations have contributed to better understand the epidemiology of FMD in both these regions. The risk factor analysis during retrospective outbreak investigations in Xayabuly suggested that the risk of grazing 2 weeks prior to outbreak increases five folds while two-fold increase in risk was noted due to the purchase of livestock

2 weeks prior to FMD outbreak. FMD vaccination factor odds ratio less than one suggest that vaccination is a protective factor for the households against FMD which emphasizes the importance of vaccination to control clinical FMD. The risk factor of 2 weeks prior to grazing shown similar five-fold increase in Attapeu Province investigations. Therefore, quarantine of suspected and FMD affected animals, animal movement control, restrictions on trade of animals during outbreak and public awareness on FMD introduction, spread and biosecurity were some of the recommendations came as outcome of the investigations.

Biosecurity principals of segregation, cleaning and disinfection was integrated in the FMD training programme for district officer. While efforts continue to highlight importance of Biosecurity application to VVW training programme.

Animal movement Survey Questionnaire implemented in 32 districts of 3 provinces namely Savannakhet, Champasak, and Xieng Khouang 25 March- 17 May 2019. In Summary, 195 village level and 194 trader's questionnaire data entry has been completed and analysis of the report is awaited.

II. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

- Two Days FMD Control Training Programme was organized for the District Officers (Do's) in Kaysone of Savannakhet. The training was attended by 33 participants representing DLF, PAFO, DAFO, and faculty of agriculture. Out of which, 20 Do's represented 10 targeted districts, 6 technical Officers from Savannakhet and Champasak province and 7 National level staff. Pre and Post-test were conducted to evaluate training, the mean average of pre-test was 57 % and post result was 77% in which suggest the improved knowledge of 24 %.
- FMD Control training program for Village Veterinary VVW was conducted following district officers training. In Summary, 30 trainings have been conducted in 3 provinces in which 635 VVW's from 336 villages of 3 provinces have been trained in FMD Control. Amongst Provinces, 239 VVW's are trained through 9 training followed by Savannakhet 208 VVW's (12 training) and Xieng Khouang 188 VVW's (9 trainings).

B. ADVOCACY

- Agreement in place for import, export and transit of animals and animal product. (April 2019).
- National Strategic Framework (NSF) for FMD Control with long term vision 2025 has been developed and is under process for approval.
- Laos RBSP Plan (2019-2021) is currently under development to seek improved resources and budget for FMD Control.

C. PROMOTION OF CAMPAIGN AWARENESS

- Biosecurity guidelines distributed to technical officers during trainings.
- Distributed FMD Control manuals to District Officers and VVW booklet distributed in Southern Laos and Xeing Khouang.

III. GOVERNANCE AND POLICY

A. DEVELOPMENT OF LEGISLATION

- Reviewed on the draft of prime minister degree on slaughter house and meat inspection management and on veterinary drug management on 5-9 February 2018.
- Reviewed the draft prime ministry on animal feed management and ministerial decision on animals, aquatic and products movement control on 19-22 December 2017.

B. FUNDING

Additional 80,000 USD have been requested to strengthen International animal check point and veterinary certifications by DLF to the Ministry of Agriculture.

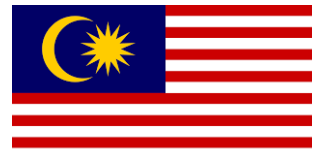
IV. Constraints and Solutions

1. Constraints
 - Human and financial resources at district level is extremely limited hence implementation of programme and proactive disease control is challenging without incentives to district staff and VVW's.
 - Livestock production system is largely free ranging therefore operational limitation to reach to livestock. This also limits the surveillance capacities and disease reporting on time.
 - Support required to purchase Laboratory supplies reagents, primers, probes and consumables
2. Solutions
 - Continue to enforce existing laws and decrees including animal movement control.
 - Continue to strengthen surveillance and control for timely disease reporting.
 - Continue systematic approach to outbreak investigation and response.
 - Develop communication strategy and roll out Public awareness on FMD risks of transmission and impact, not only with livestock owners but including VVWs.

V. Future Plans

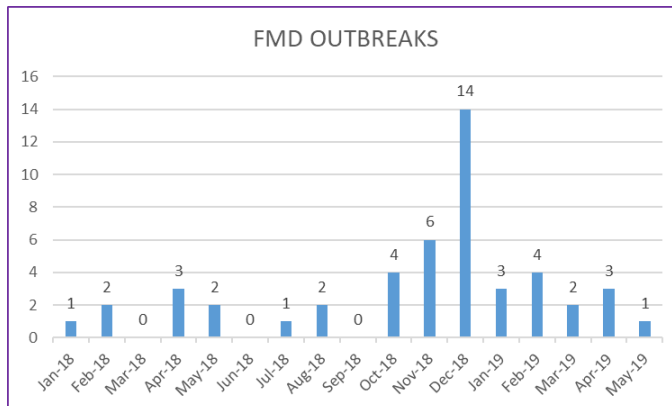
- Follow up development of 'National as well as Sub-National Surveillance Network' for animal disease surveillance.
- Endorsement of RBSP Plan.
- Promote public awareness and biosecurity application.
- Develop capacities to conduct detail outbreak investigation and response.

MALAYSIA

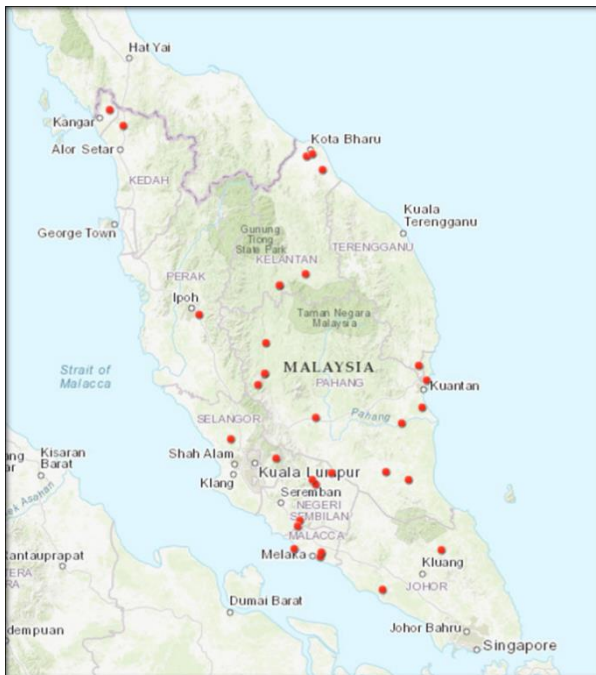


I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE



FMD outbreaks from January 2018 until June 2019 : an increase in the number of outbreaks in November 2018 and December 2018 following the temporary suspension of cattle importation from Thailand. Importation of cattle was resumed from May 2019.



Number of Outbreaks 2018: 33

STATE	NO OF OUTBREAKS
JOHOR	3
KEDAH	1
KELANTAN	6
MELAKA	4
NEGERI SEMBILAN	5
PAHANG	9
PERAK	1
PERLIS	1
SELANGOR	2
TERENGGANU	1
TOTAL	33

FMD surveillance:

1. Annual Serological surveillance and passive surveillance is still being carried out. Virological surveys are only based on suspected cases.

2. In FMD suspicions cases reported, disease investigation team were despatched to verify the report and to identify the source of the infection and the likely spread of the disease.

