Report of the 22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China

Chiang Rai, Thailand, 8-11 March 2016

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22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China
Chiang Rai, Thailand, 8-11 March 2016

EXECUTIVE SUMMARY 7
RECCOMENDATIONS 10
REPORT 13

I. Introduction 13

II. Opening Ceremony 14
1. Mr Prachon Pratsakul, Vice-Governor of Chiang Rai Province 14
2. Dr Gardner Murray, President, OIE Sub-Commission for FMD Control in South-East Asia and China 14
3. Dr Monique Eloit, Director General, World Organisation for Animal Health (OIE) 14
4. Dr Ayuth Harintharanon, Delegate of Thailand to the OIE 15

III. Session 1: Updates on the global and regional FMD situation 16
1. Launch of Phase 5 of the SEACFMD Campaign (Dr Gardner Murray, President, OIE Sub-Commission for SEACFMD) 16
2. SEACFMD Progress Report (Dr Ronello Abila, Sub-Regional Representative, OIE SRR-SEA) 16
3. The global FMD situation (Dr Anna Ludi, WRLFMD, Pirbright Institute Laboratory, UK) 17
4. The Regional FMD Situation (Dr Ronello Abila, Sub-Regional Representative, and Dr Karan Kukreja, Project Officer, OIE SRR-SEA) 18

IV. Session 2: Updates on the national FMD situation 19
1. Philippines (Dr Arlene Asteria Vytiaoco, SEACFMD National Coordinator) 19
2. Singapore (Dr Lee Chee Wee, Director, Agri-Food and Veterinary Authority) 19
3. Cambodia (Dr Sorn San, SEACFMD National Coordinator) 20
4. China (Dr Wu Wei, China Animal Disease Control Center, Ministry of Agriculture) 20
5. Lao PDR (Dr Phachone Bounma, Department of Livestock and Fisheries) 21
6. Malaysia (Dr Mohamed Naheed Bin Mohamed Hussein, SEACFMD National Coordinator) 21
7. Myanmar (Dr Sein Lwin, Deputy Director of Research and Disease Control Division, LBVD) 22
8. Thailand (Dr Sith Premashthira, SEACFMD National Coordinator) 23
9. Vietnam (Dr Phan Quang Minh, SEACFMD National Coordinator) 23
10. Mongolia (Dr Bolortuya Purevsuren, OIE Delegate to Mongolia) 24

V. Session 3: Plenary Session 25
1. The nature and scope of the STANDZ-funded FMD Projects in Lao PDR and Myanmar (Dr Phillip Widders, SEACFMD Campaign Coordinator, OIE SRR-SEA) 25
2. The STANDZ Sustainability Plan (Dr Ronello Abila, Sub-Regional Representative, OIE SRR-SEA) 26
3. The New Zealand Project (Dr Ian Dacre, New Zealand Project Coordinator, OIE SRR-SEA) 27
4. Review of the SEACFMD Roadmap Objectives, Roles and Responsibilities (Dr Ronello Abila, Sub-Regional Representative, OIE SRR-SEA) 28
5. Strengthening communication nationally and regionally, and enhanced advocacy (Dr Pennapa, Matayompong, STRIVES Programme Coordinator, OIE SRR-SEA) 29
6. Plenary Discussion: Driving the SEACFMD Roadmap 29
### VI. Session 4: OIE SRR-SEA Activities

1. Using detailed data from FMD sequencing to enhance FMD control (Dr Yu Qiu, Project Officer, OIE SRR-SEA)  
2. Post-Vaccination Monitoring Activities conducted in the Northern Lao and Central Myanmar (Dr Blesilda Verin, Project Officer, OIE SRR-SEA)  
3. FMD Risks in SEACFMD (Dr Ronello Abila, Sub-Regional Representative, OIE SRR-SEA)  
4. SEACFMD Research: Past, Present and Future (Dr Philipp Wedders, SEACFMD Campaign Coordinator, OIE SRR-SEA)  
5. Plenary Discussion: FMD Risks

### VII. Session 5: Updates from Partners

1. Regional FMD Reference Laboratory Activities at Pakchong (Dr Pranee Rodtian, Acting Director, Regional Reference Laboratory for FMD in South-East Asia)  
2. Regional FMD Reference Laboratory Activities at Lanzhou (Dr Hong Yin, Director General, Lanzhou Veterinary Research Institute)  
3. A Decision Tool for Strategy (Dr Alasdair King, MSD)  
4. How to Anticipate Peaks in Vaccine Demand (Dr Pascal Hudelet, MERIAL)  
5. Production Industry Perspective on the international trade benefits of FMD control (Dr Boonyita Rujitkumporn, Senior Vice President, CP Food Thailand)

### VIII. Session 6: Updates from partners

1. Australian Animal Health Laboratory (Dr Wilna Vosloo, Principle Research Scientist)  
2. Australian Government (Dr Mark Schipp, Australian Department of Agriculture)  
3. Chinese Taipei (Dr Nien-Nung Lin, Section Chief, Bureau of Animal and Plant Health Inspection and Quarantine)  
4. FAO Regional Office for Asia and the Pacific (Dr Carolyn Benigno, Regional Project Coordinator, and Dr Katinka de Balogh, Senior Animal Production and Health Officer)  
5. Japan (Dr Kazuo Ito, Director of International Animal Health Affairs Office, Animal Health Division, Ministry of Agriculture, Forestry and Fisheries)  
6. New Zealand Ministry for Primary Industries (Dr Matthew Stone, Director of Animal and Animal Products)  
7. OIE Regional Representation for Asia and the Pacific (Dr Batsukh Basan, Regional Veterinary Officer)  
8. European Union (Dr Dirk Van Aken, Livestock Sector Expert, Department of Animal Health and Production in Cambodia)

### IX. Session 7: Sustainable FMD Control and Coordinating Protection

1. Plenary Discussion: Sustainable FMD Control and Coordination of Protection

### X. Session 8: Animal Movement Management

1. Animal Movement in SEACFMD Countries (Dr Phillip Wedders, SEACFMD Campaign Coordinator, OIE SRR-SEA)  
2. Regionalisation Pilot Project on Transboundary Animal Diseases along China-Laos and China-Myanmar Borders (Dr Junxia Song, Director, Veterinary Bureau, Ministry of Agriculture, China)  

### XI. Session 9: Action and Implementation Plans
1. Updates on OIE FMD Standards – Requirements for the OIE Endorsement of National FMD Plans and for Official Recognition of FMD-Free Zones (Dr Laure Weber-Vintzel, Officer in Charge of Official recognition of disease status, OIE HQ) 47
2. FMD Progressive Control Pathway and Implementation of the Global FMD Strategy and other TADs (PPR), including its application in the SEACFMD Campaign Dr Laure Weber-Vintzel, Officer in Charge of Official recognition of disease status, OIE HQ) 47
3. Plenary discussion: PCP in SEACFMD 48

XII. Session 10: Action Plan for SEACFMD 49
1. Workshop (Concurrent Sessions) – Review of key issues and provision of advice on the 2016/2017 Action Plan and Phase 5 of SEACFMD 49
2. Expert Group Meeting – Guidance to SEACFMD Sub-Commission on research priorities 51

XIII. Session 11: Governance and Advocacy 53
1. Review of SEACFMD Implementation Plan and Action Plan (Dr Ronello Abila, Sub-Regional Representative, OIE SRR-SEA) 53

XIV. Session 12: Recommendations and Closing 54
## TABLE OF ANNEXES

| Annex 1 | Programme | 55 |
| Annex 2 | List of participants | 61 |
| Annex 3 | Agenda Paper: SEACFMD Achievements | 69 |
| Annex 4 | Agenda Paper: National Coordinators’ Meeting Report | 72 |
| Annex 5 | Agenda Paper: LabNet/EpiNet Meeting Report | 76 |
| Annex 6 | Agenda Paper: FMD Situation in South-East Asia | 80 |
| Annex 7 | Agenda Paper: STANDZ-funded FMD Projects in Lao PDR and Myanmar | 87 |
| Annex 8 | Agenda Paper: STANDZ Sustainability Plan | 89 |
| Annex 9 | Agenda Paper: The New Zealand Funded Project to Support the SEACFMD Campaign | 91 |
| Annex 10 | Agenda Paper: Roadmap and SEACFMD Phase V | 94 |
| Annex 11 | Agenda Paper: Communication and Advocacy | 97 |
| Annex 12 | Agenda Paper: Sequence analysis and FMD Control | 99 |
| Annex 13 | Agenda Paper: PVM Activities | 101 |
| Annex 14 | Agenda Paper: SEACFMD Research - Past, Present, Future | 103 |
| Annex 15 | Agenda Paper: Outputs from the Animal Movement Meeting 2015 | 112 |
| Annex 16 | Agenda Paper: SEACFMD Implementation Plan | 115 |
| Annex 17 | Agenda Paper: Status of Priority Actions | 128 |
| Annex 19 | Country Report: Singapore | 142 |
| Annex 20 | Country Report: Cambodia | 145 |
| Annex 21 | Country Report: China | 153 |
| Annex 22 | Country Report: Lao PDR | 156 |
| Annex 23 | Country Report: Malaysia | 161 |
| Annex 24 | Country Report: Myanmar | 165 |
| Annex 27 | Recommendations on SEACFMD Research Priorities | 177 |
## LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>ARAHIS</td>
<td>ASEAN Regional Animal Health Information System</td>
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<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<tr>
<td>AVA Singapore</td>
<td>Agri-Food and Veterinary Authority Singapore</td>
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<tr>
<td>CIRAD</td>
<td>Centre de coopération internationale en recherche agronomique pour le développement</td>
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<tr>
<td>DLD</td>
<td>Department of Livestock Development</td>
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<tr>
<td>DAHP</td>
<td>Department of Animal Health and Production</td>
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<tr>
<td>DFAT</td>
<td>Department of Foreign Affairs and Trade</td>
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<tr>
<td>ELISA</td>
<td>Enzyme-Linked Immunosorbent Assay</td>
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<tr>
<td>EU-HPED</td>
<td>European Union Regional Cooperation Programme on Highly Pathogenic and Emerging and Re-emerging Diseases in Asia</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<tr>
<td>FAO RAP</td>
<td>FAO Regional Office for Asia and the Pacific</td>
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<tr>
<td>FMD</td>
<td>Foot-and-Mouth Disease</td>
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<tr>
<td>GF-TADs</td>
<td>Global Framework for Transboundary Animal Diseases</td>
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<tr>
<td>HPAI</td>
<td>Highly Pathogenic Avian Influenza</td>
</tr>
<tr>
<td>JTF</td>
<td>Japan Trust Fund</td>
</tr>
<tr>
<td>KAP</td>
<td>Knowledge, Attitudes and Perceptions</td>
</tr>
<tr>
<td>LBVD</td>
<td>Livestock Breeding and Veterinary Department</td>
</tr>
<tr>
<td>LP ELISA</td>
<td>Liquid Phase Blocking ELISA</td>
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<tr>
<td>MARD</td>
<td>Ministry of Agriculture and Rural Development</td>
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<tr>
<td>MOA</td>
<td>Ministry of Agriculture</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<tr>
<td>NSP</td>
<td>Non-structural proteins</td>
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<td>OIE</td>
<td>World Organisation for Animal Health</td>
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<tr>
<td>OIE SRR SEA</td>
<td>OIE Sub-Regional Representation for South-East Asia</td>
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<tr>
<td>PCP</td>
<td>Progressive Control Pathway</td>
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<tr>
<td>PVM</td>
<td>Post-Vaccination Monitoring</td>
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<tr>
<td>PVS</td>
<td>Performance of Veterinary Services</td>
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<tr>
<td>RRL</td>
<td>Regional Reference Laboratory</td>
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<tr>
<td>SEA</td>
<td>South-East Asia</td>
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<tr>
<td>SEACFMD</td>
<td>South-East Asia and China Foot-and-Mouth Disease Campaign</td>
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<tr>
<td>SGF</td>
<td>Small-Grant Facility</td>
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<tr>
<td>SOCO</td>
<td>Single Overarching Communications Outcome</td>
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<td>STANDZ</td>
<td>Stop Transboundary Animal Diseases and Zoonoses</td>
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<tr>
<td>STANDZ SGF</td>
<td>STANDZ Small Grants Facility</td>
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<tr>
<td>TPI</td>
<td>The Pirbright Institute</td>
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<tr>
<td>VN</td>
<td>Virus Neutralisation</td>
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<tr>
<td>VS</td>
<td>Veterinary Service</td>
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<tr>
<td>WAHID</td>
<td>World Animal Health Information Database</td>
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<tr>
<td>WAHIS</td>
<td>World Animal Health Information System</td>
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<tr>
<td>WRL FMD</td>
<td>World Reference Laboratory for Foot-and-Mouth Disease</td>
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The 22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China was held in Chiang Rai, Thailand, on 8-11 March 2016. Approximately 90 participants attended, including representatives from SEACFMD Member Countries, observer countries, key partners and donors, OIE Reference Laboratories and OIE staff.

The meeting was opened by Mr Prachon Pratsakul, Vice-Governor of Chiang Rai Province, welcomed the participants and highlighted the socio-economic importance of controlling FMD in Chiang Rai Province. Dr Monique Eloit, Director-General of the OIE, and Dr Gardner Murray, President of the OIE Sub-Commission for FMD control in South-East Asia and China, thanked the Government of Chiang Rai and Thailand Department of Livestock Development (DLD) for hosting the meeting and acknowledged donors and countries for their support. Dr Ayuth Harintharanon, Director-General of the DLD representing the Minister for Agriculture and Cooperatives, appreciated OIE’s leading role in FMD control in the region and wished all participants a successful meeting.

Phase 5 of the campaign that covers 2016-2020 was also officially launched Current achievements of the SEACFMD Campaign was presented as well as the latest global and regional FMD situation. The recent cross-region transmissions of FMD viruses were highlighted and Member Countries were requested to continue to collect and submit field samples to support early detection of exotic viruses and timely implementation of risk-based control measures.

In the following session, members presented their national FMD surveillance activities, the coordination, advocacy and governance activities for FMD control strategy as well as challenges encountered and future plans for FMD prevention and control. Among the highlights of discussion focused on the incursions of new FMD virus strains into Myanmar and Lao PDR and the relations between FMD spread and animal/animal product movements. The OIE SRR-SEA presented the nature and scope of the OIE-managed FMD projects funded by Australia through STANDZ and New Zealand. The 3rd edition of SEACFMD Roadmap that provides a regional framework for FMD control from 2016-2020 was officially launched. The FMD Progressive Control Pathway (PCP-FMD) as a key tool incorporated in the SEACFMD Roadmap was highlighted in the discussion to provide guidance for optimal distribution and use of resources.

On the second day, OIE SRR-SEA gave presentations on: (1) sequence analysis and FMD control; (2) post-vaccination monitoring activities; (3) FMD risks in SEACFMD; and, (4) SEACFMD research. These presentations underlined the research issues that SEACFMD needs to prioritise in order to advance FMD control in the region, and highlighted the need for extra funding sources to support research and analysis activities.

In the following session, participants were informed of the laboratory activities from OIE Regional Reference Laboratories for FMD in Pakchong and Lanzhou, as well as industry reports from vaccine manufacturers (Merial, MSD) and a major animal producer in Thailand (CP Foods). In discussions,
countries asked OIE Reference Laboratories to provide technical guidance and advice concerning specimen collection, handling and shipment process, and requested the OIE for recommendations on vaccine selection and vaccination strategy. The OIE confirmed to continue supporting Member Countries to submit samples to Reference Laboratories for virus characterizations as well as provide technical support relating to vaccination.

Subsequently, key partners presented their activities and future plans related to FMD, with particular relevance to the SEACFMD Campaign. The last session of the day was the plenary discussion on the sustainable FMD control and coordination of protection. The discussions stressed the importance of field sample collections, epidemiological data gathering and analysis, information transparency and viral sequence data sharing in a better understanding of the evolutionary and epidemiological dynamics of FMD in the region. It was also highlighted the significance of continued close monitoring of cross-boundary/regional livestock movements and the related biosecurity issues, as well as the need for more active engagement with private sectors in animal movement management and disease control.

On the third day, the animal movement management session included presentations on the output of 2015 Animal Movement Meeting and China’s plan of establishing animal movement control zones along the border with South-East Asia. The discussions highlighted a combination of vaccination, quarantine, animal identification and animal movement management in the transboundary FMD control. It was also confirmed that the OIE will provide regional coordination and technical advice in China’s establishment of control zones.

In the following session, Dr Laure Weber-Vintzel updated the participants on the latest OIE FMD Standards and discussed the implementation of PCP-FMD and Global FMD Control Strategy in the SEACFMD Campaign. Participants were then separated into two groups, the first composed of National Coordinators and the second of Observers. This parallel session provided an opportunity for both groups to review key points and issues for SEACFMD and to identify key actions to be considered for SEACFMD in the coming year. The main comments from the two groups were: need for enhanced FMD disease surveillance and outbreak investigations; to engage other initiatives in the region and to align activities with the SEACFMD Roadmap; to review the annual progress of Member Countries against the SEACFMD recommendations of the previous year; to implement the SEACFMD Roadmap and PCP-FMD strategy on a national or zone level; to urge that National Coordinators facilitate discussions and to invite more experts to share expertise in the meeting. The aforementioned issues were discussed in plenary and taken into consideration for the formulation of the meeting’s final recommendations.

On the fourth day, Dr Ronello Abila presented the SEACFMD implementation plan and action plan. Subsequently, the meeting offered an opportunity for the participants to review and comment on draft recommendations, which were extracted from the meeting and will help to guide the SEACFMD Campaign’s work in the coming year. Key recommendations included: agreement to support Mongolia’s application to join SEACFMD; agreement to use the PCP-FMD as a reference for Member Countries’ goals and activities, and encouragement of Member Countries to review their progression along the PCP-FMD throughout the period 2016-2020; agreement to monitor trends in animal movement (legal/illegal) and other factors that contribute to the emergence and/or spread of FMD,
as well as to review FMDV strains and monitor evolving trends; acknowledgement of China’s initiative in development of control zones to support management of animal movement.

Dr Ayuth Harintharanon gave closing comments for the meeting. Dr Gardner Murray acknowledged all attendees for their participation and constructive discussions, and thanked Thai DLD again for their excellent support to the meeting.

In the afternoon, a fieldtrip was conducted to a Bann Dong Charoen Buffalo raiser community. The local veterinary officers explained to the participants about the management and operation of the buffalo farm, and introduced the Thailand livestock husbandry pattern as well as underlined the socio-economic importance of good animal health management in this area.
The OIE Sub-Commission for Foot and Mouth Disease in South-East Asia and China notes the considerable progress made since the 21st Sub-Commission Meeting, and agrees that the recommendations and views of the 22nd Sub-Commission should form the basis for the 2016-2017 SEACFMD Operational Plan. The following recommendations have been developed based on discussions at this meeting. Progress against these recommendations will be reviewed at the 19th National Coordinators’ Meeting, 2016, and at the 23rd Sub-Commission Meeting, 2017. The Sub-Commission:

1. SUPPORTS Mongolia’s application to join the OIE Sub-Commission for Foot-and-Mouth Disease in South-East Asia and China, and ENCOURAGES the World Assembly of Delegates to endorse this proposal in May 2016.

2. RECOMMENDS that advocacy and actions be undertaken based on the findings of the Animal Movement Study and the 2015 Animal Movement Management meeting.

3. NOTES the OIE/FAO FMD Progressive Control Pathway (FMD PCP) as a reference for Member Countries’ goals and activities, and RECOMMENDS that Member Countries review their progression along the FMD PCP throughout the period 2016-2020, including that:
   - OIE develops a transparent and robust process for evaluation of PCP status and progression along the pathway;
   - OIE prepare a 5 year PCP plan for the region;
   - Members report to Sub-Commission against activities relevant to their PCP status.

4. RECOMMENDS that Member Countries implement the SEACFMD Roadmap Implementation Plan and provide progress reports.

5. RECOMMENDS that OIE investigates additional and alternative funding sources to support important SEACFMD activities, and provides progress reports.

6. RECOMMENDS monitoring trends in animal movement (legal/illega)l and other factors that contribute to the emergence and/or spread of FMD, and AGREES to continue to review FMDV strains and monitor evolving trends.

7. RECOMMENDS that the Guidance Document prepared by the Scientific Working Group be used by Member Countries to inform decisions and technical activities, and be considered for future research directions by inclusion in the SEACFMD research framework to be developed by the OIE.
8. RECOMMENDS that OIE works with World and Regional Reference Laboratories to verify diagnostic proficiency, and respond to and report on relevant challenges.

9. ACKNOWLEDGES PR China’s initiative in development of control zones to support management of animal movement and NOTES the request from PR China for advice from OIE.

10. RECOMMENDS that ASEAN+1 facilitates development of sanitary protocols that support safe trade in live animals across the region.

**Membership**

11. CONGRATULATES Dr Song Junxia on her re-election to a second term, and Dr Sith Premashthira on his election, as Vice Presidents of OIE Sub-Commission for FMD in South-East Asia and China.

**Roadmap**

12. NOTES the goals and objectives underlined in the SEACFMD Roadmap 2016-2020, development by June 2016 of Manuals to support the Strategy Components identified in the SEACFMD Roadmap 2016-2020 for consideration by National Coordinators, and Roles and Responsibilities for key stakeholders underlined in the relevant agenda paper and the Roadmap.

**Disease situation/technical**

13. ENCOURAGES Member Countries, including reference centres, to contribute towards the sharing of genomic sequences and their analysis.

14. AGREES that communication and advocacy are essential components of regional and national programs, and COMMITS to pursue high-level advocacy by OIE at the ASEAN+1 level and by Member Countries at the National Level to reinforce political and resource support for Phase 5 of the SEACFMD Campaign.

15. Recognising the lower risk associated with imports of animal products compared to live animals, ENCOURAGES Member Countries to review and implement risk-based import protocols for such products that comply with OIE Standards.

**Governance/Policy**

16. AGREES that Member Countries will continue to improve the application of OIE standards for disease surveillance, diagnosis and notification, as well as for animal movement management within and between countries in the region.
**Application for status**

17. CONGRATULATES Thailand and Mongolia, whose Official Control Programmes for FMD will be proposed for endorsement by Members in 2016, and ENCOURAGES other Member Countries to prepare their Official Control Programmes for FMD for submission to the OIE in 2016 for formal endorsement.

18. RECOMMENDS that OIE develop a statement on the benefit of countries having endorsed Official Control Programmes for FMD.

19. ENCOURAGES Member Countries receiving endorsement of their Official Control Programmes for FMD to share dossiers within the region to support other applications.

**Thanks**

20. THANKS Member Countries, partners and observers for their active participation in the meeting.

21. THANKS the donors for their continued valuable support and contributions to the SEACFMD Campaign; including the Australian, the New Zealand, the People’s Republic of China, the Republic of Korea, Japan, Thailand, and the Department of Livestock Development for hosting an outstanding and successful meeting.

22. THANKS Dr Mohamed Naheed Mohamed Hussein for his sterling service in supporting the activities of SEACFMD, and FMD in general, over many years.

**Next Meeting**

23. REQUESTS Cambodia to host the 23rd Meeting of OIE Sub-Commission for Foot and Mouth Disease in South-East Asia and China in March 2017.
22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China
Chiang Rai, Thailand, 8-11 March 2016

I. Introduction

Preceding the 22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China, meetings of the Steering Committees of the STANDZ Initiative and the SEACFMD Campaign were held in Chiang Rai on 7 March, 2016. The Sub-Commission President Dr Gardner Murray led discussions with key staff from OIE Headquarters, OIE Sub-Regional Representation for South-East Asia and respective Steering Committee members in the closed sessions.

The 22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China was held in Chiang Rai, Thailand, on 8-11 March 2016. The meeting was attended by around 90 participants from the region and other parts of the world, including from SEACFMD Member Countries, representatives of partner organisations, and key OIE Officials headed by Director General Dr Monique Eloit, SEACFMD President Dr Gardner Murray, OIE Regional Representative for Asia and the Pacific Dr Hirofumi Kugita, and OIE Sub-Regional Representative for South-East Asia Dr Ronello Abila. Around 30 staff from Thailand Department of Livestock Development headed by Dr Ayuth Harintharanon, Delegate of Thailand to the OIE, attended this meeting.

The four-day meeting had 12 sessions in total. On Day 1, sessions 1, 2, and 3 provided updates on the global, regional and national FMD situations in Member Countries, and underlined programme support and key issues for strengthening regional performance and coordination. Sessions 4, 5, 6 and 7 on Day 2 included presentations and discussions on key technical, policy and governance issues relating to FMD, as well as updates of FMD research/control activities from key partners. On Day 3, session 8 focused on enhancing control activities for animal movements, while session 9 focused on global FMD initiatives and their application in SEACFMD. Session 10 discussed initiatives strengthening animal disease control globally and regionally through parallel workshops for SEACFMD National Coordinators and Observers. On Day 4, session 11 reviewed the SEACFMD implementation plan and action plan. During session 12, recommendations of the 22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease in South-East Asia and China were developed and endorsed by the Member Countries. Finally, a fieldtrip was conducted to a Bann Dong Charoen Buffalo raiser community to showcase the local buffalo husbandry practice and health management.
II. Opening Ceremony

1. Mr Prachon Pratsakul, Vice-Governor of Chiang Rai Province

Mr Prachon Pratsakul, Vice-Governor of Chiang Rai Province, commenced the opening ceremony of the 22nd Meeting of the OIE Sub-Commission for FMD Control in South-East Asia and China by welcoming participants to Chiang Rai on behalf of the Government of Chiang Rai Province. Mr Prachon Pratsakul highlighted the socio-economic importance of controlling FMD in Chiang Rai Province, and acknowledged the efforts and progress made towards the control and eradication of FMD by the OIE SEACFMD Campaign, and wished participants a successful meeting.

2. Dr Gardner Murray, President, OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China

Dr Gardner Murray, President of the OIE Sub-Commission for FMD Control in South-East Asia and China, thanked the Government of Chiang Rai and Thailand Department of Livestock Development (DLD) for hosting the meeting, and welcomed participants from SEACFMD Member Countries, OIE representatives, partner organisations and observers. Dr Murray reviewed the key achievements of the SEACFMD campaign, and underlined that eradication of a transboundary animal disease such as FMD is a long-term process and requires a consistent strong commitment from Member Countries and financial investment by donors. He also highlighted the coordination activities of SEACFMD are critical to progress FMD control in the region, and saw the use of the SEACFMD approach as a model for the coordination of other transboundary animal diseases. Dr Murray summarised the key objectives of the meeting, emphasising a focus on risk- and science-based control and innovative approaches to vaccination programmes and animal movement management. He stressed the importance of international multilateral cooperation to achieve FMD control and, ultimately, eradication in the region.

3. Dr Monique Eloit, Director General, World Organisation for Animal Health (OIE)

Dr Monique Eloit, Director-General of the OIE, welcomed participants and commended the achievements of the SEACFMD Campaign. Dr Eloit appreciated the coordination role of the SEACFMD Campaign and the commitment of Member Countries in regional FMD control. She also acknowledged donors, including Governments of Australia, New Zealand, China, Japan and South Korea, for their financial supports to SEACFMD activities. Dr Eloit encouraged Member Countries to integrate the 3rd edition of the SEACFMD Roadmap, which is consistent with the OIE-FAO Global FMD Strategy and has an emphasis on the importance of Veterinary Service, into their national FMD control strategy to provide the strategic framework to achieve significant reductions in FMD by 2020. Dr Eloit also highlighted the importance of using high quality vaccines and enhancing the surveillance network in the FMD control. She underlined a need for expanding the current risk-based vaccination control strategy to include more control hotspot areas, and further urged Member Countries to collect and submit field samples for FMD virus characterisation on a more regular basis. Finally, she thanked the Government of Thailand for hosting the event, and wished participants a productive meeting.
4. Dr Ayuth Harintharanon, Delegate of Thailand to the OIE

Dr Ayuth Harintharanon, Director-General of the DLD representing the Minister for Agriculture and Cooperatives, welcomed participants to the city of Chiang Rai, and expressed his gratitude for the opportunity for Thailand to host the 22nd OIE Sub-Commission for FMD Control in South-East Asia and China. He thanked the OIE for its support of FMD control activities in Thailand and in the region as a whole. Dr Harintharanon underlined the growing potential of the region’s livestock sectors, noting the significant impact and threats that transboundary animal diseases pose to these industries as well as to the livelihood of farmers. He also noted that FMD is very difficult to control given its ability to spread rapidly, survive under various conditions, and infect many domestic and wild species. Sticking to national strategic plans endorsed by the OIE can help Thailand to achieve FMD control progressively and eventually eradication. Dr Harintharanon urged Member Countries to enhance multilateral cooperation under the SEACFMD Framework, and wished participants a successful meeting.
III. Session 1: Updates on the global and regional FMD situation  
(Chaired by Dr Monique Eloot)

1. Launch of Phase 5 of the SEACFMD Campaign (Dr Gardner Murray, SEACFMD President)

Dr Gardner Murray announced the launch of Phase 5 (2016-2020) of the Campaign. Phase 5 provides strategic direction to achieve significant reductions in FMD in the region by 2020 while protecting free countries and zones, and it will be guided by the 3rd Edition of the SEACFMD 2020 Roadmap. The Roadmap builds upon the successes of the previous four phases of the SEACFMD Campaign with the introduction of the Roadmap, which is consistent with the OIE/FAO Global Foot and Mouth Disease Control Strategy and emphasises the importance of Veterinary Services for animal and human health and economic development. Dr Murray highlighted the pivotal role played by properly planned vaccination programmes to achieve the goals of Phase 5, and urged Member Countries, donors and other stakeholders to use the Roadmap as a background document when considering resources support for the SEACFMD Campaign.

2. SEACFMD Progress Report (Dr Ronello Abila, Sub-Regional Representative for South-East Asia)

Dr Ronello Abila presented the progress of the SEACFMD campaign during the 2015/16 period. In the technical field, OIE SRR-SEA continued supporting Member Countries in FMD outbreak reporting and investigating, and organised various training on outbreak investigations, laboratory diagnosis, and post-vaccination monitoring (PVM). Dr Abila also updated participants of the key findings and recommendations from the Animal Movement Study. In the coordination and advocacy field, OIE SRR-SEA organised the 21st SEACFMD Sub-Commission Meeting in March 2015 and the 18th SEACFMD National Coordinators Meeting in August 2015 in order to update the latest FMD situation and control activates in the region, as well as facilitate the information exchange between Member countries and key partners. In addition, the SEACFMD Animal Movement Meeting was organised in August 2015 to update participants with the findings on animal movement pathways and drivers in the Upper-Mekong River region. This meeting called for a joint commitment in managing animal movement across countries. Upon Member Countries’ request, OIE SRR-SEA provided workshop training on the OIE procedure for endorsement of official national control programmes and for official recognition of Member Country’s FMD disease status. OIE SRR-SEA has continued its efforts on enhancing public awareness and advocacy through publishing SEACFMD newsletters and research briefs as well as engaging private sectors. In the governance and programme management field, OIE SRR-SEA has finalised the 3rd edition of the SEACFMD Roadmap, as well as supported and assisted specific Member Countries in the development of National FMD Control Strategy.

Dr Abila further presented the provisional activities for the 2016/17 period. Generally, activities in the above three fields will be continued and expanded. In addition, OIE SRR-SEA will (1) conduct cost/benefit analysis of FMD freedom; (2) develop and refine the New Zealand funded projects in Laos and Myanmar; (3) strengthen engagement with countries in East Asia, particularly China and Mongolia; (4) support national self-assessment to review member’s PCP level.

See Annex 3 for more information
3. The global FMD situation (Dr Anna Ludi, Pirbright Institute Laboratory, UK)

Dr Anna Ludi presented the current FMD situation globally. Submissions to The Pirbright Institute (TPI) show a similar pattern to past years where serotype A and O are the dominant serotypes worldwide. No FMD outbreak has been reported in South America for more than 4 years. Serotype C has not been detected in over 10 years, and the OIE/FAO FMD Laboratory Network has made recommendations about limiting the use of this serotype in animal experiments and in-vitro studies worldwide.

This presentation highlighted the latest epidemiological situation regarding two emerging lineages of particular significance to SEACFMD: O/ME-SA/Ind2001 and A/Asia/G-VII.

The latest series of outbreaks due to O/ME-SA/Ind2001 first occurred in 2013 in Libya and Saudi Arabia. Subsequent cases have occurred in UAE, Bahrain, Tunisia and Algeria (in 2014) and in 2015 this lineage spread further West to Morocco. Moreover, during 2015 this lineage has also spread East to Laos (April). For these outbreaks, the exact link to the Indian sub-continent is not known and further surveillance in SEACFMD is urgently required to determine whether O/ME-SA/Ind2001 is more widely spread in the region. Vaccine matching studies for O/ME-SA/Ind2001 showed good response to O-3039 and O/TUR/S/2009. O1 Manisa showed variability and this strain was used for a potency study. The results, using O/ALG/2014 as the challenge virus, showed a heterologous PD50 of approximately 3. The second strain, and the latest challenge, is A/Asia/G-VII which is now present in the Middle East. Vaccine matching studies for this strain carried out at TPI indicated a poor antigenic match with available vaccines, although there was some evidence that A-SAU/95 maybe protective. An in-vivo challenge study is currently in progress at TPI.

There have been new submissions to TPI from South-East Asia (SEA) and surrounding countries (Hong Kong, South Korea, Taiwan). However, it is still difficult to determine whether we are seeing the true picture of FMD in SEA or whether these results are biased by under sampling. In-vitro vaccine matching of serotypes O and A does not show a great difference from past years.

A new tool will be published later this year to help countries determine what vaccines they may need in their respective vaccine banks. It is hoped that this will replace the current list of vaccine virus recommendations. TPI is also developing lineage specific real-time RT-PCR, with the methods available via a method brochures. The websites are currently being updated and will hopefully make it easier to find relevant information.

Dr Mark Schipp asked if there was evidence to indicate that the O/ME-SA/Ind-2001d strain had spread to other SEA countries. Vietnam’s country report indicated that the strain was also detected in outbreaks during September 2015, based on sequence analysis conducted at RAHO6 in Vietnam, and confirmed by TPI. In other SEA countries, including those have intensive surveillance such as Thailand, there has been no evidence of further incursions of this strain so far.

Dr Gardner Murray commented that the tool to determine optimal vaccine candidates would be very helpful, and the publication of this tool will allow the general public to view the process of information gathering, analysis and conclusions.
4. The regional FMD situation (Dr Ronello Abila, Sub-Regional Representative for South-East Asia, presented on behalf of Dr Karan Kukreja, Project Officer of SRR-SEA)

The presentation summarised that the total number of outbreaks reported in 2015 was 344 – this is a 8% increase as compared to the 318 outbreaks reported in 2014, 43% as compared to 240 outbreaks reported in 2013 and a 142% increase as compared to 2012 in which there were 142 outbreaks but a marked decrease of 77% from the 1488 outbreaks reported to ARAHIS and directly to SEACFMD in 2011. One hundred and sixty-eight outbreaks (49%) out of the total were characterised as being caused by Serotype O virus, while 31 (9%) were serotyped as being caused by Serotype A. The rest were reported as untyped or with results pending. This is a return to the trend seen for a number of years before 2013, in which O was the predominant serotype in the region. In 2014, serotype O was identified in 31% of outbreaks and serotype A in 25% of outbreaks, and in 2013, serotype O was identified in 28% of outbreaks and serotype A in 33%. Fourteen outbreaks were reported in January 2016, with serotype O identified in two of the outbreaks and serotype A identified in the other two outbreaks. Eleven outbreaks were reported in February 2016, with serotype A identified in two of these outbreaks. O/SEA/Mya-98 was typed in outbreaks in Myanmar, Thailand and Vietnam in 2015. O/ME-SA/PanAsia was typed in one outbreak in Cambodia in 2015. O/ME-SA/Ind2001d was typed in one outbreak in Lao PDR in 2015. A/Asia/Sea-97 was typed in outbreaks in Cambodia, China, Lao, Myanmar, Thailand, and Vietnam in 2015. The FMD-free areas of East Malaysia (Sarawak and Sabah), Brunei, Indonesia, and Singapore remained FMD-free.

See Annex 5 for more information
IV. Session 2: Updates on the national FMD situation

(Chaired by Dr Gardner Murray)

1. The Philippines (Dr Arlene Asteria Vytiaco, SEACFMD National Coordinator)

Dr Arlene Asteria Vytiaco presented an update on the national FMD situation in the Philippines. The Philippines was recognized as an FMD free country without vaccination last May 2015 during the 83rd OIE General Assembly, officially consolidating the freedom of its five FMD free zones into a national status. The national FMD prevention and preparedness program remains in place to uphold disease freedom. The FMD Preparedness Program is one of the major components of the Animal Health and Welfare Protection Program included in the 5-year strategic plan of the Bureau of Animal Industry (BAI) (2016-2020). This strategic plan is in the pipeline for approval and funding for years 2017-2020.

A series of four table top simulation exercises have been conducted to gauge the level of preparedness and hone the skills of the local government veterinarians in the event of an incursion. In addition, a series of Trainers Training on Outbreak Investigation and Management (OIM) for Second and Third Level were conducted by the BAI · Philippine Animal Health Information System (PhilAHIS) staff in different regions. A National FMD Coordinators’ Meeting was also held where activities carried out at the national and provincial levels were presented and the constraints and challenges faced were discussed. There was also a poster-making contest with the theme on “Maintenance of FMD Freedom”. The winning pieces will be used in our Information Education Campaign. Copies of the FMD Emergency Preparedness Plan manual were distributed to all the FMD coordinators and members of the National Advisory Committee for Animal Disease Control and Emergency (NACADCE).

See Annex 18 for more information

Dr Vytiaco asked for advice on selecting antigen/vaccine strains for storage in a bank and selecting the appropriate strain(s) to be used in the case of emergency vaccination. Dr Anna Ludi suggested that strain selection should reflect the major strains circulating in the region, especially in the neighbouring countries, as well as strains in countries which export animals/animal products to the Philippines. Dr Ronel Abila added that the OIE FMD Vaccine Bank has been developed for this region, which can provide emergency vaccines immediately to FMD free areas/countries at risk of FMD resurgence.

2. Singapore (Dr Lim Chee Wee, Director, Agri-Food and Veterinary Authority)

Dr Lim Chee Wee presented an update on the national FMD situation in Singapore. Singapore remains as a FMD free country without vaccination. Due to limited land for farming, the local livestock industry is small. Hence, Singapore depends heavily on import of animals and animal products for its food supply. By adopting a multi-approach strategy, Singapore maintains FMD-disease free status through stringent import control measures, source accreditation, increasing laboratory testing capability and local disease surveillance. This integrated disease control system is based on a risk-based approach and scientific evidence. Moving forward, the Agri-Food and Veterinary Authority of Singapore (AVA) will actively engage the relevant stakeholders to look into reviewing existing emergency protocols and FMD contingency plans.

See Annex 19 for more information
3. Cambodia (Dr Sorn San, SEACFMD National Coordinator)

Dr Sorn San presented an update on the national FMD situation in Cambodia. From January to December 2015, 12 outbreaks of FMD were reported from 7 provinces (Kampong Speu, Kampong Cham, Prey Veng, Pursat, Svay Rieng, TboungKhmum and Kandal). 439 head of cattle, 3 head of buffaloes and 12 head of pigs displayed clinical signs resembling FMD. Amongst them, there were mortalities of 5 head of cattle. A total of 17 samples was collected for virus characterisation and the testing results are Serotype O and A.

With support from FMD-ROK Project funded by Korean government through FAO, the Department of Animal Health and Production/National Veterinary Research Institute conduct three training courses on FMD outbreak investigation for district veterinarians in 3 targeted provinces (Takeo, Prey Veng and Kampong Cham) with the distribution of outbreak investigation kits to all 46 participants and some kits are kept at the provincial animal health and production offices. In addition, with support from OIE SRR-SEA, Animal Health and Production/National Veterinary Research Institute conducted training courses on FMD outbreak investigation for district veterinarians in 11 provinces and conducted training on Occupational Health and Safety for NaVRI laboratory staff. Stakeholder meetings and workshops were conducted with 25 provincial animal health and production offices in 2015.

See Annex 20 for more information

4. China (Dr Wu Wei, Researcher, China Animal Disease Control Centre, Ministry of Agriculture)

Dr Wu Wei presented an update on the national FMD situation in China. In total in 2015, China notified 3 FMD outbreaks, all caused by type A FMD virus. No outbreaks were reported in January and February of 2016. China hasn’t detected FMD outbreaks of type Asia I for more than 5 years. The main strain of Type A involved in FMD outbreaks is A/Asia/Sea 97-G2, while that for type O is O/SEA/Mya-98.

In 2015, China continued to implement a compulsory vaccination policy towards all pigs, cattle, sheep and goats. The central budget allocated 3.45 billion USD for FMD vaccines. During the year, there were a total of 0.92 million samples collected in pathogen surveillance and 33 of them showed FMD nucleic acid positive (21 Type A & 12 Type O). A total of 3.97 million samples were examined in serological surveillance, with 20 positives. Efforts were made to enhance animal disease inspection, supervision and emergency response, improve the capacity of veterinary laboratories and personnel resources, and strengthen the public awareness of animal disease. On the basis of maintaining the existing FMD free zones, China put forward the proposal to establish the North-east and Shandong FMD free zone. China has initiated surveillance and assessment on the withdrawal of vaccination for Type Asia I and has also conducted active multi-lateral and bilateral exchanges and cooperation with many international organizations such as OIE and FAO, as well as countries including Singapore, Vietnam, Laos, Myanmar, Russia and Mongolia.

Currently, the biggest challenge for China in prevention and control of FMD is the large extent of smuggling of livestock and animal products from South-east Asia. In the future, China will continue to implement its comprehensive FMD prevention and control strategy which combines vaccination with the stamping-out policy, speed up the construction of specific animal disease free zones and animal disease control areas in border areas (like Yunnan province) in accordance with the National FMD Prevention and Control Program.
5. **Lao PDR (Dr Phachone BOUNMA, SEACFMD National Coordinator)**

Dr Phachone Bounma presented an update on the national FMD situation in Lao PDR. FMD remains endemic in Lao PDR. From January 2014 to February 2016 Lao PDR had 4 FMD outbreaks confirmed, with 7299 animals affected. All outbreaks were caused by serotype O viruses as confirmed in the National FMD Laboratory. Importantly, it was confirmed that the O/ME-SA/Ind2001d strain which is new to the SEA region caused outbreaks in two neighbouring villages in Vientiane Capital in April 2015. Shortly after this outbreak, ring vaccination was conducted covering a radius of 5 km under the support of FAO-ROK project. Retrospective outbreak investigation was performed in February 2016 in collaboration with OIE SRR-SEA, which found the imported frozen buffalo deboned tongue from India may be the source of outbreaks.

Current FMD prevention and control activities included training and outbreak investigations towards identification of foci and sources of FMD; elimination of sources of the virus through improved cleaning and disinfection practices; prevention of spread of virus through maintenance of border check points, quarantine, movement restriction in affected areas and a zoning approach in Northern Lao PDR; and protection of susceptible hosts through vaccination. Advocacy materials were also distributed, and a Knowledge, Attitudes and Perceptions (KAP) survey was conducted. Key bilateral and multilateral cooperation activities involving China, Thailand, Myanmar and Vietnam were also implemented.