SERO-SURVEILLANCE 2018 (CATTLE/BUFFALO)

STATE	NOS TESTED	NOS POSITIVES	PREVALENCE
JOHOR	40	9	22.5
KEDAH	82	0	0
KELANTAN	200	93	46.5
MELAKA	490	77	15.71
NEGERI SEMBILAN	345	156	45.22
PAHANG	472	151	39.99
PERAK	365	0	0
PERLIS	50	21	42
PULAU PINANG	381	177	46.46
SELANGOR	246	80	32.52
TERENGGANU	168	29	17.26
TOTAL	3013	784	26.02

B. VALUE CHAIN MONITORING

For the past years there is no change in the value chain as the 11th Malaysia Plan is still in progress. We will be reviewing the outcome of the 11th Malaysia plan for the preparation of the next 12th Malaysia Plan.

C. CONTROL STRATEGIES

- Vaccination and post-vaccination monitoring

For 2019 DVS will resume the vaccination and post-vaccination monitoring program when the procurement of the kits is finalised. The monitoring program will focussed on dairy herds.

- Other control measures

At the moment there is no change in outbreak management, *biosecurity measures*, disinfection procedures/protocols and other relevant activities to control and eradicate FMD. DVS is continuously monitoring the procedures and the procedures will be reviewed when needed.

D. MAINTENANCE OF DISEASE FREEDOM [for countries with OIE official status]

The monitoring and surveillance activities for the maintenance of FMD free zone without vaccination in Sabah and Sarawak, the FMD free zone without vaccination is on-going.

E. PROCEDURE FOR OFFICIAL RECOGNITION [for countries with OIE official status or with an endorsed official control programme]

DVS is in the process of reviewing the FMD strategic plan following the recent FMD outbreaks and the resource issues in implementing the activities which will have an effect on our proposed official national control program.

II. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

DVS has a Committee for National Disease Control, chaired by the Director General of DVS and the Directors of State DVS and Heads of Divisions of DVS Headquarters are the committee members. This committee meet twice yearly to discuss on the policy, sharing information on the national animal disease status and matters of national disease control program.

Each state DVS will also conduct frequent meetings among the state animal health staffs on disease control activities which include the annual animal disease surveillance program and activities. During these meeting training requirement needs are also discussed and back to back seminars or trainings are also conducted.

The laboratory needs are discussed in the meetings between the Diagnostic and quality control and Research and Innovation Divisions and the outcomes of the meetings are discussed in the meetings with DVS top management for endorsement and action. The laboratory training and field training will be managed by the training and competency division of DVS.

B. ADVOCACY

Constant engagement with stakeholders regarding animal movement issues, farm biosecurity awareness to farm owners and traders on the importance of disinfection and good animal husbandry practices.

C. PROMOTION OF CAMPAIGN AWARENESS

DVS headquarters with State Veterinary Offices will conduct awareness campaign to stakeholders aiming on farm biosecurity, good animal husbandry practises and animal movement issues especially during disease outbreaks and during the festival seasons to reduce the number of illegal animal movements.

III. GOVERNANCE AND POLICY

A. DEVELOPMENT OF LEGISLATION

Animals Act 1953 (Act 647) revised 2006, is an act to amend and consolidate the laws for preventing the introduction into, and spreading within Malaysia of diseases of animals; for

the control of the movement of animals into, within and from Malaysia; for the control of slaughter of animals; for the prevention of cruelty to animals; for measures pertaining to the general welfare, conservation and improvement of animals in Malaysia; and for purposes connected therewith.

B. FUNDING

DVS receives operational federal allocations and state allocations to support the operation of activities under disease control and eradication program. The annual federal operational allocation for disease control and eradication program is RM 5 million with allocation for FMD control program amount to RM 2million.

Under the 12th Malaysia Plan, DVS will apply development budget for disease control and eradication for 3 main economic and zoonotic diseases.

IV. Constraints and Solutions

- Poor sample quality, late detection and reporting of FMD outbreaks remain a major constraint to effective control and prevention of FMD. Regular training of field staff and rapid action team is needed to ensure the staffs are competent enough to diagnose FMD and able to get good quality sample.
- Land border is always a threat to FMD incursions in the country. Illegal animal movements are a constant threat to FMD outbreaks, Collaboration with other agency at the border to assist in the control of animal and animal product movement.
- A challenge to source importation of FMD free cattle from FMD infected countries where the number of livestock is abundance and the price is reasonable. Bilateral meeting and review of import protocol will facilitate risk analysis and risk assessment prior to importation.
- Budget constraints result in lower number of doses of FMD vaccine purchased causing fewer number of susceptible animal vaccinated. DVS will request for development budget under the FMD control program for additional budget.
- Human resource is also a critical factor in disease control activities. Retired staff are not replaced in due time and replacement staff are not competent in their field and need further training in disease investigation in the field, risk assessment and laboratory diagnosis.

V. Future Plans

- Reviewing National FMD control program and activities for the next five years.
- Review the annual surveillance program to include serology and virology surveillance and post vaccination monitoring.

- Application of development budget with the revised national FMD control program and other disease control program.
- Upgrading the laboratory capacities and personnel competencies for the diagnosis and surveillance of FMD.

MYANMAR



ABSTRACT

Foot and Mouth Disease (FMD) is an endemic in Myanmar and all of the outbreaks have been occurred in all parts of the country in yearly. Three serotypes such as serotype O, A and Asia-1 have been recorded and serotype O type is dominant serotype in large ruminants in Myanmar.

The central part of Myanmar is a major source of livestock and a hotspot area of FMD with high density of animal population and complex animal movement pathway. Risk-based vaccination campaign has been conducted in 24 townships of Mandalay and Sagaing regions under the OIE-LBVD Myanmar FMD Control Project funded by New Zealand Government. Since 2017, 6th round vaccination campaigns were conducted in the 1968 villages of 24 townships from Mandalay and Sagaing regions, reflected that a good vaccination coverage and protective immunity development.

Serosurveillance study were conducted in large ruminant, small ruminant and pig in 6 townships in Rakhine, Shan State and Magway Regions that results showed that with high NSP prevalence in those animal. A final draft of “The Risk Based Strategic Plan” (RBSP) has been completed after the two regional training sessions and supported by development guidelines with international expert support.

I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

1. FMD surveillance

FMD sero-surveillance study were conducted in high risk area of 6 townships (Muse, Lashio, Magway, Salin, Taungtwingyi, Maungdaw) in Rakhin, Shan and Magway region in March 2018 (figure 1).



Figure 1 Map of FMD Sero-surveillance 6 Townships

A total of 1777 serum samples were collected from large ruminants, small ruminants and pig and processed by NSP ELISA test for the detection of FMD field virus exposure and the interpretation of results is set to equal or above 50% of percentage inhibition (PI). The results showed that 37.8% (659/1777) of NSP antibody that reflected the previous FMD field virus exposure. The higher NSP antibody was detected in small ruminants compared with large ruminant and pig (figure 2).

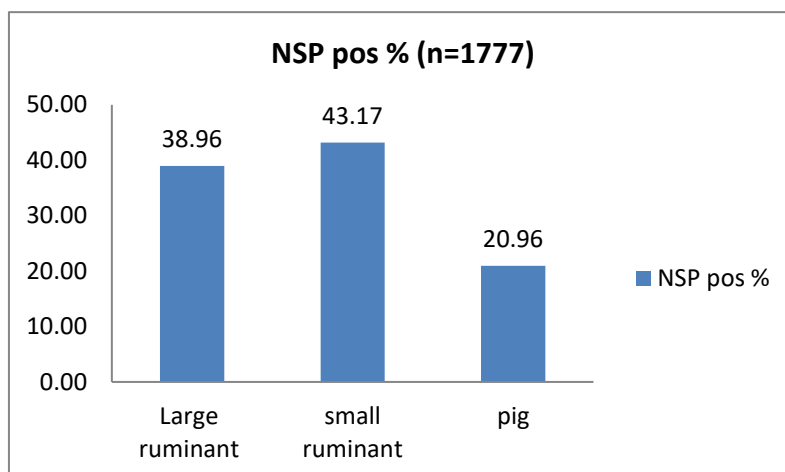


Figure 2 NSP antibody (%) in large ruminant, small ruminant and pig

2. FMD outbreak situation

During January 2018-June 2019, Myanmar has been reported 48 FMD affected villages in 13 townships of Rakhine, Mandalay, Bago Shan, Magway and Sagaing regions (Table 1). All of these outbreaks were caused by serotype "O" viruses that confirmed from Yangon FMD Diagnosis Laboratory and BSL-2 FMD Diagnostic Laboratory (Shwemyo), Nay Pyi Taw (Figure 3). For the strain characterization, 15 clinical samples were submitted to WRLFMD Pirbright.

Month	States/ Regions	Townships	Affected Villages	Myanmar Lab -Result
May 18	Rakhine	Kyauktaw	21	Type "O"
		Ramree	8	Type "O"
Sept 18	Mandalay	Pyin Oo Lwin	1	Untyped
Oct 18	Bago	Nyaunglebin	4	Type "O"
	Shan	Muse	2	Untyped
	Mandalay	Thazi	1	Type "O"
		NyaungU	1	Type "O"
		Yamethin	1	Type "O"
	Magway	Chauk	2	Type "O"
Nov 18	Bago	Kawa	1	Type "O"
	Sagaing	YeU	1	Untyped
		Yinmarbin	4	Type "O"
Jan 19	Magway	Taungtwingyi	1	Type "O"
	6	13	48	

Table 1 FMD outbreaks in 2018 and June 2019 location & serotypes

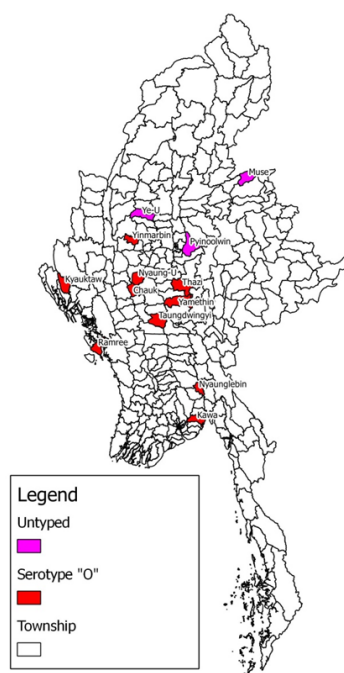


Figure 3 FMD outbreak

B. VALUE CHAIN MONITORING

None to report

C. CONTROL STRATEGIES

- Vaccination

FMD vaccination campaign developed in Myanmar under the OIE-LBVD Myanmar FMD Control Project funded by New Zealand Government, has been the largest and most comprehensive FMD vaccination campaign. Since 2017, 6th round vaccination campaigns were conducted in the 1968 villages of 24 townships from Mandalay and Sagaing regions, reflected that a good vaccination coverage and protective immunity development (Figure 4).

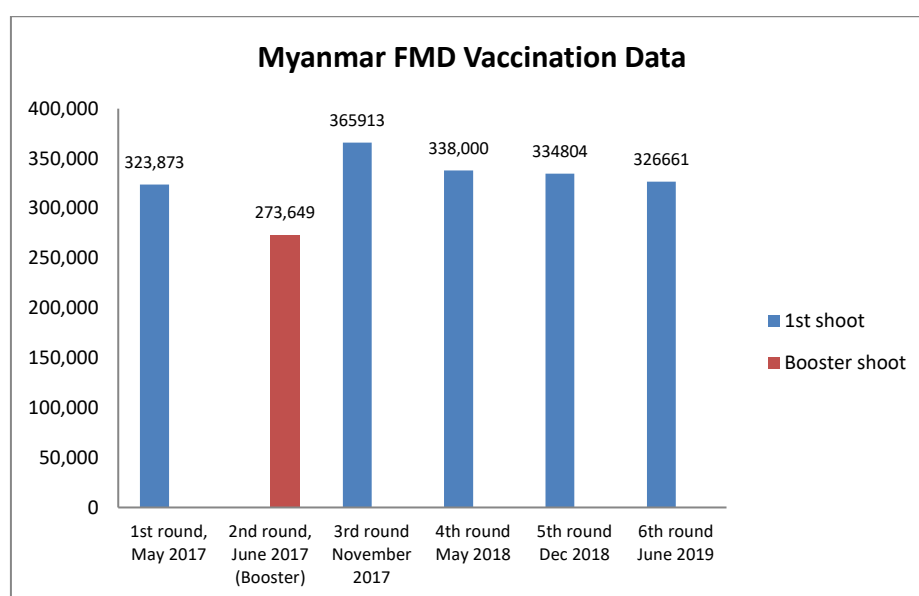


Figure 4 FMD Vaccination Campaign and Vaccinated Animal

- Post-vaccination monitoring

The post-vaccination monitoring and evaluation guidelines in 2018 were developed in collaboration with Massey University. The design was aimed at monitoring the level of herd immunity after vaccination and comparing FMD exposure rates in vaccinated and non-vaccinated villages. In total 900 samples (450 in each group) were collected from the 30 villages in each vaccinated and non-vaccinated group between 20 August and 5 September. The samples were tested for NSP detection and immune response against A, O, Asia-1 serotypes at Nay Pyi Taw FMD laboratory. The development of the protective immunity was detected in all the townships by Serotype O, A and Asia 1, with an average 67% O serotype, 71% Serotype A and 81% serotype Asia 1. (Figure 5)

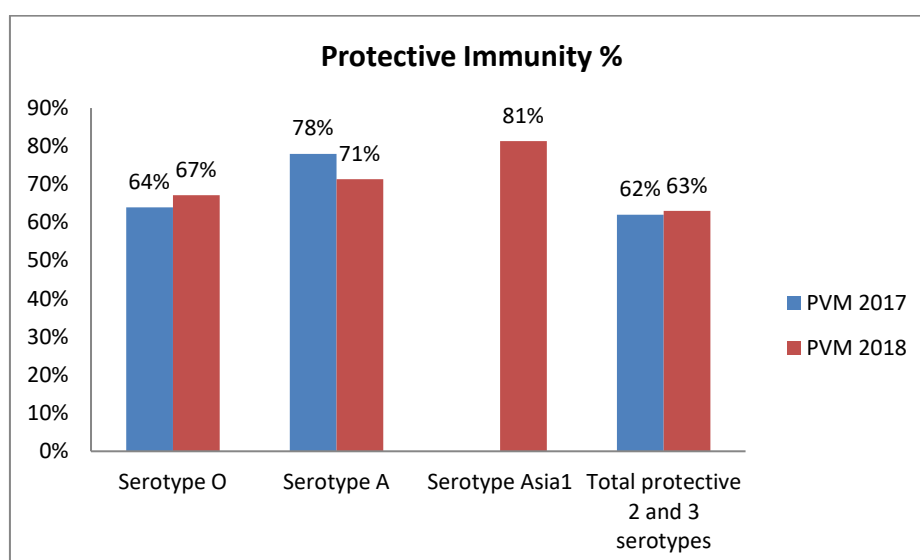


Figure 5 Immunity Development of 2017 and 2018 PVM results

- Other control measures

During the vaccination campaign, the monitoring teams observed and provided advice on the correct vaccination technique, biosecurity, vaccination reaction and animal identification. The Project team and local LBVD Staff ensured that biosecurity principles, practices and guidelines were followed by vaccination team members during the vaccination campaigns.