Dr Bounma noted the primary constraints to FMD control include difficulties in accessing some vaccination sites, and the shared and free-grazing livestock systems. Suggested solutions included careful planning of vaccination activities to coincide with the dry season and fostering a sense of ownership through involvement of provincial and district staff in project activities. Future planned activities include finalisation of the Cambodia FMD National Plan for government endorsement; strengthening of surveillance systems; target sero-surveillance; completion of vaccination targets, post vaccination monitoring and KAP surveys; activities on animal movement management; and assessment of the Progressive Control Pathway (PCP) for FMD.

[See Annex 21 for more information](#)

Questions were raised by participants as to why the Ind2001d strain which is originated from India has been detected in Lao PDR but not in Myanmar, considering the latter locates between Lao PDR and India. Dr Abila replied that the investigation performed by the joint OIE SRR-SEA and Lao DLF found there were 4 times of documented importation of buffalo meat/tongue from India to Lao PDR, twice in 2014 and twice in 2015. Those activities, especially importation of buffalo tongue, would pose a significant risk on introducing FMDV into the country.

6. **Malaysia (Dr Mohamed Naheed Mohamed Hussein, SEACFMD National Coordinator)**

Dr Mohamed Naheed Mohamed Hussein presented an update on the national FMD situation in Malaysia. FMD remains endemic in Peninsular Malaysia, and there were 10 FMD outbreaks in 2015 with the range from 0-3 outbreaks occurred in the months of March, April, June, July, September and October. In 2016, there was no temporal trend of outbreaks progressively increasing in the last quarter.
(festive season) of the year compared to observations since the first incidence of FMD in Malaysia. Also there were 6 months of no FMD outbreak in the country due to the effective implementation the FMD Control Plan 2009 – 2016, especially due to strategic vaccination and better management of imported animals in approved temporary licensed private quarantine stations which has significantly reduced illegal animal movement across the border. Where there were outbreaks it was related to animal movements within the country and a very small number of illegal animal movements from across the northern border.

Cattle were the only affected species in 2015. Serotyping results of specimens from outbreaks were serotypes O and there was no outbreak involving serotype A in Malaysia in 2015. The specimens are in process of being sent to OIE FMD WRL, Pirbright, UK for sequencing and vaccine matching analysis.

Malaysia has a number of ongoing FMD prevention and control activities. FMD control is achieved through effective implementation of Outbreak Control Management operating procedures, which include animal movement controls, outbreak investigation, vaccination, surveillance, public awareness and reporting procedures. Protection of susceptible animals is recommended through strategic vaccination, and prevention of spread is achieved through implementation of e-permits to control animal movements. Communication and advocacy is achieved through public awareness campaigns. Coordination and programme management is through the Committee for National Disease Control and the FMD Task Force; coordination with MAQIS on importation of livestock; and regional OIE SEACFMD activities and meetings.

See Annex 23 for more information

7. Myanmar (Dr Sein Lwin, Deputy Director of Research and Disease Control Division, Livestock Breeding and Veterinary Department)

Dr Sein Lwin presented an update on Myanmar FMD situation. A total of 117 samples was collected for FMDV typing in 2015. The majority of samples tested positive to serotype O with only 3 positive to serotype A (A/Asia/Sea-97). This was the first time to have serotype A virus isolated in Myanmar in the last 5 years. All the three serotype A viruses were recovered in Mandalay between late August to early September of 2015. Two rounds of vaccination of 250,000 doses vaccine (Merial: O/Manisa+O/3039) were implemented in February and Match of 2016, respectively. A total of 1127 villages distributed throughout 10 townships in the Mandalay state and 8 townships in the Sagaing state was included in the vaccination campaign. The post vaccination monitoring (PVM) study showed that approximately 84% of vaccinated animals developed protective immunity at 1 month post boost vaccination as determined by the Liquid Phase Blocking ELISA. It was observed that outbreaks were very rare in vaccination target areas, affecting villages vaccinated only once. Flood affected 11 regions in 2015 and it was believed to have a significant impact on the dispersal of FMD aside from the illegal trade of cattle.

Dr Lwin pointed out that constraints for FMD control include the lack of laboratory reagents for typing serotype A viruses, and the limited capacity to perform PVM studies. Myanmar will request OIE SRR-SEA for support on laboratory reagents and supplies as well as technical training. Future activities include continuation of the OIE supported vaccination campaign in Central Myanmar, as well as further PVM studies; development of national FMD control plan for OIE endorsement; and
organisation of OIE-supported outbreak investigation training as well as FMD diagnostic technique training.

Dr Peter Black asked if the incursion of serotype A virus in Myanmar was associated with irregular animal movements. Dr Abila replied the VP1 gene analysis of those Myanmar serotype A isolates showed they have a high identity (99.84%) to isolates recovered in China and Russia in 2013 as well as Thai isolates from 2014 and 2015, suggesting a common source for all those viruses. OIE SRR-SEA will continue to support Myanmar on tracing-back investigations to identify the source and introduction pathways. Dr Abila also confirmed the OIE SRR-SEA remained ready to provide Myanmar with necessary laboratory reagents for serotype A diagnosis and training on PVM.

See Annex 24 for more information

8. Thailand (Dr Sith Premashthira, SEACFMD National Coordinator)

Dr Sith Premashthira presented an update on the national FMD situation in Thailand. There were 183 FMD outbreaks reported in 2015. The high season of the outbreak started from September till the end of the year. The serotype O caused 60% of all outbreaks throughout year. Serotype A was found to cause 7% of the outbreaks. Nearly 16% outbreaks were not sampled and 17% were not typed. Outbreaks declined in January 2016 as compared to the end of 2015. In February 2016, three outbreaks have been confirmed to be caused by serotype A viruses. Meanwhile, results from some field samples are still pending.

In total, 37 out of 77 provinces of Thailand were affected by FMD in 2015. Twenty-one outbreaks were reported from Nakhon Ratchasima which has substantial dairy cattle. The northern and the southern part of Thailand also reported a high number of outbreaks. A total of 10,097 cloven-hoofed animal was affected by FMD in 2015. The proportions of the cloven-hoofed animals affected by FMD was 57%, 26% and 17% in beef cattle, dairy cattle, and buffaloes, respectively.

See Annex 25 for more information

9. Vietnam (Dr Phan Quang Minh, SEACFMD National Coordinator)

Dr Phan Quang Minh presented an update on the national FMD situation in Vietnam. In 2015, 60 outbreaks were reported in Viet Nam due to serotype O or A. The country has continued to apply an integrated control programme using the combination of measures best suited to its existing situation and implement activities of the last year of the national FMD control plan. Vaccination approach remains the key intervention. Other control measures include early detection, outbreak investigation and response; compartmentalisation/zoning approach; closely monitoring the virus; enhanced animal movement control; improving private sector engagement; and improving the understanding of value chain. Veterinary Law has been approved and will be effective from 1 July 2016. The government has also approved the National Programme for FMD Control and Prevention for 2016-2020. Self PCP-FMD assessment showed that Viet Nam has completed PCP-FMD Stage 2 and entered Stage 3.

See Annex 26 for more information
10. Mongolia’s FMD activities (Dr Bolortuya Purevsuren, OIE Delegate to Mongolia)

Dr Bolortuya Purevsuren presented the FMD situation in Mongolia. In 2014, a total of 54 outbreaks was reported. All occurred in eastern part of Mongolia and the majority was caused by O/ME-SA/PanAsia. Almost 98% affected animals were cattle, especially young calves. In 2015, outbreaks occurred in both eastern and western parts of the country, caused by O/ME-SA/PanAsia and O/SEA/Mya-98 respectively. There was a clear drop in the number of affected animals, and small ruminants displayed very mild infections with no obvious clinical symptoms. The FMD control activities include vaccination approach, engaging neighbouring countries to develop a joint control framework; zoning approach and importing animals/animal products only from the 5 Chinese FMD-free provinces; developed Mongolia-China-Russia multilateral collaborations on TADs control. The current constraints on FMD control include weak legislation/command chain and limited knowledge on FMD epidemiology, including the source and introduction pathway of the disease, genetic and antigenic characteristics of the circulating viruses, as well as vaccine matching tests and vaccine recommendation. Future activities include drafting animal health law to be submitted to the Parliament, restructuring and enhancing veterinary service, and implementing the updated national FMD control plan.

Dr Matthew Stone asked why Mongolia should join SEACFMD. Dr Purevsuren replied analysis of viral sequences indicated that some FMDVs that caused outbreaks in China and Mongolia originated in mainland SEA where these viruses are endemic. The control of FMD in Mongolia requires sharing of disease information with China and SEA countries. In addition, the SEACFMD campaign has a long history and extensive experience in FMD surveillance and control. She wishes SEACFMD to share experience with Mongolia. Furthermore, Mongolia wants technical support from SEACFMD for laboratory diagnosis of FMDVs. Dr Gardner Murray noted Mongolia’s wishes and suggest Mongolia sending field samples to Regional Reference Laboratories (RRLs) at Lanzhou or Pakchong for virus characterisation.
V. Session 3: Plenary Session  
*(Chaired by Dr Song Junxia)*

1. **The nature and scope of the STANDZ-funded FMD Projects in Lao PDR and Myanmar (Dr Phillip Widders, SEACFMD Campaign Coordinator, OIE SRR-SEA)**

Dr Phillip Widders presented an update on status and next steps of the STANDZ-funded FMD projects in northern Lao PDR and central Myanmar. The northern Lao PDR FMD Project was initiated in July 2014, with the first vaccinations commencing in September that year. During the life of the project, a total of 860,000 doses of vaccine will have been deployed across the target areas in 10 Provinces in northern Lao PDR. In order to monitor the implementation of the vaccination campaign and assess its likely efficacy in providing protection against FMD in the target areas, OIE SRR-SEA developed a database to record vaccination and PVM data. By the conclusion of the vaccination campaign, it is expected that the majority of more than 244,000 cattle and buffalo in key villages will have received at least 3 injections of a high potency, bivalent (serotypes O and A) FMD vaccine. Livestock in 1081 villages, in 34 Districts, belonging to 120,015 owners, have been vaccinated, with 93% of these animals located in villages in Districts that were classified as high risk or hot spots with respect to FMD risk.

In the central Myanmar project, the first two rounds of vaccinations were conducted in February and March of 2015. The third round of vaccinations was conducted in February 2016. The database used in the northern Lao PDR projects was adapted for use in the Myanmar campaign. Vaccinations were conducted in the Mandalay (10 Townships) and Sagaing (8 Townships) regions of central Myanmar, with villages selected within those Townships on the basis of their classification as high risk or hot spot areas. The initial deployment of 500,000 doses of high potency, monovalent (serotype O) FMD vaccine was funded by the EU-HPED Project. Field operations costs for each round of vaccinations, and the second batch of 300,000 doses of vaccine for the February 2016 round, was supported by the STANDZ Initiative. In all, it is expected that approximately 210,000 animals in up to 1,100 villages, belonging to more than 54,000 owners, will have received 3 injections of FMD vaccine during the course of the vaccination campaign in central Myanmar.

Post vaccination monitoring (PVM) has been conducted during the vaccination campaigns in both Lao PDR and Myanmar, with further sampling proposed in the first half of 2016. The PVM studies are reported in more detail elsewhere at this meeting (Session 4). In brief, it has been demonstrated that, after two vaccinations in northern Lao PDR, a protective immune response was produced in 88% and 84% of naïve animals for serotypes O and A respectively. Seven months after the first vaccination, 73% and 53% respectively of these animals remained protected. In central Myanmar, 84% of animals developed a protective immune response after two vaccinations with the serotype O vaccine. The persistence of this protection has not yet been measured.

Based on official reports on ARAHIS, a total of 50 outbreaks of FMD was recorded in northern Lao PDR from 2011. Associated with the roll-out of the vaccination campaigns since 2012, no outbreaks have been reported in northern Lao PDR since May 2013. Extensive outbreaks of FMD were reported on ARAHIS in Myanmar during 2015, including in central Myanmar. Based on these reports, it appears that few outbreaks occurred in villages that were vaccinated as part of the 2015 vaccination program.

*See Annex 7 for more information*
2. **The STANDZ Sustainability Plan (Dr Ronello Abila, Sub-Regional Representative for South-East Asia)**

Dr Ronello Abila presented a STANDZ Sustainability Plan that describes proposed activities and approaches prioritised based on OIE’s assessment of the activities’ likely contribution to secure and sustain outcomes achieved by the programme to date. These include:

**SEACFMD Campaign:**

SRR-SEA will prioritise STANDZ support to the flagship SEACFMD programme until December 2017. SRR-SEA will implement a final round of FMD vaccinations in Northern Lao PDR and Central Myanmar, and will support the implementation of the Phase 5 of the SEACFMD 2020 Roadmap by leveraging and co-funding activities with Member Countries and with other potential and existing donors. SRR-SEA technical assistance to countries on FMD will continue but the number of regional meetings funded by STANDZ will decrease and will focus support only to the SEACFMD Sub-Commission and the FMD National Coordinators Meeting.

**One Health/Rabies:**

SRR-SEA will gradually phase out and end this component by December 2016. Support during this remaining period will include: on-going Rabies vaccination activities in Cambodia and Myanmar; an extra dog vaccination round for the Philippines; oversight for project completion activities; technical assistance to countries’ development and regional alignment of National Rabies Plans; and inputs to the ASEAN Rabies Elimination Strategy (ARES). During the phase out period, the OIE will continue to explore new donors and funding mechanisms to ensure a longer term sustainability of accomplishments.

**Strengthening Initiatives for Veterinary Services (STRIVES):**

SRR-SEA will gradually phase out and end this component by December 2016. Support during this remaining period will include: a subregional workshop on Veterinary Statutory Bodies (VSB), technical assistance to countries on establishing a well-functioning VSB that meets the demands of the ASEAN economic integration; monitoring and technical assistance to partners’ efforts in university twinning, in adopting OIE Day 1 Competencies in the veterinary curricula, and in addressing key gaps in their veterinary services.

**SRR-SEA Programme Management:**

SRR-SEA will end this component by December 2017 in conjunction with the no-cost extension period of STANDZ. There will be a gradual reduction of STANDZ-funded SRR-SEA personnel to allow ample time for SRR-SEA to sustain STANDZ activities. This component will also manage an expanded technical secondment programme with Member Countries as a risk management strategy to fill technical gaps as STANDZ components and SRR-SEA personnel are gradually phased out. Under this component, SRR-SEA will prioritise: the continuation of gender equity mainstreaming work within SRR-SEA operations, across the STANDZ technical components, and in future project proposals; progress reporting obligations to DFAT; support to programme completion and a limited scope independent end-of-
programme evaluation of STANDZ; and the development of concept notes for a future phase of STANDZ, potentially supported by other partners.

See Annex 8 for more information

3. The New Zealand Project (Dr Ian Dacre, New Zealand Project Coordinator, OIE SRR-SEA)

Dr Ian Dacre presented the nature and scope of the New Zealand-funded FMD projects to be started in Lao PDR and Myanmar. Those projects aim to complement previous and other ongoing STANDZ-funded FMD projects and to expand FMD-free zones and countries. The FMD project in Lao PDR will become officially recognised with the signing of a Funding Agreement currently scheduled for September, 2016. This will be immediately followed up with a Project inception meeting. Already the Project has contracted a Project Coordinator based in Thailand, and Project Officer and an Administration Assistant based in Vientiane. This Lao FMD project focuses on three key provinces: the central province Xiengkhouang (critical for monitoring FMD movements from northern Lao PDR provinces to Vietnam and China), and two key southern provinces: Savannakhet and Champasak, where a new vaccination campaign will start in April 2016. Southern Lao PDR is a critical area for regional FMD control due to its high cattle and buffalo population and the substantial movement of cattle through this area from Thailand and Cambodia to other countries, including China and Vietnam. In summary, the Lao project is intended to:

1) Vaccinate 80% of at risk animals (being no less than 300,000 animals – primarily cattle and buffalo) over three consecutive years to achieve an additional FMD free zone in Southern Lao PDR as well as maintaining herd protection in Xiengkhouang Province;
2) Train at least 900 farmers and traders in FMD control with at least 700 farmers and traders implementing best practice;
3) Provide applied extension training to 100 veterinarians or village animal health workers in FMD and other disease control, with at least 80 veterinarians and animal health workers receiving this training;
4) Benefit 60,000 farming households by increasing their livestock related income by at least 20% through prevention of losses from FMD outbreaks and improved market access.

The Myanmar project, which has similar objectives as described in the Lao project, is intended to launch in the middle of 2016 and will continue and expand the vaccination campaigns in STANDZ target areas in Mandalay and Sagaing States.

See Annex 9 for more information

Questions were raised about the target of expanding FMD free zones in Myanmar, why the New Zealand project will only focus on Central Myanmar that is already a target area in the STANDZ project, rather than start the vaccination campaign in some other parts of the country. Dr Dacre replied that the New Zealand funded Myanmar FMD Vaccination Campaign is a strategic risk-based programme, which is based on a successful model established in Northern Laos where no FMD outbreaks have been reported since May 2013 after massive multiple vaccinations. Central Myanmar is considered as a critical area for regional control of FMD due to its large cattle and buffalo population and role as significant source for livestock trade routes to the rest of SEA and China. The New Zealand Myanmar FMD initiative is developed to support maintenance of immunity achieved through the Central
Myanmar Vaccination Campaign supported by the STANDZ Initiative. The programme will be expanded to cover more control hotspots if the funding and resources allows.

Dr Carolyn Benigno noted that the New Zealand project and STANDZ project should not be separated from one another, and the coordination role of the OIE SRR-SEA is pivotal for the effective project implementation and optimisation of resources use. Dr Dacre agreed and pointed out that during the design stage of the New Zealand project, it had already been considered to place it as a complementary and continuation of the STANDZ project, such as maintaining herd immunity achieved by STANDZ funded vaccinations in central Myanmar and starting vaccination campaign in Southern Laos, following the successfully control of FMD in North Laos via the STANDZ project. He also has very frequent discussions with Dr Widders for information and experience exchange. He further added that the New Zealand project will enhance scientific research on the FMD epidemiology and explore other control strategies aside from vaccinations.

4. Review of the SEACFMD ROADMAP Objectives, Roles and Responsibilities (Dr Ronello Abila, Sub-Regional Representative for South-East Asia)

Dr Ronello Abila reviewed the 3rd edition of the SEACFMD 2020 Roadmap, and underlined the objectives identified there as well as the roles and responsibilities of key stakeholders in the SEACFMD Campaign. The development of this 3rd edition considered the changing political and economic circumstances in the SEACFMD region, and the lessons from Phase 4 of the SEACFMD Campaign from 2012-2016. Different from the earlier two versions, the new Roadmap is consistent with the OIE/FAO Global FMD Control Strategy agreed in 2012, and has incorporated PCP-FMD as a tool to progress FMD control and eradication. The Roadmap has refined the goals for Phase 5 of the Campaign, which include: decrease FMD prevalence in South-East Asia and China, expand disease-free zones, and maintain FMD freedom in countries and zones that have attained that status; strengthen national Veterinary Services; and enhance regional cooperation in policy and capacity development. To achieve these Goals, the Objectives are to: apply science- and risk-based strategies, including vaccination and animal movement controls, and promote progression of Member Countries in line with PCP-FMD, to reduce the prevalence of FMD and develop and maintain FMD-free zones and countries; improve the performance of Member Countries’ Veterinary Services, through progression along the OIE PVS Pathway and adherence to international animal health Standards; promote regional cooperation in policy and capacity development by holding regular training and collaborative activities for the Veterinary Services of Member Countries. The Roadmap also defines three major strategy components – technical, coordination and advocacy, and governance and policy – as well as cross-cutting components to address the key elements of effective animal health management programmes.

The OIE Sub-Commission for FMD in South-East Asia and China will continue to provide overall guidance to the SEACFMD Campaign for policy development and review. The OIE will continue to play a leading role in ensuring the success of the SEACFMD Campaign, by providing scientific and policy input, and liaising with other regional FMD and TAD control programmes to help secure programme funding. National Coordinators will provide a critical link between the OIE SRR-SEA and Member Country Veterinary Services, in progressing activities consistent with the Roadmap, developing and reviewing Manuals, and reporting to the OIE Sub-Commission.
5. **Strengthening Communication nationally and regionally, and enhanced advocacy (Dr Pennapa Matayompong, STRIVES Programme Coordinator, OIE SRR-SEA)**

Dr Pennapa Matayompong presented the importance and pathways for enhancing communication and advocacy nationally and regionally. Communication is an essential component of the OIE’s mandate so it is addressed in the OIE strategic objectives at all times. The OIE standards on Communication are described in the Chapter 3.3 and Chapter 3.2 of the Terrestrial Animal Health Code and the Aquatic Animal Health Code respectively. The chapters include the principles, definitions and description of a communication system.

In the OIE 6th Strategic Plan (2016-2020), communication has been addressed in a Strategic Objective on “Establishing trust through transparency and communication” in which the outputs would be authoritative statements on animal health, timely reporting of animal disease events, analysis of the animal health situation and epidemiologic trends worldwide, and scientific and public health information on the state of animal health and animal welfare worldwide. To achieve these outputs, contribution of information from Member Countries is significant through the effective communication networks using the most appropriate means and channels.

In addition, the “South-East Asian Strategy for Animal Health Communication” was developed in 2009, comprising 4 goals: (1) Ensuring integration of communication strategies with policy and programme of Veterinary Services; (2) Improving risk communication approaches; (3) Increasing communication resourcing through advocacy; and (4) Improving coordination across sectors and stakeholders. The 4th OIE Sub-Regional Workshop on Animal Health Communication was recently organised by the OIE SRR-SEA in Cambodia in November 2015. The workshop reviewed the key aspects of the Strategy taking into account new disease trends, research findings on stakeholders and animal diseases and the changing economic and political landscape that have taken place since the Strategy was developed in 2009. The two most basic tips for effective communications: developing a Single Overarching Communications Outcome (SOCO) and getting to your point fast (POINT) were also introduced to the workshop.

*See Annex 10 for more information*

6. **Plenary Discussion: Driving the SEACFMD Roadmap**

Dr Ronello Abila requested participants to consider ways to progress along the SEACFMD Roadmap.

Dr Gardner Murray started the discussion by asking Member Countries to present their progression plan for PCP-FMD from 2016 to 2020, which would provide a basis for the discussion on progression towards the SEACFMD Roadmap goals.

Dr Matthew Stone asked if FAO could share updates of the achievement of the FAO/ROK project funded by Republic of Korea. Dr Carolyn Benigno replied that the FAO/ROK project targeted to enhance the application of PCP-FMD in Cambodia, Lao PDR and Vietnam, and has made significant achievements by assisting those countries in enabling an FMD control environment, improving outbreak control, strengthening emergency preparedness as well as the development and implementation of a risk-based FMD control plan. Currently, Lao PDR and Cambodia have already
progressed into stage 1 and Viet Nam has already completed stage 2, progressing to stage 3. The project has also provided trainings on how to perform PCP self-assessment to those countries.

Dr Stone suggested that in order to progress along the SEACFMD Roadmap as well as the PCP Pathway, the target, strategies and action plans should be country specific rather than on a regional level. This would help to identify the gaps and locate resources in a more efficient way. Dr Abila agreed and added that each country should identify their own goal as well as the impediments for upgrading the PCP status in their regular reports, with resources and implementations to be directed based on country’s specific gap analysis.

Dr Laure Weber-Vintzel and Dr Stone further suggested that, for big countries, it would be more efficient to use zoning and compartmentalisation on FMD control and PCP-FMD application. Priorities should be identified for each zone to direct resources in a highly efficient way. Dr Junxia Song agreed with this suggestion and stated that China has many zones of various PCP stages. The province of Hainan may have achieved PCP stage 5, considering it has been FMD free with vaccination for more than 5 years. However, some remote mountain areas may only be at PCP stage 1, due to very limited veterinary services. China will consider implementing zone-specific FMD control activities as per Sub-Commission’s suggestions.

Dr Mark Schipp stated that the socio-economic issues are critical in FMD control. He noted that China wishes to lower the risks posed by transboundary animal diseases (TADs) by establishing animal movement control zones along the border, but smugglers may find alternative ways to avoid the border check. The key to control TADs is to harmonise the trade policies and regulations to be aligned with international standards, and make efforts to control the sources of the diseases.

Dr Gardner appreciated all the discussions and suggestions, and suggested Member Countries to re-consider their implementation plans to progress the PCP levels, which would be discussed in more details in the plenary discussion in Session 9.
VI. Session 4: OIE SRR-SEA Activities

(Chaired by Dr Mohamed Naheed Mohamed Hussein)

1. Using detailed data from FMD sequencing to enhance FMD control (Dr Yu Qiu, Project Officer, OIE SRR-SEA)

Dr Yu Qiu gave a presentation to summarise the use of sequence analysis in FMD control. Phylogenetic inference from molecular sequences of isolated viruses can contribute significantly to investigate the dynamics of FMDV dispersal. In SEA and China, the A/Asia/SEA-97 and O/SEA/MYA-98 viruses collected between 2012-2015 can be respectively grouped into various clusters based on the VP1 gene sequence. Interestingly, viruses grouped in such clusters can often be found in various neighboring countries. For example, current strain of circulating A/Asia/SEA-97 was first reported in Thailand in 2012 with subsequent detections in Lao PDR, Cambodia, Viet Nam and China in 2013/14 and more recently in Myanmar in 2015. While differences between the effectiveness of disease detection and reporting among countries may explain these observed trends, the epidemiological data are consistent with the cattle movement pathway in the region.

Analysis of sequence data can also be used to trace the origin and transmission pathways of FMD outbreaks. In one example, the FMDVs recovered from the outbreaks occurred in Lao PDR during April-May 2015 were found to be O/ME-SA/Ind-2001d viruses. This is the first time to have such virus reported in SEA. The retrospective investigation found the importation of frozen buffalo tongue into Lao PDR during September 2014 and February 2015 from Indian states where Ind-2001d are endemic. In another example, genetic analysis of the VP1 gene of Myanmar A isolates (having been detected for the first time in the last 5 years) shows those isolates are very similar (up to 99.84%) to some viruses isolated in China and Russia in 2013 and to some Thai viruses isolated in 2014 and 2015, suggesting a common ancestor virus for all those isolates. This unusual slow mutation rate within a 2-year time span suggests possible fomite transmission may be part of the cross-border dissemination in this instance.

Sequence data can also be used for the prediction for vaccine strain selection. In recent years, significant progress has been made in identifying the antigenic sites of different serotypes of FMDVs, and variations in those antigenic regions are directly related to serological cross-reactivity. Research findings by Reeve et al (Reeve et al., PLoS Computational Biology, 2010) has further demonstrated the relationship among sequence variations and antigenic differences, and used this relationship for rapid vaccine matching prediction without the need for serology work for existing vaccines.

Dr Qiu advocated more sequencing analysis and sequence data sharing to support better control strategies in this region.

See Annex 12 for more information

Dr Pascal Hudelet-Picatto asked Dr Qiu to illustrate more about using sequence data to predict vaccine matching results. Dr Qiu replied that FMDV is evolving continuously both genetically and antigenically, and sometimes amino acid changes at certain sites can have a disproportionately large antigenic effect, driving researchers to identify antigenicity-associated sites. Dr Richard Reeve and his colleagues have already identified antigenic sites in surface-exposed structural proteins of FMDV.
serotype SAT1 and SAT2, which are correlates of loss of cross-reactivity in the VN assay. These allowed prediction of both the best vaccine match for any single virus and the breadth of coverage of current vaccine candidates from their capsid sequences as effectively as or better than serology. Dr Qiu suggested supporting research on identifying antigenic sites in serotype A and O FMDVs endemic in this region. This allows prediction of antigenic drift of FMDVs and could accelerate the selection of vaccine strains. Moreover, identifying the common/conservative antigenic sites across an entire serotype can help in the design of vaccines with better targeting and broader coverage.

2. **Post-Vaccination Monitoring Activities conducted in the Northern Lao and Central Myanmar FMD Project – what we have learnt and what improvements need to be made (Dr Blesilda Verin, Project Officer, OIE SRR-SEA)**

Dr Blesilda Verin presented PVM activities used to support and evaluate vaccination campaigns in northern Lao PDR and in central Myanmar. PVM studies are designed to specifically: a) assess the level of protection in a population, b) to measure the response to vaccination in previously unvaccinated and uninfected animals, c) to measure the antibody response and its longevity following multiple vaccinations in naïve animals/population d) and in the case of Myanmar, to assess the efficiency of the systematic vaccination strategy applied by the Government.

To measure the response to vaccination in the two countries, PVM by laboratory (serology) test was adopted. Results of the PVM studies in Lao PDR proved that after two vaccinations 88% and 84% of animals produced protective levels of antibody against serotypes O and A respectively, and the majority of those vaccinated remained protected at 6 months post boost vaccination. In Myanmar, 84% of vaccinated animals developed protective titres against serotype O FMDV. Accordingly, these studies also demonstrated the importance of delivering two vaccinations to boost protection against FMD. Based on the analysis conducted by SEACFMD on Lao PDR and Myanmar vaccination programs, it will be necessary to vaccinate at least 95% of the target population to achieve 80% protection and to target revaccination earlier than day 210.

*See Annex 13 for more information*

Dr Wilna Vosloo asked how the PVM study for the massive vaccination campaign was designed? Dr Phillip Widders replied that the PVM study was designed according to the Global Guideline for FMD PVM study. Serum samples were collected from a random selection of vaccinated animals (ear tagged and between 6-12 months old) at the moment of the 1st vaccination and the 2nd vaccination, as well as 1 month and 6 months post the 2nd vaccination. Sera was tested in the NSP ELISA and only NSP negative sera was subsequently tested in LP ELISA, using homologous vaccine strains.

3. **FMD Risks in SEACFMD (Dr Ronello Abila, Sub-Regional Representative for South-East Asia)**

Dr Abila presented the recent FMD risks identified through OIE Risk Analysis Framework. In the hazard identification, O/SEA/Myanmar/98 strain was dominant in 2015, followed by the O/ME-SA/PanAsia strain that was detected in Cambodia and Vietnam in 2015. In addition, sporadic outbreaks caused by O/Cathay was reported in Vietnam. Importantly, for the first time, O/ME-SA/Ind-2001d was reported in SEA and has caused outbreaks in Lao PDR. The incidence of serotype A caused outbreaks reduced significantly in 2015, but the presence in Myanmar was reported for the first time in the last 5 years.
The main risk factor identified is the transboundary movement of animals and animal products, which is usually driven by the meat price, market demand and livestock population density. The consequence assessment underlights the presence of significant numbers of susceptible animals in the region, given the limited vaccination coverage and low level of immunity remaining several years after outbreaks. Risk management approaches include vaccination, early detection and animal movement management. In addition, further investigations on social factors involved, enhanced engagement and communications with primary stakeholders, as well as strengthened veterinary legislation and implementation would help to mitigate risks for future FMD outbreaks.

4. SEACFMD Research: Past, Present and Future (Dr Phillip Widders, STANDZ Programme Coordinator, on behalf of Dr Mary Joy Gordoncillo, One Health Programme Coordinator, OIE SRR-SEA)

The presentation summarised SEACFMD research activities and made recommendations on future directions to be consistent with the 3rd Edition of the SEACFMD Roadmap. In 2008, the SEAFMD and the Australian Biosecurity Cooperative research Centre (AB-CRC) commissioned a study to audit existing research, identify the most important remaining gaps, and carry out ex-ante costing of such research to assist in the prioritization of research questions. Following this, the SEACFMD Research Directions was drafted in 2013 to update the resulting document from that particular study and streamline research initiatives relevant to the 2nd edition of the SEACFMD 2020 Roadmap (2011).

To be consistent with the objectives of the 3rd edition the SEACFMD 2020 Roadmap to apply science- and risk-based strategies to reduce the prevalence of FMD and develop and maintain FMD-free zones and countries, SEACFMD scientific gaps and new research directions are identified. For Strategy Component 1 (Technical), research priorities should focus on optimising the efficacy of control and prevention strategies, including: FMD epidemiology, management of animal movement, and the effectiveness of intervention strategies in reducing disease risks nationally and regionally. Relevant research initiatives for Strategy Component 2 (Coordination and Advocacy) should include: behavioural studies particularly on means to effect desired behavioural change, animal health communication, as well as other studies related to improved coordination and effective advocacy. For Strategy Component 3 (Governance and Policy) studies should include: institutional analysis of FMD control, cost-benefit analyses of FMD control and prevention strategies.

See Annex 14 for more information

5. Plenary Discussion: FMD Risks

Dr Phillip Widders summarised the current regional FMD situation and proposed a discussion on risk identification as well as risk mitigation measures.

Dr Widders first reviewed genetic relations between isolates from neighbouring countries and emphasised the importance of virus sequence analysis, which would enhance our understanding of the FMDVs evolution as well as possible FMD transmission patterns. He encouraged Member Countries to collect samples in all outbreaks and submit those samples to reference laboratories on a regular basis. This would not only enhance our knowledge about the epidemiology but also assist in vaccine selection. Dr Bolortuya Purevsuren agreed with Dr Widders’s opinion and asked if there is any existing protocol for field samples submission to RRL. Dr Ronello Abila replied that Mongolia could
submit samples to the two RRLs at Lanzhou and Pakchong, and documents describing the sample requirements and shipment are available upon request.

Dr Matthew Stone stated that, the genetic sequence analysis as well as the outbreak investigation gave clue to the incursion of O/ME-SA/Ind-2001d into Lao PDR may be associated with the importation with frozen buffalo tongue or deboned meat from India. Attentions should focus not only on transboundary animal movements, but also the biosecurity procedures involved in international trade of animal products. Dr Ronello Abila stated that according to the OIE Terrestrial Code, the risk posed by deboned meat is low if it is properly processed, while the tongue could really pose a big risk in disseminating FMD. It was also discussed about the re-introduction of serotype A FMDV in Myanmar. Dr Abila stated that this may be a fomite-mediated transmission: according to Myanmar veterinary staff, biosecurity measures are rarely applied during livestock transboundary transportation. Dr Gardner Murray commented that it would be worth to list a whole series of hazards that could contribute to the dispersal of FMD as well as the precautions to be taken accordingly. He further stressed that FMD infected countries or zones should stick to the OIE standards when processing and exporting animal products from FMD susceptible animals.

Dr Widders stated high-quality suitable vaccines also play an important role in reducing the risks posted by FMD, but immunity induced by killed vaccines wane over time. As in Lao PDR, 73% vaccinated animals had protective antibody titre against the serotype O vaccine strain and only 53% had protective titre against the serotype A vaccine strain at 6 months post the 2nd vaccination. Although it is recommended by vaccine manufactures and the global FMD PVM guideline that animals should receive a boost vaccination every 6 months, it is very difficult to implement in the practical setting, especially in the massive vaccination campaigns in Myanmar and Lao PDR. This poses a challenge, as vaccine-induced immunity, if not timely boosted, may not be sufficient to protect animals when encountering the disease. Participants agreed and expressed their wishes that OIE could collaborate with FMD researchers and vaccine producers to optimize vaccination strategy to lower the risk. Dr Mohamed Naheed Mohamed Hussein further suggested countries store some vaccine stocks for emergency use.

Dr Murray concluded that the discussion was very informative. He highlighted the importance of virus sequence data sharing, vaccine matching study, and PVM study in controlling the risks of FMD outbreaks. He further suggested vaccine manufactures and FMD researchers to hold another discussion to prioritise research topics for the SEACFMD Campaign. Dr Murray also highlighted the need to refine regional FMD vaccine strategy on a sound scientific and practical basis.
1. Regional FMD Reference Laboratory Activities at Pakchong (Dr Pranee Rodtian, Acting Director, Regional Reference Laboratory for FMD in South-East Asia)

Dr Pranee Rodtian presented 2015/16 Regional FMD Reference Laboratory Activities at RRL-Pakchong. In 2015, a total of 522 samples from 5 countries (Thailand, Cambodia, Lao PDR, Myanmar and Viet Nam) was submitted to RRL, which was increased compared to the previous two years. Serotype O was dominant in all countries except Viet Nam in which serotype A was dominant. Surprisingly, two samples from Cambodia were repeatedly found to be positive to Asia 1 in the typing ELISA, whilst they turned to be serotype A viruses by sequencing at RRL and this was further confirmed by WRL. The discrepancy in the results is now under investigation. The Thai local vaccines A/Lopburi/2012 and O/Udonthani/189/87 showed good matching to the majority of isolates from Cambodia, Lao PDR, Myanmar and Viet Nam.

Phylogenetic analysis showed that the majority of serotype O isolates in 2015 were Q/SEA/Myanmar98 like viruses, while Q/ME-SA/PanAsia like viruses were only found in Lao PDR and Cambodia at lower frequencies. The majority of serotype A viruses isolated in Thailand were very similar to the Lopburi stain, which was included in the current trivalent vaccine used in Thailand, whilst it was noticed that some viruses isolated at the end of 2015 were genetically more diverse. All serotype A viruses identified at RRL were A/Asia/SEA-97 like viruses, with some new sublineages observed since 2014. A total of 5,820 serum samples was collected by both passive and active surveillance in northeast Thailand and evaluated by LP ELISA against the three strains incorporated in the Thai FMD trivalent vaccine. In addition, a total of 8,214 serum samples was collected in the animal movement monitoring campaign, and approximately 4.8% of them tested positive in the NSP ELISA.

Dr Pranee also spoke about the 2014-2015 inter-laboratory comparison testing for FMD laboratory proficiency, which includes antigen detection by ELISA typing, and antibody detection by LP ELISA and NSP testing. Seventeen FMD laboratories participated, with 8 from Thailand and 9 from other SEA countries. It was shown that 7 and 16 assessed laboratories performed with good results on the antigen typing and NSP tests, respectively. For LP ELISA, 11 laboratories had a good result for the internal quality control. Dr Pranee pointed out that factors impacting laboratory performance included using laboratory equipment without calibration/verification, personnel error and new staff who were unfamiliar with some laboratory techniques, buffer preparation, buffer pH checking as well as data recording mistakes.

RRL has continued to supply ELISA typing kits and LP ELISA reagents to other SEA countries including Cambodia, Lao PDR, Myanmar and Vietnam. RRL has also further enhanced its collaboration and cooperation with overseas and national institutes and universities on FMD surveillance, diagnosis, vaccine development, as well as policy development on FMD eradication.
2. **Regional FMD Reference Laboratory Activities at Lanzhou (Dr Hong Yin, Director General, Lanzhou Veterinary Research Institute)**

Dr Hong Yin presented 2015/16 Regional FMD Reference Laboratory Activities at RRL-Lanzhou. He briefly introduced the FMD status in China in 2015. In total, 3 outbreaks were confirmed by laboratory diagnosis, all caused by the A/Asia/Sea-97 strain. In 2015, FMD active surveillance was conducted by RRL, including pig slaughterhouses in 12 provinces, field surveillance in 4 provinces in north-east China, nation-wide evaluative surveillance for Asia 1 FMD vaccination campaign, special surveillance of serotype A in pigs, surveillance in the FMD free zones with vaccination in Hainan and Liaoning provinces, as well as Yongji area in Jilin province. RRL also provided diagnostic reagents to provincial and local veterinary offices, including both antibody and antigen detection kits. Vaccine matching tests were also performed and the results were shared with relevant veterinary staff, vaccine producers and farmers. RRL-Lanzhou also provided nation-wide training on diagnosis, vaccination, and field sampling, as well as international training to 3 visitors from North Korea and 1 visitor form Myanmar. He also mentioned that some new types of vaccine (i.e. FMDV marker vaccine by reverse genetics, empty capsid vaccine (VLP), multiple epitopes vaccine, live virus vector vaccine, DNA vaccine, and edible vaccine using tobacco or tomato) have been developed by scientists at RRL-Lanzhou.

3. **A Decision Tool for Strategy (Dr Alasdair King, Director, Intergovernmental Veterinary Health, MSD)**

Dr King gave a presentation on the development and application of a tool to assist strategy development for FMD control. Frequently, governments face serious challenges in deciding how to prioritise resources for FMD control. To help with those decisions, MSD, in collaboration with Wageningen University, has developed a Susceptible – Infected – Recovered (SIR) model that can be applied in various scenarios. Users just need to enter relevant data of their country (animal population, vaccination coverage, infection rate, etc), and they can see the economic impact of their control strategies. MSD’s analysis has shown the use of high potency vaccines, even with a low vaccination coverage, can still have significant cost effectiveness. Dr King summarised that the SIR serves a dynamic, adaptive approach that can be continually used to assess how control is progressing.

4. **How to Anticipate Peaks in Vaccine Demand (Dr Pascal Hudelet, Head, Customer Service Large Animals & Veterinary Public Health, Merial)**

Dr Hudelet presented how to anticipate peaks in vaccine demand and the strategies used by Merial FMD vaccines plant to lower the risks in vaccine supply. Because vaccine supply requires a long production cycle (antigen should be produced 6 months earlier) and very strict quality control timelines which cannot be reduced, vaccine plants are constantly anticipating what the demand will be and preparing accordingly. One of the major challenges for FMD vaccine preparation is how to select the right vaccine seed strains, given FMDV has 7 serotypes and multiple topotypes and lineages. To address this, Merial has been constantly monitoring FMD epidemiology and vaccine matching in each region of the world to ensure that the most suitable strains will be prepared and incorporated. Besides, Merial has made significant capacity investment to increase vaccine production volumes. Traditionally, inventories are built to ensure sufficient vaccine stocks, but this poses significant risks to producers, especially when there is irregular demand for large volumes or unanticipated outbreaks. Dr Hudelet pointed out that this challenge would be overcome by establishing antigen banks, which
store concentrated inactivated antigens representing the most important/epidemiologically relevant strains. The advantages of antigen banks include a much longer shelf-life than formulated vaccines (5 years), the flexibility to formulate (multivalent, potency, dose, adjuvant, batch size, etc), potential for mutualization at regional level, as well as rapid formulation of emergency vaccines within days.