E. PROCEDURE FOR OFFICIAL RECOGNITION [for countries with OIE official status or with an endorsed official control programme]

Development of risk-based control strategy

A final draft of “The Risk Based Strategic Plan” (RBSP) has been completed after the two regional training sessions and supported by development guidelines with international expert support. The RBSP is aligned with the Global FMD Control Strategy, SEACFMD Roadmap and OIE FMD PCP. It consists of 7 Chapters (Chapter 1: Situation Analysis, Chapter 2: Benefits of FMD Control in Myanmar, Chapter 3: Strategy for FMD Control, Chapter 4: Quality Veterinary Services as part of enabling environment of an efficient and sustainable FMD prevention and control, Chapter 5: Monitoring and Evaluation, Chapter 6: Implementation and Chapter 7: Technical assistance).

II. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

1) The third overseas training at Massey University’s, EpiCenter during 27th May to 7th June 2019 involved four participants: Dr Phyo Thu Aung, Dr Htun Htun Win, Dr Min San and Dr Myo Thiha from LBVD.

2) Dr Htun Htun Win, FMD Control Project Officer, Dr Khin Aung, Regional Director of Shan State and Dr Myint Soe, Regional Director of Sagaing Region, participated in the 14th Meeting of the Upper Mekong Working Group on FMD Zoning and Animal Movement Management which was held in Xishuangbanna, China, from 23 to 25 April 2019.

- 3) Dr Kyaw Thin, Assistant Director and Dr Htun Htun Win, Research Officer were participated and shared FMD experiences and activities in 21st SEACFMD NC Meeting, 17-19th July 2018.
- 4) Dr Khin Ohnmar Lwin, FMD National Coordinator and Dr Htun Htun Win, Research Officer were attended and presented FMD situation and OIE-LBVD Myanmar FMD Control Project's progress report in 24th SEACMFD Sub-Commission Meeting, 28th-30th November 2018.

B. ADVOCACY

The Magway Regional Government initiated FMVD vaccination campaign in 25 townships of Magway Region and purchased 30,000 doses (with 60,000 booster doses) of monovalent vaccine from the LBVD vaccine production section.

The Project Coordination Office (PCO) operated a pavilion and advertised the Project activities during the annual Livestock show which is organized by Mandalay Regional Livestock Breeding and Veterinary Department. The Regional authorities and exhibitors have visited the Project pavilion and introduced the Project activities funded by the NZ Government.

C. PROMOTION OF CAMPAIGN AWARENESS

Livestock Breeding and Veterinary Department (LBVD) has successfully organized an awareness weekly activity followed by an effective vaccination campaign. This was typically inviting about 6000-7000 local farmers and village authorities from the targeted villages to negotiate the animal to be vaccinated against FMD and the potential benefits for FMD vaccination. The awareness activities well performed by LBVD staffs and township veterinary officers in each vaccination campaign. The targeted farmers and village headmen are by now sufficiently aware of FMD vaccination.

III. GOVERNANCE AND POLICY

- Animal Health and Development Law that is issued in 1993 and 1999 is revised to support Animal Health, Disease Control and Trade.
- Request budget to Government for long term FMD control and prevention.

IV. Constraints and Solutions

- FMD Vaccination Campaign organized by OIE-LBVD Myanmar Control project in 24 townships, Sagaing and Mandalay Regions show that the benefit of FMD control by vaccination but Government has limited resources to conduct such a kind of vaccination program.
- FMD is not viewed as a priority disease by some farmers, so stakeholder knowledge, attitudes and perceptions is still limitation. Disease reporting from grass-root level still weak with very few number of reported outbreak. Public and stakeholder participation is still need for all parts of FMD control programme.

- Lessons learned include FMD vaccination campaign in some part of the country and outbreak seasons to maintain herd and animal immunity.
- Monitoring and controlling on animal movement by using animal identification need more public awareness for effectiveness using identification.

V. Future Plans

- New Zealand funded OIE-LBVD Myanmar FMD Project's activities will continue in project area including vaccination campaign, public awareness on FMD prevention and control, post vaccination monitoring, animal movement study and trainings.
- The Project for Improvement of Foot and Mouth Disease Control in Myanmar cooperated by JICA is to support for FMD vaccine production plant, renovation of existing Veterinary Medical Plant building for FMD Diagnostic laboratory and, procurement and installation of equipment.
- National FMD active surveillance program in high risk area of Myanmar during June in Nay Pyi Taw and July in Magway Regions, and will conduct step by step to extend with government support.
- The Project on FMD Surveillance and Diagnosis Development in Myanmar funded by KOICA, is conducting FMD Diagnosis Training in Myanmar and APQA, KOREA.
- National laboratory team and epidemiology team will conduct slaughterhouse survey in project area that cooperate with MPI by providing New Zealand government.

PHILIPPINES



I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

Bi-annual serological surveillance in all of the 81 provinces of the country remains in place. In **2018**, a total of 6,678 samples have been submitted, with one sample yielding a positive result. It was part of the 28 samples submitted by the Ilocos Norte Provincial Veterinary Office (PVO) on November 28, 2018. The samples were collected from various species of FMD susceptible animals from 12 backyard raisers in the towns of Solsona and Dingras. The positive sample came from 1 of the 3 goats owned by Mr. Mariano Eulalio of Brgy. Juan, Solsona. The laboratory result was promptly sent to the PVO after it was released by the National FMD Laboratory on 7 December 2018.

On 13 December 2018, there was a second collection of samples from 6 out of the 7 goats of Mr. Mariano. However, they were only sent to the laboratory on 9 January 2019 since they had to await for the samples collected from the other goats in the neighboring farms. A total of 33 samples from 9 goat raisers were submitted. Unfortunately, the lone reactor tested positive again. The rest of the animals were negative.

Disease investigation was conducted by the Provincial Veterinarian, Dr. Loida Valenzuela, in all of the livestock farms in Brgy. Juan.

- Mr. Mariano raises ducks and chickens aside from goats. Only 6 samples were collected because the youngest was only 2 months old. There are 4 female (aged 2, 3 and 4 years) and 2 male (aged 4 months and 5 years).
- The 4-year old female breeder is pregnant; it was bought from the municipality of Dingras 2 ½ years ago. The 5-year old male was bought from the municipality of Batac 4 ½ years ago. The rest of the goats are their offsprings.
- The 2-year old female was the POSITIVE reactor.
- All the goats were apparently healthy with no vesicles seen on the mouth, teats and feet. If the reactor has a subclinical infection, it should have transmitted the virus to the other goats in the farm and there would have been other reactors.
- The animals in the rest of the farms in the barangay were also apparently healthy. There has been no FMD outbreak nor evidence of FMD infection since 2007.

For the third collection, we sought the assistance of our expert epidemiologist, Dr. Romeo Gundran, to analyse the survey design through the FreeCalc software. Based on the following assumptions, the required sample size for the entire town of Solsona was 130 and the cutpoint number of reactors was 3.

Sampling Assumptions

Test Sensitivity	100%
Test Specificity	99.2%
Goat Population in Solsona	1,797
Prevalence	5%

132 serum samples were submitted by the Ilocos Norte PVO on 6 February 2019.

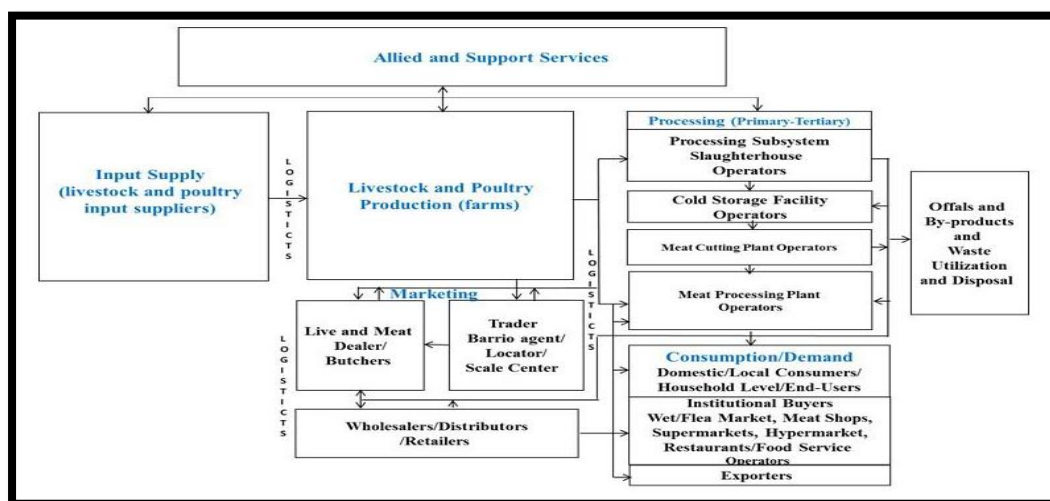
- 9 barangays which were within 5 kilometers around the affected barangay were covered in the surveillance.
- In Brgy. Juan, a total of 33 goat serum samples from 13 backyard raisers were collected including 6 samples from the goats of Mr. Mariano. His 7th goat was spared because it was less than 3 months old and was still small.
- Samples were collected from 99 more goats of 41 backyard raisers from the rest of the 8 barangays.

The FMDV-NSP ELISA test result was released on 8 February 2019 and all the samples were negative.

From **January to June 2019**, a total of 2, 248 samples have been tested at the National FMD Laboratory and all of the results were negative.

B. VALUE CHAIN MONITORING

Livestock and Poultry Supply Chain Model in the Philippines



Source: Livestock Supply Chain in the Philippines Website, June 2018

There has been no change in the supply and value chain of ruminants and pigs and their products in the country. The livestock farms cover the different types of farms operating in the country which include the backyard raisers, natural/organic producers, semi-commercial, commercial, cooperative and integrated livestock farms. Processing includes primary

processing (i.e. slaughtering, meat cutting and fabrication of meat), meat processing, and canning. Marketing includes the selling of livestock commodities by trading of meat, meat products, and by-products, waste utilization and its disposal interplaying with the logistics facilities, marketing infrastructures, and related marketing costs in the distribution of the different product lines. Consumption or the demand of livestock, meat and meat products and by-products include both local distribution and exportation of the different product lines produced by the livestock industry cut across the different types of consumer marketing places such as institutional, wet/flea market, meat shops, supermarkets, hypermarket, restaurant/food service operators.

Along the different supply and value chain segments, there are the allied and support services to assist and provide the needed services for the further improvement and development of the livestock industry. These include the government, private sector, and industry associations.

During the country's FMD eradication phase (2004-2009), analysis of the animal movement and livestock trade led to the identification of livestock markets, holding yards and abattoirs as high risk areas for FMD virus maintenance. The critical/risk areas on animal movement, from the farm to the market, were identified and interventions were focused on these critical nodes such as deployment of Compliance Monitoring Teams (CMTs) to check on the slaughter houses and stockyards/auction markets if they abide by the rules imposed by the government, specifically the all in/all out protocol for livestock brought in the slaughterhouse to give way for proper cleaning and disinfection of the facility and a maximum 24 hour holding time to prevent overstaying of animals in the holding yard to avoid mixing of susceptible herds.

C. CONTROL STRATEGIES

Vaccination and post-vaccination monitoring

In the event of an FMD outbreak, emergency vaccination will be conducted in all *barangays* or villages covered within 10 kilometers centered on each infected area. This would commence as soon as the first outbreak is confirmed by necessary laboratory tests. All FMD susceptible species within the identified areas of vaccination will be covered.

In order to determine the presence of field infections even after vaccination has been completed and clinical cases are no longer observed, stringent monitoring of and serosurveillance activities in the affected premises shall be conducted. Laboratory testing shall follow to determine whether titers, if ever detected, are due to vaccination or persisting field infection.

D. MAINTENANCE OF DISEASE FREEDOM [for countries with OIE official status]

Prevention measures are still anchored on disease monitoring and surveillance, animal movement management including risk assessment, public awareness, and implementation of biosecurity measures.

In the event of an incursion, the country's policy to eradicate the disease at the shortest possible time while limiting economic impact remains in place. As prescribed in the FMD Emergency Preparedness Plan Manual, the strategies, aside from emergency vaccination, include Stamping out, Quarantine and Movement Control, Decontamination, Outbreak Investigation (Trace Back/Trace Forward), and Risk and Crisis Communication.

E. PROCEDURE FOR OFFICIAL RECOGNITION [for countries with OIE official status or with an endorsed official control programme]

The main challenge in the preparation of the annual reconfirmation for the maintenance of the country's FMD-free status is ensuring that all the necessary data are available and all the required activities have been carried out. In the event that there has been a positive reactor in the serosurveillance, there must be a thorough follow-up on the ensuing investigation and collection of samples until it has been established that country remains free of FMD.

II. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

The Bureau of Animal Industry (BAI) had conducted a capacity building program entitled Integrated Planning Course on Incident Command System (ICS) on March 12-16, 2018 in Dumaguete City and on June 4-8, 2018 in Cebu City. The main objective of the training was to enhance the participants' knowledge in handling animal disease outbreaks and emergencies with a common standard approach for multiple agencies/institutions.

The annual National FMD Coordinators' Meeting was held on November 12-15, 2018 in Davao City. This was a gathering of the regional and provincial FMD coordinators to present, among others, their 2018 accomplishments on FMD prevention as well as the constraints and challenges faced in carrying out the program.

The various Department of Agriculture Regional Field Offices and Local Government Veterinary Offices have conducted various seminars and workshops for the field technicians, livestock aides, barangay animal health workers, and farm owners on animal health programs and animal movement policies. There were also meetings with meat vendors to promote public health through safe and wholesome meat.

B. ADVOCACY

We are working on a proposal for BAI FMD emergency response and indemnification fund since the current strategies of the BAI are mainly focused on border protection, surveillance and capacity building activities. Included in the said proposal is the conduct of an epidemiological modelling study with the aim to link control actions to impacts on disease incidence particularly in terms of spatial and temporal dynamics, for better targeting of control interventions and improving the cost effectiveness of these actions. The proposal will be submitted to the Department of Budget and Management.

C. PROMOTION OF CAMPAIGN AWARENESS

As part of our public awareness, we have T-shirts and standees carrying a message on keeping the Philippines FMD-free. We have distributed tarpaulin streamers to DA regional field offices and to the local government veterinary offices; they contain basic information about FMD such as the cause, clinical signs, and means of transmission.

III. GOVERNANCE AND POLICY

A. DEVELOPMENT OF LEGISLATION

Currently, the development and issuance of legislations/policies are focused on African Swine Fever Prevention and Preparedness Program. Likewise, DA has requested to tap its Quick Response Fund for the emergency procurement of 20 units of X-ray machines worth P130 million which will be installed in all the international airports of the country. There is also the request to DBM for P1 billion indemnification fund for ASF.