5. Production Industry Perspective on the international trade benefits of FMD control (Dr Boonyita Rujtikumporn, Senior Vice President, CP Food Thailand)

Dr Rujtikumporn gave a presentation on the international trade benefits of FMD control from a Thai animal production industry perspective. FMD is the most important constraint on international trade in livestock and animal products. CP Food Thailand has made significant efforts to improve pig production, while exportation of pigs is greatly hindered by trade restrictions resulting from FMD, except for the FMD free zone in Region 2. Besides limiting export market access, FMD also reduces food security, and leads to massive losses due to control costs. Dr Rujtikumporn stressed FMD poses a big burden on agricultural development and the benefits that control and eradication can bring will be enormous. She further highlighted several important measures in FMD control from the industry’s viewpoint, which include:

1) Availability of good FMD vaccines for both cattle and swine (R&D for high quality vaccine production and constant strain update)
2) Monitoring of protective immunity levels with low cost testing (available of more certified test kit or more certified lab)
3) Enhanced technique in vaccination practice, high potency vaccine production, vaccine transportation and storage.
4) Farm biosecurity, hygienic slaughterhouse and disinfect all vehicle at slaughter house exits.
5) More education to farmers and the general public (biosecurity, hygiene, feed quality, etc)

VIII. Session 6: Updates from Partners
(Chaired by Dr Pennapa Mataompong)

1. FMD activities at the CSIRO-Australian Animal Health Laboratory (Dr Wilna Vosloo, Principle Research Scientist, CSIRO Australian Animal Health Laboratory)

Dr Vosloo presented FMD activities at the CSIRO-Australian Animal Health Laboratory on regional epidemiology and capacity building. New lineages of FMD virus regularly emerge and it is therefore necessary to genetically and antigenically characterise current virus isolates to determine whether or not the vaccines in the Australian vaccine bank would be protective against an outbreak. To increase the real-time understanding of the epidemiology of FMD in Southeast Asia, the CSIRO Australian Animal Health Laboratory has performed vaccine matching studies in collaboration with RRL, Pakchong, Thailand and RAHO6, HCMC, Vietnam. In vitro studies showed variable vaccine matching as a result of evolving viruses that complicate vaccine choices. However, despite low r-values that predicted potential vaccine failure, in vivo challenge studies indicated that high potency, good quality
vaccines can provide protection against clinical disease and decrease virus excretion. Vaccination therefore remains an important control strategy if the potency and quality can be assured.

2. **Australian FMD Developments (Dr Mark Schipp, Australian Chief Veterinary Officer)**

Australia has financially supported the SEACFMD program since 1997, effectively contributing to FMD control in the region. As an FMD free country Australia continues to exert efforts in surveillance, preparedness and strengthening veterinary services. In 2015 Australia completed a large standstill exercise involving 48 activities and more than 1600 people which demonstrated the ability to enact a livestock standstill in the event of an FMD outbreak; the exercise also increased awareness and knowledge. More than 150 Australian veterinarians and livestock handlers have undertaken FMD training in Nepal, and this training has been supplemented in 2015 with on-line training for 118 veterinarians. In 2015, Australia received an OIE PVS assessment and is responding to the draft report which was received in early 2016.

3. **Current Situation of Foot and Mouth Disease (FMD) in Chinese Taipei (Dr Nien-Nung Lin, Section Chief, Bureau of Animal and Plant Health Inspection and Quarantine)**

Dr Nien-Nung Lin presented the current FMD situation and control measures applied in Chinese Taipei. Details are as follows:

1) **Blanket vaccination**

   It is mandatory to have all cloven-hoofed animals vaccinated with the FMD vaccine in Chinese Taipei. Ruminants are vaccinated at 4 and 12 months of age then boosted annually, while pigs are vaccinated at 12-14 weeks and again after 6 months. In 2012, the Bureau of Animal and Plant Health Inspection and Quarantine (BAPHIQ) amended regulations to strengthen FMD prevention and control measures. If serum neutralization (SN) antibody geometric mean titers against FMDV were less than 16 for pigs, or less than 32 for ruminants, animals should be re-boosted one dose of FMD vaccine under the supervision of Local Disease Control Center (LDCC). When SN antibody titers in a farm were below 4, the owner or keeper will be fined NTD 30,000-150,000 (USD 1,000-5,000). The LDCCs monitor FMD vaccination situation of cloven-hoofed animal farms simultaneously to enhance the FMD immunization coverage.

2) **Enhanced cleaning and disinfection program in animal conveyances, auction market, and farm**

   To eliminate FMD virus circulating in the environment, Council of Agriculture (COA) had adopted the Regulations on Cleaning and Disinfection of Animal Transportation vehicles and Cages in 2015. The BAPHIQ and LDCCs have also strengthened the cleaning and disinfection procedures in animal conveyances in auction markets and slaughter houses. LDCCs and industry organizations also guide cloven-hoofed animal farms to implement on-farm biosecurity measures to reduce the risk of disease spread.

3) **Surveillance**

   - **Farm**: Six hundred pig farms and 300 ruminant farms per year were stratified random sampled, based on a 95% level of confidence and 1% prevalence rate. Eight hundred pig farms and 160 ruminant farms per year were collected for targeted surveillance (e.g. low SN antibody titer farms). Those samples were collected for SN and non structural protein (NSP) antibody tests. Clinical inspection of animals is conducted simultaneously when collecting serum samples.
- Auction Markets: At least 1-2 pigs per source farm are randomly selected for NSP antibody testing on a daily basis. Positive samples are traced back to the source farms for further sampling and testing.

4) Achievement
The current FMD vaccination rate of cloven-hoofed animal farms is above 90%. Above 80% of cloven-hoofed animal farms had herd level protection based on the results of serological surveillance in 2015. There has been no FMD case detected or found in Taiwan, Penghu, and Matsu Island since June 2013. Only 2 yellow cattle cases of serotype A FMDV were detected by active surveillance in Kinmen Island in May and June 2015, respectively, and were quickly solved by stamping out, intensified surveillance program and control measures.

4. FAO Regional Office for Asia and the Pacific (Dr Carolyn Benigno, Regional Project Coordinator, and Dr Katinka de Balogh, Senior Animal Production and Health Officer, FAO Regional Office for Asia and the Pacific)

The presentation summarised the FAO FMD Control Initiatives in this region. In 2013, FAO introduced a new strategic frame work consisting of 5 strategic objectives (SOs) with the goal to contribute to end hunger and poverty and provide the organization with a clear focus and strengthening FAO’s impact especially at country/field level. FAO considers FMD among its priority diseases and has developed various regional FMD control initiatives in Asia such as the Support to Lao PDR’s SPS legal framework development related to livestock and veterinary matters including animal movements, disease control, border checkpoints, etc. In addition, FAO actively supports bilateral and multilateral meetings among China, Lao PDR, Myanmar and Vietnam, provided evidence based policy planning for safe production and trade. The Republic of Korea funded the improvement of national preparedness for transboundary animal infectious disease in SEA and assisted Lao PDR, Vietnam and Myanmar with the application of the PCP-FMD. The project facilitated national consultations and assessments of the PCP status of the three participating countries as well as assessments of the socio-economic impact of FMD. By using social network analysis, animal movements and value chain actor behaviour were determined. Among other activities, the project also addressed biosecurity, provided capacity development, linked epidemiology with laboratory diagnostics and enhanced public awareness. Overall, the FMD-PCP is considered an effective tool for countries to monitor the progress of control activities and the use of socio-economics and value chains has clearly demonstrated the impact of FMD on the farmers’ livelihood and risks for spread.

Other FAO FMD initiatives in the region relate to building resilience and self-reliance of livestock keepers in Afghanistan, and increasing sustainable livestock production in the Islamic Republic of Pakistan. Emergency assistance has been provided to North Korea for strengthening the FMD control capacity in the country.

For 2016-2017, FAO’s work on FMD will focus on further linking epidemiology to laboratory information systems, provide training on conducting FMD-PCP assessments and other capacity building activities as well as obtaining a better understanding of drivers of FMD spread, promote operational research including community based surveillance, improve vaccination coverage and better understand prevention and control barriers.
5. Japan’s FMD activity relevant to SEACFMD, 2016 (Dr Kazuo Ito, Director of International Animal Health Affairs Office, Animal Health Division, Ministry of Agriculture, Forestry and Fisheries)

Dr Kazuo Ito presented updates on Japan’s FMD activity relevant to SEACFMD. Japan has FMD-free status without vaccination. The Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF) has been supporting the FAO/OIE Global Framework on the progressive control of Transboundary Animal Diseases (GF-TADs) and supporting FMD control in Asia since 2005 through contributions to the OIE and FAO, and the JTF/OIE Project for FMD Control in Asia has been renewed for another 5 years. The National Institute of Animal Health of Japan, as an OIE Collaborating Centre, has also contributed through follow-up investigations after vaccine donation to Laos and Myanmar, genetic diagnostic training for the experts of Pakchong Regional Reference Laboratory and OIE Twinning project with Mongolia. Japan also developed a new planning ODA project for the construction of facilities for FMD vaccine production and FMD diagnosis in Myanmar.

6. New Zealand (Dr Matthew Stone, Director of Animal and Animal Products)

Dr Matthew Stone presented an update on the national FMD situation in New Zealand. New Zealand remains free of FMD without vaccination. The current comprehensive risk management system for FMD includes an extensive portfolio of risk reduction and readiness projects. Risk reduction focuses on the development of import health standards under the Biosecurity Act. Current priorities include sheep and goat germplasm, ruminant meat, and dairy products. Scientific evaluation of risks guides any deviation from the commitment to harmonise with the international standards of the OIE Code. Readiness activities for FMD have continued over the last two years, earning a very favourable report from the Office of the Auditor General. Discussions with animal sector stakeholders within the Interim FMD Council are focused on development of an operational agreement for cost-sharing jointly prioritised with elements of the ongoing readiness programme.

7. FMD control initiatives in East Asia (Dr Batsukh Basan, Regional Project Coordinator, OIE Regional Representation for Asia and the Pacific)

Dr Batsukh Basan presented the current situation of FMD in East Asia and “OIE/JTF Project on FMD control in Asia” as a main FMD control activity in East Asia region.

Only Japan has been maintaining official recognition of FMD free without vaccination status in the East Asia region.

The OIE/JTF Project on FMD Control in Asia is an initiative of the OIE and the Japanese Government, and was launched in 2011. The Project aims at promoting information sharing on FMD in the region, developing strategies and establishing a Roadmap for FMD Control in East Asia, and strengthening capacity of diagnosis and surveillance of FMD, and improving FMD control measures at national and regional level.

Series of annual and bi annual meetings, training courses, and field activities have been conducted under the project activities.

Under the Project activities, Roadmap for FMD Control in East Asia was developed by National Contact Persons (NCP) based on the concept of the Global FMD Control Strategy taking the specific and unique
regional context and epidemiology of FMD. This approach was officially endorsed by the Regional Commission Meeting in Cebu in 2013. The Roadmap has 3 main strategies and 5 components with tools and activities, and annexes such as country profile, laboratory capacity, national control plan and PCP status of Member Countries.

Major outcomes of the OIE/JTF Project for FMD control in Asia are: information sharing among members is increased; The Roadmap for FMD control in East Asia has been developed, endorsed and annexes are updated annually by member countries; some field activities such as FMD vaccination campaign, animal identification and post vaccination monitoring were implemented in some countries (Laos and Myanmar) in order to strengthen FMD control in the country; capacity of FMD laboratory diagnosis and surveillance is increased; and awareness of the occurrence of FMD in surrounding countries is increased.

8. **European Union funded Programme - Promotion of Inclusive and Sustainable Growth in the Agricultural Sector: Fisheries and Livestock (Dr Dirk Van Aken, Livestock Sector Expert with the Department of Animal Health and Production (DAHP) in Cambodia)**

Dr Dirk Van Aken updated the meeting on SEACFMD relevant activities of the European Union funded Programme entitled “Promotion of Inclusive and Sustainable Growth in the Agricultural Sector: Fisheries and Livestock”. This programme aims to trigger sustainable and inclusive socio-economic growth in the livestock sub-sector, through adequate support by Government, civil society and DPs in line with PBA principles. Some activities implemented that are closely relevant to the SEACFMD Campaign are summarised as follows:

1) **Support capacity strengthening of Government Staff**
   - Veterinary Services management training
   - Develop Strategic Framework for Livestock Development
   - Support OIE PVS Follow-up mission
   - Veterinary Curriculum development in line with D-1 Competencies

2) **Support national disease control programme**
   - Improved disease reporting from provinces
   - Emergency control of outbreaks of newly emerging animal diseases
   - FMD vaccination campaign, with vaccines donated by OIE
   - Develop strategies for control of FMD, ND, HS and CSF

3) **Strengthen Veterinary Services**
   - Support establishment of Veterinary Statutory Body
   - Role of VAHW vs para-veterinarians vs veterinarians
   - Develop standards for slaughterhouses
IX. Session 7: Sustainable FMD Control and Coordination of Protection

*(Chaired by Dr Ian Dacre)*

1. **Plenary Discussion: Sustainable FMD Control and Coordination of Protection**

Dr Phillip Widders requested participants to consider whether the current picture is a true reflection of FMD prevalence in SEACFMD. Participants agreed that the current surveillance was inadequate and the FMD outbreak data may only represent the tip of the iceberg. Subsequently, National Coordinators stated their surveillance activities and the efforts on strengthening FMD detection and reporting.

Dr Sith Premshthira stated that Thailand FMD active surveillance frame has already been developed and continuous effects will be exerted to enhance active clinical surveillance, sero-surveillance and laboratory surveillance, strengthen disease reporting system, facilitate outbreak investigation, develop screening programs for cross-border animal movements. Dr Phan Quang Minh stated that Viet Nam has adopted/endorsed veterinary laws and regulations to improve disease reporting, include suspicious cases. Dr Mohamed Naheed Mohamed Hussein stated that in Malaysia, outbreak information system had been developed but can still be improved to detect more outbreaks within 24 hours. Dr Sein Lwin stated that Myanmar only reported approximately 30 outbreaks in 2015 through the official reporting channel, but LBVD’s field investigation identified >200 outbreaks. He highlighted that political support was crucial to address under reporting. Dr Phachone Bounma stated that in Lao PDR, passive surveillance is conducted by distributing outbreak questionnaires to district veterinary offices to collect detailed field information. Besides, farmers are encouraged to report any suspicious cases to village animal health workers. Upon receipt of a report, the veterinary inspector will review the report and investigate to confirm. Dr Sorn San stated that in Cambodia, FMD outbreak reports to DAHP had significantly increased as compared to previous years. He further stressed that collaborations with OIE, FAO and NGOs as well as the European Union’s Development Cooperation Programme had significantly enhanced the village animal health worker system and improved disease reporting on provincial level. He also underlined that DAHP had employed various social media to facilitate timely reporting of diseases and sharing real-time outbreak information and control activities. Dr Junxia Song stated that China employs a combination of passive and targeted surveillance. It is mandatory for farmers to report any FMD (including suspicious cases) to regional, provincial and central veterinary authorities. Besides, targeted surveillance is conducted in FMD high-risk areas to strengthen disease detection. Dr Widders suggested National Coordinators consider socio-economic issues underlying the under-reporting, such as no or limited compensation, if stamping out was applied, would make farmers feel reluctant to report disease.

Dr Widders also recommended field information be collected for each virus submitted for sequencing to improve our understanding of the epidemiology of FMD in the region. Dr Anna Ludi stated that viruses submitted to WRL may represent only a small proportion of the total viruses collected in the region. She further suggested sharing viral sequence data between laboratories, which would facilitate better comparison between phylogenetic trees. Dr Wilna Vosloo agreed that sharing information would maximise the value of data, and minimise any possible repetitions of laboratory work as well as resource costs. Dr Gardner Murray concluded that increased use of nucleotide sequencing to assist with disease control should be strongly supported and suggested WRL draft guidelines on how sequences can be submitted for general use.
The following discussions focused on the inter-regional coordination of protection and recommended: (1) outbreak investigation and field sample collection should be enhanced to improve predicting vaccine match; (2) the choice of vaccine strains should be documented in terms of r-values, supplier and other technical information and shared with the region; (3) measuring vaccine match in the field; (4) enhancing research collaboration to speed up laboratory vaccine matching tests and make them more reliable; (5) advocating livestock industry/competent authority to adopt “user/importer pay” policy to make vaccination program sustainable.
X. Session 8: Animal Movement Management

(Chaired by Dr Phan Quang Minh)

1. Animal Movement Management in SEACFMD Countries (Dr Phillip Widders, SEACFMD Campaign coordinator, OIE SRR-SEA)

Dr Phillip Widders provided an update on the animal movement study in the Upper Mekong region, which was conducted from February to June, 2015, involving China, Vietnam, Laos, Thailand and Myanmar. OIE SRR-SEA commissioned and coordinated the study, and China and Australian governments provided financial support. Key findings from the study include:

- Change in trend northwards, away from Malaysia, since the last study
- Large numbers of cattle and buffalo moving across SEA towards higher prices in China and Vietnam
- Reports of animals from India (and Bangladesh) entering SEA
- The majority of movements are illegal

The Animal Movement Management meeting held in August 2015 in Qingdao, China, reviewed the critical role of animal movement in the epidemiology of FMD, heard updates on the current situation with respect to the disease in South-East Asia and China, and was presented with a summary of the current import protocols and policies of Member Countries. Following a description of the study design and presentation of the findings, extensive discussion resulted in development of a set of recommendations, which include:

- Draft a Joint Statement on animal movement management in the region, and propose that OIE Delegates/Directors General meet on the occasion of the OIE General Session, May 2016, to discuss progress on animal movement management and to sign the Joint Statement
- Note the value of the study and confirm that the results would be used to strengthen FMD control in the region
- Acknowledge the importance of vaccination in reducing FMD risk, and support collaborative development of control zones, based on practical sanitary guidelines, to reduce FMD risks within the region.
- Acknowledge existing agreements (ASEAN and ASEAN+1) and the role of harmonized protocols on animal trade advocated by those agreements, and support the endorsement by GMS Directors General of the Joint Statement.

See Annex 15 for more information

2. Regionalisation Pilot Project on Transboundary Animal Diseases along China-Laos and China-Myanmar Borders (Dr Junxia Song, Director, Veterinary Bureau, Ministry of Agriculture, China)

Dr Junxia Song, presented the plan of China’s pilot project on establishing animal movement control zones along the China-Laos and China-Myanmar borders, in order to control and prevent illegal cross-border animal movements. The control zones will have natural boundaries like rivers or mountain ranges, while multiple check points will also be established to monitor animal movement activities closely.
Dr Naheed stated that the protocol for establishing animal movement control zone should be practical. He cited Malaysia’s experience that import of livestock is not taxed to support legal trading, given smuggling is very difficult to control and smugglers can change their strategies every year.

Dr Gardner Murray noted that the establishment of control zones along China-Myanmar and China-Lao PDR borders would benefit China greatly. He questioned how such project could benefit other SEA countries. Dr Song replied that China is also considering establishing animal movement control zones in Myanmar and Lao PDR, and animals with approved vaccination and health status will be allowed to enter China. This program will benefit China and neighbouring countries on TADs control and trade activities. Dr Song further highlighted that the coordination of OIE SRR-SEA on technical collaboration and information sharing will be very important for this programme. Dr Gardner confirmed that OIE SRR-SEA remained ready to assist and he further suggested including Viet Nam in this framework. Dr Song agreed but expressed her concern that this will be technically more challenging due to lack of natural barriers between China and Viet Nam.

3. **Plenary discussion: Animal Movement Management, Import Regulations and Health Protocols**

Dr Ian Dacre requested participants to discuss gaps existing in the current animal movement management, as well as ways to improve import/export regulations and harmonise sanitary regulations for the international movement of animals and products of animal origin.

Dr Peter Black stated that the growing need of beef consumption is not only restricted to China but will be a global trend in coming years. China’s plan of establishing animal movement control zones to facilitate TADs control is justified, while more attention is required to address the drivers of illegal trade in this region.

Dr Phillip Widders stated that one major obstacle that hinders the regional trade relates to the administrative or regulatory constraints. As an example, Myanmar is the main cattle provider in the region but the government bans any international cattle trades. This drives livestock producers to engage in illegal trade and resort to informal channels to move their livestock to neighbouring countries for a higher market price. The cost for such illegal animal transportation is usually between 300-500 USD per head, as imposed by the illegal taxes/bribes at numerous traffic blocks. Dr Widders highlighted that the harmonisation of import and export regulations in this region would benefit both animal producers and consumers. Dr Gardner Murray agreed and added that importing and exporting countries have a shared responsibility to maximise compliance of their laws and regulations to the OIE Code and other international standards.

Dr Mark Schipp suggested the OIE develop a regional legal framework to support the movement of animals and animal products. Dr Ronello Abila replied OIE has already developed a joint statement on harmonising procedures for livestock movement among Upper Mekong Countries, which is intended to be endorsed in the 84th General Session of the OIE in May 2016. He also suggested continuing to utilize various regional platforms such as the ASEAN+China and ADB initiated Greater Mekong Subregion SPS Agreement, in pursuing the harmonisation of regional biosecurity and livestock movement management, including development and mutual recognition of control zones.
Dr Widders suggested countries consider the possibility that the import/export of meat would be more economic than transboundary movements of live animals. Dr Naheed agreed, citing the experience of Malaysia that substantial amounts of meat product are imported from India annually to meet domestic consumption demands, providing the plants handling animal products have been approved or registered by the Malaysia’s government authority and meet the OIE standards. Other participants agreed this is a good direction and worthy of being explored further.

The following discussion focused on linking animal identification and movement systems. Dr Matthew Stone shared New Zealand’s experience that their National Animal Identification and Tracing (NAIT) scheme in place links people, property and livestock. Under the scheme, cattle and deer are traced using NAIT approved ear tags. Once tagged, these animals are registered in a national database and the details recorded include the animal's location, movements in the animal's life, and contact details for the owners. This provides traceability for individual animals, to enhance New Zealand's ability to respond quickly if there is a biosecurity incursion such as a disease outbreak. Dr Sith Premasithira stated that Thailand had developed a similar system and started a pilot program on electronically tracing on cattle/buffalo movement and vaccination/health status. Dr Widders stated that the electronic livestock identification and trace-back system represents an ideal, whilst at least in the near future, low cost traditional identification methods with manually data recording will still be most commonly used in the region. Cost and cultural reasons as well as low capacity of veterinary services are the main obstacles to adoption of sophisticated methods in some countries. Dr Murray noted that livestock identification and the management of livestock movements are critical to the control of animal diseases and access to trade. Efforts should be exerted to promote farmers’ awareness of the benefits of animal identification. He also re-emphasised the increasing need for Member Countries to develop and implement harmonised approaches on livestock identification and movement as well as biosecurity procedures in the region, and highlighted that improved disease control and increased access to trade requires strong cooperation between neighbouring countries and active participation by multiple stakeholder groups.
XI. Session 9: Action and Implementation Plans

(Chaired by Dr Ronel Abila)

1. Updates on OIE FMD Standards – Requirements for the OIE Endorsement of National FMD Plans and for Official Recognition of FMD-Free Zones (Dr Laure Weber-Vintzel, Officer in Charge of Official recognition of disease status, OIE HQ)

Dr Laure Weber-Vintzel updated participants on the 2015 OIE Terrestrial Code on FMD, which was adopted in May 2015. She presented relevant articles of the Terrestrial Code for official recognition of FMD freedom, and clarified the procedures and requirements for official recognition of FMD-Free countries and zones. She also illustrated OIE Standards for endorsement of official FMD control programme, with a focus on the definition of the official control programme and the criteria for OIE endorsement. The endorsed official control programme may be withdrawn if it does not comply with timelines or performance indicators, or significant problems with the performance of veterinary service are identified, or there is increased incidence of FMD which cannot be addressed by the programme.

2. FMD Progressive Control Pathway and Implementation of the Global FMD Strategy and other TADs (PPR), including its application in the SEACFMD Campaign Dr Laure Weber-Vintzel, Officer in Charge of Official recognition of disease status, OIE HQ)

Dr Laure Weber-Vintzel provided a comprehensive overview of the stage descriptions, indicators and assessment of PCP-FMD. The PCP-FMD contains 5 stages that progressively increase the level of FMD control, and it is intended to assist FMD endemic countries to progressively reduce the impact and burden of FMD. Dr Laure Weber-Vintzel emphasised the focus in each PCP stage as well as the respective criterion to progress to the next stage. The PCP stages assessment is composed of self-assessment through questionnaires and regional assessment through the Regional Advisory Group (RAG). Dr Weber-Vintzel also introduced the global control and eradication strategy for Peste des Petits Ruminants (PPR) that aims to eradicate PPR by 2030, as well as its 4-stage step-wise approach.

Following Dr Weber-Vintzel’s presentation, Dr Naheed expressed his concern that it was difficult to summarise the countries’ activities and achievements through the PCP questionnaire. Dr Weber-Vintzel explained that countries are encouraged to submit supporting documents annexed to the questionnaire, giving evidence to their answers and strengthening the application.

Dr Song Junxia was concerned that OIE would withdraw the endorsement of the official control programme if there is an increase in the incidence of FMD, and argued that many factors may cause sudden FMD outbreaks and some of them are unpredictable. Dr Weber-Vintzel clarified that indeed the incidence of FMD may increase suddenly, as seen in Tunisia in 2014 due to an incursion of a new strain from India. But Tunisia took strong actions to contain outbreaks and their interventions proved to be very effective. A similar example was seen in Morocco: in spite of increased FMD incidence, the country has shown significantly improved disease control performance/capacity. As in those scenarios although FMD incidence increased, the official control programme for FMD was properly implemented, and the OIE endorsement of the official control programme was maintained.
Dr Mark Schipp asked how the OIE ad hoc group was selected and how they worked for the endorsement of official control programme? Dr Weber-Vintzel explained that the ad hoc group is always chosen with very strict criteria, requiring members being well-known FMD experts and speak different languages. The members give their opinion independently by filling a form, which will be passed on to OIE Scientific Commission for Animal Diseases and subsequently to the OIE DG. The positive report will be published online whilst the negative outcome will be kept confidential.

3. Plenary Discussion: PCP in SEACFMD

The plans for PCP progression during 2016-2020 of SEACFMD countries were outlined and raised discussions on their feasibility. Dr Mark Schipp commented that some countries may have set targets too high, and Dr Weber-Vintzel agreed that it would be a significant achievement to upgrade 1 stage during a time span of 3 years, as progressing along PCP will rely on the strengthening of veterinary services (VS) and collaboration and support from many groups.

Dr Peter Black suggested that PCP assessment procedures should be carried out on a yearly basis to determine each country’s status within the PCP. Dr Matthew Stone noted that the criteria for the PCP assessment should be transparent, and detailed guidelines should be in place to help countries be prepared for the evaluation. He suggested OIE publish the evaluation opinion of the experts online to help countries improve and become better prepared. Dr Abila agreed and stated that OIE SRR-SEA will develop a framework, enabling a transparent and evidence-based assessment of PCP implementation on the level of individual country as well as the region as a whole. Dr Weber-Vintzel stated countries within a region being assessed concurrently will be an excellent opportunity for countries to cross-examine progress at regional level, and it is an essential platform which will encourage greater transparency and accountability for progress, and where common regional problems may be addressed.

Dr Weber-Vintzel further clarified that within the country, different areas might attain different levels of FMD control. This is reflected in the PCP through the principle of zoning, in which different PCP Stages might be assigned to distinct zones within a country. In order to consider a geographic area as a zone within the PCP, the country must provide convincing, evidence-based rationale for the decision. Dr Stone commented that the current questionnaire for PCP evaluation creates confusion on which level (country or zone) it refers to. Dr Weber-Vintzel replied that OIE will improve the questionnaire to be country-/zone-specific.

Dr Weber-Vintzel further highlighted that embarking on the PCP-FMD should acquire the appropriate capacity and capability of the VS to conduct activities aimed at the control and elimination of FMD. She encouraged countries to Link the PCP-FMD stages and the Critical Competences of the OIE PVS evaluation tool.

Dr Murray appreciated the above discussions and suggestions, and noted that the progress assessment of PCP implementation of each Member Country as well as the region as whole will be carried out regularly, possibly through the annual Sub-Commission meeting and National Coordinators meeting. The outcome will be reported to the Sub-Commission on a yearly basis.
XII. Session 10: Action Plan for SEACFMD

(Chaired by Dr Gardner Murray and Dr Monique Eloit)

1. Workshop (Concurrent Sessions) – Review of key issues and provision of advice on the 2015/2016 Action Plan and Phase 5 of SEACFMD

a. SEACFMD Coordinators

Dr Gardner Murray, President of the SEACFMD Sub-Commission, chaired the SEACFMD Coordinators workshop session and commenced proceedings by welcoming National Coordinators from the SEACFMD Member Countries and their representatives. Dr Murray first mentioned that recommendations of the 18th National Coordinator’s meeting have been progressed or in train. Dr Murray then brought to the attention of participants key issues related to technical recommendations. He noted comments in previous discussions had highlighted the need for strengthening of epidemiological knowledge, following up on the recent incursion of serotype A in Myanmar and O/ME-SA/Ind-2001d strain in Lao PDR and Viet Nam, and the development of guidelines for PCP evaluation. He recognised that the ASEAN Group and OIE SRR-SEA have been working on the harmonisation of laws and regulations on animal movements and sanitary protocols in the region, which will have positive outputs for SEACFMD. He noted the importance of collection and submission of field samples, and sharing of sequence data to understand disease transmission pathways and improve vaccine strain selection. Dr Murray then asked National Coordinators to comment on any further key issues which may need to be addressed. A summary of the meeting outputs follows:

A. Progress
   i. Recommendations of the previous National Coordinator’s meeting in August 2015 have been progressed or in train

Additional points to bear in mind are:

   ii. Optimise vaccine strain selection
   iii. Improve retrospective outbreak investigations (Note: Lao PDR and Myanmar studies)

B. Resource Issues

   iv. The SEACFMD Subcommission and National Coordinators Meeting will be kept, whilst the EpiNet/LabNet meeting may not be continued due to the resource reduction
   v. Seek additional financial support from New Zealand, China, and probably also Australia
   vi. Note that China and Japan may donate vaccines to SEACFMD and confirm that SEACFMD can assist in PVM studies
   vii. Seek additional resources from national governments of SEACFMD Member Countries
   viii. Support Provisional Activities

C. Technical

   ix. Confirm SRR-SEA to help coordinate technical issues relating to China - Myanmar/Lao PDR animal movement control zones
   x. Scientific guidance documents development
xi. Prepare draft governance documents for PCP-FMD evaluation for national coordinators’ consideration
xii. Request Member Countries submit progress report against PCP-FMD to the Subcommission

D. Meetings and Elections
xiii. Request Cambodia to host the 23rd Meeting of OIE Sub-Commission for Foot and Mouth Disease in South-East Asia and China.
xiv. Propose the 19th SEACFMD National Coordinators Meeting to be held on 17-19 August 2016 in Bangkok, Thailand
xv. Congratulate Dr Song Junxia on her re-election to a second term, and Dr Sith Premasuthira on his election, as Vice Presidents of OIE Sub-Commission for FMD in South-East Asia and China.

E. Membership of Mongolia
xvi. Support Mongolia’s application for the SEACFMD Membership
xvii. Seek OIE General Assembly’s endorsement for Mongolia’s Membership application in May 2016

F. Coordination with other organisations
xviii. Engage other FMD initiatives in the region under the umbrella of the SEACFMD

G. Sub-Commission Meeting
xix. Note the importance of reports from Member Countries and WRL
xx. Consider bring back a half day or so on other key TBDs
xxi. Support listing of priority recommendations and others

b. Observers’ Meeting

Dr Phillip Widders, SEACFMD Campaign Coordinator, chaired the Observer’s Meeting of the parallel workshop. The objective of the meeting was to review key issues highlighted during the meeting, and provide recommendations for the implementation of Phase 5 of SEACFMD. A summary of meeting outputs follows:

A. Progress on 2015 Meeting
i. Animal movement study: need to advocate for action to address findings
ii. Vaccination given high profile: future should also focus on results of outbreak investigation
iii. Need to review progress formally against recommendations
iv. Members given first opportunity to comment has increased their participation

B. Key issues raised this week
v. Illegal movements and relationship with food security
vi. China control zone and animal movement protocols – «legal pathway for animal movements»
vii. Vaccination: what is the appropriate strategy; regional protocol and coordination
viii. Sustainability: country commitment
C. What can observers bring
   ix.  Science
   x.  Awareness of donor contributions in the region
   xi.  Resources
   xii.  Engagement & advocacy – assist with high level engagement (e.g. ASEAN ANZFTA; G7)
   xiii.  Regulatory knowledge and capacity (ID traceability, frameworks, governance and rules),
   xiv.  Best practices and lessons learned
   xv.  Market information
   xvi.  Thinking of the region as whole – planning framework

D. Other actors to engage with
   xvii.  Industry: resourcing; political push; traders; marketers; transporters
   xviii.  Scientific publications/ reporting on Member Country experiences
   xix.  Custom agencies: national heads of custom agencies to link with CVOs (ASEAN context) =>
        food security & trade
   xx.  FAVA
   xxi.  Representatives from countries (SAARC Secretariat): epidemiological linkage; role in
        contributing to food security (Regional Commission; SAARC CVO meeting)
   xxii.  Wildlife-livestock interface

E. Future
   xxiii.  Capture & report on other initiatives in the region
   xxiv.  Other initiatives & projects to align with Roadmap
   xxv.  Present recommendations from previous years & review progress
   xxvi.  Smaller groups to stimulate participation & dialogue
   xxvii.  Case studies from different countries on key issues (champion/ success stories; topics of
           interest to countries; thematic topics; disease reporting)
   xxviii.  Country progression along PCP; outcomes of outbreak investigations (poster session)
   xxix.  Implementation of Roadmap at national level
   xxx.  National Coordinators and other experts to facilitate discussions and to provide experiences

2. Expert Group Meeting – Guidance to SEACFMD Sub-Commission on research priorities

Taking the opportunity and privilege of having recognized regional and global experts on FMD researchers at this Sub-Commission Meeting, the SEACFMD organized a special side-meeting to discuss the scientific recommendations in response to the current FMD situation in South-East Asia. This brief scientific forum, chaired by Dr Wilna Vosloo, Principle Research Scientist, sought the selected delegates’ expertise in providing advice and recommendations on priority research needs for the region. A summary of discussion outputs follows:

A. The increased use of nucleotide sequencing to assist with disease control is strongly supported
   i.  Investigate potential causes of lack of molecular clock in serotype A
   ii.  Collect good field data to support the sequence data
   iii.  Small trial to determine the use of full genome sequence in an endemic setting
iv. Field study to determine whether vaccination drives viral evolution
v. Sharing of data and backbone tree to facilitate comparisons

B. Use of vaccines in naïve animals and subsequent vaccinations
vi. Recommendations on the use of vaccine in naïve animals and subsequent vaccinations
vii. Cost benefit study when using the vaccine correctly
viii. Studies to determine the real cost of vaccination campaigns to investigate a change to high potency vaccines
ix. Investigate the use of the MSD model to guide decisions regarding vaccination

C. Quality of vaccines
x. Compile annual information on vaccines used in the region (potency, strains, inactivation, field efficacy, how long after vaccination infection occurred, use of antibodies, etc)
xii. Basic, independent quality control (vaccination followed by serological follow up)
xii. Factors impacting on cold chain
xiii. Socio-economic studies on user-pay

D. Vaccine matching and field information
xiv. Document info regarding choice of vaccines (r-values, seq data, etc) to be used for future decisions

E. Improved submission of samples to laboratories
xv. Determine whether or not other methods of sample submission would encourage increased numbers to be sent to labs

F. Investigate the potential for Private Quarantine stations to assist with disease control
xvi. Use the Malaysian Private Quarantine stations as a case study and determine its potential in controlling animal movement on other parts of the region

G. Animal movement
xvii. Use data collected from Governments’ economic departments to understand member country beef markets
xviii. This may provide a clearer picture on livestock market drivers and associated FMD risk

H. Identify and quantify putative risk factors associated with an outbreak of FMD
xix. Putative risk factors to be examined would include vaccination, perceived risk status (e.g. high vs low risk), biosecurity, proximity to a road or trade route, proximity to livestock market, training level of animal health worker, local beef price, socio-economic status (household income/livestock) and distance (time) to a border
xx. This would involve the initiation of various control strategies, e.g. vaccination and biosecurity, an assessment of the present state of the other putative risk factors

See Annex 27 for more information
XIII. Session 11: Governance and Advocacy

(Chaired by Dr Gardner Murray)

1. Review of SEACFMD Implementation Plan and Action Plan (Dr Ronello Abila, Sub-Regional Representative, OIE SRR-SEA)

Dr Ronello Abila presented the SEACFMD implementation plan for 2016-2020. Member countries’ PCP progression plan was reviewed and key actions for upgrading the PCP stages were outlined. Dr Abila highlighted the importance of conducting PCP assessment at the country level, and encouraged Member Countries to present their FMD situation and activities in consistent with the PCP assessment checklist. The draft SEACFMD Roadmap implementation plan was reviewed and endorsed by the meeting. The meeting advocated members to provide regular progress reports as indicated in the implementation plan. A couple of technical, political, and logistical resources required for implementation activities were underlined and discussed.

The OIE SRR-SEA has compiled a number of key recommendations of the 21st OIE Sub-Commission for FMD in South-East Asia and China, the 18th SEACFMD National Coordinators Meeting, the 2015 Animal Movement Meeting, and the 2015 joint SEACFMD LabNet and EpiNet meetings. Participants were updated on the status of implementation of those recommendations. Key actions have been listed in Annex 17 along with information on their progress, bodies responsible, any problems or impediments, actions to be taken, and a timeline.

See Annex 16 and 17 for more information
XIV. Session 12: Recommendations and Closing

(Chaired by Dr Gardner Murray)

The assembly reconvened for the presentation, review and revision of the draft recommendations and statements that were developed during the four-day meeting.

The 22nd Meeting of the OIE Sub-Commission for FMD Control in Southeast Asia and China was formally closed by a speech from the president of the SEACFMD Sub-Commission, Dr Gardner Murray and Delegate of Thailand to the OIE, Dr Ayuth Harintharanon. Dr Murray concluded that the meeting was very informative and productive, providing a sound frame for Member Countries progressing towards the goals of SEACFMD. He further emphasised that the sustainability of political and financial support is critical to ensure that the programme will continue to work with optimum efficiency. He thanked the staff of DLD for their hard work and assistance in organising the meeting, and appreciated the interesting presentations and constructive discussions throughout the meeting. Dr Harintharanon, on behalf of the government of Thailand, officially closed the meeting by commending the achievement the meeting and acknowledging all participants for their active participation.
### Annex 1: Program

#### 22nd Meeting of the OIE Sub-Commission for Foot and Mouth Disease in South-East Asia and China

**March 8-11, 2016**  
Chiang Rai, Thailand

**PROGRAMME**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>March 7, 2016</strong></td>
<td></td>
<td>Registration: Dusit Island Resort</td>
<td></td>
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<tr>
<td><strong>DAY 1 – March 8, 2016</strong></td>
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<tr>
<td>07:30 – 08:30</td>
<td>Registration</td>
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</tbody>
</table>
| 08:30 – 09:30 | Opening Ceremony – Speeches By  
Mr. Prachon Pratsakul  
Vice-Governor of Chiang Rai  
Dr Gardner Murray  
President, OIE SEACFMD Sub-Commission  
Dr Monique Eloit  
OIE Director-General  
H.E. Gen. Chatchai Sarikulya  
Minister of Agriculture and Cooperatives of the Kingdom of Thailand |                                            |
| 09:30 – 10:00 | Coffee Break  |                                                                         |                                            |
| 10:00 – 11:00 | Launch of Phase 5 of the SEACFMD Campaign  
SEACFMD – Progress Report  
The Global FMD Situation and SEACFMD in the Global Context  
The Regional FMD Situation | Dr Gardner Murray  
Dr Ronel Abila  
Dr Anna Ludi  
Dr Karanvir Kukreja |
| 11:00 – 11:30 | Plenary Discussion |                                                                         |                                            |
### Session 2: Updates on the National FMD Situation (Chair: Dr Gardner Murray)

**Purpose:** To summarise current disease status and trends.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:30 – 12:10</td>
<td>Country Reports (FMD free countries)</td>
<td>SEACFMD National Coordinators</td>
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<tr>
<td></td>
<td>• Philippines</td>
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<td>• Singapore</td>
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<tr>
<td>12:10 – 12:30</td>
<td>Plenary Discussion</td>
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<tr>
<td>12:30 – 13:30</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>13:30 – 15:00</td>
<td>Country Reports (FMD infected countries)</td>
<td>SEACFMD National Coordinators</td>
</tr>
<tr>
<td></td>
<td>• Cambodia</td>
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<td>• China</td>
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<td>• Lao PDR</td>
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<td></td>
<td>• Vietnam</td>
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<tr>
<td></td>
<td>Mongolia’s FMD Activities</td>
<td>OIE Delegate of Mongolia</td>
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<tr>
<td></td>
<td>Plenary Discussion</td>
<td></td>
</tr>
<tr>
<td>15:00 – 15:30</td>
<td>Coffee Break</td>
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</tbody>
</table>

### Session 3: Plenary Session (Chair: Dr Song Junxia)

**Purpose:** To outline Programme support and key issues for strengthening regional performance and coordination

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30 – 15:50</td>
<td>The nature and scope of the STANDZ-funded FMD Projects in Lao PDR and Myanmar</td>
<td>Dr Phil Widders</td>
</tr>
<tr>
<td>15:50 – 16:10</td>
<td>The STANDZ Sustainability Plan</td>
<td>Dr Ronel Abila</td>
</tr>
<tr>
<td>16:10 – 16:30</td>
<td>The New Zealand Project</td>
<td>Dr Ian Dacre</td>
</tr>
<tr>
<td>16:30 – 16:50</td>
<td>Review of the SEACFMD Roadmap Objectives, Roles and Responsibilities</td>
<td>Dr Ronel Abila</td>
</tr>
<tr>
<td>16:50 – 17:10</td>
<td>Strengthening communication nationally and regionally, and enhanced advocacy</td>
<td>Dr Pennapa Matayompong</td>
</tr>
<tr>
<td>17:10 – 17:30</td>
<td>Plenary Discussion: Driving the SEACFMD Roadmap</td>
<td>Facilitator: Dr Ronel Abila</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td></td>
<td>OIE Dinner</td>
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<tr>
<td>Time</td>
<td>Event</td>
<td>Speaker</td>
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</tr>
<tr>
<td>08:30 – 09:20</td>
<td>Using detailed data from FMD sequencing to enhance FMD control</td>
<td>Dr Yu Qiu</td>
</tr>
<tr>
<td>09:00 – 09:20</td>
<td>Post-Vaccination Monitoring Activities conducted in the Northern Lao and Central Myanmar FMD Project – what we have learnt and what improvements need to be made</td>
<td>Dr Blesilda Verin</td>
</tr>
<tr>
<td>09:20 – 09:40</td>
<td>FMD Risks in SEACFMD</td>
<td>Dr Ronel Abila/NCs</td>
</tr>
<tr>
<td>09:40 – 10:00</td>
<td>SEACFMD Research: Past, Present and Future</td>
<td>Dr Phil Widders</td>
</tr>
<tr>
<td>10:00 – 10:20</td>
<td>Plenary Discussion: FMD Risks</td>
<td>ALL</td>
</tr>
<tr>
<td>10:20 – 10:50</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>10:50 – 11:10</td>
<td>Regional FMD Reference Laboratory Activities at RRL Pakchong</td>
<td>Dr Pranee Rodtian</td>
</tr>
<tr>
<td>11:10 – 11:30</td>
<td>Regional FMD Reference Laboratory Activities at RRL Lanzhou</td>
<td>Dr Yin Hong</td>
</tr>
<tr>
<td>11:30 – 12:00</td>
<td>A Decision Tool for Strategy</td>
<td>Dr Alasdair King</td>
</tr>
<tr>
<td></td>
<td>How to anticipate sudden peaks in vaccine demand.</td>
<td>Dr Pascal Hudelet</td>
</tr>
<tr>
<td>12:00 – 12:30</td>
<td>Production Industry Perspective on the international trade benefits of FMD control</td>
<td>Dr Boonyita Rujitikumporn</td>
</tr>
<tr>
<td>12:30 – 13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30 – 15:30</td>
<td>Partner Reports (AAHL, Australia (DAWR and DFAT), Chinese Taipei, CIRAD, DTRA, EU, FAO, Japan, Republic of Korea, New Zealand, OIE Regional Representation for Asia and the Pacific)</td>
<td></td>
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<tr>
<td>15:30 – 16:00</td>
<td>Coffee Break</td>
<td>ALL</td>
</tr>
<tr>
<td>16:00 – 17:30</td>
<td>Plenary Discussion: Sustainable FMD Control and Coordination of Protection</td>
<td>Facilitator: Dr Phil Widders</td>
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<tr>
<td></td>
<td>Dinner hosted by Department of Livestock Development, Thailand</td>
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</table>
# DAY 3 – March 10, 2016

## Session 8: Animal Movement Management (Chair: Dr Phan Quang Minh)

*Purpose: To discuss enhanced control activities focused on Animal Movement*

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
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</thead>
<tbody>
<tr>
<td>08:30 – 09:00</td>
<td>Animal Movement Management in SEACFMD Countries – Outputs from the Animal Movement Meeting 2015</td>
<td>Dr Phil Widders</td>
</tr>
<tr>
<td></td>
<td>Progress on development and implementation of Control</td>
<td>Dr Song Junxia</td>
</tr>
<tr>
<td>09:00 – 10:30</td>
<td>Plenary Discussion: Animal Movement Management, Import Regulations and Health Protocols</td>
<td>Facilitator: Dr Ian Dacre</td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td>Coffee Break</td>
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</tbody>
</table>

## Session 9: Actions and Implementation Plans (Chair: Dr Ronel Abila)

*Purpose: To provide advice on Global FMD initiatives and their application in SEACFMD*

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 – 11:30</td>
<td>Updates to the OIE FMD Standards – Requirements for the OIE Endorsement of National FMD Plans and for Official Recognition of FMD-Free Zones</td>
<td>Dr Laure Weber-Vintzel</td>
</tr>
<tr>
<td>11:30 – 12:00</td>
<td>FMD Progressive Control Pathway and Implementation of the Global FMD Strategy and other TADs (PPR), including its application in the SEACFMD Campaign</td>
<td>Dr Laure Weber-Vintzel</td>
</tr>
<tr>
<td>12:00 – 12:30</td>
<td>Plenary Discussion: PCP in SEACFMD</td>
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<tr>
<td>12:30 – 13:30</td>
<td>Lunch</td>
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</tbody>
</table>

## Session 10A: Review of Actions and setting of Priorities – SEACFMD National Coordinators Group (Chair: Dr Gardner Murray)

*Purpose: To discuss initiatives strengthening Animal Disease Control Globally and Regionally*

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30 – 15:30</td>
<td>Workshop: Discussion of Key issues, actions and Immediate Steps to be taken for Implementation</td>
<td>Dr Ian Dacre</td>
</tr>
</tbody>
</table>

## Session 10B: Review of Actions and setting of Priorities – Observers Group (Co-Chairs: Dr Laure Weber-Vintzel/Ms Emily Tagliaro)

*Purpose: To discuss initiatives strengthening Animal Disease Control Globally and Regionally*

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30 – 15:30</td>
<td>Workshop: Discussion of Key issues, actions and Immediate Steps to be taken for Implementation</td>
<td>Facilitator: Dr Ian Dacre</td>
</tr>
<tr>
<td>15:30 – 16:00</td>
<td>Coffee Break</td>
<td>Dr Phil Widders</td>
</tr>
<tr>
<td>16:00 – 17:30</td>
<td>Plenary Discussion: Outputs from Workshop sessions of NC and Observers Groups</td>
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<td>DAY 4 – March 11, 2016</td>
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<tr>
<td><strong>Session 11: Governance and Advocacy (Chair: Dr Gardner Murray)</strong></td>
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<tr>
<td>Purpose: To provide Advice on the SEACFMD 2015/16 Action Plan and Phase 5 of SEACFMD</td>
<td></td>
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</tr>
<tr>
<td>09:00 – 10:00</td>
<td>Review of SEACFMD Implementation Plan and Action Plan</td>
<td>Dr Ronel Abila</td>
</tr>
<tr>
<td>10:00 – 10:30</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td><strong>Session 12: Recommendations (Chair: Dr Gardner Murray)</strong></td>
<td></td>
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</tr>
<tr>
<td>10:30 – 11:30</td>
<td>Recommendations of the 22nd OIE Sub-Commission for FMD Control in South-East Asia and China</td>
<td>Dr Gardner Murray</td>
</tr>
<tr>
<td>11:30 – 12:00</td>
<td>Closing Program</td>
<td>TBA/ Dr Ayuth Harintharanon</td>
</tr>
<tr>
<td>12:00 – 13:00</td>
<td>Lunch</td>
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<tr>
<td><strong>Field trip</strong></td>
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<tr>
<td>13:00 – 18:00</td>
<td>Field trip (Baan Dong Charoen Buffalo Bank)</td>
<td>Department of Livestock Development, Thailand</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DAY 5 – March 12, 2016</th>
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</thead>
<tbody>
<tr>
<td>Departure of Participants</td>
</tr>
</tbody>
</table>
**Annex 2: List of Participants**

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PURPOSE

To advise the 22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China on the progress of the SEACFMD Campaign from March 2015 to February 2016, and to present the provisional programme for 2016/17.