B. FUNDING

There has been an annual decline in the fund allocation for FMD activities. Starting in 2018, the budget for at least 2,000 bottles or 100,000 doses of FMD buffer stock has been scrapped. Since 2015, the budget for FMD Prevention Program has been lumped together with the other economically important diseases.

IV. Constraints and Solutions

Though there is an allocated budget for the purchase of FMD serological test and sample collection paraphernalia, other activities of the FMD Prevention and Preparedness Program do not have funding support starting this year. Especially alarming is the absence of allocation for the FMD vaccine buffer stock. We have prepared a project proposal for the

DBM to release funds for FMD emergency response and indemnification. The target is to submit it late this year or early next year.

V. Future Plans

There is an upcoming retooling seminar for all the livestock inspector/animal health workers nationwide. Among the topics are Disease Recognition, Sample Collection, and Disease Outbreak Investigation. The annual FMD Coordinators' Meeting is scheduled on October where the FMD Prevention activities of the regional and provincial coordinators will be presented, current constraints will be raised and discussed.

A project brief on the improvement in the implementation of FMD serological and clinical surveillance activities. For serological surveillance, there shall be a review of the FMD serosurveillance sample submission guide on the basis of the level of risk of each of the 81 provinces. The objective is to come up with a new serosurveillance sample guide wherein only those provinces classified to be of medium and high risks will be included in the surveillance. A list of the potential risk factors for disease incursion and maintenance of infection will be prepared and each province will be evaluated based in the said list. Each risk factor will have a corresponding value and the provinces will be classified to be of low, medium and high risks, depending on the sum total of their risk factors. For the submission of negative monitoring reports, other means of submission will be considered, such as the creation of an FMD surveillance chat group in FB messenger.

THAILAND



I. TECHNICAL

A. EPIDEMIOLOGY/SURVEILLANCE

1. There was no active sero-surveillance for FMD in Thailand during 2018 and early 2019 at national level. The national serological surveys will be conducted later in 2020 for beef cattle throughout the country and dairy cattle in high risk areas, which is still in the planning process. The current sero-surveillance has been conducted in the FMD free zone in east of the country during 2018 - June 2019 but the result is not yet available. The study design is described separately according to animal species.

- a. Dairy cattle/Beef cattle/ buffaloes/goat and sheep
 - i. Using a two-stage sampling scheme, the expected herd prevalence was 10%. Number of herds to be sampled at a 95% level of confidence was estimated to 600 herds (150 herds per species). Whereas, within herd prevalence for disease detection was 30% with 95% level of confidence, the number of samples per herd was 10 heads. The overall calculated samples were 6,000 samples collected from 600 herds.
- b. Swine entering the slaughterhouses
 - i. Within herd prevalence for disease detection was 1% with 99% level of confidence and the number of pigs sampled was 500 head per 3 months. The overall samples were approximately 2,000 samples.

Remark: ** Simple random sampling is used to select farm and herd for inclusion of samples. All unit has the same, chance (or probability) to be selected.

2. The investigation of FMD outbreaks is conducted after the local officers receive disease notification from the farmers either by the telephone or DLD disease reporting system or during the clinical surveillance. When the clinical signs of the animals are clear as defined in the FMD case definition, the local officers will collect the tissue samples, if not possible, the serum or blood sample will be collected instead. Then, the samples will be submitted to OIE-Regional Reference Laboratory for FMD in South East Asia via post or directly by car. After, verification of the index case, the local livestock officers will issue the quarantine record to the farmers to stop the farmer from moving their animals out of the farm. The FMD investigation form will be filled in with the questions related to the previous animal movements and also the movement of the vehicles between infected farm. This is the main method to trace the origin of the virus along with the checking of animal movement history within the infected areas from animal movement database. Then, the temporary epidemic zone will be announced to stop the movement of animals in at least 5 km radius from the index case. This is the key to provide the local officers the authority to visit and investigate other nearby farms to assess the extent of the outbreak and perform necessary treatment and ring vaccination. The number of infected animals and location of further infected farms will be reported daily and weekly through e-mail and the animal disease database (e-Smart Surveillance).

3. According the FMD outbreak map in figure 1, the major epidemiological change is the increase of the outbreaks from serotype A virus in the early 2019 especially in the south of the country. The finding is in contrast from the outbreak in 2018, when the outbreaks from serotype A mainly occurred in the central area (high density area for daily cattle), and the outbreak of serotype O in beef cattle occurred mainly in the south. The reason of this finding is still under investigation and discussion with relevant offices. The initial activity is to highlight this finding to the local officers to monitor the outbreak closely and collect the tissue samples immediately to obtain complete genotyping and vaccine matching results. In the near future, if there is any change in vaccine matching results, the seed vaccine will be changed immediately to ensure consistent protection against the current field virus.

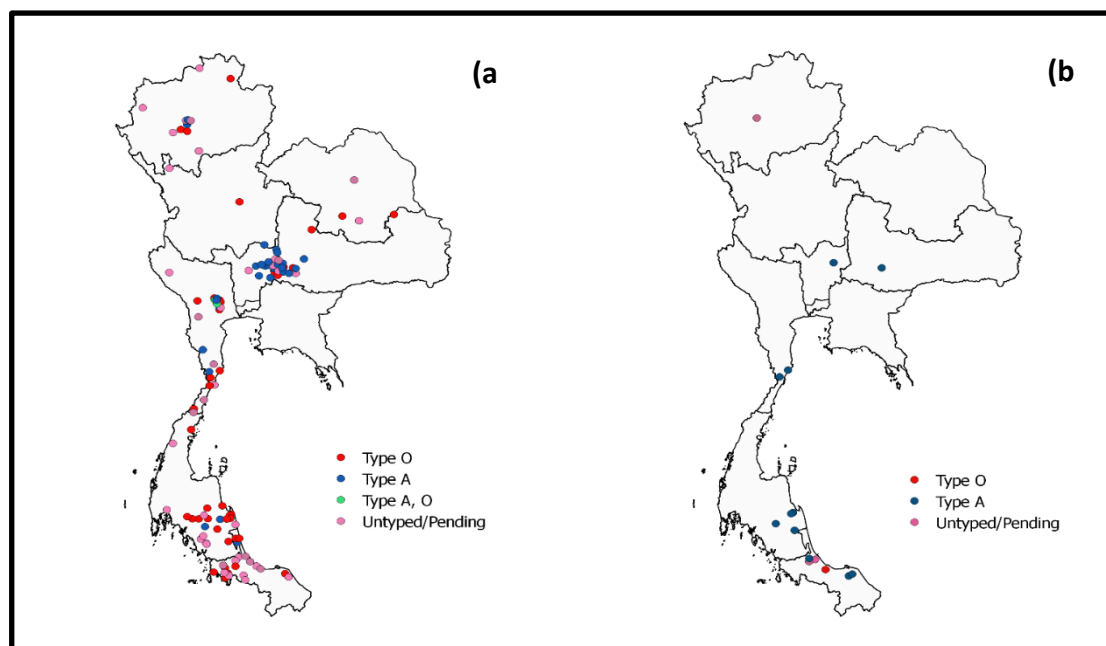


Figure 1 FMD outbreaks in Thailand between 2018 (a) and 2019 (b) categorized by type of FMD virus. The 2019 information was updated until 20 June 2019.

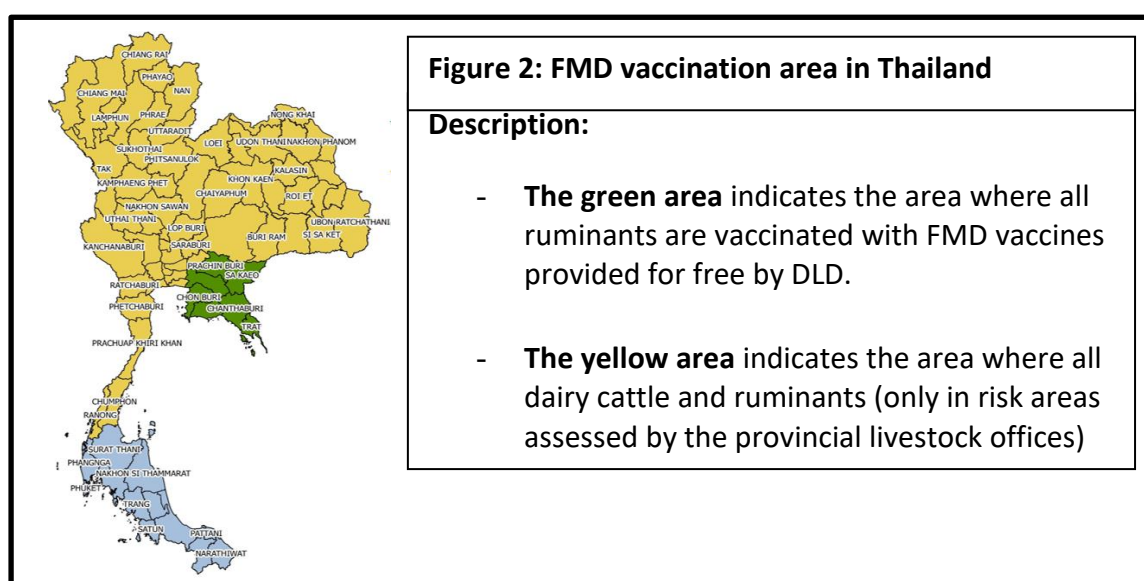
B. VALUE CHAIN MONITORING

It is difficult to compare the changes of value chain in Thailand over time because the studies on value chain in Thailand is quite limited and sometimes outdated. From the observation, the value chain in ruminants is quite consistent with high demand from both within and outside of the countries especially China and Malaysia. The drastic change is considered to be for pig value chain due to the outbreak of African Swine Fever (ASF) across China and Vietnam. Consequently, pig price in Thailand, which is free from ASF, increases dramatically in 2019 compared to neighbouring country. Therefore, we assume that there might be higher illegal movement of pigs along the border because of the price gradient.

C. CONTROL STRATEGIES

- **Vaccination and post-vaccination monitoring**
- the vaccine strains used is A: Sea-97 and O: Mya-98 for pigs and ruminants except dairy cattle. The vaccine strains used in used in dairy cattle are Asia1, A: Sea-97 and O: Mya-98.

- The total number of vaccinated animals supported by DLD in 2018 was 9,903,087.
- The number of vaccination rates per region is shown in table 1.
- The map of vaccination area provided by DLD is shown in figure 2.
- The post vaccination monitoring is being conducted in FMD-free zone. It is conducting in 8 provinces of Region 2, which consists of Chanthaburi, Chachoengsao, Chonburi, Sakaew, Prachinburi, Trat, Rayong and Nakornnayok. For beef cattle, 30 samples will be collected on Day 0 before vaccination, then day 30, 60, 90, 120 and 180 after vaccination. In dairy cattle, 50 samples will be collected on Day 0 before vaccination, then Day 30,60,90 and 120 after vaccination respectively.
-
- **Other control measures**
 - The major change is mainly on the development of public-private partnership especially for dairy cattle cooperatives by supporting them to develop the funding programme for dairy farmers during the recovery process of FMD outbreaks. For example, a farmer with good biosecurity practices and timely disease reporting can get the compensation from the milk price during the time when they cannot sell their milk to the cooperatives during FMD outbreak in their farms.
 - DLD is developing the Application DLD 4.0 that the farmers and people can access and report any disease outbreak, which will be alerted to both local officers and DLD central office. We hope that this will improve the process of disease reporting and support the local officers to respond more quickly to verify the disease notification.



D. MAINTENANCE OF DISEASE FREEDOM [for countries with OIE official status]

Not relevant

E. PROCEDURE FOR OFFICIAL RECOGNITION [for countries with OIE official status or with an endorsed official control programme]

Currently, Thailand is undergoing the process to develop OIE-recognized FMD free zone in the east of Thailand. However, due to the changes in situation and policy related to animal disease in general, some topics must be revised and propose to the policy makers to consider in the near future especially the possible territory for establishment of the zone and practical

activity timeline and realistic goals that are possible to be achieved under current socioeconomic situation and related policy.

Table 1 Vaccination Coverage in fiscal year 2018 (September 2017 - August 2018)

			Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Total
Beef cattle, Buffalo, Sheep and Goat	1st Round	No. of animals	181,789	138,901	1,370,013	1,169,665	428,747	405,888	509,250	18,892	6,459	4,229,604
		No. of vaccinated animals	196,356	129,379	1,322,845	1,133,127	450,660	442,240	472,201	18,652	6,833	4,172,293
		% vaccination coverage	108.01	93.14	96.56	96.88	105.11	108.96	92.72	98.73	105.79	98.65
	2nd Round	No. of animals	181,789	138,901	1,370,013	1,169,665	428,747	405,888	509,250	18,891	6,458	4,229,602
		No. of vaccinated animals	205,999	139,043	1,205,930	1,087,651	440,577	459,315	502,960	19,101	6,511	4,067,087
		% vaccination coverage	113.32	100.10	88.02	92.99	102.76	113.16	98.76	101.11	100.82	96.16
	Total	No. of animals	363,578	277,802	2,740,026	2,339,330	857,494	811,776	1,018,500	37,783	12,917	8,459,206
		No. of vaccinated animals	402,355	268,422	2,528,775	2,220,778	891,237	901,555	975,161	37,753	13,344	8,239,380
		% vaccination coverage	110.67	96.62	92.29	94.93	103.94	111.06	95.74	99.92	103.31	97.40
Dairy Cattle	1st Round	No. of animals	162,560	32,138	86,537	46,032	65,558	6,388	140,296	3,899	29	543,437
		No. of vaccinated animals	157,429	32,403	90,014	48,754	69,290	6,032	136,111	3,939	30	544,002
		% vaccination coverage	96.84	100.82	104.02	105.91	105.69	94.43	97.02	101.03	103.45	100.10
	2nd Round	No. of animals	162,560	32,138	86,537	46,032	65,558	6,388	140,296	3,899	11	543,419
		No. of vaccinated animals	170,130	32,712	83,236	44,531	66,851	7,183	136,257	4,605	12	545,517
		% vaccination coverage	104.66	101.79	96.19	96.74	101.97	112.45	97.12	118.11	109.09	100.39
	3rd Round	No. of animals	162,560	32,138	86,537	46,032	65,558	6,388	140,296	3,899	22	543,430
		No. of vaccinated animals	163,620	32,829	90,713	43,307	90,385	6,282	143,143	3,888	21	574,188
		% vaccination coverage	100.65	102.15	104.83	94.08	137.87	98.34	102.03	99.72	95.45	105.66
	Total	No. of animals	487,680	96,414	259,611	138,096	196,674	19,164	420,888	11,697	62	1,630,286
		No. of vaccinated animals	491,179	97,944	263,963	136,592	226,526	19,497	415,511	12,432	63	1,663,707
		% vaccination coverage	100.72	101.59	101.68	98.91	115.18	101.74	98.72	106.28	101.61	102.05