BACKGROUND

This report covers the achievements of the SEACFMD Campaign based on the priority activities identified for 2015/16 and the recommendations endorsed at the 21st Sub-Commission meeting, and the targets set in the OIE SRR-SEA Work Programme. The provisional activities for 2016/17 are also presented. The STANDZ Initiative has been supported by the Australian Government from 2011 to the end of June 2016. However, a no-cost extension for the programme has been approved, to support continuation of some activities, albeit at a reduced scale in terms of staff and funding, until December 2017.

SUMMARY

Major highlights of the SEACFMD Campaign during this reporting period include completion of the Greater Mekong Sub-Region Animal Movement Study, continuation of vaccination programs in northern Lao PDR and central Myanmar, provision of support to Member Countries in development of National FMD Control Programs for endorsement by OIE, and publication of the 3rd Edition of the SEACFMD Roadmap 2016-2020.

Key Activities

- FMD control activities during 2015 have resulted in more than 288,000 doses of vaccine being administered across 831 villages in 10 Provinces of northern Lao PDR, and more than 415,000 doses administered in targeted villages in 18 townships in central Myanmar.

- The Animal Movement Study involved surveys of traders and other key operators in Vietnam, Lao PDR, China, Thailand and Myanmar, and was posted to the OIE website in 2015.

- Coordination activities included the 18th SEACFMD National Coordinators Meeting (Qingdao, China) and the EpiNet/LabNet Meeting (Nay Pyi Taw, Myanmar). The NC Meeting was preceded by a high-level meeting of representatives of Member Countries’ Directors General to review the results of the GMS Animal Movement Study and to discuss options for enhanced animal movement management in the region.

- OIE SRR-SEA is also working with the World Reference Laboratory to undertake vaccine matching studies to better support Member Country decisions on the choice of virus strains to include in vaccination programmes.

- Capacity building activities have also continued in 2015, with technical assistance provided by OIE SRR-SEA to regional laboratory activities, post-vaccination monitoring (PVM), outbreak investigation and for development of National FMD Control Programmes. Following this assistance, PVM has been conducted in the northern Lao and central Myanmar FMD Projects, Thailand has submitted its National FMD Programme to OIE for endorsement, and Vietnam has had Phase 3 of its National FMD Programme endorsed by its government. In addition, support has been provided to Vietnam for development of FMD-free zones, and a review of Member...
Country PCP status has been undertaken for Vietnam, Cambodia and Lao PDR.

- OIE SRR-SEA is exploring collaboration with specific Member Countries on research initiatives to enhance serotype-specific protection against FMD, and to improve diagnostic capacity to evaluate cases of apparent vaccination failure.

- OIE SRR-SEA has developed a Sustainability Plan for the Australian Government-funded STANDZ initiative, based on which the Department of Foreign Affairs and Trade has approved a no-cost extension to cover the period from July 2016 to December 2017.

- Work commenced in late 2015 on the New Zealand Government-funded Project on FMD Control in South-East Asia, with the initial focus in Lao PDR. Planning meetings have been held involving the Lao Department of Livestock and Fisheries, OIE SRR-SEA and partner agencies NZ Ministry of Primary Industries and Massey University EpiCentre. Recruitment of in-country staff, purchase of vaccines and eartags, and planning for baseline surveys of key target areas is well underway.

PROVISIONAL ACTIVITIES FOR 2016/17

In line with recommendations from the various consultation meetings held at the regional and national level, the following activities are identified as possible priority areas for implementation for the period of 2016/17. These provisional activities will be further refined based on the recommendations of the 22nd Sub-Commission meeting.

**Technical**
- Conduct cost/benefit analysis of FMD freedom
- Review epidemiology of FMD in SEA and China
- Continue outbreak investigations
- Conduct post vaccination monitoring in STANDZ-funded target areas
- Review regional research activities
- Provide emergency support for outbreak investigations as required
- Continue management of the northern Lao PDR FMD Project
- Oversight the 3rd round of FMD vaccinations in the central Myanmar FMD Project
- Provide FMD vaccine to Cambodia to support FMD control activities in that country
- Develop and refine the NZ-funded Projects in Laos and Myanmar
- Progress Animal Movement Management planning and activities
- Engaging with contingency planning activities in FMD-free countries
- Strengthen engagement with countries in East Asia, particularly Mongolia and PR China
- Provide technical and logistic support to FMD laboratories in member countries
- Continue to provide regional analysis of the FMD situation

**Communication and Advocacy**
- Engagement with high level officials, Ministers, and with ASEAN, including updating the ASEAN/OIE MoU
- Continue the publication of SEACFMD News
- Assist members to conduct FMD awareness campaigns and educational drives for promoting FMD control and prevention
- Provide training support on effective animal health communication
- Promote country commitments and achievements with regards to FMD control


**Coordination and Programme Management**

- Organize Meetings of the 23rd SEACFMD Sub-Commission, 19th National Coordinators, and Epidemiology and Laboratory Network.
- Assist to advocate funding and implementation of the National FMD Plans in Cambodia, Lao PDR and Myanmar.
- Facilitate disease reporting by Member Countries
- Support national self-assessment to review member’s PCP level. Incorporate priority activities identified in the PCP assessment with the FMD National Plan
- Continue to promote and coordinate existing and potential resources from other partner agencies such as the FAO-ROK FMD Project, OIE RR JTF FMD Project, ACIAR, New Zealand FMD project, etc.
- Engage high-level policy-makers to support FMD control

**RECOMMENDATIONS**

The Sub-Commission:

- NOTES progress of the SEACFMD Campaign 2015/16
- ENDORSES the provisional activities of SEACFMD Campaign 2016/17 noting reduced staffing and funding availability at the SRR SEA.
- ENCOURAGES investigation of additional and alternative funding sources to support important SEACFMD activities.
Annex 4: Agenda Paper: 18th SEACFMD National Coordinators Meeting Report

PURPOSE

To inform the Sub-Commission on the 18th Meeting of the SEACFMD Campaign’s Coordinators and Partners, held in Qingdao, PR China from August 26-28, 2014.

BACKGROUND

The 18th SEACFMD National Coordinators Meeting was held immediately after a meeting on animal movements in the Greater Mekong Sub-Region, which presented results of a recent animal movement study and discussed potential avenues of decreasing FMD risk associated with movements.

The meeting aimed to discuss recent developments in FMD and activities in the region, discuss and finalise the strategic framework for the SEACFMD Roadmap, agree on a regional implementation plan, discuss outcomes of the animal movement meeting, and consider regional approaches to various aspects of FMD control.

SUMMARY

The meeting was attended by SEACFMD National Coordinators or their representatives, donors, partners and observers. Opening comments from Dr Gardner Murray emphasised the importance of this meeting in assessing progress that had been made since the Sub-Commission Meeting in March and to work on tools for the future, including finalisation of the SEACFMD Roadmap Framework. Dr Wang Gongmin highlighted the strong performance of SEACFMD over the past few years and his hope for future strong cooperation in the future.

Presentations were given on SEACFMD campaign progress and OIE Recognition of National FMD Plans (including a recent workshop held in Bangkok to strengthen countries’ capacity to prepare National FMD Plans for OIE endorsement as well as applications for recognition of free status), the regional FMD situation and potential uses of disease data coupled with advanced diagnostic information and movement information to inform FMD control efforts.

SEACFMD member countries then made presentations on their FMD situation and activities over the previous year, overall demonstrating significant progress on recommendations from SEACFMD meetings. One major achievement has been Thailand’s submission of their National FMD Plan to OIE for endorsement, with Malaysia also commenting that they will try to do this very soon. A major point of discussion was the change in FMD trends in the region, with the decreased incidence of FMDV type A outbreaks and the increased incidence and spread of FMD type O/SEA/Mya-98 outbreaks. Countries were encouraged to submit more samples to the Regional Reference Laboratory in Thailand for characterisation, and increased efforts towards vaccine matching to inform control efforts were also encouraged.

Member countries had been asked in March to submit annexes to be used in the SEACFMD Roadmap outlining their FMD situation including PCP status and priorities. Presentations were then made on member countries’ PCP self-assessment derived from the submitted annexes and a PCP-FMD evaluation conducted under the FAO-ROK FMD in Cambodia, Lao and Myanmar. As several member countries had not yet submitted their annexes, a presentation was made outlining what information was included in submitted annexes and putting forward an implementation plan format that members may use to plan their activities to address these priorities. This template also links to regional priorities. Members were given time to fill out their activities, and presented these to the workshop.
It is expected that members will be able to use this template to keep track of their activities and targets and to link this to regional progress over the coming years. Members were also asked to finalise their annexes for use in the Roadmap. Discussions of PCP status resulted in a recommendation to form a small panel of representatives from SEACFMD member countries to review and provide advice on member country’s self-evaluations for PCP status. This follows on from a similar suggestion from a previous Sub-Commission meeting.

The second day of the meeting started with presentations from partners on their FMD-related activities and planned initiatives in the region. Participants commended the increased coordination, including with reference laboratories.

Presentations were then given on the progress and further development of a database mapping resources for FMD control and capacity building in the region. Members were encouraged to regularly submit relevant data to keep this updated in order to allow stakeholders to be able to identify future resource needs. A regional implementation plan was then presented, with major targets and key indicators identified for the region for each year up until 2020. Members responded positively to this in a facilitated workshop, coupled with country implementation plans, with some countries indicating that they would adapt these indicators for their countries. It was agreed that the regional implementation plan would give more of an overview, while the national implementation plans would give more details. Dr Abila discussed the importance of communicating information on outbreaks to the region in “real-time” to enhance regional control. Members agreed that this would be a good idea, but various countries expressed that this may be difficult for them. Participants also discussed formulation of a regional animal movement protocol to lead to a harmonised system, with this identified as a potential regional priority.

Dr Smith presented the Animal Movement Study and major recommendations for members, followed by a presentation by Dr Widders on the outcomes of the animal movement meeting held on August 25th and import protocols of key member countries.

A facilitated workshop in the afternoon asked members to outline their vaccination strategies and post-vaccination monitoring activities, with FMD-free countries asked to outline what their strategies would be in case of an FMD incursion. Members made presentations of their strategies, with the SRR-SEA thanking members as this will help with developing regional strategies. Members were asked to provide their livestock populations to at least the 2nd administrative divisions to the SRR-SEA to further help with regional strategy development.

Dr Abila presented regional progress on recommendations and asked for members input into updating this and progressing other priorities. Discussion was also made on important vaccine strains to be considered for the region, as this will help inform the OIE’s next international call for tender for the regional vaccine bank. The strains endorsed by the meeting were: O1 Manisa, O Cathay, O PanAsia-2, A 22 Iraq, A Malaysia 97, A Iran 05 and Asia 1 Shamir, in addition to the possible use of non-determined or pre-determined optional strains. It was also suggested that potential producers should be asked to recommend additional virus strains that may be compatible with virus strains in the region.

Dr Murray thanked SRR-SEA and member countries on the help in progressing a number of the recommendations. He also discussed the impending end to the STANDZ Initiative (in June 2016), and informed members that there may be a possibility of a no-cost extension for the SEACFMD component until June 2017. He brought up potential options for future sustainability. Members made comments about the great progress that has been made in their countries with help from the SEACFMD Campaign and their hope for this to be sustained. Dr Murray emphasized that the regional coordination activities will continue and that there are future potential investments from other donors. Dr Sam Hamilton,
Australia’s representative from the Department of Agriculture and Water Resources (DAWR) articulated DA’s support for SEACFMD and said that they have been working hard to get a continuation of funding, but that efforts have been frustrated thus far due to the final decision of funding being made by the Department of Foreign Affairs. He indicated that the DAWR will continue to work hard to try to support SEACFMD.

Key recommendations from the meeting were discussed, and included endorsing the recommendations from the Animal Movement Meeting, finalisation of timing for key documents including the SEACFMD Roadmap and Annexes and Regional and Country implementation plan, and exploring the possibility of establishing a small group of members for the region to review and advise on country self-evaluations for PCP status.

In the afternoon a field trip was made to the China Animal Health and Epidemiology Centre, where participants were able to observe facilities and hear presentations on research and activities at the centre.

Recommendations of the 18th SEACFMD National Coordinators Meeting:
1. NOTES the significant progress in implementing all of the recommendations of the 21st Sub Commission meeting in March 2015, Manila

2. AGREES that the SRR-SEA will circulate on request training materials on Application to OIE for Endorsement of National FMD Control Plans

3. NOTES that OIE has established an FMD coordination office in Kazakhstan for Central Asian countries adapting approaches similar to SEACFMD; and AGREES that Kazakhstan’s Delegate to the OIE will be invited to the 2016 Sub-Commission Meeting in Thailand.

4. AGREES to improve sample submission including quantity, quality and timeliness to support analyses of the nature of circulating strains in the SEACFMD Campaign countries.

5. NOTES that free countries and zones have remained free of FMD; that there have been no FMD outbreaks in N Laos since April 2013; that OIE has recognized Philippines as an FMD Free country without vaccination; the FMD control program in China has been endorsed by OIE; Thailand has submitted the National FMD Control Programme to OIE for assessment and endorsement; and that the Cambodian and Lao Ministers of Agriculture have endorsed their countries’ respective National FMD Plans.

6. AGREES to actively monitor and report on serotype O, including the PanAsia Strain in Lao PDR, because of the apparent increased incidence relative to serotype A.

7. AGREES that the SRR-SEA examine the utility of establishing a small group of SEACFMD Members to review and provide advice on country self-evaluations for PCP Status.

8. AGREES to maintain efforts to seek additional resources for the SEACFMD and support continuing improvements to program activities including prioritization of work and introduction as appropriate of efficiency/effectiveness measures.

9. ENDORSES the recommendations of the SEACFMD Animal Movement Meeting.

10. AGREES to the following timing of key documents:
• Submission and validation of the Annex to the SEACFMD 2020 Roadmap by 23rd September
• Printing of the SEACFMD 2020 Roadmap in October
• Finalisation of Regional and National Implementation Plans and tabling of these documents at the 22nd Meeting of the OIE Sub-Commission for FMD Control in South-East Asia and China in March 2016
• Submission of Geographical Information Systems shapefiles to the OIE SRR-SEA demonstrating FMD control and eradication objectives until 2020 by September 23 2015.
• Drafting of the Roadmap Manual for presentation at the 22nd Sub-Commission Meeting in March 2016

11. ENDORSES the list of strains proposed for the next round of OIE international call for tender for high potency purified oil adjuvanted vaccines for the regional vaccine bank, namely: O1 Manisa - O Cathay – O-3039 – O Panasia 2 - A22 Iraq - A Malaysia 97 - A Iran 05 - Asia 1 Shamir (not by order of importance), in addition to possible use of non-determined or pre-determined optional strains. In addition, indicate in the tender to request companies to recommend additional strains that would be most compatible to combat the prevalent strains circulating in SEACFMD countries such as O Myanmar 98, O Panasia, O Cathay and the new A SE-Asia ( A Lopburi-Thai and A Gen2-China).

12. NOTES the contributions of partners to the success of the meeting.

13. THANKS the Government of the People’s Republic of China and its Veterinary Bureau and China Animal Health and Epidemiology Centre for hosting the 18th SEACFMD National Coordinators Meeting.


RECOMMENDATIONS

The Sub-Commission:

• ENDORSES the recommendations from the 2015 National Coordinators’ Meeting.
• NOTES the work of the SEACFMD Campaign and its partners, and encourages member countries and partners to work together to improve FMD control in the region.

PURPOSE

To inform the Sub-Commission on the Joint Meeting of the SEACFMD EpiNet and LabNet, held in Nay Pyi Taw, Myanmar from September 22-24, 2015.

BACKGROUND

The Joint SEACFMD EpiNet-LabNet Meeting aimed to update Laboratory and Epidemiology Focal Points on key FMD-related developments in the region, discuss the OIE Guidelines for Surveillance and the soon-to-be released OIE/FAO Vaccination and Post-Vaccination Monitoring Guidelines and help members in improving related activities for the region.

SUMMARY

The meeting was attended by SEACFMD EpiNet and LabNet focal points, partners and observers. Opening comments from Dr Ronello Abila emphasised the importance of the topics to be discussed, including Surveillance and Post-Vaccination Monitoring and the need for EpiNet and LabNet focal points to give inputs and advice which will be taken into account when finalising the SEACFMD Roadmap for the coming phase. Dr Khin Zaw of Myanmar highlighted the importance of FMD to Myanmar and support given by OIE to Myanmar’s FMD eradication efforts.

Presentations were given on the progress of the SEACFMD Campaign, the Regional FMD situation and trends and relevant activities from the Regional Reference Laboratories in Pakchong and Lanzhou. Presentations then followed from countries and partners on their relevant laboratory and epidemiology activities. These presentations provided background for discussions and workshops over the following days. Particular highlights of discussion included comments on the need for vigilance in early detection and response, including in free countries, and not just sole reliance on serosurveillance for detection of disease, the need for deeper phylogenetic analysis (including potentially full genome sequencing) to understand the epidemiology of FMD to enhance control, proper determination of “Cut-offs” for protective antibody titres and investigation of outbreaks in vaccinated areas and understanding why these occurred. The need to enhance sequencing data and its link to epidemiology data and the relevant resolution 33 from the May 2015 at the OIE General Assembly was also mentioned (“The OIE establish a platform for the collection and management of partial and complete genomic sequences (including genotype assignment) with the aim to integrate the reporting of genomic sequence data into the OIE World Animal Health Information System (WAHIS), with the collective support of OIE Reference Centres, and involving all OIE Member Countries.”).

On the second day, Dr Abila presented in detail the role of the Epidemiology and Laboratory Networks, including in understanding in detail the host-pathogen-environment relationship in the region and risks associated with each component which can be managed, epidemiology and laboratory tools available to help with FMD control, and phylogeographical tools that are being used to integrate sequencing and epidemiology data. Dr Tim Carpenter of Massey University presented examples of techniques and models used to inform FMD control efforts, including the use of risk-related data, network analyses and economic optimisation approaches to enhance FMD control.

A workshop was then conducted with: a) endemic countries listing the main FMD risks within their countries and in terms of introduction to their countries, measures in place to mitigate these risks, and measures which may be used to further mitigate these risks and; b) FMD-free countries listing main FMD and exposure risks for their countries and mitigation measures (both current and which
may be added). Countries then presented their individual situations in terms of risk to the workshop. The aim of this workshop was for countries to consider where the main risk areas in terms of FMD were for their countries in terms and consider possible weaknesses to be addressed in their surveillance systems for these. Movements of animals were discussed as an important risk both for FMD-free and FMD-infected countries, as well as several different factors for different countries.

Dr Joseph Domenech then presented the Global Vaccination and Post-Vaccination Monitoring guidelines (soon to be released), sections of the OIE Terrestrial Code Chapter relevant to surveillance, OIE Surveillance Guidelines and sections of the FAO/OIE Global FMD Strategy relevant to surveillance. Participants were given an overview of the importance of these activities to Global FMD control and eradication.

The meeting then split into two groups, with the EpiNet group focussing on surveillance and the LabNet group focussing on vaccination and the role of post-vaccination monitoring.

The EpiNet group went through a process of using decision-tree analysis to help identify the maximum risks for their countries for FMD. After background presentations, including on gaps identified in FMD surveillance in the region in the 2014 meeting, participants broke into groups to practice using the process of decision-tree analysis and identify actions to be taken to minimise risk based on these. The aim of the workshop was for participants to be introduced to using the process and to identify general actions they can take within countries to manage FMD risks, with the hope that they may use this approach further in their countries. Potential regional actions were identified from actions and needs identified by multiple countries.

Participants in the LabNet workshop were given introductory presentations, including on gaps identified and recommendations addressed in the last LabNet Meeting in 2014. The Global Vaccination and PVM Guidelines were also described in further detail and post-vaccination monitoring activities in Lao PDR and Myanmar under OIE-funded projects were also presented. For the workshop, countries were asked to identify major improvements needed in their existing capacities in order to successfully implement post-vaccination monitoring, major deterrents to its implementation, and particular needs that the regional network can support. Outputs from these workshops, including potential regional initiatives, were then presented on the third day.

On the third day, outputs from the two workshops were presented. Regional actions relevant to the EpiNet group included capacity building in risk analysis, improvement of legislation (with the possibility of requesting PVS legislation missions), developing regional guidelines for identifying high-risk areas and hotspots (with support from the Laboratory Network), sharing of Outbreak Investigation SOPs identified by some countries and a regional Training of Trainers in Outbreak Investigation (as the last training was conducted in 2013). Potential regional actions relevant to LabNet included provision of new and improved (homologous) reagents for harmonised LPB ELISA testing, developing SOPs for testing and determination of cut-off for protective titres, capacity building for PVM and vaccine matching and facilitating technical support from reference laboratories to countries that need assistance.

Recommendations were then discussed, with key recommendations including enhancing in-country coordination between laboratory and epidemiology staff, regularly reviewing and updating control and prevention strategies based on routine risk assessments, further enhancing application of OIE Guidelines (with support from the OIE including through capacity building), encouraging more sample submission to OIE Reference Laboratories at least for VP1 sequencing, and strongly supporting OIE General Assembly Resolution 33.
In the afternoon a field trip was made to the Myanmar’s new FMD laboratory in Nay Pyi Taw, where NSP and LPB ELISA procedures for post-vaccination monitoring are being conducted.

Recommendations of the Joint SEACFMD EpiNet and LabNet Meeting:

1. NOTES the progress of the members’ implementation of activities and recommendations from previous meetings of the SEACFMD Epidemiology Network (EpiNet) and Laboratory Network (LabNet).

2. NOTES the critical role of EpiNet and LabNet in the implementation of SEACFMD Roadmap 2016-2020 to support the technical component of the roadmap.

3. NOTES that in addition to technical components (effective surveillance, vaccination, and animal movement management), the two other components on advocacy (communication and public awareness and governance) are equally important for the success of the SEACFMD.

4. AGREES that country epidemiology and laboratory staff will enhance their coordination through regular meetings to improve information sharing, analyses of FMD status and control activities.

5. AGREES to continuously improve communication channels between the FMD laboratories and the respective relevant authorities such that laboratory findings in the country, including those on PVM, may effectively influence further planning of FMD initiatives in the SEACFMD Member Countries.

6. AGREES to regularly review and update country FMD control and prevention strategies, based on the results of their routine risk assessments in order to ensure effectiveness and efficiency in the allocation of resources.

7. AGREES to enhance public-private partnership to support FMD control at the country and regional level.

8. AGREES that members will further enhance the application of OIE Standards and guidelines, such as the Guidelines on Terrestrial Animal Surveillance and the Post-Vaccination Monitoring, and the OIE will provide support towards the implementation of these Guidelines, including through capacity building activities.

9. NOTES that there are new scientific tools that can be used to further analyze the epidemiology of FMD outbreaks in the region and to improve FMD control strategies.

10. AGREES that EpiNet will develop a basic surveillance design and Outbreak investigation protocol based on OIE standards and guidelines.

11. AGREES to address the following areas of concern to further enhance serological assessment of FMD vaccination initiatives in the countries and to optimize its combined benefits for the SEACFMD goals in the region.

12. AGREES to consider organising a side meeting of FMD Laboratory Experts at the 22nd SubCommission, to discuss strategies and develop a regional action plan to address the gaps as discussed in the 2014 and 2015 SEACFMD Laboratory Network Meeting.

13. COMMENDS members on the increased number of samples submitted and diagnosed by country laboratories and OIE Reference Laboratories, ENCOURAGE further submission of samples to OIE Reference Laboratories.
14. **ENCOURAGE** for more samples submitted to OIE Reference Laboratories be sequenced at least for VP1 and if possible for full genome sequencing, **EXPLORE** support from partners to assist OIE Reference Laboratories to implement this.

15. **REQUESTS** that epidemiology network members update diagnostic results in their report to OIE through the WAHIS or WAHIS Regional Core, once the results are available.

16. Strongly **SUPPORT** the OIE General Assembly Resolution 33 in May 2015 that: “The OIE establish a platform for the collection and management of partial and complete genomic sequences (including genotype assignment) with the aim to integrate the reporting of genomic sequence data into the OIE World Animal Health Information System (WAHIS), with the collective support of OIE Reference Centres, and involving all OIE Member Countries.”

17. **RECOGNISES** the importance of epidemiological information in laboratory analysis, and **REQUESTS** the epidemiology units to require the complete submission of epidemiological information to accompany samples.

18. **EXPLORE** the development of a regional numbering/reference system for outbreaks on a regional basis, and the OIE SRR-SEA will coordinate with OIE Reference Laboratories in Pakchong, Lanzhou and Pirbright in the construction of a regional database.

19. **EXPLORES** the development of a nomenclature for new FMD strains in coordination with the Global FMD Reference Laboratory Network.

**Acknowledgments**

- **THANK** Dr Somjai for her valuable contributions to success of the SEACFMD LabNet and wish her all the best in her future endeavors.
- **THANK** the member countries, international partners and the resource speakers for significant contributions in making this Meeting successful.
- **NOTE** the work of the other partners (such as OIE RR-AP JTF/FMD project, FAO, ROK-QIA/KOICA, AAHL-Australia, NIAH-Japan, New Zealand) on FMD control in the region.
- **THANK** the Australian government for its support in funding the Joint SEACFMD EpiNet and LabNet Meeting.
- **THANK** the Government of Myanmar through Livestock Breeding and Veterinary Department for its excellent organization of the Meeting.

**RECOMMENDATIONS**

The Sub-Commission:

- **ENDORSE** the recommendations of the LabNet and EpiNet meetings from 2015.
- **NOTES** the work of SEACFMD Laboratories and Epidemiology Services in the Region and encourages members to continue to work together and share information regularly to ensure optimal FMD prevention and control
- **ENCOURAGES** members to continue applying OIE Standards and Guidelines to their work
- **ENCOURAGES** members, including reference centres, to contribute towards the sharing of genomic sequences in order to enhance regional and global FMD control.
Annex 6: Agenda Paper: FMD Situation in South-East Asia

PURPOSE

To advise on the status of FMD in South-East Asia (SEA) and China in 2015/2016.

BACKGROUND

Countries within the SEACFMD Campaign are in what has been designated as “Virus Pool 1.” A short table describing the viruses in this pool is below:

<table>
<thead>
<tr>
<th>Serotype</th>
<th>Topotype/Strain</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>South-East Asia/Myanmar 98</td>
<td>Myanmar 98 and Cambodia 94; Myanmar 98 endemic in SEACFMD; reported in Japan in 2010, S Korea in 2010/2014/2016</td>
</tr>
<tr>
<td></td>
<td>ME-SA/PanAsia Cathay</td>
<td>Detected SE Asia in late 1990s; 1st detected in Hong Kong in early 1990s</td>
</tr>
<tr>
<td>A</td>
<td>Asia/South-East Asia 97</td>
<td>Indigenous in SEACFMD; Reported in Korea in 2010</td>
</tr>
<tr>
<td>Asia 1</td>
<td>Asian</td>
<td>Last reported in Vietnam 2007, China 2009</td>
</tr>
</tbody>
</table>

- FMD outbreaks and status are reportedly regularly by Information Focal Points in countries to the ASEAN Regional Animal Health Information System (ARAHIS) and through the World Animal Health Information System (WAHIS) for immediate notifications and 6-monthly disease status reports. ARAHIS serves as a regional core for ARAHIS.

- The OIE SRR-SEA bases its analysis of the regional status on the reports uploaded by the Members in the ARAHIS as well as WRLFMD reports, WAHIS and country reports at meetings. However, ARAHIS has had functionality problems since 2015, which leads to some data being incomplete.

- Frequently, reports from some members are delayed and/or are not updated to reflect updates in laboratory results such as serotyping, including results from the Regional Reference Laboratories. This leads to potential flaws to analysis. Members are urged to update these results on ARAHIS and/or make them publicly available.

SUMMARY

- The total number of outbreaks reported in 2014 is 344 – this is a 8% increase as compared to the 318 outbreaks reported in 2014, 43% as compared to 240 outbreaks reported in 2013 and a 142% increase as compared to 2012 in which there were 142 outbreaks but a marked decrease of 77% from the 1488 outbreaks reported to ARAHIS and directly to SEACFMD in 2011. Most countries in ARAHIS have submitted reports this year until December.

- 168 outbreaks (49%) out of the total were characterized as being caused by Serotype O virus, while 31 (9%) were serotyped as being caused by Serotype A. The rest are reported as untyped or with results pending. This is a return to the trend seen for a number of years previously to 2013, in which O was the predominant serotype in the region. In 2014, serotype O was identified in 31% of outbreaks and serotype A in 25% of outbreaks, and in 2013, serotype O was identified in 28% of outbreaks and serotype A in 33%.
• 14 outbreaks were reported in January 2016, with serotype O identified in two of the outbreaks and serotype A identified in 2 other outbreaks.

• 11 outbreaks were reported in February 2016, with serotype A identified in two of these outbreaks.

• O/SEA/Mya-98 was typed in outbreaks in Myanmar, Thailand and Vietnam in 2015.

• O/ME-SA/PanAsia was typed in one outbreak in Cambodia in 2015.

• O/ME-SA/Ind2001d was typed in one outbreak in Lao PDR in 2015.

• A/Asia/Sea-97 was typed in outbreaks in Cambodia, China, Lao, Myanmar, Thailand, and Vietnam in 2015.

• The FMD-free areas of East Malaysia (Sarawak and Sabah), Brunei, Indonesia, and Singapore remained FMD-free.

### Number Of Outbreaks reported in SEACFMD Campaign Area 2015*

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>TOTAL OUTBREAKS</th>
<th>SEROTYPE O</th>
<th>SEROTYPE A</th>
<th>UNTYPED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAMBODIA</td>
<td>43</td>
<td>1</td>
<td>1</td>
<td>41</td>
</tr>
<tr>
<td>CHINA (PR)</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>LAO PDR</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>MALAYSIA</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MYANMAR</td>
<td>27</td>
<td>17</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>THAILAND</td>
<td>178</td>
<td>107</td>
<td>12</td>
<td>59</td>
</tr>
<tr>
<td>VIETNAM</td>
<td>75</td>
<td>30</td>
<td>12</td>
<td>33</td>
</tr>
</tbody>
</table>

### Number Of Outbreaks reported in SEACFMD Campaign Area 2016**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>TOTAL OUTBREAKS</th>
<th>SEROTYPE O</th>
<th>SEROTYPE A</th>
<th>UNTYPED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAMBODIA</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>VIETNAM</td>
<td>18</td>
<td>2</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

* Brunei, Indonesia, Philippines, and Singapore not Included in Tables due to FMD-Free Status

** No outbreaks reported thus far in 2016 for PR China, Lao, Malaysia, Myanmar and Thailand
Map of Outbreaks Reported in SEACFMD Campaign Area 2015
Graph of Outbreaks Reported Monthly in SEACFMD Campaign Area 2012-2016
Serotypes seen – 2013 vs 2014 vs 2015

**2013**

- A: 94 (39%)
- O: 79 (33%)
- Untyped: 67 (28%)

**2014**

- A: 140 (44%)
- O: 78 (25%)
- Untyped: 100 (31%)
85 22nd Meeting of the OIE Sub-Commission for FMD Control in South-East Asia and China

COMMENTS AND ISSUES

- Pre-2013, pronounced peaks in total outbreaks were generally seen towards the beginning and the end of the year. However, in 2013 and 2014, the peaks became progressively less pronounced. In 2015, the peaks are more pronounced than for previously years, in large part due to a large number of outbreaks towards the end of the year. The reason(s) for these changes in patterns may warrant further investigation and analysis.

- No serotype Asia 1 outbreaks have been reported in the region since 2009. This has been an issue of particular concern in light of the increased frequency of Asia 1 outbreaks elsewhere in the world, including in the South Asian region.

- The increase in outbreaks can be attributed at least in part to waning immunity of susceptible animals in the region after the epizootic seen in 2010/2011, particular to the O/SEA/Mya-98 and O/ME-SA/PanAsia topotypes. There have also been possible indications of a shift in Myanmar-98, with a new clade identified by China in 2014. The increased number and proportion of outbreaks due to serotype O is a cause for concern, and further sequencing of strains and analysis to ascertain whether this is due to changes in the virus, and whether this would warrant increased vaccine matching, may need to be discussed.

- The outbreak due to O/ME-SA/Ind-2001 strain is of particular concern, as this strain has not previously been isolated in South-East Asia. Investigations conducted by Lao PDR and OIE SRR-SEA following this have indicated that there are no further outbreaks in the area, and this strain has not been isolated since. However, this is still a cause for concern, and will be discussed further during the meeting.

- Outbreaks due to A/Asia/Sea-97 have reduced markedly as compared to the figure the previous year. However, their distribution has increased substantially, with it now being isolated in six countries, as to four in the previous year, with Cambodia and Myanmar being added to the previous year’s list.

- Several other factors may be in play in the increase in spread and distribution of serotype A outbreaks, such as changes in movement patterns, antigenic shift and efficacy of vaccination, and it is important that these are studied further.
Keeping these increases in mind, it is important to continually review risks of incursion and spread due to FMD in order to be able to adjust prevention and control activities necessary.

Finding, establishing and targeting hotspots, areas where the disease is endemic, and critical control points, such as areas along movement pathways where there is substantial aggregation of animals, form crucial parts of SEACFMD’s strategy towards eliminating FMD in the region. To target these areas effectively, more complete and detailed information is needed from the field, including updated animal movement data. Tools towards achieving this will be discussed in more detail elsewhere in the meeting, including in the session on risk.

The absolute number and percentage of results serotyped by countries’ own laboratories as well as the Regional Reference Laboratories and World Reference Laboratory has substantially increased in comparison to 2011 and 2012 (57.8% in 2015, 55.3% in 2014, 60.8% in 2013 cf. 36.6% in 2012 and 4.0% in 2011). This is likely due in part due to OIE SEACFMD and FAO ROK PCP-FMD project assistance in submitting samples. The increase is commendable, and more frequent and consistent sample submission is to be encouraged in order to create a more complete picture.

It should be noted that there are a large number of entries in ARAHIS which are listed as serotype “pending,” despite unofficial information indicating that RRLs have given results for some of these. Countries should strongly encourage their focal points to update these results.

The timeliness and accuracy of reporting by all Members is essential towards delivery of a timely, accurate and meaningful analysis for the region. Countries are also strongly encouraged to update information submitted to ARAHIS and WAHIS in cases where new information, such as serotyping results, becomes available.

RECOMMENDATIONS

The Sub-Commission:

- NOTES the status report and PROVIDES comments.
- ENCOURAGES timely and complete reporting to ARAHIS and WAHIS.
- ENCOURAGES more sample submission for FMDV characterisation, including sequencing to Reference Laboratories.
Annex 7: Agenda Paper: STANDZ-funded FMD Projects in Laos and Myanmar

PURPOSE

To advise the 22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China on the STANDZ-funded FMD control projects in northern Lao PDR and central Myanmar.

BACKGROUND

Two major FMD control projects have been undertaken in Lao PDR and Myanmar, supported by funding from the Australian Government STANDZ initiative and with purchase of initial stocks of vaccine through the EU-funded HPED programme. The projects have been coordinated by OIE SRR-SEA, and follow successful pilot scale projects (Small Grant Facilities; SGFs) in both countries that demonstrated the feasibility of implementing vaccination campaigns in areas that were considered high risk for FMD incursion and spread. Two SGF projects were conducted in northern Laos PDR, and comprised two batches of 200,000 and 600,000 doses of bivalent (serotype O and A) FMD vaccine delivered in 2012 and 2013 respectively. Similarly, 2 SGF projects were conducted in central Myanmar during 2012 and 2013, comprising 200,000 doses of bivalent (serotype O and Asia1) and 500,000 doses of monovalent (serotype O) vaccine respectively.

The rationale for the vaccination projects in each country differed slightly, based on their location within the animal movement pathway in the region. Myanmar was seen as a key potential source of livestock being traded across the region, with most movements destined for high value markets in China and Vietnam. Lao PDR, particularly the northern part of the country, was recognised as a significant transit route for livestock on that same movement pathway.

In order to reduce disease prevalence in a key supply market and major transit destination, and thus reduce the risk of disease transmission along the animal movement pathway, additional large-scale vaccination projects were developed and implemented in northern Lao PDR and in central Myanmar. Post vaccination monitoring (PVM) will be undertaken during 2016 and possibly beyond, to assess the efficacy of the vaccination campaigns and the longevity of protection that has been induced.

SUMMARY

Following the successful completion of the two SGF projects in 2012 and 2013, the Northern Lao PDR FMD Project was initiated in July 2014, with the first vaccinations commencing in September that year. The project has also involved significant communication and awareness activities, to promote awareness of risks and disease reporting, and to encourage participation in control initiatives. During the life of the project, a total of 860,000 doses of vaccine will have been deployed across the target areas in 10 Provinces in northern Lao PDR. In order to monitor the implementation of the vaccination campaign and assess its likely efficacy in providing protection against FMD in the target areas, OIE SRR-SEA developed a database to record vaccination and PVM data.

By the conclusion of the vaccination campaign, it is expected that the majority of more than 244,000 cattle and buffalo in key villages will have received at least 3 injections of a high potency, bivalent (serotypes O and A) FMD vaccine. Livestock in 1081 villages, in 34 Districts, belonging to 120,015 owners, have been vaccinated, with 93% of these animals located in villages in Districts that were classified as high risk or hot spots with respect to FMD risk.

Following the successful completion of the two SGF campaigns in the Sagaing region of central Myanmar, the expanded vaccination campaign was resourced as two separate projects and covered
Townships in both Sagaing and Mandalay regions. The first two rounds of vaccinations were conducted in February and March of 2015. The third round of vaccinations was conducted in February 2016. The database used in the northern Lao PDR projects was adapted for use in the Myanmar campaign.

Vaccinations were conducted in the Mandalay (10 Townships) and Sagaing (8 Townships) regions of central Myanmar, with villages selected within those Townships on the basis of their classification as high risk or hot spot areas. The initial deployment of 500,000 doses of high potency, monovalent (serotype O) FMD vaccine was funded by the EU-HPED Project. Field operations costs for each round of vaccinations, and the second batch of 300,000 doses of vaccine for the February 2016 round, was supported by the STANDZ Initiative. In all, it is expected that approximately 210,000 animals in up to 1,100 villages, belonging to more than 54,000 owners, will have received 3 injections of FMD vaccine during the course of the vaccination campaign in central Myanmar.

Post vaccination monitoring has been conducted during the vaccination campaigns in both Lao PDR and Myanmar, with further sampling proposed in the first half of 2016. Subsequent monitoring will examine the longevity of protection in both regions, to guide future vaccination campaigns. Two separate analyses will be undertaken. The first, which evaluates the response to vaccination in cohorts of unvaccinated and uninfected cattle, is already underway. The second, which assesses the effectiveness of the vaccination campaign in achieving the required level of protection in the livestock population in the target areas, is scheduled to commence in April or May 2016. The PVM studies are reported in more detail elsewhere at this meeting (Session 4). In brief, it has been demonstrated that, after two vaccinations in northern Lao PDR, a protective immune response was produced in 88% and 84% of naïve animals for serotypes O and A respectively. Seven months after the first vaccination, 73% and 53% respectively of these animals remained protected. In central Myanmar, 84% of animals developed a protective immune response after two vaccinations with the serotype O vaccine. The persistence of this protection has not yet been measured.

As indicated above, the second PVM study, to be completed in 2016, will evaluate the effectiveness of the vaccination campaigns in both northern Lao PDR and central Myanmar. In addition, the initial cohort of naïve animals that has been used to assess the response to vaccination will be followed to measure the longevity of protection after the 3rd and subsequent vaccinations.

Based on official reports on ARAHIS, a total of 50 outbreaks of FMD were recorded in northern Lao PDR from 2011. Associated with the roll-out of the vaccination campaigns since 2012, no outbreaks have been reported in northern Lao PDR since May 2013.

Extensive outbreaks of FMD were reported on ARAHIS in Myanmar during 2015, including in central Myanmar. Based on these reports, it appears that few outbreaks occurred in villages that were vaccinated as part of the 2015 vaccination program.

RECOMMENDATIONS

The Sub-Commission:

- NOTES the achievements of, and future activities proposed for, the STANDZ-funded FMD control projects in Lao PDR and Myanmar.
Annex 8: Agenda Paper: STANDZ Sustainability Plan

PURPOSE

To advise the 22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China on the Sustainability Plan for the no-cost extension of the STANDZ Initiative from July 2016 to December 2017.

BACKGROUND

The end of STANDZ activities by mid-June 2016 will severely compromise the effectiveness of major activities particularly the pilot projects in selected countries. To ensure smooth transition and to mitigate the impact of declining resources, OIE SRR-SEA has developed the STANDZ Sustainability Plan to provide a detailed guide to SRR-SEA’s implementation approach and prioritization of activities in the remaining months of STANDZ. Key to this plan is the OIE’s request for a one-and-a-half year (July 2016 to December 2017) no-cost extension of the DFAT-OIE grant agreement which was approved in February 2016. This no-cost extension aims to make an effective programme even better by securing the full effectiveness of STANDZ in-country pilot FMD/Rabies vaccination projects and by allowing adequate time for both a gradual phase out of STANDZ assistance and for SRR-SEA’s systematic planning and engagement with its various partners to sustain key STANDZ outcomes and activities on or before the proposed new programme end date of December 2017.

SUMMARY

The STANDZ Sustainability Plan describes proposed activities and approaches that were prioritised based on OIE’s assessment of the activities’ likely contribution to secure and sustain outcomes achieved by the programme to date. These include:

- **SEACFMD Campaign**: SRR-SEA will prioritise STANDZ support to the flagship South-East Asia and China FMD (SEACFMD) programme until December 2017, consistent with OIE and Australian priorities in the region and to take advantage of the increasing regional momentum on FMD control. SRR-SEA will implement a final round of FMD vaccinations to complete an effective vaccination cycle in STANDZ-funded projects in Northern Lao PDR and Central Myanmar. SRR-SEA will support the implementation of the Phase 5 of the SEACFMD 2020 Roadmap by leveraging and co-funding activities with member countries and with other potential and existing donors such as Australia, P.R. China, Korea, and New Zealand. SRR-SEA technical assistance to countries on FMD will continue but the number of regional meetings funded by STANDZ will decrease and will focus support only to the SEACFMD Sub-Commission and the FMD National Coordinators Meeting.

- **One Health/Rabies**: SRR-SEA will gradually phase out and end this component by December 2016. Support during this remaining period will include: on-going Rabies vaccination activities in Cambodia and Myanmar; an extra dog vaccination round for the Philippines; oversight for project completion activities; technical assistance to countries’ development and regional alignment of National Rabies Plans; and inputs to the ASEAN Rabies Elimination Strategy (ARES). During the phase out period, the OIE will continue to explore new donors and funding mechanisms (including with beneficiary countries) to ensure a longer term sustainability of accomplishments.

- **Strengthening Initiatives for Veterinary Services (STRIVES)**: SRR-SEA will gradually phase out and end this component by December 2016. Support during this remaining period will include: a sub-regional workshop on Veterinary Statutory Bodies (VSB), technical assistance to countries on establishing a well-functioning VSB that meets the demands of the ASEAN economic integration;
monitoring and technical assistance to partners’ efforts in university twinning, in adopting OIE Day 1 Competencies in the veterinary curricula, and in addressing key gaps in their veterinary services (e.g. animal disease surveillance, laboratory biosafety and biosecurity, public private partnerships and veterinary services Management).

- SRR-SEA Programme Management: SRR-SEA will end this component by December 2017 in conjunction with the no-cost extension period of STANDZ. This will ensure accountability to DFAT and programme stakeholders through the maintenance of SRR-SEA capacity to effectively and efficiently manage the remaining STANDZ activities. The gradual reduction of STANDZ-funded SRR-SEA personnel until December 2017 allows ample time for SRR-SEA to implement advocacy strategies with key partners to sustain STANDZ activities. This component will also manage an expanded technical secondment programme with Member Countries as a risk management strategy to fill technical gaps as STANDZ components and SRR-SEA personnel are gradually phased out. This expanded secondment programme will continue beyond STANDZ as a strategy to bolster SRR-SEA’s technical standing in the region. Under this component, SRR-SEA will prioritise: the continuation of gender equity mainstreaming work within SRR-SEA operations, across the STANDZ technical components, and in future project proposals; progress reporting obligations to DFAT; support to programme completion and a limited scope independent end-of-programme evaluation of STANDZ; and the development of concept notes for a future phase of STANDZ, potentially supported by other partners.

RECOMMENDATIONS

The Sub-Commission:

- NOTES the STANDZ Sustainability Plan
- ADVOCATE for members and donors to continue to provide support to SEACFMD activities to ensure its implementation until 2020 and beyond.
Annex 9: Agenda Paper: New Zealand-funded Project to Support SEACFMD

PURPOSE

To summarise the background and current status of this inaugural SEACFMD Project funded by the New Zealand (NZ) Ministry of Foreign Affairs and Trade (MFAT) under their Activity ‘Strengthening a risk-based control strategy for foot-and-mouth disease in South East Asia’.

BACKGROUND

As stated in the Activity Design Document “The overall goal of the project is to control foot and mouth disease (FMD) in South East Asia. The long term outcome that contributes to this goal is to increase the number of zones and countries that are FMD-free. This will occur as the result of lowering the incidence of FMD in the region which in turn will increase the contribution of livestock production to household income in South East Asia... The Activity will provide training and technical assistance to multiple groups in Myanmar and Laos initially, and support FMD control efforts there. It may also work directly with Cambodia and Vietnam later in the Activity.” This was agreed in September 2015 when both the OIE and MFAT NZ signed a Grant Funding Arrangement in September 2015 to the value of approximately NZ$15 million where OIE would act as the implementing partner for the NZ Government.

SUMMARY

Lao PDR and Myanmar have different levels of infrastructure development, each with their own limitations and strengths, especially with respect to veterinary services. The Project will deal with each country, and with individual districts within a country, as a unique unit, to meet their different needs. Results will be shared regionally in SE Asia through meetings and workshops. The fact that the Project is able to interact with multiple groups in and among countries, will give all stakeholders in the region the benefit of gaining from the lessons learned in each country.

To achieve the goal of controlling FMD and improving the socioeconomic condition of the people in Southeast Asia, there is a need to increase the number of zones and countries that are FMD-free. This can be accomplished by helping to improve the existing surveillance, vaccination and control strategies, and monitoring their impact. The long-term outcome that will best indicate this improvement is improved animal productivity and increased contribution to household income from livestock production due to decreased FMD incidence.

The NZ Funded Project aims to compliment previous and other ongoing FMD vaccination campaigns. As a result of increased vaccination coverage, vaccine quality, and specificity to serotype, the Project will expect to see increased animal (cattle) population immunity to and reduced incidence of FMD. Coupled with education/awareness of farmers and traders to suspend or limit movement and infected animal contact when FMD is suspected, this will reduce the impact of an outbreak and the spread of disease. Other key outcomes of this Project will be the improved technical capacities of the district and national veterinary services to conduct surveillance; help farmers and traders recognize FMD and apply non-vaccination control measures; vaccinate, monitor and assess the impact of control and animal movement restrictions; and increased emergency preparedness for FMD.

These long-term outcomes will occur only if proposed control strategies are successful. The target areas in Myanmar and Lao PDR will test the risk factors for disease spread as well as the efficacy of field vaccination, which is susceptible to strain differences, cold-chain failures, low immunization rates and vaccination failures. In parallel with a successful vaccination strategy, the establishment of
control zones to limit disease spread is important. Control zones will minimize the transmission of disease out of an area and could act as a buffer between areas. The establishment and subsequent maintenance of these zones will reinforce the view that FMD can be controlled and potentially eradicated in the region.

The expected outputs of the project are:

Output 1: FMD risk assessments conducted in target areas.
Output 2: Control strategies developed and implemented for target areas
Output 3: Training and technical assistance provided.
Output 4: Coordination workshops conducted and resource materials provided.
Output 5: FMD monitoring, evaluation and modelling tools established

The NZ Funded FMD Control Project in Lao PDR

The Project has started initially in Lao PDR, and will become officially recognized with the signing of a Funding Agreement currently scheduled for March 31st, 2016. This will be immediately followed up with a Project inception meeting. Already the Project has contracted a Project Coordinator based in Thailand, and Project Officer and an Administration Assistant based in Vientiane. Lao PDR has shown a high level of engagement in SEACFMD work and OIE PVS activities, and has finalised a long-term plan for National FMD Control. A long term aspiration of the SEACFMD campaign is the creation of an FMD-free zone with vaccination in the Upper Mekong area, of which Lao PDR covers the central area.

The NZ Funded Lao PDR FMD Control Project has been developed to enable the continuation of vaccination campaigns and other related activities started with the SGF under STANDZ. The Project has also been developed in order to address the enormous threat presented by increased livestock movement through Lao PDR, as well as to control the FMD virus believed to be circulating in several national hotspot districts. The Project is in line with the priority activities identified under the Lao PDR National FMD Control Plan which has been updated in order to align it with the objectives of the SEACFMD 2020 Roadmap and the Global FMD Control Strategy.

Given the important role of animal movement involving Lao PDR provinces, the Project will focus on three key provinces: the central province Xiengkhouang (critical for monitoring FMD movements from northern Lao PDR provinces to Vietnam and China), and two key southern provinces: Savannakhet and Champasak, where a new vaccination campaign will start in April 2016. Southern Lao PDR is a critical area for regional FMD control due to its high cattle and buffalo population and the substantial movement of cattle through this area from Thailand and Cambodia to other countries, including China and Vietnam.

The Project will also reinforce awareness of the importance of FMD prevention and control, animal movement management as well as legislation, veterinary services and operational requirements in both the project and neighboring areas. It will serve as a model future FMD control programmes in South East Asia and beyond.

In summary activities include:
1. Vaccinating 80% of at risk animals (being no less than 300,000 animals – primarily cattle and buffalo) over three consecutive years to achieve an additional FMD free zone in Southern Lao PDR as well as maintaining herd protection in Xiengkhouang Province
2. Training at least 900 farmers and traders in FMD control with at least 700 farmers and traders implementing best practice
3. Providing applied extension training to 100 veterinarians or village animal health workers in FMD and other disease control, with at least 80 veterinarians and animal health workers applying such training; and
4. Benefits to 60,000 farming households by increasing their livestock related income by at least 20% through prevention of losses from FMD outbreaks and improved market access, and highlighting these key gains to key stakeholders

The Project will also assist investigations into FMD outbreaks nationally.

Work will also start mid-2016 in Myanmar. The Myanmar Project will have very similar objectives as those described in the Lao PDR Project.

RECOMMENDATIONS

The Sub-Commission:

• Note developments with the NZ funded FMD Projects in Lao PDR and Myanmar
• Note the OIE/Laos Funding Agreements is expected to be signed in March to ensure that 2 rounds of vaccinations can be completed between April and July 2016, and
• Note that the financial management arrangements and the database system developed for the Northern Lao PDR FMD Program be adapted for use in Southern Lao PDR.

PURPOSE

To review the 3rd Edition of the SEACFMD Roadmap 2016-2020, and outline the Objectives identified there as well as the roles and responsibilities of key stakeholders in the SEACFMD Campaign.

BACKGROUND

A draft of the 3rd Edition of the SEACFMD Roadmap 2016-2020 was presented to the 21st Sub-Commission in 2015, and endorsed by Sub-Comm subject to minor editorial amendments. The Roadmap has now been published, with Manuals under development, through OIE SRR-SEA, that will complement the Strategy Components.

SUMMARY

Goals and Objectives

The Vision for the SEACFMD Campaign is that FMD and other major animal diseases in South-East Asia and China are controlled by strong national Veterinary Services that cooperate regionally.

The Goals for Phase 5 of the Campaign are aligned with the Global FMD Control Strategy and are, by the year 2020, to:

1. Decrease FMD prevalence in South-East Asia and China, expand disease-free zones, and maintain FMD freedom in countries and zones that have attained that status;
2. Strengthen national Veterinary Services;
3. Enhance regional cooperation in policy and capacity development.

To achieve these Goals, the Objectives are to:

1. apply science- and risk-based strategies, including vaccination and animal movement controls, and promote progression of Member Countries in line with PCP-FMD, to reduce the prevalence of FMD and develop and maintain FMD-free zones and countries.
2. improve the performance of Member Countries’ Veterinary Services, through progression along the OIE PVS Pathway and adherence to international animal health Standards.
3. promote regional cooperation in policy and capacity development by holding regular training and collaborative activities for the Veterinary Services of Member Countries.

The specific objectives for each of the Strategy Components and Cross-Cutting elements are listed here:

Strategy Component 1: Technical Objectives:

1) Understand the epidemiology of the disease, particularly the endemic and sporadic nature of FMD in the region;
2) Identify risk factors for introduction and spread of the disease (FMD viral dynamics, animal movement, husbandry systems, market drivers, socio-economic issues);
3) Develop and apply effective control strategies;
4) Maintain disease freedom in zones and countries that have achieved such status.

Strategy Component 2: Coordination and Advocacy Objectives:
1) Coordinate the development and implementation of control strategies, training and communication;
2) Support the development and application of advocacy strategies to increase political commitment to FMD control;
3) Extend advocacy to the public and private sectors, to promote Campaign awareness and support.

Strategic Component 3: Governance and Policy
Objectives:
1) Provide governance at the national and regional levels;
2) Assist Member Countries in evaluating and strengthening their Veterinary Services;
3) Develop a regional policy framework, and support development of legislation in Member Countries for management of animal and zoonotic diseases in their territories.
4) Define funding needs and pursue opportunities for additional support.

Cross-cutting elements
Objectives:
1) Promote effective communication of SEACFMD Campaign objectives, activities and achievements;
2) Enhance technical, coordination and policy capability in national Veterinary Services;
3) Guide research and development in key areas;
4) Implement effective monitoring and evaluation of activities and achievements to support the sustainability of the SEACFMD Campaign to 2020 and beyond.

Roles and Responsibilities
Roles and responsibilities are reflected in the institutional arrangements for the SEACFMD Campaign, which is an OIE programme funded by international donors, and works in close cooperation with Member Countries, ASEAN, international organisations and other donors to ensure progress against agreed objectives. The success of the SEACFMD Campaign is dependent on cooperation between its members, support from Thailand, funding from donors and Member Countries, and the quality of professional staff. Continued political commitment by Member Countries’ governments, matched by resources, is critical.

The OIE Sub-Commission for FMD in South-East Asia and China provides overall guidance to the SEACFMD Campaign for policy development and review. The OIE continues to play the lead role in ensuring the success of the SEACFMD Campaign, by providing scientific and policy input, and liaising with other regional FMD and TAD control programmes to help secure programme funding. A key objective of Phase 5 of the SEACFMD Campaign is to enhance ASEAN involvement, as a means of promoting Member Country ownership and thus the sustainability of the Campaign.

The FAO will continue as an active member of the Sub-Commission and the Steering Committee, and will liaise with OIE for provision of technical support and mobilisation of resources. FAO will provide direct assistance to Member Countries for disease emergencies through its country offices.

Member Countries developed national FMD control plans under Phase 4 of the SEACFMD Campaign. These plans will be updated through Phase 5, in line with the Strategic Framework and consistent with each country’s status on the PCP-FMD. Member Countries will promote progress in FMD control through adherence to the activities and timeframes outlined in these control plans.
The Regional Coordination Unit (RCU) located within the OIE SRR-SEA remains the centre of all SEACFMD Campaign coordination, monitoring, and evaluation of regional progress. The RCU will continue to support Member Countries, particularly in coordination of disease control activities, and will serve as a reservoir of skills, knowledge and information for access by Member Countries.

National Coordinators provide a critical link between the RCU and Member Country Veterinary Services, in progressing activities consistent with the Roadmap, developing and reviewing Manuals, and reporting to the OIE Sub-Commission.

RECOMMENDATIONS

The Sub-Commission:

- NOTES the goals and objectives outlined in the SEACFMD Roadmap 2016-2020
- NOTES the development of Manuals to support the Strategy Components identified in the SEACFMD Roadmap 2016-2020
- ENDORSES the Roles and Responsibilities for key stakeholders outlined here and in the SEACFMD Roadmap.
Annex 11: Agenda Paper: Strengthening Communication Nationally and Regionally, and Enhanced Advocacy

PURPOSE

To enhance Member Countries to have communication as an integral part of all the activities of the Veterinary Services including animal health, animal welfare, veterinary public health and veterinary medicine.

BACKGROUND

Communication entails the exchange of information between various individual, institutional and public groups for purposes of informing, guiding and motivating action. Veterinary Services should have effective internal and external systems of communication covering administrative and technical staff and parties affected by their activities. The OIE has recognised the vital role of communication in the successful delivery of Veterinary Services. Therefore, the OIE standards on communication has been developed. In addition, communication is an essential component of the OIE’s mandate so it is addresses in the OIE strategic objectives at all times. Effective communication of National Veterinary Services nationally and regionally will serve to build relationships and trust between stakeholders, including trading partners and with the general public.

SUMMARY

Communication is recognised as an important tool in support of Veterinary Services. The OIE standards on Communication are published in the Chapter 3.3 and Chapter 3.2 of the Terrestrial Animal Health Code and the Aquatic Animal Health Code respectively. The chapter includes principles, definitions and the description of a communication system. To have an effective communication system, the National Veterinary Services should develop the strategic plan and operational plans for communication to support the Veterinary Services strategic plan and have management support and commitment. The OIE delegate of each member should appoint an OIE National Focal Point for Communication to perform the tasks as detailed in the OIE Term of Reference.

In the OIE 6th Strategic Plan (2016-2020), communication has been addressed in a Strategic Objective on ‘Establishing trust through transparency and communication’ in which the outputs would be authoritative statements on animal health, timely reporting of animal disease events, analysis of the animal health situation and epidemiologic trends worldwide, and scientific and public health information on the state on animal health and animal welfare worldwide. To achieve these outputs, contribution of information from Member Countries is significant through the effective communication networks using the most appropriate means and channels.

In 2009, the ‘South-East Asian Strategy for Animal Health Communication’ was developed composing of 4 goals which were: (1) Ensuring integration of communication strategies with policy and programme of Veterinary Services; (2) Improving risk communication approaches; (3) Increasing communication resourcing through advocacy; and (4) Improving coordination across sectors and stakeholders. A number of objectives and activities were included under each goal. The 4th OIE Sub-Regional Workshop on Animal Health Communication was recently organised by the OIE SRR SEA in Cambodia in November 2015. The workshop reviewed the key aspects of the Strategy taking into account new disease trends, research findings on stakeholders and animal diseases and the changing economic and political landscape that have taken place since the Strategy was developed in 2009. The two most basic tips for effective communications: developing a Single Overarching Communications
Outcome (SOCO) and getting to your point fast (POINT) were also introduced to the workshop. The recommendations from the workshop are shown below.

The 4th OIE Sub-Regional Workshop on Animal Health Communication, Cambodia, 16-17 Nov 2015 recommended that:

- The OIE SRR-SEA with the support of the OIE Communication Unit revises the November 2009 “South-East Asian Strategy for Animal Health Communication” to align it with the OIE international standards on Communication, and to take into account development since 2009, in particular the ASEAN Economic Community (2015) and productive linkages with World Trade Organisation (WTO), World Health Organization (WHO) and FAO
- The OIE SRR-SEA Representative advises the outcomes of the Workshop at the next ASEAN Working Group on Livestock.
- Given the critical importance of communication, that OIE includes a Communication module in the training for new OIE Delegates dedicated to the implementation of OIE Communication standards; and that OIE places emphasis on Risk Communication trainings for Veterinary Services in SEA Sub-Region, both general training or training with a disease focus; and based on this training develop Tool Boxes.
- The Veterinary Services in SEA establish a Communication Unit with adequate budget and staffed by communication specialists to develop and implement a national communication action plan that reflects the aspirations of the SEA Animal Health Communication Strategy.
- Using the results from the PVS reports, OIE Member Countries in SEA continue to strengthen the communication function in animal health, animal welfare and veterinary public health.

RECOMMENDATIONS

The Sub-Commission:

- NOTE the OIE SRR SEA activities on animal health communications.
- ENDORSE the recommendations from 4th OIE Sub-Regional Workshop on Animal Health Communication, Cambodia, 16-17 Nov 2015.
- REQUEST members to actively support the revisions of the SEA Animal Health Communication Strategy.
- RE-ACTIVATE and STRENGTHEN SEACFMD animal health communication network.
Annex 12: Agenda Paper: Sequence analysis and FMD Control

PURPOSE

To summarise the use of sequence analysis in FMD control and advocate more sequencing analysis and sequence data sharing to support better control strategies.

BACKGROUND

The generation of genetic data is becoming routine in the research and control of infectious diseases, including FMD, and the development of applications to maximize the value of these genetic data remains a priority. Here, we summarise some of the most common applications of sequence analysis, which include the study of viral biodiversity and virus evolution, thereby supporting the ability to track transmission sources and events. In addition, the characterization and detection of possible conformation changes of circulating viral immuno-relevant epitopes based on genetic data, is of special interest, as it may indicate that an update in the currently used vaccine strains is needed. It is highlighted that a continuing and enhanced molecular epidemiological surveillance of FMD virus (FMDV) is needed for the early recognition and understanding of emerging risks or changes in the regional FMD situation.

SUMMARY

Understanding the spread of foot and mouth disease

In studying the dynamics of FMDV dispersal across the globe, phylogenetic inference from molecular sequences of isolated viruses can make a significant contribution to investigating the evolutionary and spatial pathways underlying the source of FMD epidemics. Matching data on livestock movement with molecular epidemiology can enhance our understanding when reconstructing the spread of the virus between geographical regions, which is essential for the development of effective FMD control strategies. Here we report for South-East Asia and China, where the endemic A/Asia/SEA-97 and O/SEA/MYA-98 viruses collected between 2012-2015 can be respectively grouped into various clusters based on the sequence data of the VP1 gene. It must be acknowledged that viruses within a phylogenetic cluster simply have a recent common ancestor, rather than having a direct link between each other. However, viruses grouped in such clusters can often be found in various neighboring countries. For examples, current strain of circulating A/Asia/SEA-97 was first reported in Thailand in 2012 (as Lopburi strain) with subsequent detections in Lao PDR, Cambodia, Viet Nam and China in 2013/14 and more recently in Myanmar in 2015. While differences between the effectiveness of disease detection and reporting among countries may explain these observed trends, the epidemiological data are consistent with the cattle movement pathway in the region. Animal movement studies have shown that substantial numbers of cattle are passing through Thailand every year to cross Lao PDR or Cambodia, destined for high value markets in Viet Nam and China.

Tracing the origin and transmission pathways of FMDV outbreaks

Analysis of sequence data can also be used to trace the origin and transmission pathways of FMD outbreaks, which was successfully applied to two UK epidemics of FMD in 2001 and 2007. Here we discuss phylogenetic data that may enable tracing origins and transmission patterns for some outbreaks in South-East Asia.

The FMDVs recovered from the outbreaks occurred in Vientiane Capital of Lao PDR during April-May 2015 are O/ME-SA/Ind-2001d viruses based on phylogenetic analysis. The latter have to date been restricted to South Asia and the Middle East, and have never previously been reported in South-East Asia. The retrospective investigation found the importation of frozen buffalo tongue and deboned...
meat into Lao PDR during September 2014 and February 2015 from Indian states where Ind-2001d are endemic. Further analysis will be conducted to investigate the epidemiologic links between those commodities and the outbreak.

For the first time in the recent 5 years, serotype A FMDVs were isolated in Myanmar in August 2015. Genetic analysis of the VP1 gene shows those isolates are very similar (up to 99.84%) to some viruses isolated in China and Russia in 2013 and to some Thai viruses isolated in 2014 and 2015, suggesting a common ancestor virus for all those isolates. While the definitive origin of the viruses recovered in Myanmar in 2015 remains unknown, given the very few substitutions (1-3 nucleotides) in the VP1 gene of viruses from various countries and an average rate of 1.5 substitutions per infected farm (Cottam et al., Journal of Virology, 2006), possible fomite transmission may be part of the cross-border dissemination in this instance.

Prediction for vaccine strain selection and identification of antigenic variability
New strains of FMDVs arise continually, which pose a significant challenge to the current vaccines. The traditional vaccine candidate selection strategy has proved to be time-consuming, requiring a laborious process of serological tests such as ELISA or virus-neutralization (VN) assays. In recent years, significant progress has been made in identifying the antigenic sites of different serotypes of FMDVs, and variations in those antigenic regions are directly related to serological cross-reactivity. In this presentation, we review a research finding by Reeve et al (Reeve et al., PLoS Computational Biology, 2010), which has further demonstrated the relationship among sequence variations and antigenic differences, and used this relationship for rapid vaccine matching prediction without the need for new serology work for existing vaccines.

RECOMMENDATIONS
The Sub-Commission:

- Encourage SEACFMD countries to collect more field samples in each FMD outbreak and submit those samples to OIE FMD Reference Laboratory in Pakchong, Lanzhou and Pirbright for sequencing on a more regular basis.
- Advocate sharing of viral sequences and information in a broader and more timely way.
- Encourage and facilitate research activities on the issues stated above.
Annex 13: Agenda Paper: Post Vaccination Monitoring Activities Conducted in Northern Lao and Central Myanmar FMD Project

PURPOSE

Generally, Post Vaccination Monitoring (PVM) is conducted to determine and evaluate the effectiveness of a vaccination program in targeted areas and to serve as the basis for modifications to vaccination programs if and when necessary. In particular, PVM studies are designed to specifically: a) assess the level of protection in a population, b) to measure the response to vaccination in previously unvaccinated and uninfected animals, c) to measure the antibody response and its longevity following multiple vaccinations in naïve animals/population d) and in the case of Myanmar, to assess the efficiency of the systematic vaccination strategy applied by the Government. This paper describes PVM activities used to support and evaluation vaccination campaigns in northern Lao PDR and in central Myanmar.

BACKGROUND

Since 2012, the South-East Asia and China Foot-and-Mouth Disease Campaign (SEACFMD) has facilitated a significant investment on vaccination against Foot and Mouth Disease (FMD) in some SEA member countries. Lao PDR and Myanmar have been the recipients of these investments, and the cost of implementation and operations for these vaccination campaigns, covered by the Australian AID Stop Transboundary Animal Diseases and Zoonoses (STANDZ) Initiative, has been significant. In an effort to determine the impact of the vaccination to control the disease in the two countries, post vaccination monitoring was developed to evaluate the efficiency of vaccination strategies implemented by both Lao PDR and Myanmar. At present, since the titre of the circulating humoral antibody following vaccination is considered to be the most important factor in conferring protection by vaccination against FMD, the SEACFMD PVM study has used laboratory (serology) testing that detects and measures the level of specific antibody following vaccination.

SUMMARY

In some countries, vaccination against FMD has been proven to be an efficient method of disease control. In Lao PDR and Myanmar, two countries in SEA that are considered endemic of FMD, the vaccination campaign funded by the Australian government and facilitated by the OIE SRR-SEA since 2012 has help reduce the disease occurrence in some parts of the two countries. In Lao PDR the vaccination campaign was implemented in 10 Provinces in the northern part of the country while in Myanmar the campaign was implemented in Sagaing township, Dawei in Thanintharyi Division and in Mandalay. The basis for the selection of these areas included the endemic nature of infection in the area and the major importance in livestock trade within and beyond the country. Dawei on the other hand was selected because of the recently reported incursion in this important buffer position in the Malaysia-Thailand-Myanmar (MTM) zone.

In Lao PDR the basis for selection of the 10 provinces in the Northern part was the continued demand for animals and animal products across bordering countries like China and Vietnam which is considered the major risk for incursion of the disease in the Northern Lao area. In response to this risk, the Northern Lao PDR FMD Project was established in order to facilitate the continuation of the vaccination against FMD. The last reported FMD outbreak in Northern Lao was in April 2013 involving only one Province (Bokeo). To measure the response to vaccination in the two countries, a post vaccination monitoring by laboratory (serology) test was adopted by the PVM study. Results of the PVM studies in Lao PDR proved that after two vaccinations 88% and 84% of animals produced protective levels of antibody against serotypes O and A respectively, and the majority of those
vaccinated remained protected 6 months post vaccination. In Myanmar, 84% of vaccinated animals developed protective titres against serotype O FMDV. Accordingly, these studies also demonstrated the importance of delivering two vaccinations to optimize protection against FMD. Based on the analysis conducted by SEACFMD on Lao PDR and Myanmar vaccination programs, it will be necessary to vaccinate at least 95% of the target population to achieve 80% protection and to target revaccination earlier than day 210.

RECOMMENDATIONS

• A second round of PVM studies that will assess protection against FMD in the target population as a whole will be necessary to assess the efficiency of the vaccination strategy and the results should be considered in the decision-making policy for future similar projects.
• A serosurvey based on non structural protein (NSP) tests used on a herd basis to detect viral circulation in vaccinated population will also help the FMD control program.
• Transfer of knowledge through training of the new or younger staff will be necessary for sustainability and the continuity of the activities of the FMD vaccination and animal health program in general.

PURPOSE

To summarise Research activities and make recommendations on future directions consistent with the 3rd Edition of the SEACFMD Roadmap

BACKGROUND

Research to support the effective control and eradication of FMD has been conducted internationally and nationally by a range of parties for many years with the application of findings key to the success of FMD management. The SRR SEA and its predecessor, the Regional Coordination Unit, has commissioned research both technical and socio-economic in nature which has been complemented by the activities of others, for example Members, FAO and Industry and supported the SEACFMD Campaign. In 2008, the SEAFMD and the Australian Biosecurity Cooperative research Centre (AB-CRC) commissioned a study to audit existing research, identify the most important remaining gaps, and carry out ex-ante costing of such research to assist in the prioritization of research questions. Following this, the SEACFMD Research Directions was drafted in 2013 to update the resulting document from that particular study and streamline research initiatives relevant to the 2nd edition of the SEACFMD 2020 Roadmap (2011). With the recent publication of the 3rd edition of the SEACFMD Roadmap 2016-2020, the SEACFMD Research Directions merits revisiting to review continued alignment and complementarity with the SEACFMD Roadmap 2016-2020 as well as update its progress and revise paths in light of new findings.

SUMMARY

SEACFMD Research prior to the 2016-2020 Roadmap

In 2014, an initial attempt was made by the SEACFMD to determine the ongoing FMD research activities in the region at that time through a short survey (Annex). As a result, basic information from a total of 24 ongoing FMD research projects in SEA and China was collated including studies in various SEACFMD Member Countries on FMD epidemiology, vaccines and vaccination, diagnosis, risk assessment, animal movement, biosecurity, control and prevention, molecular epidemiology and socio-economic impact of FMD. Additional key research initiatives have commenced since that analysis.

With initiatives coming from the SEACFMD, its Member Countries, partners, research institutions and other research stakeholders, substantial progress on FMD research has been made in the region. However, as raised in the 2013 SEACFMD Research Directions, three key areas could usefully be progressed on a regional basis: (1) identification and pursuit of critical regional research priorities and gaps; (2) establishment of a research framework that meets the needs of SEACFMD Members; and (3) development of a mechanism for collating the practical applications of generated research findings and ensuring their effective utility to the advantage of regional FMD control efforts in South-East Asia and China. For example, key findings from socio-economic studies or risk analyses that may impact trade and economy should be used to inform policy makers and advocate for political engagement. Likewise, results of epidemiological studies should be utilized to develop or update regional or national FMD control strategies.

Filling the knowledge gaps to complement the SEACFMD Roadmap 2016-2020 and beyond

These standing key gaps in SEACFMD research need to be addressed in light of the new SEACFMD Roadmap. Consistent with one of the objectives of Phase 5 of the SEACFMD Campaign to apply
science- and risk-based strategies to reduce the prevalence of FMD and develop and maintain FMD-free zones and countries, research needs to be made a priority where scientific gaps exist.

For Strategy Component 1 (Technical), research priorities should focus on optimising the efficacy of control and prevention strategies, including: FMD epidemiology, management of animal movement, and the effectiveness of intervention strategies in reducing disease risks nationally and regionally. Relevant research initiatives for Strategy Component 2 (Coordination and Advocacy) should include: behavioural studies particularly on means to effect desired behavioural change, animal health communication, as well as other studies related to improved coordination and effective advocacy. For Strategy Component 3 (Governance and Policy) studies should include: institutional analysis of FMD control, cost-benefit analyses of FMD control and prevention strategies.

SEACFMD should take the lead in addressing these research opportunities in the interest of advancing FMD control efforts in the region. With the Roadmap providing a guiding framework and direction, this initiative is envisioned to catalyze the progress towards realizing the goals as set in the SEACFMD Roadmap 2016-2020. This approach will also strengthen the capacity of Veterinary Services to control other major diseases of concern in the region.

RECOMMENDATIONS

The Sub-Commission:

- Agree that the SEACFMD identify, prioritize and pursue regional research priorities aligned to the SEACFMD Roadmap 2016-2020.
- Agree that the SRR SEA take forward the comments made in discussion to Epi/Labnet and National Coordinators and develop a research framework aligned to the SEACFMD 2020 Roadmap objectives that meets the agreed needs of SEACFMD Members.
- Agree that, in the context of resource mapping as outlined in the SEACFMD 2020 Roadmap, the SEACFMD develop a mechanism for collating and sharing regionally the practical applications of research findings.
- Agree that, the EpiNet, LabNet, and NC Meetings will include and integrate a session on “FMD Research Updates” whose objectives will put forward, monitor, and be in support of the above recommendations.
<table>
<thead>
<tr>
<th>Study No.</th>
<th>Research Title</th>
<th>Research area</th>
<th>Location</th>
<th>Study Period</th>
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<td>2013-2014</td>
<td>OIE/JTF and NIAH</td>
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<td>“Differentiation of antibodies by infection and by vaccination”</td>
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<td>Lao PDR</td>
<td>2012-2014</td>
<td>OIE/JTF and NIAH</td>
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<td>“Domestic and International Market Development for high-value cattle and beef in South-East Cambodia”</td>
<td>Risk assessment, Animal movement, Vaccines/vaccination, Biosecurity, Control &amp; prevention</td>
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<td>2012-2016</td>
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<td>“Research and demonstration of clinical and immunological evaluation technique of serious animal diseases vaccine”</td>
<td>Vaccines/vaccination</td>
<td>China</td>
<td>2012-2016</td>
<td>MoA China</td>
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<td>“The development of effective vaccine for prevention and control of FMD epidemic strains”</td>
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<td>2011-2017</td>
<td>MoA China</td>
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<td>China</td>
<td>2013-2015</td>
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<td>Epidemiology, Molecular epi, Diagnosis, Vaccines/vaccination, Control &amp; prevention</td>
<td>China</td>
<td>Yearly</td>
<td>MoA, China</td>
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<td>Diagnosis</td>
<td>China</td>
<td>2011-2015</td>
<td>MoA, China</td>
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<td>The National High Technology Research and Development Program of China</td>
<td>Vaccines/vaccination</td>
<td>China</td>
<td>2010-2015</td>
<td>MoS&amp;T, China</td>
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<td>2013-2014</td>
<td>Republic of Korea and EU</td>
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<td>Participatory methods in surveillance and control of FMD: How to better involve the farmers at local scale?</td>
<td>Epidemiology Socio-Econ impact Control &amp; prevention</td>
<td>Vietnam</td>
<td>2013-2016</td>
<td>CIRAD</td>
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<td>Epidemiology Risk Assessment Control &amp; prevention</td>
<td>Thailand</td>
<td>2010-2012</td>
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<td>2014-2015</td>
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<td>2014-2015</td>
<td>DLD, Thailand</td>
</tr>
<tr>
<td>15</td>
<td>“Adaptation of FMDV for vaccine in Thailand”</td>
<td>Vaccines/vaccination</td>
<td>Thailand</td>
<td>2012-2015</td>
<td>DLD, Thailand</td>
</tr>
<tr>
<td>16</td>
<td>“Development of Real-Time PCR for the diagnosis of FMD”</td>
<td>Diagnosis</td>
<td>Thailand</td>
<td>2010-</td>
<td>DLD, Thailand</td>
</tr>
<tr>
<td>17</td>
<td>“Molecular epidemiology of FMDV isolated in Thailand and SEA 2010-2012”</td>
<td>Molecular epi</td>
<td>Lao PDR Thailand Vietnam</td>
<td>2010-2012</td>
<td>DLD, Thailand</td>
</tr>
<tr>
<td>18</td>
<td>“Whole genome sequence analysis of FMDV isolated in Thailand”</td>
<td>Molecular epi</td>
<td>Thailand</td>
<td>2012-2014</td>
<td>DLD, Thailand</td>
</tr>
<tr>
<td>19</td>
<td>“Typing of FMD in Thailand during 2009-2013 in GIS Mapping”</td>
<td>Epidemiology</td>
<td>Thailand</td>
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<td>DLD, Thailand</td>
</tr>
<tr>
<td>20</td>
<td>“Post-Vaccination Monitoring (PVM) in Targeted Vaccination Areas in Myanmar”</td>
<td>Vaccines/vaccination</td>
<td>Myanmar</td>
<td>2013-2014</td>
<td>STANDZ</td>
</tr>
<tr>
<td>Study No.</td>
<td>Research Title</td>
<td>Research area</td>
<td>Location</td>
<td>Study Period</td>
<td>Funding source</td>
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<tr>
<td>21</td>
<td>“Post-vaccination serological study in Lao PDR”</td>
<td>Vaccines/vaccination</td>
<td>Lao PDR</td>
<td>2013-2014</td>
<td>STANDZ</td>
</tr>
<tr>
<td>22</td>
<td>“Assessment of socio-economic impacts of FMD in Cambodia, Lao PDR and Myanmar”</td>
<td>Socio-econ impact</td>
<td>Cambodia, Lao PDR, Myanmar</td>
<td>2013-2014</td>
<td>STANDZ</td>
</tr>
<tr>
<td>23</td>
<td>“Combining Epidemiological And Serological Studies To Evaluate And Improve The Impact Of Foot And Mouth Disease (FMD) Vaccination Of Cattle In Northern Lao People’s Democratic Republic (Lao PDR)”</td>
<td>Vaccines/vaccination, Risk assessment</td>
<td>Lao PDR</td>
<td>2013-2016</td>
<td>STANDZ</td>
</tr>
<tr>
<td>24</td>
<td>“Characterization of the FMD viruses circulating in Vietnam and application of new diagnostics”</td>
<td>Epidemiology, Molecular epi Diagnosis, Vaccines/Vaccination</td>
<td>Viet Nam</td>
<td>2013-2014</td>
<td>ROK</td>
</tr>
</tbody>
</table>

I. TECHNICAL

A. Studies identifying FMD Foci of Infection

Foci of FMD infection may be defined as the central point which serves as source for FMDV, and that which places a susceptible host, when exposed, to an increased risk for FMDV infection. This may refer to uncontrolled FMDV-infected premises, animals, or contaminated products particularly for FMD-free areas. To be able to combat FMD at source, identification of foci of infection will be a crucial first step. Key areas of research previously identified include research initiatives on: (1) identifying FMD hotspots and critical control points; (2) investigating the roles of different species in the maintenance and spread of different FMDV serotypes; and (3) identifying potential sources of incursions for FMD-free countries and free zones.

Some potential research topics under this category may include, but not be limited to, the following:
- Retrospective study of major FMD outbreaks in [SEACFMD Member Country]
- FMD outbreak investigation series in [SEACFMD Member Country]
- Profiling and validating suspect hotspots in [SEACFMD Member Country]
- Natural history of [PanAsia] [Myanmar 98] [A/Asia] in South-East Asia
- Molecular epidemiology of [PanAsia] [Myanmar 98] [A/Asia] in South-East Asia
- Profiling of FMD outbreaks in between major endemic pulses in South-East Asia
- The role of [pigs] [sheep] [goats] [carrier cattle and buffalo] [vaccinated animals] [wildlife] in the transmission and maintenance of FMDV in South-East Asia
- The role of wildlife in transmission and epidemiology of FMD in South-East Asia
- Risk analysis of potential sources of FMD incursions in [FMD free country/zones]
- The nature, extent and significance of molecular change in FMD virus in endemic settings of SE Asia

B. Studies leading the to elimination of FMDV at source

With the key strategy of addressing the disease at source, FMD virus should be immediately and effectively eliminated where found present. These can be in identified hotspots, including where FMD outbreaks have been reported. Good outbreak management including strategic vaccination, decontamination, disinfection and overall enhanced biosecurity measures are key activities to address this. Elimination of FMD virus at source is addressed differently in an endemic setting, particularly in developing countries. Whereas emergency slaughter and efficient carcass disposal would be ideal as practiced in most FMD-free countries, this approach is viewed as not practical, if not impossible, in areas where the disease is persistent and the livestock are critical sources of meager income for many small holders. For a more realistic and sustainable approach to FMD control, the nature of this setting has to be taken into consideration and integrated into the development of FMD plans, including those for identifying research needs. This include: (1) research supporting effective management of infected animals; (2) research supporting effective management of infected premises, and (3) research supporting effective management of contaminated fomites.