II. COORDINATION AND ADVOCACY

A. COORDINATION AND TRAINING

Meetings:

- 2nd Scientific Meeting on foot-and-mouth disease between Regional Reference Laboratory for FMD in Southeast Asia and Exotic Disease Research Station, National Institute of Animal Health, NARO, Kodaira, Tokyo, Japan, February 15-16, 2018
- 21st SEACFMD National Coordinators meetings in Malaysia, July 17 - 19, 2018
- Coordination meeting between Regional Reference Laboratory for FMD in South East Asia with Veterinary Laboratories in Austria, August 6 - 10, 2018
- The 9th Bilateral meeting on cooperation on animal health development between the Kingdom of Thailand and the Kingdom of Cambodia
- 5th Meeting of the SAARC Laboratory Directors Forum, Thailand, October 1 - 3, 2018
- 10th Lab-TAG Meeting, Singapore, October 29 - 31, 2018
- 6th ALDF Meeting, Singapore, November 1 - 2, 2018
- 13th OIE/FAO FMD Reference Laboratories Network Annual Meeting, UK, November 6 - 8, 2018
- 6th Joint Meeting of NIAH Japan and NIAH Thailand, Japan, November 19 - 23, 2018
- 24th Meeting of the OIE Sub-Commission for Foot and Mouth Disease in SEA, China Mongolia and Vietnam, 28 - 30 November 2018
- The 6th Joint Thailand-Malaysia Sub-Committee Meeting on Livestock Development in Penang, Malaysia, 18 Dec 2018
- 14th Meeting of the Upper Mekong Working Group on Foot and Mouth Disease Zoning and Animal Movement Management, Xishuangbanna, China, April 23-25, 2019
- Regional Expert Group Meeting on Foot and Mouth Disease, 14 – 16 May 2019, Bangkok Thailand
- National workshop on development in FMD control and prevention measures in high risk area, Bangkok, Thailand 16 – 17 May 2019

- *Development, revision or endorsement of national FMD plans*
 - There was an OIE expert mission to Thailand with regards to PPR and FMD during 18-22 March 2019. The experts reviewed, visited and discussed on FMD control programmes and related activities in Thailand and provided recommendations to improve the programme such as vaccine and contingency plan with specific to slaughterhouse, animal quarantine camp, and livestock market. A DLD working group will start to improve immediately.

- *training, including laboratory training and field training*
 - Lancang-Mekong Cooperation (LMC) TADs Prevention and Control “Laboratory Training and Field Study on Diagnosis of Trans-boundary Animal Diseases in Lancang-Mekong Countries”, Yunnan Province, P.R. China, June 11-14, 2018.
 - Japan Asia Exchange program in Science, Japan, December 7-16, 2018.
 - OIE Sub-Regional training on applying Geographic Information Systems (GIS) For advanced spatial analysis of animal health data Bangkok, Thailand 16–19 October 2018

B. ADVOCACY

- High demand on consumption of livestock in China has encouraged the policy makers in the Ministry level to discuss with DLD in order to find an alternative from establishment of FMD free zone, which is still time consuming to develop. Therefore, DLD is planning to proposed the concept of establishment of FMD-free compartment with vaccination to China to consider as a bilateral agreement to improve livestock trade between Thailand and China.
- Risk assessment studies on the target area especially in the North of Thailand. This study is conducted in collaboration with Kasetsart University in order the assess the possibility for establishment of FMD free zone possibly under the bilateral agreement between Thailand and China in the future.

C. PROMOTION OF CAMPAIGN AWARENESS

- During the National workshop on development in FMD control and prevention measures in high risk area, Bangkok, Thailand 16 – 17 May 2019, DLD invited the stakeholders, mainly dairy cooperatives and livestock associations in the areas, to inform them on the current FMD policy and also encourage them to provide some insights on the situation and constraints, in which they are facing related to the disease itself or the DLD policy. Moreover, stakeholders also shared very constructive opinions to the local officers during the workshop in order to support additional activities to reduce FMD outbreaks in the high-risk area such as the registration of livestock traders, establishment of additional vaccine distribution centres, development of local disease notification centres/network etc.
- The key awareness campaign is mainly conducted by the development of Herd Health Units situated through out the area with high density of livestock. Their role is to provided animal health management consultation, suggestions on biosecurity improvement and also on-farm disease awareness campaign not only FMD but also zoonotic diseases and diseases related to production.

III. GOVERNANCE AND POLICY

A. DEVELOPMENT OF LEGISLATION

- The key development in legislation is the issuance of the Ministerial Regulation No. 7 under the Animal Epidemic Act B.E. 2558 (2015). Its objectives are to prescribe the mandatory conditions for farm registration, animal identification, farm biosecurity, essential vaccination routine including FMD, routine zoonotic disease testing and animal health care etc.

B. FUNDING

National Budget for FMD (Excluding Budget for establishment of FMD free zone)

YEAR		Fiscal year 2018 (Thai Baht)	Fiscal year 2019 (Thai Baht)
Total		320,608,000	292,918,900
1	Personnel	94,937,700	94,937,700
2	Operation	224,395,300	194,981,200
2.1	Materials and allowance (Total)	224,395,300	194,981,200
2.1.1	Allowance for vaccination and clinical surveillance	6,150,000	6,150,000
2.1.2	Operation cost for DLD staffs	2,375,000	1,375,000
2.1.3	Materials such as Vaccine, test, veterinary drugs, PR materials, training cost (for farmers and staff)	215,870,300	187,456,200
3	Capital budget (vehicle)	-	-
4	Compensation (notifiable diseases)	1,275,000	3,000,000

Budget for establishment of FMD free zone

Year		Fiscal year 2018 (Thai Baht)	Fiscal year 2019 (Thai Baht)
Total		39,974,200	37,287,500
1	Personnel	17,212,000	17,212,000
2	Operation	39,974,200	37,287,500
2.1	Materials and allowance	39,974,200	37,287,500
2.1.2	Operation cost for DLD staff	19,147,500	19,147,500
2.1.3	Materials such as Vaccine, test, veterinary drugs, PR materials, training cost (for farmers and staff)	20,826,700	18,140,000

IV. Constraints and Solutions

Constraints	Solutions
Lack of complete value chain studies in all susceptible animals and all related stakeholders	- Develop the collaboration with academic institute in national and international to conduct a value chain studies probably start from the high-risk area, then enhance the study into national or regional later on
The 100% coverage of registration for farms and livestock	- Improve clear definition on the conditions or the criteria for registration. - Establishment of complete national animal identification system
Illegal movement of livestock	- Improve the registration system and regulations specifically for traders or livestock distributors with strict law enforcement in case of the violation of the law or any illegal behaviours.
Lack of harmonization of animal health development in the region	- Increase regional meetings in order to discuss, assess current situation and agreement to harmonize regional livestock health. - Establishment of the working group to regularly update the situation (disease situation, value chain and also policy)

V. Future Plans

Plans	Activities
Reduction of FMD outbreak in the high-risk area	- Trader registration - Improve vaccine distribution protocols to ensure sufficient immunity against FMD - Conducting post vaccination monitoring in high risk area
Revision of regulations related to establishment of FMD-Free zone	- Raise awareness on the concept of the FMD-free zone for higher level decision makers to set clear directions. - Conducting the socioeconomic study for the renewal of the territory of the FMD free zone