Some potential research topics under this category may include, but not be limited to, the following:
- Natural activity and efficacy of traditionally used FMD regimen (alum, lime, tar, and others) against FMD virus
- Properties, persistence, survival, susceptibility and resistance of commonly circulating FMDV strains in South-East Asia
• Modeling to predict spatial and temporal progression of FMD in affected grazing area
• Evaluation of various disinfectants and disinfection procedures to eliminate FMD virus in infected premises under prevailing SEA conditions

C. Studies supporting efficient prevention and spread of FMD

While eliminating the virus at source is directed towards addressing FMD hotspots and other foci of infection, this component is towards managing identified critical control points, for the purpose of reducing the risk of further FMDV spread and transmission. Keys to this are research activities addressing animal movement and animal biosecurity and may include: (1) research activities related to effectively managing movement of animals and animal by-products; and (2) research activities related to effective implementation of animal biosecurity.

Some potential research topics under this category may include, but not be limited to, the following:
• Network analysis on the livestock trading patterns in South-East Asia
• Risk assessment related with the animal movements in Mekong Sub-Region
• Policy options for animal movements management
• Models for animal movements in the [MTM zone] [Upper Mekong Zone] [Lower Mekong Zone]
• Understanding animal population dynamics and identifying determinants of geographic patterns of FMD in [SEACFMD Member Country]
• Value chain analysis for livestock in South-East Asia
• Exploring options for community-based biosecurity practices
• Cost-benefit analysis of biosecurity investments to improve animal health, productivity and market opportunities
• Knowledge, attitudes and practices relevant to international biosecurity standards in select communities: identifying barriers and opportunities for implementation

D. Protection of FMD-susceptible hosts

Vaccination against FMD is a key element in protecting susceptible hosts, and thus control of the disease. Although vaccination is not used widely as a control tool in SE Asia because of resource and regulatory constraints, a number of countries in the region such as Malaysia, Thailand and Vietnam have applied a mass vaccination program for large ruminants. Countries such as Lao PDR, Myanmar and Cambodia have also recently received substantial, albeit limited, provisions from the vaccine bank. This includes: (1) research initiatives supporting strategic FMD Vaccination campaigns, and (2) research initiatives determining benefits and impact of FMD vaccination.

Some potential research topics under this category may include, but not be limited to, the following:
• Molecular characterization and phylogenetic analysis of FMD virus strain circulating in the selected epidemiological study areas
• Serologic profiling of animal populations in select target areas
• Serologic monitoring of vaccinated animals
• Comprehensive evaluation of strategic vaccination campaign
• Combining epidemiological and economic models to estimate impacts of vaccination
• Dynamic modeling of FMD spread to estimate the impact of a vaccination program in endemic setting
• Cost effectiveness of different vaccination strategies
• Vaccine-matching studies for the region
• Neutralization activity of post-vaccination sera against circulating FMDV serotypes in South-East Asia
II. COMMUNICATION AND ADVOCACY

A. Animal health communication studies

Animal health communication is a key component in prevention and control programme for transboundary animal diseases and zoonoses. It aims to create awareness and knowledge, induces behavioral change and promotes compliance with disease control measures. Communication strategies that take an audience-centred approach should be developed in order to ensure those who will implement and participate in prevention and control measures accept the need and see the benefits of doing so. Research into the factors that inhibit and most likely to motivate the target audience to adopt prevention and control measures will help the veterinary officials understand them better. Research findings should assist the veterinary services in developing appropriate interventions that address risky behaviors and encourage and build on good practices. This should include: (1) studies on knowledge, attitude and practices (KAP); (2) studies assessing gender impact on communication; (3) studies on general barriers and motivations to performing key control measures at the household level, and (4) studies on gender and social competencies of veterinarians, para-vets and livestock extension agents involved in public awareness campaigns.

Some potential research topics under this category may include, but not be limited to, the following:
- The impact of FMD on poverty and poverty on FMD
- Developing an effective model for FMD communication in [SEACFMD Member Country]
- Knowledge, attitudes and practices of farmers, traders, animal health workers and other stakeholders about FMD and other TADs
- Assessment of different roles men and women play in animal care and the kind of interventions needed to maximize their contributions to FMD control
- Identifying general barriers and motivations to practicing prevention and control measures

B. Studies to determine the socio-economic impact of FMD

In order to secure adequate human and financial resources, gender-responsive policies, strategies, legislation and regulatory framework to support FMD control, SEACFMD countries especially those that are resource deficient are encouraged to conduct socioeconomic studies that show the impact of FMD outbreaks on poverty alleviation and food security and how its control will result in improved market access and increased trade opportunities. This should include (1) research initiatives determining direct and indirect socio-economic costs associated with the control and prevention of FMD outbreaks; (2) research initiatives determining socio-economic impacts of FMD outbreaks

Some potential research topics under this category may include, but not be limited to, the following:
- Socio-economic studies to assess the potential benefit impact of FMD control and eradication on livelihoods and gender
- Estimating the burden of disease in local small holders in [SEACFMD Member Country]
- Socio-economic studies on the impacts of FMD control and eradication on poverty alleviation, food security, improved market access and trade opportunities
- Estimating the direct and indirect social and economic costs of FMD outbreaks and control measures at individual, collective, national and international level
- Value chain analysis

III. COORDINATION

An effective FMD control management strategy will require strong veterinary services with a well-organized infrastructure and sufficient resources of materials and personnel, good surveillance and
reporting, rapid and efficient communication and transport networks, and well-structured contingency plans. There is a need to do a comparative study on these capacities which are currently under increasing threat in SE Asia, as veterinary services have been down-sized and restructured, and as other priorities are pushed up in the government policy agenda. The research should investigate and compare the political and financial stability in each country, the policy processes in each country, regulatory environments and enforcement, institutional arrangement, support from private sectors, capacity building, information dissemination and networking, as well as international assistance. Beside the technical strategies which have been adopted by each country in relation with the quality assurances of movement control, quarantine measures, laboratory diagnosis, surveillance and reporting, vaccination, stamping-out, and public awareness. The expected output of this research area is a set of recommendations for effective FMD control management strategies in the region.

Some potential research topics under this category may include, but not be limited to, the following:

- Institutional analysis of FMD control
- Cost-effectiveness of alternative strategies for FMD control
- Cost-benefit analyses of different FMD control strategies
- Identification of economic and logistical requirements of FMD control strategies
- Impact of different control strategies on limiting the spread/incidence of FMD

PURPOSE

To advise the 22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China on animal movement management in the region.

BACKGROUND

Movement of FMD-susceptible animals poses the greatest risk of FMD spread in SEACFMD Member Countries. In recognition of this fact, OIE Delegates/Directors General from GMS countries met in Paris in 2014 to discuss this matter. As a result of this meeting, a study was commissioned by OIE SRR-SEA, entitled ‘Movement pathways and market chains of large ruminants in the Greater Mekong Sub-region’, supported by funding from the governments of PR China and Australia. The study was conducted in the first half of 2015, and the findings were presented and discussed at a meeting of representatives of SEACFMD Directors General, held in Qingdao, PR China, during August 2015. A report of the study has been posted to the OIE website:


SUMMARY

The Animal Movement Management meeting held in Qingdao reviewed the critical role of animal movement in the epidemiology of FMD, heard updates on the current situation with respect to the disease in South-East Asia and China, and was presented with a summary of the current import protocols and policies of Member Countries. Following a description of the study design and presentation of the findings, extensive discussion resulted in development of a set of recommendations, including drafting of a Joint Statement to be signed by GMS Directors General on animal movement management in the region. The recommendations noted the value of the study and confirmed that the results would be used to strengthen FMD control in the region. The importance of vaccination in reducing FMD risk was acknowledged, and the forum supported collaborative development of control zones, based on practical sanitary guidelines, to reduce FMD risks within the region. The group also acknowledged existing agreements (ASEAN and ASEAN+1) and the role of harmonized protocols on animal trade advocated by those agreements, and supported the endorsement by GMS Directors General of the Joint Statement.

It is proposed that OIE Delegates/Directors General meet on the occasion of the OIE General Session, May 2016, to discuss progress on animal movement management and to sign the Joint Statement.

A copy of the draft Joint Statement, which is an update to the Statement signed in 2009, is attached to this Agenda Paper.

RECOMMENDATIONS

- The Sub-Commission:
- NOTES the recommendations of the Animal Movement Meeting.
- ENDORSES the draft Joint Statement and commends it to the GMS Directors General for their endorsement.
Joint Statement on Harmonizing Procedures for Livestock Movement among Cambodia, China, Laos, Malaysia, Myanmar, Thailand and Vietnam

We, the Directors General of the Veterinary Authorities of Cambodia, PR China, Lao PDR, Malaysia, Myanmar, Thailand and Vietnam, jointly agree on the approach to harmonizing procedures for livestock movement in our region.

This Joint Statement is drawn from discussions during the SEACFMD animal movement meeting held on 25 August 2015, in Qingdao, China, based on technical principles and the situation in each of our countries. While not legally binding, it is intended to provide guidance and direction to developing and improving management of livestock movement in our region.

We have reviewed current procedures for management of livestock movement in Member Countries, including problems and constraints, and considered the needs and opportunities for enhancement of these procedures as well as international support for such initiatives.

We acknowledge recent and pending development of regional infrastructure that promotes rapid transport of commodities, including livestock, between countries. We recognize the increasing need to strengthen animal movement regulation and biosecurity procedures in the region, in order to control transboundary animal diseases, ensure food safety, and protect the health of animals and the public in our countries to achieve national, regional and global benefits.

WE JOINTLY AGREE THAT:

1. Veterinary Services of Member Countries shall develop, strengthen and improve procedures for managing the movement of livestock and their products in each country, in order to control transboundary animal diseases, promote food safety, and protect the health of animals and the public in our countries and our region.

2. Procedures for managing biosecurity and the health risks associated with the movement of livestock and their products, including international health certification, will be developed and harmonized based on the OIE Code and other international standards.

3. Bi-lateral or multi-lateral agreements on regional livestock movement and trade should be developed and implemented.

4. The Upper Mekong Working Group, coordinated by OIE Sub Regional Representation for South-East Asia, should serve as the focus for development of standardised protocols and procedures to support cross-border trade in livestock, including consideration of the development of control zones. The representatives of individual Member Countries on this group will be suitably supported by our respective Veterinary Services to assist in this important coordination work.

5. Veterinary Services continue to encourage technical collaboration and information sharing among Member Countries on managing the movement of animals and animal products, including biosecurity, animal identification, information systems, communication and import risk analysis.

6. International donors and partner agencies, including OIE and FAO, should continue to support capacity building in the region through workshops and training sessions, with assistance from relevant international experts.
7. We will continue to utilize various regional platforms such as the ASEAN+1 (ASEAN+China) and ADB-initiated Greater Mekong Subregion SPS Agreement, in pursuing the harmonisation of regional biosecurity and livestock movement management, including development and mutual recognition of control zones.

Signatories:
Annex 16: Agenda Paper: The SEACFMD Roadmap Implementation Plan

PURPOSE

To advise the 22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China on the draft SEACFMD Roadmap Implementation Plan.

BACKGROUND

With finalization of the SEACFMD Roadmap 3rd edition, it was agreed at the 21st SEACFMD Sub-Commission meeting to develop an Implementation Plan to thresh out the details from the Roadmap. The Implementation Plan shall also serve as the Monitoring and Evaluation (M&E) Framework for the SEACFMD Campaign that will be reviewed annually.

SUMMARY

The SEACFMD Roadmap provided a framework for the SEACFMD Campaign Phase 5 (2016-2020). Its goals are:
- Decrease FMD prevalence in South-East Asia and China, expand disease-free zones, and maintain FMD freedom in countries and zones that have attained that status;
- Strengthen national Veterinary Services;
- Enhance regional cooperation in policy and capacity development

It has 3 major components, namely: Technical, Coordination and Advocacy, and Governance and Policy.

The Implementation Plan was drafted to guide the SEACFMD campaign to monitor how it is progressively achieving its Roadmap goals with the implementation of various activities from the three components. Many of the key performance indicators used were based from PCP that was incorporated in the OIE/FAO Global FMD Control Strategy. Progression of the members along the OIE PVS pathway is also included in the Implementation Plan.

RECOMMENDATIONS

The Sub-Commission:

- ENDORSE the SEACFMD Roadmap Implementation Plan with revisions as discussed in the meeting.
- ENCOURAGE members to provide regular reports as indicated in the Implementation Plan.
<table>
<thead>
<tr>
<th>SEACFMD 2020 Roadmap Outcomes</th>
<th>Key Performance Indicator (KPI)</th>
<th>Explanation of KPI</th>
<th>SEACFMD 2020 Roadmap Key Outputs and Activities</th>
<th>Data Source</th>
<th>Frequency of Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. To decrease FMD prevalence in South East Asia and China, expand disease-free zones, and maintain FMD freedom in countries and zones by 2020</td>
<td>A.1 Progressive reduction and/or elimination of clinical FMD in domestic animals in each of the relevant SEACFMD Member Countries from 2015 to 2020 (i.e. annual decrease in FMD prevalence or incidence)</td>
<td>This indicator involves countries that are not FMD-free as of 2015 and requires credible epidemiological evidence that FMDV is progressively being eliminated in domestic animals (with or without vaccination); Compare annual FMD national prevalence or incidence data of SEACFMD Member Countries with their respective 2015 baseline.</td>
<td>Application of science- and risk-based strategies</td>
<td>FMD surveillance and serological survey data from all SEACFMD member countries collated regionally by the OIE-SRR</td>
<td>Annual data reported every year at the SEACFMD Sub-Commission Meeting</td>
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<td></td>
<td>A.2 Increase in the number of FMD-free zones and countries in South East Asia and China from 2015 to 2020</td>
<td>FMD-free areas are defined as OIE recognized or self-declared FMD-free zones or countries with or without vaccination; This is a regional indicator to assess the extent the whole region is able to expand FMD-free areas; Compare annually the number of FMD-free zones and countries (baseline of 2015).</td>
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<td>6-monthly data reported every year at the SEACFMD National Coordinators’ Meeting.</td>
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<td>A.3 Elimination of FMDV circulation in domestic animals in at least one zone of the country by 2020</td>
<td>This indicator is for the 7 countries targeting at least PCP-FMD Stage 3 by 2020 (e.g. Cambodia, China, Lao PDR, Malaysia, Myanmar, Vietnam and Thailand); Compare annually with 2015 baseline.</td>
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<td>A.4 Number of countries and zones</td>
<td>This indicator is for FMD-free (OIE-)</td>
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<tr>
<td>SEACFMD 2020 Roadmap End-of-Strategy Outcomes</td>
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<td>In South East Asia and China that have maintained their FMD-free status from 2015 to 2020</td>
<td>Recognized or self-declared with or without vaccination) countries and zones in South East Asia and China as of 2015; The indicator measures the extent that these areas do not experience any FMD incursions from 2015 to 2020; Compare annual data with 2015 baseline.</td>
<td>All SEACFMD Member Countries should be at least at the PCP-FMD Stage 3 level by 2020; Reaching PCP-FMD Stage 3 means that a country should reach a minimum of Level 3 compliance for all 33 FMD-relevant PVS critical competencies on or before 2020; This indicator implies that much effort and resources should be focused on the 4 SEACFMD Member Countries that are below PCP-FMD Stage 3 in 2015 (e.g. Cambodia, Lao PDR, Myanmar, and Vietnam); Compare 2015 baseline data to annual data until 2020; The assessment of a country’s achievement of PCP-FMD Stage 3, 4, and 5 should be consistent with</td>
<td>Reporting by SEACFMD Member Countries with regional collation of data by the OIE SRR-SEA.</td>
<td>Annual data reported every year at the SEACFMD Sub-Commission Meeting (Note: Reporting should include actions to be undertaken in the next year to reach annual targets).</td>
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B. To strengthen national Veterinary Services

B.1 Progression of SEACFMD Member Countries against their respective target PCP-FMD stage levels in 2020 compared to their 2015 baseline:

- Brunei: Not applicable (FMD-free)
- Cambodia: Stage 4 by 2020 from Stage 1 in 2015
- China: Stage 4 in Beijing, Tianjin, Liaoning, Jilin, Heilongjiang, and Shanghai; Stage 5 in Hainan Island, Liaodong Peninsula and Jiaodong Peninsula; and Stage 3 in some areas of China by 2020 from Stage 3 or 4 in these areas in 2015
- Indonesia: Not applicable (FMD-free)
- Lao PDR: Stage 3 by 2018 and Stage 4 by 2020 from Stage 1 in 2015

Adherence to international animal health standards as reflected by the level 3 compliance to each 33 FMD-related PVS critical competency.
<table>
<thead>
<tr>
<th>SEACFMD 2020 Roadmap End-of-Strategy Outcomes</th>
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<tbody>
<tr>
<td>Malaysia: Stage 4 by 2018 and Stage 5 by 2020 from Stage 3 in 2015</td>
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<td>Myanmar: Stage 4 by 2020 from Stage 1 in 2015</td>
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<td>Philippines: Not applicable (FMD-free)</td>
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<td>Singapore: Not applicable (FMD-free)</td>
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<td>Thailand: Stage 4 with OIE endorsement by 2016 from Stage 4 in 2015 for Region 2; Stage 5 for Regions 8 and 9 by 2019; Stage 4 for Regions 3 and 4 by 2020; Stage 4 for Regions 1, 5, 6, and 7 by 2022; Stage 4 for the whole country by 2023 from Stage 3 in 2015</td>
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<td>Vietnam: Stage 3 by 2020 from Stage 2 in 2015</td>
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</table>

B.2 Countries that are compliant with OIE standards in 2015 (i.e. Level 3 compliance or above for the 33 FMD-relevant PVS critical competencies) at least maintain their level of compliance until 2020.

C.1 Extent that National FMD measures

This indicator is focused on the following 3 countries who are at PCP-FMD Stage 3 as of 2015 (e.g. China, Malaysia, and Thailand); The assessment of a country’s level of compliance for the 33 FMD-relevant PVS critical competencies should be consistent with regionally acceptable criteria; Compare annual data with 2015 baseline.

C. To enhance regional

C.1 Extent that National FMD measures

This indicator measures Regular training, technical Annual and 6-monthly Annual data reported every
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>cooperation in policy and capacity development</td>
<td>control strategies, risk analysis methods, and communication strategies of all SEACFMD Member Countries have been coordinated and harmonized in line with the SEACFMD 2020 Roadmap</td>
<td>whether countries have aligned their national FMD control plans and priority related strategies (the list of strategies should be determined by the SEACFMD Sub-Commission) to the regional SEACFMD 2020 Roadmap (with or without technical assistance from the OIE SRR-SEA); Compare annual data with 2015 baseline.</td>
<td>assistance, and collaborative activities provided by OIE SRR-SEA to Veterinary Services of SEACFMD Member Countries</td>
<td>informal assessments by the OIE SRR-SEA</td>
<td>year at the SEACFMD Sub-Commission Meeting</td>
</tr>
</tbody>
</table>

C.2 Number and quality of technical assistance provided by OIE SRR-SEA as a share of total request made by SEACFMD Member Countries.

C.3 Output and outcomes of OIE SRR-SEA technical assistance (i.e. key outputs and translation of technical assistance to practical improvements in processes) related to the SEACFMD Roadmap Strategy Component 3 - Governance and Policy and Cross Cutting Components:

a) Veterinary governance
b) Veterinary legislation
c) VS strengthening
d) Stakeholder funding support and sustainability
e) Communications
f) Research

It should be noted that, depending on its staffing numbers and profile, OIE SRR-SEA may have limited capacity to provide technical assistance; given this constraint, provision of technical assistance should prioritize those countries that are below the PCP-FMD Stage 3 levels as of 2015; key outputs of Indicator C.3 should be reported annually at the SEACFMD Sub-Commission Meeting; outcomes of Indicator C.3 include changes in institutional and stakeholder behaviors leading to improved processes and more effective FMD control measures; the quality of technical assistance for
<table>
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<tbody>
<tr>
<td>g) Monitoring &amp; Evaluation</td>
<td>Indicator C.3 should be evaluated independently during the evaluation of the SEACFMD 2020 Roadmap (note: the purpose of evaluating the quality of technical assistance is to further improve services provided to member countries).</td>
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<td>C.4 Number of EpiNet meetings per year (indicate if a meeting is organized and funded by SEACFMD Member Countries)</td>
<td>This indicator measures the extent that regional SEACFMD networks are operational and are being sustained by SEACFMD Member Countries; Network meeting recommendations should be measurable, specific, and time-bound; Compare annual data for these two indicators against the 2015 baseline</td>
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<tr>
<td>C.5 Extent that EpiNet meeting recommendations are being addressed by SEACFMD Member Countries</td>
<td>Comment: What percentage of meeting recommendation addressed by SEACFMD Member Countries should we target?</td>
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<tr>
<td>D.1 Number of SEACFMD LabNet meetings per year (indicate if the meeting is organized by the regional reference laboratory and/or funded by SEACFMD Member Countries)</td>
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<td>D.2 C.4 Extent that LabNet meeting recommendations are being addressed by SEACFMD Member Countries</td>
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<p>| 22nd Meeting of the OIE Sub-Commission for FMD Control in South-East Asia and China |</p>
<table>
<thead>
<tr>
<th>SEACFMD 2020 Roadmap End-of-Strategy Outcomes</th>
<th>Key Performance Indicator (KPI)</th>
<th>Explanation of KPI</th>
<th>SEACFMD 2020 Roadmap Key Outputs and Activities</th>
<th>Data Source</th>
<th>Frequency of Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.1 Extent that the regional FMD vaccine bank is operational and providing timely supply of good quality vaccines to address outbreaks in SEACFMF Member Countries (indicate if vaccines are procured using SEACFMD Member Countries’ contributions or from external donor funding)</td>
<td>Given that the regional FMD vaccine bank has been established, this indicator looks at the quality of the mechanism, including the timeliness and quality of its vaccine supply to address country demand; the timeliness and quality standards should be defined by OIE; Compare annual data with 2015 baseline.</td>
<td>Coordination of vaccine supply and administration involving OIE Paris, OIE SRR-SEA, relevant SEACFMD Member Countries, and vaccine manufacturers.</td>
<td>Informal assessment by the OIE SRR-SEA</td>
<td>Annual reporting by the OIE SRR-SEA at the SEACFMD Sub-Commission Meeting</td>
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<td>Strategy Component 1: Technical</td>
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<td><strong>SEACFMD 2020 Roadmap Objectives/Component Outcomes</strong></td>
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<td><strong>Key Performance Indicator (KPI) from the PCP-FMD</strong></td>
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<tr>
<td><strong>Explanation of KPI</strong></td>
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<td><strong>Outputs and Activities required</strong></td>
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<td><strong>Data Source</strong></td>
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<td><strong>Frequency of Reporting</strong></td>
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<td><strong>1(a) Understand the epidemiology of the disease, particularly the endemic and sporadic nature of FMD in the region</strong></td>
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<td><strong>1(a.1) Increase in frequency that value-chain analyses are reviewed and updated through technical research that addresses knowledge gaps and dynamic processes</strong></td>
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<td>Value-chain analysis describes the husbandry systems, livestock marketing network, and associated socio-economic drivers for FMD-susceptible species; Compare annual data with 2015 baseline.</td>
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<td>Participatory rural appraisal, stakeholder consultations, analysis of existing data, risk assessment to identify critical points for FMD entry and spread, mitigation options identified based on epidemiological data</td>
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<tr>
<td>Reporting by SEACFMD Member Countries combined with informal assessment by OIE SRR-SEA</td>
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<tr>
<td>Annual reporting at the SEACFMD Sub-Commission Meeting</td>
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<td><strong>1(a.2) Increase in the number of samples tested in the national laboratory</strong></td>
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<td>FMDV samples should be representative of different production sectors and geographic regions; Timeliness should be defined; Data for these two indicators should be collected and analyzed annually and compared with the 2015 baseline.</td>
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<td>Most common circulating FMDV strains identified; sampling and laboratory testing, sending samples to reference laboratories for virus characterization</td>
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<tr>
<td>Reports from SEACFMD Member Countries and the Regional Reference Laboratory with regional collation and analysis of data by the OIE SRR-SEA</td>
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<tr>
<td><strong>1(a.3) Increase and timeliness of sending samples to international reference laboratories for virus characterization</strong></td>
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<td><strong>1(b) Identify risk factors for introduction and spread of the disease (FMD viral dynamics, animal movement, husbandry systems, market drivers, socio-economic issues)</strong></td>
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<tr>
<td><strong>1(b.1) Improvements in SEACFMD Member Countries’ ability to annually collect and update data on the spatial and temporal distribution of FMD, including the quality of data</strong></td>
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<td>This data includes both clinical signs and serological surveys to differentiate risks between animal populations or production systems; Data should cover all regions of the country and all husbandry systems involving FMD-susceptible species; Data should be collected annually and compared with 2015 baseline</td>
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<tr>
<td>Passive and/or active FMD monitoring system, targeted serological survey to assess prevalence of FMD in different husbandry systems, risk assessment to identify critical points for FMD entry and spread</td>
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<td>Reports from SEACFMD Member Countries with regional collation and analysis of data by the OIE SRR-SEA</td>
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<td><strong>1(b.2) Extent that socio-economic impacts of FMD in key</strong></td>
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<td>Socio-economic impacts include the different types of direct and indirect losses arising from FMD incurred by different</td>
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<td>Analysis of secondary data, key informant interviews, primary data</td>
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<td>Reports from SEACFMD Member Countries</td>
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<td>Annual reporting at the SEACFMD Sub-Commission Meeting</td>
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<td>SEACFMD 2020 Roadmap Objectives/Component Outcomes</td>
<td>Key Performance Indicator (KPI) from the PCP-FMD</td>
<td>Explanation of KPI</td>
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<td>husbandry systems have been estimated and used to inform FMD control activities</td>
<td>stakeholders in the country; This indicator measures both quantitative and qualitative aspects – i.e. the conduct of socio-economic impact studies and the practical use of studies either in policy development, communications, or in FMD control measures; Compare annual data (if relevant) with 2015 baseline</td>
<td>collection and analysis</td>
<td>with regional collation and analysis of data by the OIE SRR-SEA</td>
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<tr>
<td>1(c) Develop and apply effective control strategies</td>
<td>1(c.1) Presence of an FMD control strategy, endorsed by the government veterinary authority, that aims to eliminate FMD from at least one zone in the country and/or to all susceptible livestock in the country</td>
<td>The FMD control plan should include provisions for FMD to be rapidly detected whenever and wherever it occurs and every outbreak should trigger a response to limit the spread of the FMDV; the focus shifts away from control in a key livestock sector or zone to elimination of FMD in all susceptible livestock in the country or zone</td>
<td>Development of contingency and emergency preparedness plans</td>
<td>Reports from SEACFMD Member Countries with regional collation and analysis of data by the OIE SRR-SEA</td>
<td>Annual reporting at the SEACFMD Sub-Commission Meeting</td>
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<tr>
<td></td>
<td>1(c.2) Extent hotspots for FMD transmission are prioritized and targeted in FMD control activities</td>
<td>A risk-based control measure involves implementing measures targeted at FMD hotspots as critical risk control points; Control measures are consistent with the FMD national control plan and will include vaccination and enhanced biosecurity measures; Compare annual data with 2015 baseline.</td>
<td>Identification of FMD hotspots based on epidemiology and risk assessment along the livestock value-chain, development of vaccination delivery mechanism and cold chain, market measures to reduce FMD transmission, border and movement controls, biosecurity measures at critical points along the production and</td>
<td>Reports from SEACFMD Member Countries with regional collation and analysis of data by the OIE SRR-SEA</td>
<td>Annual Reporting at the SEACFMD Sub-Commission Meeting</td>
</tr>
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<td>1(c.3) Positive assessments on SEACFMD Member Countries’ ability to implement a prompt response mechanism (e.g. presence and operationalized emergency plan, upgraded surveillance, implementation of emergency response measures, including culling) and intensive blanket or targeted vaccination (depending on strategy) in at least one zone in the country</td>
<td>This includes assessments on the efficiency (e.g. cost effectiveness, degree of implementation) and technical rigor of implementing FMD control measures at critical hotspots; This indicator focuses on disease reporting and response with every outbreak triggering a response; Compare annual data with 2015 baseline</td>
<td>Full epidemiological investigations into all outbreaks; Serological surveys to assess vaccination coverage of the targeted population, laboratory evidence that the vaccine used is appropriate for the FMDV virus strains circulating in the area, analysis of surveillance data to assess changes in FMD prevalence over time in the target population; assessment of control measures; outbreak investigation; documented inspections of compliance with biosecurity and hygiene requirements.</td>
<td>Reports from SEACFMD Member Countries with regional collation and analysis of data by the OIE SRR-SEA; formal or informal assessments conducted by OIE SRR-SEA or other technical agencies</td>
<td>Annual Reporting at the SEACFMD Sub-Commission Meeting</td>
<td></td>
</tr>
<tr>
<td>1(c.4) Optional for countries continuing to PCP Stage 4: Increase in the number of countries with national FMD control programmes formally endorsed by the OIE.</td>
<td>This indicator is only for countries wishing to apply for OIE endorsement of its national FMD control programme; Identify the number of countries, as of 2015, with intention to apply for OIE endorsement and then compare annual data with 2015 baseline.</td>
<td>Application to OIE for formal endorsement of the national FMD control programme; PVS analyses;</td>
<td>Reports from SEACFMD Member Countries with regional collation and analysis of data from OIE SRR-SEA</td>
<td>Annual reporting at the SEACFMD Sub-Commission.</td>
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<tr>
<td>1(c.5) Evidence of increase attention to</td>
<td>This may include the increase in number of cross-border formal or</td>
<td>Border control measures within and</td>
<td>Reports from SEACFMD</td>
<td>Annual reporting at the SEACFMD Sub-Commission.</td>
<td></td>
</tr>
<tr>
<td>SEACFMD 2020 Roadmap</td>
<td>Key Performance Indicator (KPI) from the PCP-FMD</td>
<td>Explanation of KPI</td>
<td>Outputs and Activities required</td>
<td>Data Source</td>
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<tr>
<td>Objectives/Component Outcomes</td>
<td>border security amongst SEACFMD Member Countries</td>
<td>informal agreements between countries at the national or sub-national levels, including evidence that these agreements/arrangements are being implemented.</td>
<td>between countries</td>
<td>SEACFMD Member Countries with regional collation and analysis of data from OIE SRR-SEA</td>
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</table>

Maintain disease freedom in zones and countries that have achieved such status

<table>
<thead>
<tr>
<th>Strategy Component 2: Coordination and Advocacy</th>
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<tbody>
<tr>
<td>2(a) Coordinate the development and implementation of control strategies, training and communication</td>
</tr>
</tbody>
</table>

2(b) Support the development and application of advocacy strategies to increase political commitment to FMD control

| 2(b.1) Increase in political commitment to FMD control as evidenced by increase in fiscal budget allocation to FMD control, government endorsement of policies related to FMD control, and/or broader government participation in FMD control activities | The indicator does not measure whether advocacy activities were conducted but rather the final outcome of obtaining political commitment; Political commitment is seen in its practical terms through increases in funding, policy backing, and participation in action. | |

2(c) Extend advocacy to the

| 2(c.1) Increase in the number | To differentiate this from KPI 2(b.1), this indicator | |

<p>| 22nd Meeting of the OIE Sub-Commission for FMD Control in South-East Asia and China |</p>
<table>
<thead>
<tr>
<th>SEACFMD 2020 Roadmap Objectives/Component Outcomes</th>
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<tbody>
<tr>
<td>public and private sectors, to promote campaign awareness and support</td>
<td>of private-public partnerships (formal or informal) formed and developed to support national FMD control activities in each of the SEACFMD Member Country</td>
<td>focuses on private-public partnerships to support FMD control in each of the SEACFMD countries; similar to 2(b.1), the indicator looks at the final outcome of having private-public partnerships and not on the activity of extending advocacy to promote awareness and support to the FMD campaign.</td>
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**Strategy Component 3: Governance and Policy**

Provide governance at the national and regional levels

Assist Member Countries in evaluating and strengthening their Veterinary Services

Develop a regional policy framework, and support development of legislation in Member Countries for management of animal and zoonotic diseases in their territories.

Define funding needs and pursue opportunities for additional support.

**Cross-cutting Elements**

Promote effective communication of SEACFMD Campaign objectives, activities and achievements

Enhance technical, coordination

See Indicator C.3
<table>
<thead>
<tr>
<th>SEACFMD 2020 Roadmap Objectives/Component Outcomes</th>
<th>Key Performance Indicator (KPI) from the PCP-FMD</th>
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<tbody>
<tr>
<td>and policy capability in national Veterinary Services</td>
<td>Guide research and development in key areas</td>
<td>Implement effective monitoring and evaluation of activities and achievements to support the sustainability of the SEACFMD Campaign to 2020 and beyond</td>
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- END -
Annex 17: Agenda Paper: Status of Priority SEACFMD Actions

PURPOSE

To advise on the status of priority actions of the SEACFMD Campaign.

BACKGROUND

- The OIE SRR-SEA has compiled a number of key recommendations for the below draft action plan from recommendations from the OIE Sub-Commission for FMD in South-East Asia and China, the SEACFMD Animal Movement Meeting, the SEACFMD National Coordinators Meeting, and the Joint SEACFMD LabNet and EpiNet meetings in 2015.
- Key recommendations and actions from the 2014 SEACFMD National Coordinators Meeting and 2015 OIE Sub-Commission for FMD in South-East Asia and China were discussed in a workshop at the 2015 SEACFMD National Coordinators Meeting, in order to gather information on progress of key actions.
- Actions have been color-coded according to status and priority: Green = Complete, Yellow = Ongoing/Longer-term, Red = Urgent Action needed.
- Besides regular meetings and information exchange within SEACFMD and with partners, a number of actions have been completed or have commenced during the past year. This includes (but is not restricted to) the northern Lao and central Myanmar FMD projects, an animal movement study and formulation of a joint statement, and multiple outbreak investigations.
- This document serves as a living document, and will be adjusted according to inputs from Sub-Commission members at this meeting, with new recommendations to be added and actions to be revised at subsequent Meetings of the OIE Sub-Commission for FMD in South-East Asia and China and SEACFMD National Coordinators Meetings, with the OIE SRR-SEA regularly updating progress and pushing actions forward along with member countries.

RECOMMENDATIONS

The Sub-Commission:

- NOTES the key actions and PROVIDES comments.
- ENCOURAGES members to implement priority actions.
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Progress/Status</th>
<th>Responsibility</th>
<th>Problems/Impediments</th>
<th>Action(s) to be taken</th>
<th>Timeline</th>
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<tbody>
<tr>
<td>NOTES preliminary results from the Upper Mekong Animal Movement Study; and AGREES that Directors General meet mid-year to consider and make recommendations on the Final Report of the Study.*</td>
<td>Complete</td>
<td>OIE SRR-SEA, Subcm, NC</td>
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<td>Action on recommendations</td>
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<td>AGREES that engagement with industry should occur, and that animal movement management guidelines for regional trade consistent with the Greater Mekong Sub-region ‘single window inspection’ approach be drafted for consideration by Member Countries.*</td>
<td>In Progress</td>
<td>OIE SRR-SEA, MC’s</td>
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<td>AGREES that selected participatory epidemiological (PE) trials be conducted during outbreak investigations by Member Countries, and that Regional Guidelines be considered for development, with support from OIE SRR-SEA.</td>
<td>In Progress – Trial investigation conducted in Lao PDR, Myanmar</td>
<td>OIE SRR-SEA, MC’s</td>
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<tr>
<td>ENDORSES the Strategic Framework of the SEACFMD ROADMAP (2016-2020), subject to editorial improvements; AGREES that Member Countries will draft country goals, objectives and timelines, including projections of future PCP status, which will form an Annex to the Strategic Framework to be considered and endorsed at the 18th National Coordinators Meeting in the People’s Republic of China in August, 2015.*</td>
<td>PCP status provided by countries in annexes</td>
<td>MC’s</td>
<td></td>
<td>Continual review of baseline, validation of annexes where needed</td>
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<tr>
<td>AGREES that the Manuals to the SEACFMD ROADMAP (2016-2020) will be finalized for consideration by October, 2015, including a resource mapping component.*</td>
<td>In Progress – Drafts of 3 manuals available</td>
<td>SRR-SEA</td>
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<td>Manuals to be completed and published</td>
<td>June 2016</td>
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<tr>
<td>Recommendation</td>
<td>Progress/Status</td>
<td>Responsibility</td>
<td>Problems/Impediments</td>
<td>Action(s) to be taken</td>
<td>Timeline</td>
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<td>REINFORCES the need for active monitoring of circulating viruses in the region so that vaccine-matching plans can be improved and sustained; and URGES Member Countries to submit FMD specimens in a timely manner to OIE Reference Laboratories for characterization for vaccine matching, and to strengthen epidemiological knowledge to identify risks and potential critical control points, noting that OIE SRR-SEA will continue to offer support to Member Countries.</td>
<td>Samples submitted to RRL-Pakchong and WRLFMD by Cambodia, Lao, Myanmar with support from SRR-SEA</td>
<td>RRL’s, SRR-SEA, MC’s</td>
<td>More submission to be encouraged</td>
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<tr>
<td>AGREES that the OIE FMD Vaccine Bank has proven a critical resource in supporting FMD management; and AGREES that efforts should be made by all stakeholders and OIE to ensure its continuation.</td>
<td>Vaccine bank mechanism continuing, is being used to support vaccines for Cambodia, Lao, Myanmar</td>
<td>OIE SRR-SEA, OIE HQ</td>
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<td>AGREES that the FAO/OIE Foot and Mouth Disease Vaccination and Post-Vaccination Monitoring Guidelines, to be published in 2015, are to be considered for application by Member Countries; and NOTES that post-vaccination monitoring is already conducted in a number of Member Countries.</td>
<td>Use of guidelines discussed at Joint SEACFMD EpiNet-LabNet Meeting, ongoing PVM activities in Lao and Myanmar</td>
<td>MC’s, SRR-SEA</td>
<td>Publication pending.</td>
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<td>AGREES that FMDV sequence data should be used to better support the understanding of regional transmission pathways.</td>
<td>Samples are being submitted to RRL’s and WRLFMD, with SRR-SEA making preparations for analysis once sequence data is available</td>
<td>SRR-SEA, RRL’s, WRLFMD</td>
<td>Sequence data availability and sharing</td>
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<tr>
<td>Recommendation</td>
<td>Progress/Status</td>
<td>Responsibility</td>
<td>Problems/Impediments</td>
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<td>NOTES that the OIE and the Australian Government Department of Foreign Affairs and Trade, in consultation with the Australian Government Department of Agriculture, will continue discussions on how to sustain Stop Transboundary Animal Diseases and Zoonoses (STANDZ) key activities in its last year of implementation until June 2016 and initiate discussions on Australia's potential support for FMD control in the region after June 2016.*</td>
<td>No cost-extension of STANDZ until 2017 approved</td>
<td>OIE HQ, OIE SRR-SEA, DAWR</td>
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<td>NOTES progress with the Northern Lao PDR FMD Project, the current FMD vaccination program in Central Myanmar, and that a formal FMD Project proposal for Central Myanmar will be finalised in the near future.</td>
<td>Lao Project Progressing, Central Myanmar project design approved and signed by OIE and LBVD</td>
<td>OIE HQ, OIE SRR-SEA, DLF Lao, LBVD Myanmar</td>
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<td>NOTES that a New Zealand funded project within OIE SEACFMD is being developed, and is expected to be announced and implemented in 2015.</td>
<td>Project has commenced, with activities having commenced in December 2015</td>
<td>OIE HQ, OIE SRR-SEA, MC's</td>
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<tr>
<td>NOTES that the People’s Republic of China will continue to provide financial support to the SEACFMD Campaign.</td>
<td>Contribution given by PR China</td>
<td>OIE HQ, OIE SRR-SEA, PR China</td>
<td></td>
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<tr>
<td>AGREES on the essentiality of strong governance of programs funded by STANDZ, and that the procedures and processes successfully used in the Northern Lao PDR FMD Program be considered for like programs.*</td>
<td>Procedures and processes used in Northern Lao PDR FMD project have been used in Myanmar FMD and Rabies projects, as well as New Zealand FMD Project Activities</td>
<td>OIE, DLF Lao, LBVD Myanmar</td>
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<tr>
<td>Recommendation</td>
<td>Progress/Status</td>
<td>Responsibility</td>
<td>Problems/Impediments</td>
<td>Action(s) to be taken</td>
<td>Timeline</td>
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<td>ENCOURAGES countries to request PVS follow-up evaluations and any other PVS Pathway Missions when relevant.*</td>
<td>PVS Mission recently conducted in Malaysia</td>
<td>OIE, MC’s</td>
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<tr>
<td>NOTES updated developments of National Plans (NPs) in particular countries (finalization of NPs of Cambodia and Lao PDR; endorsement of Myanmar NP by the Delegate of Myanmar to OIE); and NOTES that Vietnam has formally requested assistance from OIE SRR SEA and FAO ROK Project to update the NP (2016-2020); and NOTES that a workshop to draft this NP will be supported.</td>
<td>Cambodia and Lao plans endorsed by Ministry and Delegate respectively, Vietnam plan is progress, with workshops conducted</td>
<td>OIE, MC’s</td>
<td></td>
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<tr>
<td>ACKNOWLEDGES that Thailand is likely to apply for OIE endorsement of official control programs and/or FMD free zone status in 2015.</td>
<td>Application complete, with SCAD recommending endorsement by World Assembly 2016</td>
<td>OIE, DLD Thailand</td>
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<tr>
<td>NOTES that the SRR-SEA will seek to work with Indonesia and the Philippines to conduct cost-benefit studies to demonstrate the importance in investing in prevention and contingency planning measures for FMD.*</td>
<td>Terms of Reference Finalised, awaiting approval from Indonesia</td>
<td>OIE, MC’s</td>
<td></td>
<td>Finalisation of approval by country</td>
<td></td>
</tr>
<tr>
<td>AGREES to pursue high-level advocacy at the ASEAN and National Level to reinforce the need for political and resource support for Phase 5 of the SEACFMD Campaign.*</td>
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<tr>
<td>AGREES that private sector engagement is essential for maintaining and improving FMD status, in free and endemic countries, and that efforts be made to engage the private sector in Sub-Commission activities.*</td>
<td>Private sector attendance at 2016 Sub-Commission</td>
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*2016 SEACFMD Animal Movement Meeting
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<th>Recommendation</th>
<th>Progress/Status</th>
<th>Responsibility</th>
<th>Problems/Impediments</th>
<th>Action(s) to be taken</th>
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<tbody>
<tr>
<td>AGREE to utilize the output of the study to strengthen FMD control in the region, in managing animal movement and in targeting animals for vaccination</td>
<td>In Progress</td>
<td>OIE SRR-SEA</td>
<td>More data to be gathered, model to be developed</td>
<td></td>
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<tr>
<td>EXAMINE possibilities of developing an FMD South East Asia risk model that informs on future risk of FMD in the region. The model could be informed by price differentials of animals/animal products between countries (validated with results from recent and historical movement studies) as well as other data sources e.g. molecular epidemiological data, outbreak data, road infrastructure, livestock density etc.</td>
<td>In Progress</td>
<td>OIE SRR-SEA</td>
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<tr>
<td>SUPPORT China’s proposal in collaboration with GMS countries to encourage the establishment of control zones (export/import) within the region, based on practical animal health guidelines, for the purpose of facilitating international and domestic livestock trade and minimize risks; and NOTE that the OIE SRR-SEA is prepared to provide technical support on this initiative;</td>
<td>Ongoing, to be supported by Joint Statement</td>
<td>OIE SRR-SEA</td>
<td></td>
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<tr>
<td>SUPPORT the development of regional and harmonized protocols on animal trade, including single-window inspection framework, animal identification, regional accreditation system for international traders, etc.</td>
<td>Ongoing, to be supported by Joint Statement</td>
<td>OIE SRR-SEA</td>
<td></td>
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<tr>
<td>AGREE to institute measures to prevent illegal movement of livestock from outside SE Asia and China;</td>
<td>Ongoing, to be supported by Joint Statement</td>
<td>OIE SRR-SEA</td>
<td></td>
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<td>Recommendation</td>
<td>Progress/Status</td>
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<td>Problems/Impediments</td>
<td>Action(s) to be taken</td>
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<tr>
<td><strong>AGREE to issue a Joint Statement by the Directors General to strengthen animal movement management as per the GMS Cross-Border Transport Facilitation Agreement.</strong></td>
<td>Comments collected from member countries, Joint Statement to be finalised for signature</td>
<td></td>
<td></td>
<td>Signature by Delegates at World Assembly</td>
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<tr>
<td><strong>18th SEACFMD National Coordinators Meeting</strong></td>
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<tr>
<td><strong>AGREES that the SRR-SEA will circulate on request training materials on Application to OIE for Endorsement of National FMD Control Plans</strong></td>
<td>Requests not made as yet, but materials distributed at Workshop in 2016</td>
<td>MC’s, SRR-SEA</td>
<td></td>
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<tr>
<td><strong>AGREES to improve sample submission including quantity, quality and timeliness to support analyses of the nature of circulating strains in the SEACFMD Campaign countries.</strong></td>
<td>Sample submission at reasonable level</td>
<td>Member Countries</td>
<td></td>
<td>More samples to be submitted</td>
</tr>
<tr>
<td><strong>AGREES to actively monitor and report on serotype O, including the PanAsia Strain in Lao PDR, because of the apparent increased incidence relative to serotype A.</strong></td>
<td>Outbreak investigations conducted in various countries</td>
<td>SRR-SEA/MC’s</td>
<td></td>
<td>Further investigations to be conducted as needed</td>
</tr>
<tr>
<td><strong>AGREES that the SRR-SEA examine the utility of establishing a small group of SEACFMD Members to review and provide advice on country self-evaluations for PCP Status.</strong></td>
<td>To be discussed at Subcomm 2016</td>
<td>OIE, Member Countries, Partners</td>
<td></td>
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<td>Recommendation</td>
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<td>AGREES to the following timing of key documents:</td>
<td>Complete</td>
<td>SRR-SEA, member countries</td>
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<tr>
<td>- Submission and validation of the Annex to the SEACFMD 2020 Roadmap by 23rd September</td>
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<tr>
<td>- Printing of the SEACFMD 2020 Roadmap in October</td>
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<tr>
<td>- Finalisation of Regional and National Implementation Plans and tabling of these documents at the 22nd Meeting of the OIE Sub-Commission for FMD Control in South-East Asia and China in March 2016</td>
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<tr>
<td>- Submission of Geographical Information Systems shapefiles to the OIE SRR-SEA demonstrating FMD control and eradication objectives until 2020 by September 23 2015.</td>
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<td>- Drafting of the Roadmap Manual for presentation at the 22nd Sub-Commission Meeting in March 2016</td>
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<td>Recommendation</td>
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<td>ENDORSES the list of strains proposed for the next round of OIE international call for tender for high potency purified oil adjuvanted vaccines for the regional vaccine bank, namely: O1 Manisa - O Cathay – O-3039 – O Panasia 2 - A22 Iraq - A Malaysia 97 - A Iran 05 - Asia 1 Shamir (not by order of importance), in addition to possible use of non-determined or pre-determined optional strains. In addition, indicate in the tender to request companies to recommend additional strains that would be most compatible to combat the prevalent strains circulating in SEACFMD countries such as O Myanmar 98, O Panasia, O Cathay and the new A SE-Asia (A Lopburi-Thai and A Gen2-China).</td>
<td>Ongoing</td>
<td></td>
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<td>AGREES that country epidemiology and laboratory staff will enhance their coordination through regular meetings to improve information sharing, analyses of FMD status and control activities.</td>
<td>Ongoing</td>
<td>MC’s</td>
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<tr>
<td>AGREES to continuously improve communication channels between the FMD laboratories and the respective relevant authorities such that laboratory findings in the countries, including those on PVM, may effectively influence further planning of FMD initiatives in the SEACFMD Member Countries.</td>
<td>Ongoing</td>
<td>MC’s</td>
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<tr>
<td>AGREES to regularly review and update country FMD control and prevention strategies, based on the results of their routine risk assessments in order to ensure effectiveness and efficiency in the allocation of resources.</td>
<td>Ongoing</td>
<td>MC’s</td>
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<td>Recommendation</td>
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<tr>
<td>AGREES that members will further enhance the application of OIE Standards and guidelines, such as the Guidelines on Terrestrial Animal Surveillance and the Post-Vaccination Monitoring, and the OIE will provide support towards the implementation of these Guidelines, including through capacity building activities.</td>
<td>Ongoing</td>
<td>MC's</td>
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<tr>
<td>AGREES that EpiNet will develop a basic surveillance design and Outbreak investigation protocol based on OIE standards and guidelines.</td>
<td>Ongoing</td>
<td>SRR-SEA, MC's</td>
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<tr>
<td>ENCOURAGE for more samples submitted to OIE Reference Laboratories be sequenced at least for VP1 and if possible for full genome sequencing, EXPLORE support from partners to assist OIE Reference Laboratories to implement this.</td>
<td>Ongoing – samples submitted from Cambodia, Lao, Myanmar, Thailand for Sequencing</td>
<td>RRL’s, MC’s, SRR-SEA</td>
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<tr>
<td>REQUESTS that epidemiology network members update diagnostic results in their report to OIE through the WAHIS or WAHIS Regional Core, once the results are available.</td>
<td>Ongoing – still incomplete by some countries</td>
<td>MC’s</td>
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<tr>
<td>RECOGNISES the importance of epidemiological information in laboratory analysis, and REQUESTS the epidemiology units to require the complete submission of epidemiological information to accompany samples.</td>
<td>Ongoing</td>
<td>MC’s</td>
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<td>EXPLORE the development of a regional numbering/reference system for outbreaks on a regional basis, and the OIE SRR-SEA will coordinate with OIE Reference Laboratories in Pakchong, Lanzhou and Pirbright in the construction of a regional database.</td>
<td>Ongoing</td>
<td>SRR-SEA, RRL’s</td>
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- END -
The Philippines has been recognized as an FMD free country without practicing vaccination last May 2015 during the 83rd OIE General Assembly, officially consolidating the freedom of its five FMD free zones into a national status. The national FMD prevention and preparedness program remain in place to uphold disease freedom. The FMD Preparedness Program is one of the major components of the Animal Health and Welfare Protection Program included in the 5 year strategic plan of the Bureau of Animal Industry (BAI) (2016-2020). This strategic plan is in the pipeline for approval and funding for years 2017-2020.

A series of four table top simulation exercises have been conducted to gauge the level of preparedness and hone the skills of the local government veterinarians in the event of an incursion. In addition, a series of Trainers Training on Outbreak Investigation and Management (OIM) for Second and Third Level were conducted by the BAI - Philippine Animal Health Information System (PhilAHIS) staff in different regions. A National FMD Coordinators’ Meeting was also held where activities carried out at the national and provincial levels were presented and the constraints and challenges faced were discussed. There was also a poster-making contest with the theme “Maintenance of FMD Freedom”. The winning pieces will be used in our Information Education Campaign. Copies of the FMD Emergency Preparedness Plan manual were distributed to all the FMD coordinators and members of the National Advisory Committee for Animal Disease Control and Emergency (NACADCE).

FMD STATUS

FMD-FREE COUNTRY without vaccination

ANIMAL HEALTH MANAGEMENT ACTIVITIES

The country’s FMD Surveillance and Prevention Activities in 2015, under the leadership of BAI, are in line with the Strategy Components of the SEACFMD Roadmap 2016-2020.

1. TECHNICAL:
Serological surveillance remains a bi-annual activity to substantiate freedom from circulating infection of FMD. Serum samples are collected from different provinces and submitted in May and October to the FMD Laboratory in the Animal Disease Diagnosis and Reference Laboratory (ARDDL), formerly called Philippine Animal Health Center (PAHC), for NSP ELISA. For the year 2015 a total of 5,335 serum samples were submitted by 52 out of 81 provinces. 5,328 tested negative while 7 tested positive for presence of antibodies for FMD. All positive cases came from slaughterhouses from 4 separate regions in the country. They were of different species (bovine-2, bubaline-1, caprine-3, porcine-1).
A systematic protocol for negative monitoring and reporting of FMD suspect cases and handling of outbreak cases are continuously observed by field officers. All reports pertaining to FMD are properly disseminated from the grassroots up to the national level thru the BAI Phil-AHIS database. The local government veterinarians submit their Negative Monitoring Reports (NMRs) on the FMD status to their respective Provincial Veterinary Offices which then forward the NMRs to the Regional Field Offices for consolidation. Submission of the reports to Phil-AHIS would be expected every 20th day of the month.

A standardized livestock shipment protocol, maintenance of quarantine checkpoints, and the licensing of livestock traders and transport carriers are in place to regulate and monitor the movement of FMD susceptible animals, their meat/meat products and by-products in the country.

All importations of FMD susceptible animals and its products/by-products are strictly sourced from OIE member countries and exporters/foreign meat establishments recognized by the National Veterinary Authority (NVA) of the country of origin. Inspection of quarantine site, border control measures at port of entry, and a 30-day quarantine period with periodic inspection and serological testing are routinely conducted. The recent implementation of the BAI’s rationalization plan has resulted to a strengthened and expanded quarantine function of the agency. The ad hoc National Veterinary Quarantine Services has been created into a new division, the National Veterinary Quarantine Services Division, with 349 plantilla positions to man international and domestic seaports and airports all over the country. Any banned products detected at entry points are confiscated, destroyed or immediately returned to point of origin.

The government also maintains 100,000 doses of O1 Manisa vaccine buffer stock to be used in the event of an FMD outbreak. Vaccination of all FMD susceptible species at all barangays or villages covered within 10 kms. centered on each infected area will commence as soon as the first outbreak is confirmed.

2. COORDINATION AND ADVOCACY
The BAI is in continuous coordination with the various stakeholders such as the livestock sector, private & government veterinarians, decision makers (DA/LGUs) thru regular meetings with the National Advisory Committee for Animal Disease Control and Emergency (NAC-ADCE), swine breeders, and large and small ruminant associations. The Local Government Units are also active partners in conducting consultative dialogues with the hog raisers association, handling interviews from local media practitioners on animal diseases and animal health concerns and giving free consultation to livestock raisers.

To better equip the country for disease management during an insurgence, a series of workshop on Trainers Training on Outbreak Investigation and Management (OIM) Workshop for Second and Third Levels were conducted by the BAI-PhilAHIS in the different regions. It was attended by local government veterinarians and newly-hired quarantine officers. A total of 7 workshops for Level 3, 2 workshops on Level 2 and 3 Web-mapping Trainings were conducted in 2015.

A series of FMD Comprehensive Scenario Induced Simulation Exercise (CSI-SIMEX) or FMD Tabletop Simulation Exercise was also conducted to cover participation of regional/provincial/city/municipal veterinarians in the whole country to assess the level of preparedness at various levels and enhance their capability to respond accordingly.

For North Luzon, the simulation exercise was held in Pampanga on May 21-22, 2015; South Luzon in Laguna on June 25-26, 2015; at Iloilo City for Visayas participants on July 23-24, 2015; and finally for Mindanao participants, in Davao City on August 27-28, 2015. The Annual FMD Coordinators Meeting
was conducted last October 6-9, 2014 at the Hive Conference Hall, Quezon City where FMD activity reports of all coordinators from the local to the national level were presented, and the pressing issues and concerns were discussed. The FMD-Emergency Preparedness Plan (FMD-EPP) manual was also distributed to the regional and local government participants during the simulation workshops and annual coordinators meeting. This manual will serve as the written guidelines or protocol in case of disease insurgence.

A poster-making contest with a theme “Maintenance of FMD Freedom” was conducted during the coordinators’ meeting. The winning piece will be used on the new information materials that will be developed for Information Education Campaign.

3. GOVERNANCE AND POLICY
Department of Agriculture Administrative Order (DA-AO) No. 13, Series of 2012 re “Guidelines on the Transport/Shipment of Hogs, Cattle, Carabaos, Sheep and Goats and Other Cloven-footed Animals, their Meat and Meat Products, Animal Products and By-products in and between Luzon, Visayas and Mindanao” and DA-AO No. 19, Series of 2011 on “Lifting of FMD Transport Restrictions” serve as the implementation guidelines for disease prevention and control measures through strict observance of livestock movement in the country. The rationalization of the BAI commenced implementation in 2015, merging the Animal Welfare Division and the regulatory functions of Marketing Division (licensing of livestock traders, transport carriers) and of the Livestock Development Division (accreditation of swine breeder farms, cattle farms, and goat farms) to the Animal Health Division. In addition, the ad hoc Quarantine and Inspection Services of BAI was translated into a distinct entity as the National Veterinary Quarantine Services Division (NVQSD). The NVQSD has direct control and supervision over all animal quarantine concerns. This new organizational development aims to strengthen and expand the line function of BAI on animal quarantine implementation and regulations. The FMD Preparedness Program is one of the major components of the Animal Health and Welfare Protection Program included in the 5 year strategic plan of the BAI (2016-2020). Its goal is maintenance of FMD country freedom and has the following components: (1) disease surveillance, (2) animal movement management, (3) conduct of education and public awareness campaign, (4) vaccination, (5) capacity building of frontline veterinary services, (6) strengthening of linkages with regional and local government counterparts. This strategic plan is in the pipeline for approval and funding for years 2017-2020.

4. CONSTRAINTS AND SOLUTIONS
Surveillance:
• Delay in submission of monitoring reports and decline in the number submitted
• Revision of on-line inspection report form
• Constant reminder to concerned FMD coordinators
• Unavailability of blood collection paraphernalia
• Assistance from BAI in some provinces

Animal Movement Management:
• Lack of quarantine staff
• Strengthening of quarantine network through
• Need for 24/7 manning of checkpoints
• The on-going rationalization program of the national government

Advocacy:
• Lack of budgetary allocation for FMD prevention program
• Conduct of socio-economic studies
• Capacity building activities for advocacy
• Outdated IEC materials
• Development of new IEC materials

5. **FUTURE ACTIVITIES (for 2016)**
• Conduct of a series of capacity building trainings on risk and crisis communication among regional and local government veterinary personnel
• Conduct of National FMD Coordinators Meeting
• Conduct of Study on the economic Impact of FMD Incursion
• Production and Distribution of new IEC materials
• Regular coordination/consultation with public and private stakeholders

22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

Singapore

ABSTRACT

Singapore remains as a FMD free country where vaccination is not practised. Due to limited land for farming, the local livestock industry is small. Hence, Singapore depends heavily on import of animals and animal products for its food supply.

By adopting a multi-approach strategy, Singapore maintains FMD-disease free status through stringent import control measures, source accreditation, increasing laboratory testing capability and local disease surveillance. This integrated disease control system is based on a risk-based approach and scientific evidence.

Moving forward, the Agri-Food and Veterinary Authority of Singapore (AVA) will actively engage the relevant stakeholders to look into reviewing existing emergency protocols and FMD contingency plans.

FMD STATUS

Singapore is recognised by the OIE as a FMD free country where vaccination is not practised. Singapore is able to declare for the period of January 2015 to February 2016, that there has been no outbreak of FMD and vaccination against FMD has not been carried out. There is also no evidence of FMDV from surveillance and monitoring of local and imported animals and animal products.

ANIMAL HEALTH MANAGEMENT ACTIVITIES

While Singapore does not have a big livestock farming industry, there could be a significant economic impact to Singapore in terms of potential trade losses. Therefore, AVA has adopted strategies and approach to prevent the introduction of FMD into the country. AVA’s accreditation and import control programmes are based on a scientific and risk-based approach, and allow the import of livestock and livestock products only from FMD-free countries or regions.

1. Legislation

FMD is gazetted as a notifiable disease under The Animals and Birds Act (CAP 7), which provides the legislative powers to prevent the incursion and spread of animal diseases, and to control the movement of animals into, within and from Singapore. Under the act, any person must report any suspected or positive detection of FMD to AVA immediately. Those who fail to report FMD may be subjected to a fine or could be imprisoned upon prosecution.

The Wholesome Meat and Fish Act (1999) regulates the slaughtering of animals, processing, packing, inspection, import, distribution, sale, transhipment, and export of meat and fish products and related activities.
1. **Vaccination**

Singapore is free from FMD and does not practice vaccination.

2. **Surveillance**

Singapore is a small highly urbanised city state with little wildlife and limited livestock farming. There are only a very small local population of susceptible animals. There are three dairy cattle farms, one goat farm, and a zoological collection.

AVA conducts regular monitoring on the local farms through active serological and clinical surveillance. The last serological surveillance was done in December 2015. A baseline serological survey was conducted on susceptible ruminant and porcine species in our zoological collection in 2014/2015. In addition, AVA commenced passive serological surveillance for wildlife species in 2015.

All local samples were tested sero-negative for FMD.

3. **Import Control**

Singapore is an island where routes of entry into the country are restricted to the sea port, airport and two road links to Peninsular Malaysia. AVA will inspect all live animal imports at the border checkpoints. AVA has in place standard operating procedures with Immigration and Checkpoint Authority (ICA) to deal with illegal imports of animals and animal products.

AVA has an accreditation system for susceptible animal species, meat and meat product imports, whereby only country sources and establishments, which have been approved by AVA, may export animals, meat and meat products to Singapore. Import of animals and raw meat are only allowed from FMD free countries and zones, and processed meat or dairy products are only allowed where risk mitigation measures are applied, such as heat-treatment or pasteurisation, in accordance to OIE guidelines.

All importers must be licensed and import permits are required for each consignment of animals, animal products (including animal feeding stuffs), meat and meat products. Consignments must also arrive with valid health certificates endorsed by the relevant overseas competent authorities, and are physically inspected and samples taken for laboratory tests.

4. **Laboratory Activities**

658 samples from local surveillance and import monitoring were taken for FMD testing at the AVA Animal Health Laboratory (AHL) for the period of January 2015 to February 2016, and all samples were tested negative for FMD.

AHL provides FMD diagnostic test capabilities using OIE recognised methods, and is ISO17025 accredited. The laboratory also actively participates in inter-laboratory proficiency programmes to maintain a rigorous quality assurance standard, with 100% satisfactory results in 2015 for samples sent to the OIE regional reference lab in Pakchong, Thailand, and FMD reference lab in Pirbright, UK.

<table>
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<tr>
<th>FMD test capabilities</th>
<th>Proficiency testing</th>
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<tr>
<td>NSP ELISA</td>
<td>Participated in inter-laboratory proficiency programmes with Pakchong and Pirbright in 2015 with 100% satisfactory results.</td>
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<td>Liquid phase blocking ELISA for serotypes O, A, Asia 1, C</td>
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<td>RT-PCR molecular detection of FMDV RNA</td>
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5. **FMD contingency plan**
A contingency plan has been developed to address measures to be taken for FMD outbreaks in farms. Main strategies comprise movement control, epidemiological investigation, lab testing, surveillance and public communications.

6. Advocacy
Through regular meetings and dialogue sessions, AVA actively engages relevant stakeholders such as the local farms, meat traders and trade associations, and the zoo, to create awareness and stress the importance and impact of FMD. AVA will continue to create awareness on FMD clinical signs and farm biosecurity to local farmers through regular visits and meetings.

AVA is currently working closely with the zoo to review and refine the disease monitoring programme. FMD is one of the priority diseases identified for close monitoring and development of a disease outbreak contingency plan.

At the national level, AVA is involved in a tripartite relationship with the National Environment Agency and Ministry of Health under the mandate of the One Health Framework, employing an integrated approach for the control of animal and zoonotic diseases. High level coordinating committee meetings are conducted annually. Working groups meet more regularly to discuss and develop initiatives in the areas of protocols, communication, surveillance and risk assessment, and capability development.

Singapore also cooperates with Jilin City and the Ministry of Agriculture, China, to maintain an FMD disease free zone in Yongji County in Jilin province. As a member of the OIE and ASEAN, Singapore also works closely with other member countries towards eradicating FMD in the region. AVA organised a training workshop “OIE Recognition for FMD Freedom with Vaccination” for Jilin officers from 13-16 October 2015 in Singapore. The focus of the workshop was to educate the officers on the process to obtain OIE recognition for FMD freedom, with expert trainers from FAO (Prof John Edwards), OIE (Dr Ronello Abila and Dr Phil Widders) and MOA China (Prof Zheng Zengren).

7. FUTURE ACTIVITIES
Review FMD Contingency Plan
AVA will conduct a review of the existing FMD contingency plan in 2016. This will include the evaluation on the feasibility of an emergency vaccination strategy for the control of FMD outbreaks in the zoo collection.

Training on Socioeconomic Risk and Impact Assessment
AVA will be engaging a consultant who is an expert in health economics to conduct a training programme for AVA officers in socioeconomic risk and impact assessment in 2016. The programme will cover case studies on animal disease scenarios and human-animal conflicts, including a possible FMD outbreak or introduction into Singapore.
 Annex 20: Country Report: Cambodia

22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

Cambodia

ABSTRACT

From January to December 2015, there were 12 outbreaks of FMD reported from 7 provinces (Kampong Speu, Kampong Cham, Prey Veng, Pursat, Svay Rieng, TboungKhmum and Kandal) and caused 439 heads of cattle; 03 heads of buffaloes and 12 heads of pigs showed clinical signs and among those 5 heads of cattle died. A total of 17 samples was collected and the testing results showed positive to serotype O or A.

With support from FMD-ROK Project funded by Korean government through FAO, Department of Animal Health and Production (DAHP)/National Veterinary Research Institute (NaVRI) conducted three training courses on FMD outbreak investigation for district veterinarians in 3 target provinces (Takeo, Prey Veng and Kampong Cham) with the distribution of outbreak investigation kits to all 46 participants and some kits are kept at the provincial animal health and production offices; 10 provinces conducted stakeholder meeting and workshop with 25 provincial animal health and production offices. With support from OIE, DAHP/NaVRI conducted training courses on FMD outbreak investigation for district veterinarians in 11 provinces and conducted training on Occupational Health and Safety for NaVRI laboratory staff.

FMD STATUS

In January 2015, there was only 1 outbreak of FMD reported from TrapaingPhlong village, DamboukRoung commune, Phnom Sruoch district, Kampong Speu province. In February, Match and April of 2015, there was no FMD outbreaks reported. April 2015, there is no FMD outbreaks reported from provinces.

In May 2015, there were 3 outbreaks reported from Kampong Speu province. FMD started from May 21, 2015, and the villages and district/provincial animal health and production offices reported the FMD status to the Department of Animal Health and Production on May 29, 2015. The location of FMD outbreaks are shown as the following:

- Prey Kaheach, Banteay Roka and Trapaing Prey villages, KraingDevey commune, Phnom Sruoch district; 18 heads of cattle showed clinical symptoms and totally 2,021 heads were at risk.
- SraeChrov village, TaingSamrong commune, Phnom Sruoch district; 2 heads of cattle showed clinical signs and totally 250 heads were at risk.
- PeamRos village, Raksmeysamaki commune, Oral district; 7 heads showed clinical signs and totally 410 heads were at risk.

In June 2015, there were 3 outbreaks reported (2 ongoing outbreaks from Kampong Speu province and 1 new outbreak from Prey Veng).
• 2 ongoing FMD outbreaks is reported in Prey Kaheach, Banteay Roka and Trapaing Prey villages, KraingDevey commune, Phnom Sruoch district and affected 10 heads of cattle among the total of animal population of 2,021 heads.
• SraeChrov village, TaingSamrong commune, Phnom Sruoch district; 5 heads of cattle were affected among the total of susceptible animal population of 250 heads.
• PeamRos village, RaksmeySamaki commune, Oral district; 12 heads of cattle were affected among the total of susceptible animal population of 410 heads.
• 1 new FMD outbreak was reported from Reathor and Angreach commune, PreahSdach district, Prey Veng commune and affected 49 heads of cattle and 1 head of buffalo, of which 4 cattle died eventually.

In July 2015, there was 1 suspected outbreak of FMD in ThmeiKhor village, Roka Kouy commune, Kong Meas district, Kampong Cham province. District veterinarian did not report to provincial DAHP and Department of Animal Health and Production because he thought that were only 4 heads of cattle showed clinical sign of FMD. During that period, district veterinarian took control measures including cleaning the wounds with antiseptic, blue methylene, organising small meeting with neighbouring houses. This information was collected during the field visit of Dr.Reildrin Morales in Kampong Cham province on 29 July 2015.

In August 2015, 5 FMD outbreaks were reported from the following provinces:
Kampong Cham province
• 1 FMD outbreak in Phum No. 13, PrekTanong commune, KoahSotin district and affected 17 heads of cattle on 05 August 2015 among the total of susceptible animal population of 180 heads. Two samples were collected on 11 August 2015. District veterinarian reported to provincial DAHP on 11 August 2015 and provincial DAHP reported to DAHP HQ on 12 August 2015.
• 1 FMD outbreak in Pong Ro village, Roka Kuoy commune, Kang Meas district and caused 36 heads of cattle sick on 11 August 2015 among the total of at-risk animal population of 243 heads. Three FMD samples were collected on 14 August 2015. District veterinarian reported to provincial DAHP on 12 August 2015 and provincial DAHP reported to DAHP HQ on the same date.

Pursat province
• 1 FMD outbreak in Kdat village, Me Tek commune, Bakan district and caused 12 heads of swine sick on 01 August 2015 among the total of susceptible animal population of 284 heads. Only two FMD samples were collected on 05 August 2015. District veterinarian reported to provincial DAHP on 03 August 2015 and provincial DAHP reported to DAHP HQ on 5 August 2015.

Svay Rieng province
• 1 FMD outbreak in Salarean village, Basac commune, Svay Chrum district and caused 10 heads of cattle and 02 heads of buffaloes sick on 10 August 2015 and 4 FMD samples were collected on 17 August 2015. The village animal health worker reported to district veterinarian on 12 August 2015 and then district veterinarian reported to provincial DAHP office on 13 August 2015 and provincial DAHP reported to DAHP HQ on 14 August 2015.

TboungKhmum province
• 1 FMD outbreak in Sauy 1 and Ampel villages, Peus commune, Kroch Chmar district and caused 234 heads of cattle sick on 18 August 2015. District veterinarian reported to provincial DAHP on 24 August 2015 and provincial DAHP reported to DAHP HQ on 26 August 2015.

In September 2015, 1 FMD outbreak was reported from Phum 1 Kor, Svay Rolom commune, Sa’ang district, Kandal province by Chief of DAHP in Kandal province on 9 September 2015 and the provincial report reached DAHP HQ 10 September 2015. There were 185 heads of cattle, 95 head of buffaloes,
16 heads of sheep and 30 heads of goat at risk, and only 10 heads of cattle and 1 head of buffalo had clinical signs. Three FMD samples were collected and these samples were sent to NaVRI on 11 September 2015. During this period, district and provincial veterinarians conducted investigation and took control measures such cleaning the wounds with antiseptic, blue methylene, and other treatment.

From October to December 2015, there was no FMD outbreak reported in the country.

### Table 1: Morbidity and mortality of animals caused by FMD from January to December 2015

<table>
<thead>
<tr>
<th>Province</th>
<th>Species</th>
<th>Susceptible</th>
<th>Morbidity</th>
<th>Mortality</th>
<th>Total outbreaks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bov</td>
<td>Buf</td>
<td>Sui</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>Cattle</td>
<td>-</td>
<td>79</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>Cattle</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prey Veng</td>
<td>Cattle</td>
<td>-</td>
<td>49</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Buffalo</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Pursat</td>
<td>Swine</td>
<td>284</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>Cattle</td>
<td>423</td>
<td>53</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Svay Rieng</td>
<td>Cattle &amp; Buffalo</td>
<td>-</td>
<td>10</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>TboungKhmum</td>
<td>Cattle</td>
<td>723</td>
<td>234</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Cattle</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>439</strong></td>
<td><strong>3</strong></td>
<td><strong>12</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

*Figure 1: Distribution of FMD outbreaks by month (January-December, 2015)*
Figure 2: Location of FMD outbreaks from January to December 2015

Control measures:
• District and provincial veterinarians work closely with village animal health workers and local authority to treat sick animals with antibiotics, distribute blue methylene to farmers, separate sick animal from healthy animals
• Arrange the meeting with farmers to guide them how to control and prevent the spread of FMD in their district
• Conduct ring vaccination around the infected villages
• Strictly control animal movements from infected villages
• Promote public awareness in the infected villages and also distribute the FMD leaflets and posters to farmers
• Advise farmers on how to take care their animals during the FMD outbreaks and how to prevent their animals from FMD

Number of FMD samples collected from January to December 2015:
• In January 2015, 4 FMD samples were collected from TrapaingPhlong village, DamboukRoung commune, Phnom Sruoch district, Kampong Speu province
• In May 2015, 4 FMD sample were collected from KrasaingKhpos village, Kampong Kdei commune, Phnom Sruoch district, Kampong Speu province
• In August 2015, 9 FMD samples were collected from various locations:
  o 2 FMD samples from Kdat village, Me Tek commune, Bakan district, Pursat province
  o 3 FMD samples from Pong Ro village, Roka Kuy commune, Kang Meas district, Kampong Cham province
4 FMD samples from Sala Rean village, Basac commune, Svay Chrum district, Svay Rieng province

Table 2. Laboratory results from NaVRI and RRL in 2015

<table>
<thead>
<tr>
<th>Province</th>
<th>No. Samples</th>
<th>Species</th>
<th>NaVRI-ELISA</th>
<th>RRL-ELISA</th>
<th>RRL-RT-PCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>O   A</td>
<td>O   A</td>
<td>NVD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Asia1  NVD</td>
<td>Asia1  NVD</td>
<td></td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Pursat</td>
<td>1</td>
<td>Swine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Negative</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Positive</td>
</tr>
<tr>
<td>Svay Rieng</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Negative</td>
</tr>
<tr>
<td>Svay Rieng</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Negative</td>
</tr>
<tr>
<td>Svay Rieng</td>
<td>1</td>
<td>Bovine</td>
<td>1   1</td>
<td>1   1</td>
<td>Negative</td>
</tr>
</tbody>
</table>

ANIMAL HEALTH MANAGEMENT ACTIVITIES

1. Technical
   • Completed SOP for FMD outbreak investigation
   • Completed FMD outbreak investigation manual
   • Conducted the in-house training on FMD diagnosis for laboratory staff in NaVRI during 13-21 February 2015 in Phnom Penh
   • FMD diagnosis training for laboratory staff in NaVRI from 30 March to 03 April 2015 in Phnom Penh provided by Dr. Somjai Kamolsirichaiporn from RRL, Pakchong, Thailand
   • Conducted training course on FMD outbreak investigation and management for district and provincial veterinarians from 14 provinces during 2014-2015 and distributed outbreak investigation kits to participants and 11 provinces in 2015
   • Conducted FMD outbreak investigations in two provinces (Prey Veng and Kampong Speu)
   • Collected FMD reports from provinces every month
   • Collected FMD samples from district/provinces (17 FMD samples have been collected and testing results were positive for sub-type O, A and Asia1)
   • Conducted surveillance under the FMD-ROK Project and the ADB-SPS Project
   • Organized meeting with provincial DAHP offices for updating FMD information and FMD-ROK project activities in January 2015 and distributed intervention materials to all provinces
2. Coordination and Advocacy

- Conducted dissemination workshop on Cambodian National FMD Plan on 25 September 2015
  - Sharing the endorsed National FMD plan
  - Sharing the SOPs for FMD outbreak investigation
Conducted Participatory Communication Strategy Design Workshop on 22 October 2015. The objectives:
- Discuss lessons learned from previous studies and meetings
- Design a practical communication strategy that the government can undertake with or without external technical and funding assistance
- Discuss monitoring and evaluation strategy of agreed communication strategy

Developed and revised Law on animal health and production which will be finalised and endorsed by National Assembly during 2016-2017.
- Prepared and revised the National FMD Control Plan, which has been approved and endorsed by Ministry of Agriculture, Forestry and Fisheries on June 30, 2015
- Developed Animal Disease Surveillance Strategy for implementation in Cambodia

3. Legislation
Progress has been made on the development of Law on Animal Production and Health and FMD National Plan

4. Funding
FMD programs are currently funded by:
- ADB-SPS Project
- FMD-ROK Project
- DAHP Project (government fund)

5. Constraints
- Late and under reporting from the village level
- Laboratory operation cost and maintenance
- Involvement of private sectors in the reporting of animal diseases
- How to improve the biosecurity at farms/village level?
- The budget to purchase the vaccines from government is limited
6. **Future Activities**
   - Organise workshops for extension of Law on Animal production and Health
   - Implement of the Law on Animal production and Health and the national FMD control plan
   - Strengthen animal disease surveillance, outbreak investigation and response; and improve disease reporting system
   - Strengthen disease diagnosis and proficiency testing capacity
   - Advocate public awareness for all stakeholders on animal diseases and its impact
   - Collaborations in fields of Epidemiology and Laboratory training between Cambodia and Argentina
   - Conduct animal disease surveillance (FMD, HS, CSF, PRRS) in three target provinces supported by the ADB-SPS Project
   - Strengthen disease reporting system with the support from FMD-ROK and EU-Project
Annex 21: Country Report: China

22\textsuperscript{nd} Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

China

ABSTRACT

There were 3 outbreaks of Type A FMD from January 2015 to Match 2016. China hasn’t detected FMD clinical case of type Asia I more than 6 years. The main strain of Type A involving in our FMD outbreaks is Sea 97-G2, while type O is Mya-98.

China continued to implement compulsory vaccination policy towards all pigs, cattle, sheep and goats. The central government allocated 21.4 million USD for FMD vaccines and 0.12 million USD for Culling compensation. All FMD vaccines should be printed the QR cord. Efforts were made to enhance animal disease inspection, supervision and emergency response, improve the capacity of veterinary laboratories and personnel resources, and strengthen the public awareness of animal disease. China initiated surveillance and assessment on the withdrawal of vaccination. China also conducted active multi-lateral and bilateral exchanges and cooperation with many international organizations such as OIE and FAO, as well as counties including Singapore, Vietnam, Laos, Myanmar, Russia and Mongolia.

Currently, the biggest challenge for China in prevention and control of FMD is the illegal animal and products movement in board region. In the future, China will continue to implement its comprehensive FMD prevention and control strategy which combines vaccination with the stamping-out policy, speed up the construction of specific animal disease free zone and animal disease control area in border areas (like Yunnan province) in accordance with the National FMD Prevention and Control Program.

FMD STATUS

From January 2015 to Match 2016, there were 3 outbreaks of type A FMD. China hasn’t detected FMD clinical case of type Asia I more than 6 years. The main strain of Type A involving in our FMD outbreaks is Sea 97-G2, while type O is Mya-98.
ANIMAL HEALTH MANAGEMENT ACTIVITIES

1. **Technical**
   A. Epidemiology
   1. From January 2015 to March 2016, there were 3 outbreaks of type O FMD. Disease details are summarised in the table below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Serotype</th>
<th>Strains</th>
<th>Animal</th>
<th>No. of infected</th>
<th>No. of Destroyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-1-6</td>
<td>Anhui, Maanshan</td>
<td>A</td>
<td>Sea-97</td>
<td>Pig</td>
<td>556</td>
<td>612</td>
</tr>
<tr>
<td>2015-1-14</td>
<td>Hubei, Wuhan</td>
<td>A</td>
<td>Sea-97</td>
<td>Cow</td>
<td>54</td>
<td>1190</td>
</tr>
<tr>
<td>2015-5-6</td>
<td>Hubei, Jingzhou</td>
<td>A</td>
<td>Sea-97</td>
<td>Pig</td>
<td>25</td>
<td>179</td>
</tr>
</tbody>
</table>

2. China hasn’t detected FMD clinical case of type Asia I more than 6 years, which was epidemic in 2005-2009. The main strain of Type A involving in our FMD outbreaks is Sea 97-G2, while Type O is Mya-98.

B. Identification and analysis of risk factors
   1. Domestic animal disease
      FMD surveillance including national surveillance and local surveillance was being carried out as planned.
   2. Transboundary animal disease
      China conducted active multi-lateral and bilateral exchanges and cooperation with many international organizations such as OIE and FAO, as well as countries including Singapore, Vietnam, Laos, Myanmar, Russia and Mongolia.
C. Development and application of control measures
1. In order to improve animal disease emergency response capabilities, the local authority will receive greater power to dispose of animal disease outbreak.
2. After 6 years without Type Asia I FMD, China initiated surveillance and assessment on the withdrawal of vaccination. On January 4 2016, the Ministry of Agriculture issued a notice to carry investigation and treatment of Type Asia I FMD viral materials.

2. Coordination and Advocacy
A. Advocacy
In recent years, we have been focused to persuade the financial sector to support the eradication of FMD. It was encouraging that the proposal of national government budget continuing to support the FMD compulsory vaccination and slaughter and laboratory operation funds for FMD diagnosis and analysis were adopted.

B Promotion of campaign awareness
Free distribution of FMD manual and Inform the FMD outbreak and threat timely by Internet, TV, WeChat, etc.

3. Governance and policy
1. In order to enhance the lab diagnosis ability for the domestic disease priority, the Ministry of Agriculture issued the revised management approach for the National Veterinary reference laboratory, which would gradually increase the number of national reference laboratories.
2. Microbiology Laboratory of biological safety management training courses were held in Kunming. Training content included the high level of laboratory biosafety accreditation requirements change, the development status of China’s biosafety laboratory equipment, and introduction of Mobile biosafety level-3 Laboratory.

4. Development and legislation
The Administrative Measures for Animal Disease Reporting is being revised, which will give the local authority greater power to dispose of animal disease outbreak.

5. Funding
National government budget will be allocated to support the FMD compulsory vaccination and culling.

6. Constrains and resolutions
The biggest challenge for China in prevention and control of FMD is the large number of smuggling of livestock and relative animal products from South-east Asia. In the future, China will continue to implement its comprehensive FMD prevention and control strategy which combines vaccination with the stamping-out policy, speed up the construction of specific animal disease free zone and animal disease control area in border areas (like Yunnan province) in accordance with the National FMD Prevention and Control Program.

7. Future activities
1. Promote the construction of FMD-free Zones, such as Northeast China FMD-free Zone.
2. Improve vaccination policy, including stopping vaccination of type Asia I FMD next year according to evaluation result.
3. Consider to start a pilot project in Yunnan province, to manage the animal movement across border.

22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

Lao People’s Democratic Republic

ABSTRACT

The Government of Laos understand that FMD is very important disease and pose significant challenge on the health of cattle and buffaloes and impact the livelihood of households in each year. In order to improve FMD control and prevention, Laos has made significant efforts through coordination and cooperation with the ASEAN Member Countries, SAECFMD Sub-Commission, and neighbouring countries to enhance FMD control and prevention, especially in the Upper Mekong Zone. So far, FMD in ten provinces in northern Laos have been effectively controlled as the last outbreak had was in May 2013.

In order to further strengthen FMD control and prevention, the National Foot and Mouth Disease Control Plan for Lao PDR has been developed and approved by Minister of Ministry of Agriculture and Forestry in 2015 which contain plans of key activities to be implemented and budget to be allocated for some most important animal diseases, including FMD. During January 2015 to February 2016, FMD have been reported in central Laos. Importantly, a new FMDV strain O/ME-SA/Ind-2001d was isolated from an outbreak in Nasaythong, Vientiane capital in April-May 2015.

FMD STATUS

The FMD outbreaks on 2015-2016 were almost restricted in central part of Laos, including three districts (Nasaythong, Pakgneum and Sangthong) in Vientiane capital and one district (Paksan) in Bolikhambay province. A total of 13 samples was collected and all positive to serotype O. Surprising, one outbreak in Nasaythong was a new strain to SEA – O/India-2001d, as conformed by sequence analysis at WRL. There was no outbreak reports from northern of Laos. The details of FMD outbreaks are indicated as below:

Table 1. Summary of FMD outbreak during January 2015 to February 2016

<table>
<thead>
<tr>
<th>DATE</th>
<th>PROVINCE</th>
<th>DISTRICT</th>
<th>#OB (AVL)</th>
<th>#SAMPLES(POSITIVE)</th>
<th>VIRUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>APA. 2015</td>
<td>Vientiane Capital</td>
<td>Nasaythong</td>
<td>1(3) *</td>
<td>5(5)**</td>
<td>O/PanAsia/ME-SA (India2001d)</td>
</tr>
<tr>
<td>AUG. 2015</td>
<td>Vientiane Capital</td>
<td>Parkngum</td>
<td>1(16)</td>
<td>2(2)</td>
<td>O</td>
</tr>
<tr>
<td>NOV. 2015</td>
<td>Vientiane Capital</td>
<td>Sangthong</td>
<td>1(16)</td>
<td>4(4)</td>
<td>O</td>
</tr>
<tr>
<td>FEB. 2016</td>
<td>Bolikhambay</td>
<td>Paksan</td>
<td>1(1)</td>
<td>2(2)</td>
<td>O</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2</td>
<td>4</td>
<td>3(33)</td>
<td>13(13)</td>
<td>O</td>
</tr>
</tbody>
</table>

OB= Outbreak; AVL= Affected Village;
* = OB have been investigated (supported by ROK-FMD) and reinvestigated by OIE-SRR SEA
** = Samples sent to RRL FMD for vaccine matching & Sub-typing (supported by ROK-FMD)
Figure 1. FMD outbreak in April 2015 - March 2016

Table 2. Summary of affected animals in FMD outbreaks

<table>
<thead>
<tr>
<th>PROVINCE</th>
<th>DISTRICT</th>
<th>DATE</th>
<th>AFFECTED C(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIENTIANE C</td>
<td>Nasaythong</td>
<td>20/04/2015</td>
<td>146(32)</td>
</tr>
<tr>
<td>VIENTIANE C</td>
<td>Parkngum</td>
<td>6/08/2015</td>
<td>1109(125)</td>
</tr>
<tr>
<td>VIENTIANE C</td>
<td>Sangthong</td>
<td>2/11/2015</td>
<td>5846</td>
</tr>
<tr>
<td>BOLIKHAMXAY</td>
<td>Parksan</td>
<td>9/02/2016</td>
<td>40</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>7299</td>
</tr>
</tbody>
</table>

Figure 2. Temporal distribution of FMD outbreaks between 2010 to March 2016
ANIMAL HEALTH MANAGEMENT ACTIVITIES

1. Technical
Activities conducted to FMD control and prevention:

- Passive surveillance system via weekly report throughout the country. Outbreaks should be reported from farmers to village or district agriculture and forestry office and then summarised and passed to provincial livestock and fisheries offices and then to DLF.
- Conducted sero-surveillance in Savannakhet province as described in Figure 3:

Figure 3. FMD serosurveillance in Savanakhet Province

FMD Serosurveillance in Savanakhet Province
(Nov. 2015, ROK-FMD Project)

1. To estimate seroprevalence
2. Study sites
   - 20 Villages in 2 districts
3. Sample size
   - 20 samples per village
   - Total 400 samples
4. Using NSP-ELISA
5. Result: 43.5% were NSP+
60% (120/200) were Positive by NSP-ELISA
27% (54/200) were Positive by NSP-ELISA

- Conducted outbreak investigation based on FMD reports to confirm the disease, and try to find source of FMD infection. Meanwhile, collect samples and send to National Animal Health Laboratory for serotyping and further to WRL/RRL for genotyping. During 2015 to 2016, 3 outbreak investigations and 1 retrospective investigation were conducted. Details see below:
  - Nasaythong district, VTC 28-29/12/2015 & 2/01/2016.
  - Sangthong district, VTC 12-14/12/2015.
  - Pakgneume district, VTC 12-14/12/2015.
  - Retrospective investigation of the April 2015 FMD Outbreak in Nasaythong District, VTC on 9-12/2/2016 with Supported by OIE experts and funding.

- Conducted ring vaccination surrounding FMD outbreaks and treat infected animals.
- Control animal and animal product movement.
- Planing and implementing vaccination campaigns, PVM, bio security and disinfection in 10 Provinces of central and northern Lao PDR under FMD project.
- Planing and implementing vaccination campaigns, PVM, bio security and disinfection in 3 Provinces (Savannakhet, Champasack and Xiengkhouang province) of southern and northern of Lao PDR under New zealand FMD control project.

2. Coordination and Advocacy
The National FMD control plan for Lao PDR has been developed and endorsed by Minister of Ministry of Agriculture and Forestry in 2015.

Advocacy:
- Advisory group and coordination committee established to oversee progress of activities.
- Provincial and district focal point for FMD have been assigned.
- Published and distributed IEC materials (poster, leaflets...)
- Radio broadcasts ongoing; newspaper articles released after major activities
- Conducted Policy Makers Consultation meeting for ROK-FMD
- Inform policy makers on the progress of ROK- FMD Project.
- Conduct PCP-FMD Self-assessment and identify the gaps for further activities.

3. Promotion of Campaign Awareness
- Conducted the Participatory Communication Strategy Design Workshop on 5-9 October 2015, supported by ROK-FMD Project with the aim to discuss lessons learned from previous studies and meetings, design a practical communication strategy plan and discuss monitoring and evaluation strategy of agreed communication strategy. 40 people attended (9 Traders, 9 Farmers, 9 Provincial Agriculture and Forestry Office, 9 Department of Livestock and Fisheries and 4 FAO).
- Hired radio media to broadcast the content of IEC materials and other urgent notice regarding FMD prevention and control.
- Production of 38 billboards and other IEC materials

4. Governance
Coordination and cooperation with neighboring countries to discuss and exchange disease information and disease control and prevention and animal movement control across borders:
- Conducted the 1st Lao, China and Myanmar meeting to address TADs (in Lao PDR)
- Conducted the 2nd Bilateral Meeting on TADs Control between DLF and VB of PR China in Lao PDR, December 2015.
- Attended the 11th Bilateral meeting with Kingdom of Thailand (in Thailand)
- Attended the 12th Bilateral meeting with Vietnam SR (in Vietnam)
- Conducted the 13th Bilateral meeting with Vietnam SR (in Lao PDR).

The Government of Laos has allocated some budget against animal disease but not only for FMD. The budget covers for some seriously animal diseases.

5. Legislation
To ensure disease control and prevention to be consistent with the ASEAN Economic Community as well international organisations, Laos is revising the Livestock and Veterinary Law which is supposed to be submitted to national parliament for consideration on July of 2016.

6. Constrains
The constraints for the prevention and control of FMD in Lao PDR are:
- Not enough field veterinary epidemiologist
- Most animals are free-grazing and/or sharing of grazing areas due to the backyard husbandry practice system. Need to update the old fashioned husbandry system to industrialised farming system to improve biosecurity management.
- The delayed reporting/under reporting is common because farmers don’t care about FMD. They think that animals won’t die of FMD and can be treated by traditional medicine or disinfectants.
They lack knowledge about the long-term of FMD impact. More efforts are need to promote public awareness.

- In rural and remote areas, animals are kept or grazed in the mountains or forests for months which makes them inaccessible for vaccination and also some villages are only accessible only by foot. This causes difficulties for veterinary staff to perform vaccination and collect reports from farmers.
- Suspension of vaccination activity during the rainy season. Vaccination plan needs to be optimised to take this factor into account.
- The cost of FMD vaccine is very high

### 7. Future activities

The future plans for FMD control and prevention are indicated as follows:

- Improving the knowledge of field veterinary epidemiology by short or middle term training courses to train at least one field veterinary epidemiologist per district and two field veterinary epidemiologists per province.
- Strengthening surveillance system with a focus on the early detection and early response in hotspots and high risk areas.
- Conducting training or stakeholder’s workshop to teach farmers bio-security measures.
- Continuation of the 3rd round of vaccination in targeted areas (OIE-FMD & SPS-GMS projects).
- Continuation of raising public awareness with farmers as primary targets through radio-spots/broadcasts, reading materials and distribution of IEC materials.
- Preparing the launching ceremony of new FMD project in southern Laos with assistance of OIE SRR-SEA and the Government of New Zealand; preparing to implement the project activities such as vaccination and animal identification.
FMD STATUS

Foot-and-Mouth-Disease (FMD) is a notifiable disease in Malaysia. As such, there is a National FMD Control and Eradication Plan and annual federal government budget provided by the Ministry of Agriculture and Agro-Based Industry for implementation of control, prevention and eradication measures.

The States of Sabah and Sarawak are OIE recognized FMD free zones in Malaysia without vaccination since 2004 and maintained FMD free status in this period of report. In Peninsular Malaysia which is the Control zone, the status of FMD improved with significance in year 2015, with reduction in outbreaks by 97% from 146 outbreaks the highest number of outbreaks in year 2008. The status of FMD in the Malaysia-Thailand-Myanmar (MTM) control zone (Border States) in Peninsular Malaysia also improved significantly in the year 2015 compared to the same period in 2014. There were only two states with FMD outbreaks out of 6 Border States in the Malaysian MTM control zone, namely 1 outbreak in the state of Kedah and 3 outbreaks in the state of Terengganu. The total number of outbreaks for the country were 10 outbreaks in 5 states (Kedah, Terengganu, Pahang, Negeri Sembilan and Melaka) out of 12 states and 7 states had no FMD outbreaks. There was continuity of better reporting of FMD outbreaks.

There were 10 FMD outbreaks in year 2015 with the range from 0 – 3 outbreaks which occur in the months of March, April, June, July, September and October. This year, temporally there was no trend of outbreaks progressively increasing in the last quarter (festive season) of the year compared to since the first ever incidence of FMD in Malaysia. Also there were 6 months of no FMD outbreak in the country due to the effective implementation the FMD Control Plan 2009 – 2016, especially due to the better management of imported animals in approved temporary licensed private quarantine stations which has significantly reduced illegal animal movement across the border and strategic vaccination. Where there were outbreaks it was related to animal movements within the country and a very small number of illegal animal movements from across the northern border.

Cattle were the only affected species. Serotyping results of specimens from outbreaks were serotypes ‘O’ and there was no outbreak involving serotype ‘A’ in Malaysia for the year 2015. The specimens are in process of being sent to OIE FMD WRL, Pirbright, UK for sequencing and vaccine matching.

The livestock importation policy to facilitate trade enabled better risk management measures for live animal imports from FMD infected countries. Even though the new strategy for control and eradication of FMD that is the licenced temporary quarantine stations has tremendously reduced the illegal movement of live animals across the border, there were still very small number of cattle that were illegally brought into the country causing outbreaks. With effective strategic and ring vaccinations, the endemic status has significantly improved for this period.
Diagnosis for FMD is done at the National FMD Laboratory in Kota Bharu, Kelantan which is an ISO 17025 accredited laboratory. There has been improvement in submission of good specimens and weight of the epithelial tissues. The threat of incursions across the border has been constant. Animal health and Veterinary measures related to FMD control include management of animal movement, strategic vaccination, legislation, disease investigation and outbreak management, surveillance, public awareness campaigns and reporting.

**FMD Prevention and Control Activities**

1. **CONTROL ACTIVITIES**

The Master Document FMD Protocol – FMD Control Plan 2009 – 2016 (PVM 1/9:1/20011) and supporting documents (SOP’s) is a risk based FMD control plan, for example livestock sourcing from endemic countries had to undergo Pre-Border and Post-Border control, that is in pre-border there is risk assessment and management of the animal sources and the mitigation output is the Import Protocol, whereas the post-border are the control measures before release of animals from the quarantine stations.

Diagnostic work is done at the National FMD Laboratory at Kota Bharu, Kelantan where serotyping is done and sub-typing and vaccine matching is done at the OIE World Reference Laboratory for FMD, Pirbright, England. From 10 outbreaks in the country 27 epithelial tissues were sent to the National FMD Laboratory for diagnosis and confirmation. Eleven samples were serotyped as ‘O’ and in sixteen samples no virus was detected (negative) because this samples were taken from aged FMD lesions from cases in the same outbreaks. This eleven serotyped samples are being prepared to be sent to the OIE World Reference Laboratory for FMD, Pirbright, England and also to the RRL for FMD Pak Chong, Thailand.

The following activities were implemented to rapidly identify FMD foci and eliminated the source of FMDV:

- Mandatory reporting by stakeholders of occurrence or suspicion of FMD like syndrome under Section 30 of Animal Act (Revised 2006).
- Initiation of Outbreak Investigation applying epidemiology as according to SOP APVTM 22(f):1/2011.
- Effectively implement “Outbreak Control Management” according to SOP APVTM(16a/16b(1):2009: from detection of outbreak until free from disease is verified after two incubation periods. This includes movement control, quarantine of premises affected, vaccination, disinfection and reporting.

To prevent the spread of FMDV the following activities were implemented:

- Management of Animal Movement through e-permit which regulates the animal movement from areas of same status, Veterinary Health Certificate key document for strict compliance for approval of permit.
- Approved Licensed Private Temporary Quarantine Stations in MTM control zone to facilitate trade. This act as the first line of risk mitigation measure and have been successful in the reduction of FMD virus release into the country.
- Ring vaccination during outbreaks.
- Strategic vaccination at the hotspots and trade pathways

For the protection of susceptible animals, strategic vaccination at critical points, hotspots and ring vaccination during outbreaks was done. Animal owners and around their premises mandatorily
vaccinated 14 days prior to receiving new animals if the last vaccination date exceeded 5 months. Animals that are to be transferred out to another area were also vaccinated 14 days prior to movement. All animals tested positive to NSP ELISA test and resident animals from previous outbreak were not approved to move to established free areas. Historically in Malaysia cattle and to lesser extend buffaloes are the main species that are involved in the spread and outbreaks of FMD. From the total population 263,163 of cattle and buffaloes in the hotspots and movement pathways, 218,282 cattle and buffaloes were vaccinated with trivalent (O manisa, O 3039, A Malaysia 97 and Asia 1 shamir) vaccine manufactured by Merial, Pirbright, England. This accounts to 82.94% of the target population vaccinated that plays the most important role in FMD outbreaks in the country. Surveillance for the Post Vaccination Monitoring was done where 414 samples were tested using LPBE ELISA and 361 (87.19%) samples resulted in positive protective titres.

For the coordination and advocacy activities, nationally meetings of two important committees are held as follows:

- Committee for National Disease Control – Chaired by the Director General of DVS. Discussions are on the Policy, Strategy effectiveness and Budget, twice a year.
- Sub-National Committee for Coordination and Implementation of FMD Control which meets thrice a year to evaluate the progress of control plan and discuss any constraints.

Private licensed temporary quarantine stations were established with the collaboration of livestock traders and importers for effectively facilitating trade and risk management. These quarantine stations were coordinated and regulated by Malaysian Agriculture Quarantines and Inspection Services (MAQIS) department on livestock importation but the control of disease was under the jurisdiction of DVS Malaysia.

At Regional level attended MTM Control Zone Tri-State Meeting, Meeting of the National Coordinators and Meeting of the SEACFMD Sub-Commission.

Public awareness and communication is a continuous activity. In year 2015 there were 71 campaigns held with a total of 2,430 stakeholder attendees.

FMD Control Plan refresher courses were held for DVS staff at the field to keep them aligned to the policies and the strategy to control, prevent and eradicated FMD. Outbreak Investigation training was held in November 2015. States are kept informed of the location of outbreaks for decision making prior to allowing animal movement and these outbreak areas can be viewed in the e-permit system before decision to allow movement is made.

2. CONSTRAINTS AND SOLUTIONS

- Stakeholders complacent when no outbreak after sometime. (*The DVS Malaysia holds continuously Communication and Awareness campaigns so that the stakeholders are in line with the policy and strategy of FMD control plan.*)
- Land border always a threat to minor incursions of illegal animal movement at border. (*DVS Malaysia has stepped up continuous vigilance and enforcement at the border.*)
- It is a challenge to source cattle for importation from traditional suppliers from MTM member countries where price is reasonable and abundant of cattle. (*DVS Malaysia is re-establishing bilateral cooperation with MTM member countries to source cattle for breeding and slaughter. Discussion held with one member country but no concrete resolution yet.*)
- Although there is improvement of epithelial tissues submitted for diagnosis but due to incorrect aging of lesions, some are of low quality, inadequate and not suitable. This leads to no virus
detected. (Continuous training sessions of procedures to collect specimens, aging of lesions and the right timing for collection)

- LPBE ELISA Kits expensive to do Post Vaccination Monitoring. (Consistently request increase in budget with justification. Prioritize areas)
- Monitoring. (Only Post vaccine monitoring.)

3. FUTURE ACTIVITIES
The following future activities are planned to be implemented during 2016-2020:

- Preparation of Justification Paper to extend the target year for FMD freedom to 2020 without vaccination.
- Continue FMD Control and Eradication Plan, towards to improve the PCP status.
- OIE Endorsement of National FMD Control Plan to be submitted.
- Sustain FMD free status in Sub-Districts (Mukims) and continue surveillance.
- Prompt reporting to ARAHIS and six monthly report to WAHIS once the nominated veterinarian has finished her training in using ARAHIS.
- National FMD Lab to continue participating in the inter-laboratory proficiency testing with OIE RRL Pakchong
- To hold discussion to establish One Protocol for Importation of livestock for both slaughter and breeding purpose.
- Closely collaboration with MAQIS (Department of Malaysian Agriculture Quarantine And Inspection Services) on risk management of FMD at entry points at the borders.
Annex 24: Country Report: Myanmar

22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

Myanmar

ABSTRACT

Foot and Mouth Disease (FMD) is still endemic in Myanmar. Outbreaks are reported yearly. Where serotyping has been done, outbreaks were found to be mostly caused by type O, although type A and Asia 1 have also been recorded in 2010 and 2005, respectively. Mya-98 is the most commonly identified topotype in Myanmar (86.7%), with isolates recovered over the years indicating that most are related, at varying degrees, to those recovered from Thailand, Lao PDR, Vietnam, and occasionally from those Myanmar isolates recovered from years ago.

FMD topotypes other than Mya-98 have also been identified from the limited isolates characterised in Myanmar. Asia 1 recovered in 2005 was most closely related to isolates from Vietnam in the same year and with a 1998 isolate from Thailand. This topotype however, has not been seen in the region since 2009. A/Asia has also been recovered in 2010, but was found to be most closely related to isolates from India in 2000, not the circulating types in the region. Found in Rakhine, this was believed to have been due to an incursion from Bangladesh which shares its borders. O/ME-SA/PanAsia - although common in the region particularly in Vietnam, Cambodia and Lao PDR –has never been recovered in Myanmar.

Myanmar has been receiving some assistance from international funding agencies which supports some of the activities of Veterinary Services on serological surveillance, public awareness, and strengthening national capacity. Therefore, FMD control activities have been conducted in collaboration with OIE SEACFMD campaign, FAO, IAEA TCP project, KOICA, JICA and TICA. Targeted vaccination campaign have been conducted in 18 townships of Mandalay and Sagaing regions in central Myanmar at where found FMD outbreak yearly with assistance from South-East Asia and China FMD (SEACFMD) campaign supported by Stop Tranboundary Animal Diseases and Zoonosis (STANDZ) initiative funded by Australian Agency International Development (AusAID).

FMD STATUS

FMD outbreak reports were received officially and found 721 cases in 14 Townships in 4 Regions, Nay Pyi Taw, Mandalay, Sagaing and Magway Regions, central part of Myanmar (Table 1) during January to December in 2015. Total 117 FMD suspected samples were collected from not only official outbreak reported areas but also other regions. Of these 117 suspected samples, 75 samples were tested in Yangon FMD Laboratory and mainly found FMD serotype “O”. Of these collected samples, 20 samples were selected and submitted to Regional Reference Laboratory (Pakchong, Thailand) resulted in both serotype “A” and “O” in Mahlaing, Amarapura and Natogyi Townships and only serotype “O” in other Region (fig-1). Of these samples submitted to RRL, Thailand, 5 samples were submitted to world reference laboratory (Pirbright) to check again. As a result from Pirbright, serotype “A” found in these townships is same between them and very closely related (99.84%) with the types found in Thailand.
and China. Mahlaing township was not included in vaccination campaign area and but, adjacent to Natogyi and Wundwin and Meiktila townships where included in vaccination campaign. FMD outbreak were found 8 townships, Meiktila, Myingyan, Natogyi, Ngazun, Myitthar, Amarapura, Sagging, Wetlet townships where included in vaccination campaign area.

In 2006, the 3 FMD suspected samples were received from Yangon and Bago regions, lower part of Myanmar, during January to February. These samples were tested in Yangon FMD Laboratory, resulted in serotype “O”.

Table 1. FMD outbreaks reported officially

<table>
<thead>
<tr>
<th>Month</th>
<th>States/Regions</th>
<th>Townships</th>
<th>Susceptible Animals</th>
<th>Cases</th>
<th>Lab - Results</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Magway</td>
<td>Natmout</td>
<td>5</td>
<td>2</td>
<td>Type “O”</td>
<td>Mya/98 Introducing of newly bought animal</td>
</tr>
<tr>
<td>July</td>
<td>Mandalay</td>
<td>Tharzi</td>
<td>265</td>
<td>22</td>
<td>Type “O”</td>
<td>Introducing of newly bought animal</td>
</tr>
<tr>
<td>July</td>
<td>Mandalay</td>
<td>Meiktila</td>
<td>151</td>
<td>7</td>
<td>Type “O”</td>
<td>Introducing of newly bought animal</td>
</tr>
<tr>
<td>July</td>
<td>Mandalay</td>
<td>Myitthar</td>
<td>720</td>
<td>150</td>
<td>Type “O”</td>
<td>Introducing of newly bought animal</td>
</tr>
<tr>
<td>August</td>
<td>Magway</td>
<td>Pwint Phyu</td>
<td>160</td>
<td>10</td>
<td>Type “O”</td>
<td>unknown</td>
</tr>
<tr>
<td>August</td>
<td>Sagaing</td>
<td>Sagaing</td>
<td>20</td>
<td>70</td>
<td>Type “O”</td>
<td>Introducing of newly bought animal</td>
</tr>
<tr>
<td>August</td>
<td>Nay Pyi Taw</td>
<td>Tatkone</td>
<td>787</td>
<td>45</td>
<td>Type “O”</td>
<td>Introducing of newly bought animal</td>
</tr>
<tr>
<td>August</td>
<td>Mandalay</td>
<td>Mahlaing</td>
<td>1274</td>
<td>52</td>
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<td></td>
</tr>
<tr>
<td>August</td>
<td>Magway</td>
<td>Salin</td>
<td>350</td>
<td>42</td>
<td>Type “O”</td>
<td></td>
</tr>
<tr>
<td>Sept</td>
<td>Nay Pyi Taw</td>
<td>Lewe</td>
<td>3000</td>
<td>75</td>
<td>Type “O”</td>
<td>Introducing of newly bought animal</td>
</tr>
<tr>
<td>Sept</td>
<td>Nay Pyi Taw</td>
<td>Pobbathiri</td>
<td>2000</td>
<td>50</td>
<td>Type “O”</td>
<td></td>
</tr>
<tr>
<td>Sept</td>
<td>Nay Pyi Taw</td>
<td>Pyinmana</td>
<td>150</td>
<td>8</td>
<td>Type “O”</td>
<td></td>
</tr>
<tr>
<td>Sept</td>
<td>Mandalay</td>
<td>Natogyi</td>
<td>1000</td>
<td>170</td>
<td>Type “O”</td>
<td></td>
</tr>
<tr>
<td>Sept</td>
<td>Mandalay</td>
<td>Myingyan</td>
<td>300</td>
<td>9</td>
<td>Type “O”</td>
<td></td>
</tr>
</tbody>
</table>
FMD outbreak is quite higher in 2005 compared with the previous years. Myanmar suffered flood throughout the country, totally 11 Regions. The animals from the flooded area were moved to safety area, especially dry area and also seasonal migrate herds (cattle, sheep and goat) depend on the pasture, live cattle market and illegal trades may be main epidemiology change in 2015.

**ANIMAL HEALTH MANAGEMENT ACTIVITIES**

FMD susceptible animal population such as cattle, buffaloes, sheep and goat and pigs are mainly raised in rural area as a small scale. The farmer has no private pasture and graze freely on uncultivated land. Therefore, they have to go to graze from one place to another. It is a higher chance to introduce FMD comparing with industrialized farms. Passive surveillance and clinically active surveillance were conducted in every year. Clinically active surveillance was conducted in every township together with Community Animal Health Workers (CAHWs) who well trained about animal health. In 2015, more FMD outbreaks were found than the previous year as a reason of Epidemiology changes, transparency in outbreak and understanding of farmer for reporting in disease outbreak.

Myanmar is a country that used vaccines for FMD prevention and control. The National FMD laboratory currently produces only 150,000 doses of FMD monovalent vaccines (Serotypes O) per year, which is insufficient to cover vaccination of FMD-susceptible animals in the country. Therefore, OIE, EU-HPED vaccine bank, supported FMD vaccines to Myanmar (200,000 doses in 2012, 300,000 doses in 2013, 500,000 doses in 2015 and 300,000 doses in 2016) with assistance of SEACFMD by the STANDZ to decrease the incidence of FMD outbreak in critical hotspot area. FMD vaccination campaign was implemented in 18 townships in two regions, Sagaing and Mandalay Region, central part of
Myanmar and used 500,000 doses in 2015. First round vaccination campaign was conducted in February 2015 and 205,381 FMD susceptible animals were given FMD vaccination. The second round vaccination was conducted in March 2015 and 210,058 FMD susceptible animals were vaccinated.

Among vaccination campaign townships, Amarapura, Meikhtila, Sagaing and Myinmu townships were conducted PVM study by collection sera at Day 0, Day 30 and Day 60. These samples were tested BSL2 FMD diagnostic laboratory, Nay Pyi Taw and estimated 84% immunity against FMD. And also another PVM and outbreak investigations were conducted in Nay Pyi Taw Council. During the vaccination campaign and outbreak investigation, public awareness was conducted such as distribution of pamphlet, mention FMD articles in newspaper, standing of FMD billboard, doing Public meeting, radio interview and television interview.

In 2015, joint SEACFMD laboratory network and epidemiology network meeting was hosted during September. FMD diagnostic training was conducted in BSL2 diagnostic laboratory in Nay Pyi Taw and trained 12 participants.

1. TECHNICAL

A. UNDERSTANDING THE EPIDEMIOLOGY OF FMD IN YOUR COUNTRY

The technical activities involved identification foci of infection in central Myanmar that successfully conducted in FMD vaccination campaign with support of OIE. These activities are strengthening the improvement of herd and animal immunity to FMD. Myanmar still need to effort and to conduct like FMD vaccination campaign other foci of FMD infection.

In 2015, Myanmar faced a lot of FMD outbreaks. The reasons of this situation involved the epidemiological changes concern with water flood throughout the country, movement of FMD susceptible animal from flooded area, seasonal migrate animal herd, live cattle market and illegal border trade.

B. IDENTIFICATION AND ANALYSIS OF RISK FACTORS

FMD unit and Epidemiology unit under LBVD always conduct FMD outbreak investigation to identify source of infection, in order to guide outbreak containment and limit disease spread. Based on the outbreak investigation data, risk and route of infection are analyzed.

C. DEVELOPMENT AND APPLICATION OF CONTROL STRATEGIES

Myanmar is FMD PCP stage-1 to identify priority actions for combating FMD at source. The FMD control plan was pronounced through the outbreak investigation and the coordinating meeting. LBVD implemented FMD control plan described in below as result of meeting.

- Public awareness such as distributing pamphlets, standing FMD notice poster, broadcasting FMD programme from radio channel, Television channel and small meeting group with farmer.
- Animal movement control within the outbreak area
- Closing live cattle market within Nay the outbreak area
- Biosecurity
- Ring vaccination in outbreak areas
- Barrier vaccination between outbreak townships and un-outbreak townships
LBVD head-office, FMD Laboratory (Yangon) and BSL-2 FMD Laboratory (Nay Pyi Taw) coordinated with outbreak area LBVD for vaccine transportation, vaccine storage and animal movement control.

D. MAINTENANCE OF DISEASE FREEDOM IN ZONES AND COUNTRIES

Myanmar is still trying to establish FMD free zone. As an initiative stage, LBVD were conducting FMD vaccination campaign in FMD hotspot area, 18 townships of central Myanmar to eliminate FMD virus at its source. LBVD has plan to implement quarantine zone near the border area, especially, Chinese border and Thailand border. In principle, LBVD has agreed with Chinese government to control animal movement and illegal trade for animal and animal products. In addition to, Myanmar is coordinating with other neighbouring countries, Lao, Thailand, Bangladesh and India like illegal live cattle trade. Also LBVD have a plan to prepare contingency plan and simulation exercise in Region and Stage level with the cooperation and collaboration of International organizations.

2. COORDINATION AND ADVOCACY

LBVD selected villagers from every village and then trained them as community animal health workers (CAHW) to do such as collecting animal census, reporting animal disease information and vaccination. They have to inform animal diseases information to deputy township veterinary officers or township veterinary officers. Township officers have to inform to district level and regional level or sometime directly to head quarter. Head quarter coordinate not only veterinary officers but also regional authorities, farmers and stakeholders to control the disease outbreak such as vaccination, public meeting, distribution of pamphlets, bilateral meeting with authorities.

3. GOVERNANCE AND POLICY

Animal Health and Development law was enacted in 1993. According to this law is veterinary officers have to carry out such as animal health and development works, promoting livestock development, preventing outbreak of contagious disease in animals and controlling outbreak systematically when it occurs, inspecting the imported animal, animal products and animal feed, issuing recommendation certificate concerning animal, animal product and animal feed for export.

4. CONSTRAINS AND SOLUTIONS

Live cattle markets and illegal movements are difficult to control FMD in Myanmar. The existing law and regulation are week and less effective on animal movement and disease control. Therefore, they can be freely movement from one region to another and major constraints to control outbreak not only FMD but also other diseases. Myanmar is trying to repair the law and regulation to solve these constraints. Moreover, there are very limited the quantity of FMD vaccine production, capacity of FMD diagnosis, reagents and equipment. To overcome these constraints, Myanmar is coordinating and cooperating with other organization such as OIE, IAEA, FAO, JICA, KOICA and TICA. In addition to, LBVD will urge to government to provide more budget for diagnostic laboratories.

5. FUTURE ACTIVITIES

Myanmar will coordinate and cooperated with OIE to implement FMD eradication in Myanmar with aid of New Zealand Government. According to New Zealand Aid programme, Training on the application of OIE standard and guideline will be conducted on end of July 2016 and also implement continuously vaccination campaign based on 18 townships where conducted previously in Central Myanmar. In addition to, the project for improvement of FMD control is cooperating with JICA by aid
of Japan Government. There will include construction of facilities, provision of equipment for FMD vaccine production and FMD diagnosis in the project. Public awareness will be continuously conducted such as public meeting, TV programme, articles concerning with FMD in newspapers and journals. FMD outbreak investigation and animal movement survey will be conducted coordination with livestock owners and stakeholders. FMD suspected samples would be collected from everywhere and conduct FMD typing, cooperating with OIE references laboratories and FMD world reference laboratory.

22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

Thailand

FMD STATUS

There were 183 FMD outbreaks reported in 2015. The high season of the outbreak started from September to the end of the year. The dominant serotype was type O (60 percent of outbreaks), which was found throughout the year especially during the high season starting from September. Type A (7 percent of outbreaks) was found at low numbers during April to June and during September to November. About 16 and 17 percent of FMD outbreaks were not sampled and not typed, respectively. The outbreaks started to decline in January 2016. In February 2016, three outbreaks were confirmed to be caused by type A while type O has not been found; meanwhile, results from some samples are pending.

Spatially, 183 outbreaks were detected and reported from 37 out of 77 provinces of Thailand. Twenty-one outbreaks were reported from Nakhon Ratchasima where the dairy cattle farm are located. The high number of outbreaks were also found in the northern and the southern part of Thailand. Type O was found in many provinces of the north, northeast, central, west and south of Thailand. Fewer provinces had type A, mainly in the north, west and south of Thailand.

There were a total of 10,097 cloven-hoofed animal affected by FMD in 2015. On average, 55 animals were sick in each outbreak. Proportion of the cloven-hoofed animals affected by FMD was 57, 26 and 17 percent in beef cattle, dairy cattle, and buffaloes, respectively.

ANIMAL HEALTH MANAGEMENT ACTIVITIES

Control measures of FMD in Thailand include quarantine, isolation and treatment of sick animals, promote public awareness, outbreak proclamation, ring vaccination, disinfection by disinfectant, movement control by setting up checkpoints, and strengthening outbreak reporting. New FMD prevention measure include mass vaccination for all ruminants in FMD vaccination target zone that covers all parts of Thailand except the southern part. The southern region is target area for vaccination of dairy cattle and fighting bull. Starting from Fiscal year 2016, key performance indicator of provincial livestock office will not only include coverage of vaccination but also effectiveness of vaccination program.

In 2015, Thailand submitted the dossier of Thailand National FMD plan for OIE endorsement. In the plan, 4 FMD zones are established. The eastern region was intended to be recognised as FMD free zone by OIE at first. The other 3 zones were intended to control and eradicate FMD as per disease situation and priority. The dossier also proposed the timeline for key FMD activities, including development of national animal identification system, enhancing movement and border control and records, vaccination, PVM, risk-based surveillance, biosecurity measures and public awareness.

Legislation for FMD free zone in the eastern region has been developed. The previous DLD proclamation for the free zone only focused on the movement of live animals. Now the law controls
not only the live animals but also the fresh meat. The current DLD proclamation complies with the OIE Terrestrial Code.

The FMD surveillance programs and activities aim to enable rapid detection, monitoring disease incidence and virus circulation, early response to FMD, and managing risk factors to prevent FMD. The program includes livestock farm visit programs, active clinical surveillance, strengthening disease reporting system, outbreak investigation, sero-surveillance programs, laboratory surveillance, and screening program for transboundary animal movements.

In 2016, some priority research on FMD have been proposed for funding from Ministry of Agriculture and Cooperatives in order to support effectively control FMD in Thailand. Those include studying

- Epidemiological features of FMD in Thailand: animal movement and situation from disease surveillance
- Double oil emulsion FMD Vaccine
- Development of a prototype for optimal socio-economic policy to control, prevent and eradicate FMD in Thailand
- Logistics of FMD vaccine: demand, supply, market and price
- The model to control and prevent FMD for establishing FMD free compartment and community.
Annex 26: Country Report: Viet Nam

22nd Meeting of the OIE Sub-Commission for FMD in South-East Asia and China

Chiang Rai, Thailand, March 8-11, 2016

NARRATIVE COUNTRY REPORT

Viet Nam

ABSTRACT

In 2015, 60 outbreaks of foot and mouth disease (FMD) were reported in Viet Nam due to serotype O or A. The country has continued to apply an integrated control programme using the combination of measures best suiting its existing situation, and implement activities of the last year of the national plan to control FMD for 2011-2015. Vaccination approach remains the key intervention. Other control measures include early detection, outbreak investigation and response; compartmentalisation/zoning approach; closely monitoring the virus; enhanced animal movement control; improve private sector integration; and better understanding of value chain.

Veterinary Law has been approved and will be in place starting from 1 July 2016. The government has also approved the National Programme for FMD Control and Prevention for 2016-2020. Self PCP-FMD assessment has shown that Viet Nam has completed PCP-FMD Stage 2 and entered Stage 3.

FMD STATUS

In 2015, 60 FMD outbreaks were reported, affecting 3,054 animals including 544 buffaloes, 1,830 cattle, and 680 pigs (Table 1 and Figure 1). Both FMDV serotypes O and A viruses were identified in 2015. Serotype A has mainly affected the North and the Centre parts of Viet Nam (Figure 2).

Table 1: A summary of FMD situation in Viet Nam in 2015.

<table>
<thead>
<tr>
<th>Month</th>
<th>No. of outbreak</th>
<th>No. of infected animals</th>
<th>No. of disposed animals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>buf</td>
<td>bov</td>
</tr>
<tr>
<td>Jan.</td>
<td>4</td>
<td>89</td>
<td>96</td>
</tr>
<tr>
<td>Feb.</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mar.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Apr.</td>
<td>1</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>May</td>
<td>2</td>
<td>11</td>
<td>141</td>
</tr>
<tr>
<td>Jun.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jul.</td>
<td>1</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Aug.</td>
<td>1</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>Sep.</td>
<td>10</td>
<td>53</td>
<td>157</td>
</tr>
<tr>
<td>Oct.</td>
<td>14</td>
<td>145</td>
<td>1083</td>
</tr>
<tr>
<td>Nov.</td>
<td>17</td>
<td>183</td>
<td>278</td>
</tr>
<tr>
<td>Dec.</td>
<td>7</td>
<td>14</td>
<td>49</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>544</td>
<td>1830</td>
</tr>
</tbody>
</table>

173
Figure 1: Graph showing the number of FMD affected animals by month in Viet Nam in 2015.

Figure 2: Map of Viet Nam showing locations of FMD outbreaks in Viet Nam in 2015.
ANIMAL HEALTH MANAGEMENT ACTIVITIES

1. TECHNICAL

A. UNDERSTANDING THE EPIDEMIOLOGY OF FMD IN THE COUNTRY

A study of large ruminant and pig movement was carried out in 11 central provinces of Vietnam between March and August 2014 (final report was available in September 2015). The study provides recommendations to carry out (1) a molecular and vaccine matching study of the FMD virus isolated from this study to identify any molecular changes and whether current vaccine can be protective against this virus; (2) further study to validate 3ABC ELISA and Real-time RT-PCR tests to identify their sensitivity and specificity for each type of sample (serum and probang); and (3) mapping the density of cattle in the central region of Vietnam and superimposing on this map the location of high in-degree districts would be a logical approach for better targeting surveillance for infectious diseases such as FMD.

B. IDENTIFICATION AND ANALYSIS OF RISK FACTORS

The government has been continually monitoring FMD, and has been collecting samples to identify the circulating strains for vaccine matching purposes

C. DEVELOPMENT AND APPLICATION OF CONTROL STRATEGIES

Under 2011 – 2015 National FMD control and prevention programme, 5.4 million doses of FMD vaccine including monovalent type O and bivalent type O&A were administrated. In addition, the government also provided vaccines for localities to promptly contain outbreaks.

D. MAINTENANCE OF DISEASE FREEDOM IN ZONES AND COUNTRIES

FMD zoning has been established in two provinces in the Red River Delta. Under the approved National FMD control programme for 2016 – 2020, it is being seen as a candidate for freedom recognition.

2. COORDINATION AND ADVOCACY

A. COORDINATION, TRAINING AND COMMUNICATION FOR CONTROL STRATEGIES

Coordination with international organisations such as OIE, FAO to develop the National programme for FMD control and prevention, and train staff. Consultation workshops had also held to validate the country’s PCP-FMD status.

B. ADVOCACY

Studies supported by international organisation and countries have been implemented in recent years, which have provided scientific information for the development of policies/regulations on FMD control and prevention in Viet Nam.

C. PROMOTION OF CAMPAIGN AWARENESS

Information, education and communication (IEC) materials on FMD control and prevention, including 500 copies of handbook, 6,000 posters, 42,000 leaflets, have been distributed. PCP-FMD guidelines and Vietnamese Veterinary Law have been translated into Vietnamese and English respectively.
3. GOVERNANCE AND POLICY

A. GOVERNANCE

A national programme for FMD control and prevention 2016 – 2020 has been developed and approved. Technical measures include zoning, establishment of disease free zone/compartment, vaccination, animal movement control, slaughter and veterinary hygiene management, surveillance, laboratory and research, outbreak investigation and response, and communication.

B. STRENGTHENING VETERINARY SERVICES

A total budget of the National FMD control and prevention programme is VND 823.5 billion (~USD 37 million), which is composed of central budget of USD 12.5 million and local budget of USD 24.5 million.

C. DEVELOPMENT OF LEGISLATION

The National Assembly promulgated the Law on Animal Health (Law No. 79/2015/QH13) which regulates prevention, treatment and control of animal diseases; quarantine of animals and animal products; control of slaughter, preliminarily processing and processing of animals and animal products; inspection of veterinary hygiene; management of veterinary drugs; veterinary practices.

D. FUNDING

Under the newly approved National FMD control programme for 2016 – 2020, local budget will be mobilised for purchasing of vaccine in buffer zones (whereas in the 2011 – 5015 plan, central budget covered 50% of FMD vaccine for buffer zones and local budget covered the rest).

CONSTRAINTS AND SOLUTIONS

Late detection of FMD outbreaks has remained a major constraint for the effective prevention and control of FMD, subsequently caused late response to contain outbreaks including emergency vaccination.

4. FUTURE ACTIVITIES

- Implementing the 2016 – 2020 National programme for FMD control and prevention.
- Surveillance programmes including post vaccination monitoring and virus prevalence.
- In-country FMD vaccine production.
- Developing/updating regulations under the Law on Animal Health.
Annex 27: Recommendations on SEACFMD Research Priorities

1. **The increased use of nucleotide sequencing to assist with disease control is strongly supported.**
   - The lack of a molecular clock in the serotype A isolates needs to be investigated to determine whether it indicates a reintroduction of infection from a single source, such as incompletely inactivated vaccine, or a laboratory contamination. If not any of the latter, more research to understand this genetic conservation is warranted.
   - It is recommended that field information be collected for each virus submitted for sequencing to assist with network analysis and improve our understanding of the epidemiology of FMD in the region.
   - A small project to investigate the use of full genome sequencing in an endemic setting to support epidemiological investigations could guide the future use of this technology.
   - Sharing of sequence data within the region should be encouraged. While investigating the issue of IP, it is recommended that RRL Pakchong in collaboration with AAHL and the other labs in the region, provide guidelines on which isolates should be included in each tree generated for the region. This would facilitate better comparison between phylogenetic trees.
   - The WRL should be involved in these issues and also provide guidelines on how sequences can be submitted for general use.
   - Pilot studies using sequencing to determine how much inadequate vaccination drives virus evolution should be performed.

2. **OIE should provide recommendations on the use of vaccines in naïve animals and subsequent vaccinations**
   - The findings of the studies where a primary vaccination consisting of 2 vaccinations 4-6 weeks apart followed by 6 monthly vaccination should be translated into recommendations for the region.
   - A study to quantify the benefits of long lasting immunity when vaccinating naïve animals correctly could encourage countries to spend extra on vaccination initially.
   - The potential application of the decision support tool developed by MSD to determine the cost benefit of vaccine use should be investigated for future use.
   - Pilot studies to determine the actual cost of vaccination, including the cost of the vaccine and the campaign, will provide guidance for such tools. It will also bring into perspective how much the actual cost of the vaccine adds to a vaccination campaign. This could guide the decision to rather use high potency vaccines, even if they are more expensive.

3. **OIE should recommend the use of quality vaccines**
   - It is recommended that OIE, in collaboration with member countries, compile an accurate list of vaccines used during each vaccination campaign with number of doses applied, manufacturer and all details provided with the vaccine (strains included, potency, inactivation data, how long after vaccination animals became infected, use of antibiotics to treat FMD, what abs, etc) and also collate field observations on the efficacy of these vaccines.
   - The use of good quality, high potency vaccine should be a strong recommendation. All vaccines should be submitted to some level of independent quality control such as controlled vaccination of a small number of animals with serological testing to check for immune responses.
   - Studies to investigate the factors that impact on the cold chain should be performed and recommendations made on how to improve.
   - Research into the potential for user pays should be performed to determine the social and economic factors that prevent farmers from doing so.
4. **Vaccine matching and field information**
   - The choice of vaccine strains should be documented in terms of r-values, supplier and other technical information (potency, inactivation plots, inocuity testing, sterility, adjuvants) and shared with the region. Feedback from the field on how efficacious they are. This would build a picture over time of how valuable the r-value is.
   - There should be improved documentation on the relatedness between r-value, sequence and field data to build guidelines for future use and decision support for vaccine strains.

5. **Improved submission of samples to laboratories**
   - The use of lateral flow devices (LFD) to ship samples to labs in the region needs to be determined. It could start with a table top exercise to see if it would help with regulatory issues and if so, do a pilot where samples are submitted both as clinical material and LFD for comparison.

6. **Investigate the potential for Private Quarantine stations to assist with disease control**
   - Use the Malaysian Private Quarantine stations developed by Dr Naheed from 1997-2008 as a case study and determine its potential in controlling animal movement. A documented case study that describes the development (and history), basic design, trader engagement, cost/benefit, lessons learned etc. could be a valuable output to support other countries in the region interested in developing animal movement quarantine.

7. As animal movements are driven by market demand, an understanding of member country beef markets may help identify price differentials within the region. It has been noted that animal movement varies within the year, and peaks during festive times. Governments’ economic departments are likely collecting beef price data, and including this information in MC updates may provide clearer picture on livestock market drivers and associated FMD risk.

8. Conduct a risk factor analysis to identify and quantify putative risk factors associated with an outbreak of FMD, with the village being the epidemiologic unit. Putative risk factors to be examined would include vaccination, perceived risk status (e.g. high vs low risk), biosecurity, proximity to a road or trade route, proximity to livestock market, training level of animal health worker, local beef price, socio-economic status (household income/livestock) and distance (time) to a border. This would involve the initiation of various control strategies, e.g. vaccination and biosecurity, an assessment of the present state of the other putative risk factors. It is important that risk factors not be too highly correlated, in order to tease out their impact and avoid confounding. For example, you should not have high level biosecurity and vaccination in high-risk villages and not low risk villages.
179

22

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Meeting of the OIE Sub-

Commission for FMD Control in South-

East Asia and China

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