



World Organisation
for Animal Health
Founded as OIE

SEACFMD Bulletin

Foot and Mouth Disease Situation
January to December 2022



WOAH SUB-REGIONAL REPRESENTATION FOR SOUTH-EAST ASIA (SRR-SEA)
C/o Department of Livestock Development, Phaya Thai 10400, Bangkok, Thailand
Tel.: (+66-2) 6534864 * Fax (+66-2) 6534904 Email: srr.seasia@woah.org

Table of Contents

Summary	2
Introduction	2
1. Aims	
2. Reporting period	
3. Data source	
4. Data analysis	
Outbreaks of FMD in SEACFMD Countries in 2022	4
1. Overview of the regional situation in 2022	
2. FMD situation in SEACFMD countries	
Characterization of FMDVs in SEACFMD Countries in 2022	14
FMD related activities	15
1. Evaluation of the SEACFMD Campaign from 1997 to 2020	
2. Establishment of the SEACFMD Portal	
3. FMD Digital Awareness and Advocacy Tools	
4. Field studies and research	
5. SEACFMD Governance Meetings	
Conclusions and discussions	18

Summary

- 1) The present issue summarizes the Foot-and-mouth disease (FMD) outbreaks in the SEACFMD region in 2022 and the characterization of detected FMD viruses (FMDVs).
- 2) In total, 199 FMD outbreaks were reported in mainland Southeast Asia, China and Mongolia, amongst which 121 were due to serotype O and 13 were serotype A. Serotype Asia-1 was not reported.
- 3) Samples were not collected or sampled from 32 %¹ (65 out of 199) of the reported FMD outbreaks.
- 4) **Indonesia** reported incursion of FMDV O/ME-SA/Ind-2002e, after more than 36 years of being an FMD-free country.
- 5) **O/ME-SA/Ind-2001e** is still dominant in the region.
- 6) COVID 19 Pandemic period significantly impacted the FMD outbreak reporting, investigation and monitoring.
- 7) There was no observed seasonal pattern throughout the year.
- 8) **Brunei, the Philippines, and Singapore** did not report any FMD outbreaks in 2022 and maintained their official status of FMD free without vaccination.
- 9) **Mongolia FMD** outbreaks have been continued from 2020-2021 on large scale and countrywide, which led to the suspension of its Official Control Program for FMD by WOA. H.

Introduction

1. Aims

Following the previous issues of the SEACFMD Bulletin presenting the regional FMD situation from 2015 to 2022², the current issue was developed to summarize the FMD situation in the entire year of 2022 in the SEACFMD region, including 10 ASEAN Member States, China, and Mongolia. The SEACFMD bulletins aim to regularly update member countries, partners, and stakeholders of the regional FMD situation and to facilitate the formulation of risk-based strategies and more effective FMD control and prevention measures.

2. Reporting period

January 1st - December 31st, 2022

3. Data source

Sources of information in this report include data submitted by members to WOA. H through the World Animal Health Information Systems (WAHIS) and ASEAN Regional Animal Health Information System (ARAHIS). In addition, reports from WOA. H FMD Reference Laboratories in Pirbright (UK) and ASEAN Regional Reference Laboratory for FMD in Pakchong (Thailand), and

¹ Indonesia reported most of cases were caused by as 'O' except 2 provinces.

² <https://rr-asia.oie.int/en/projects/fmd/seacfmd-bulletin/>

the county reports at the 25th SEACFMD National Coordinators Meeting, October 2022³, Bali Indonesia were considered.

A FMD outbreak is defined as the occurrence of FMD in one or more animals in an epidemiological unit (a commune in Vietnam, a sub-district in Cambodia, or village/farm in the other SEACFMD countries). All cases within 2 weeks from the previous case are considered as part of the same outbreak.

4. Data analysis

The descriptive analysis was performed based on the official reports and country presentations by the SEACFMD Members during the period. The MS Excel programme was used to handle data. The spatial and temporal distribution of FMD, heatmaps, and circulating FMD virus serotypes were generated by QGIS and PowerBI software. (<https://rr-asia.woah.org/en/our-mission/our-mission-regional-strategies/the-south-east-asia-and-china-foot-and-mouth-disease-seacfm-campaign/>)

³ <https://rr-asia.woah.org/en/events/25th-seacfm-national-coordinators-meeting/>

Outbreaks of FMD in SEACFMD Countries in 2022

1. Overview of the regional situation in 2022

In 2022, FMD outbreaks continued to affect traditionally endemic countries (Cambodia, China, peninsular Malaysia, Mongolia, Thailand, Vietnam), whereas Lao PDR and Myanmar did not report any new outbreaks. **Indonesia** has experienced a new FMD incursion after its absence for more than 36 years (Figure 1).

Of the total 199 outbreaks reported, 121 were due to serotype O, 13 were identified as serotype A, and the remaining 65 were not typed due to the absence of/insufficient samples collected or delayed laboratory testing. Serotype A was detected only in Thailand. The number of FMD outbreaks declined significantly (306 outbreaks were reported in 2021) which could be because of the COVID-19 pandemic restrictions. The samples were sent to WRLFMD from Mongolia, Indonesia, Thailand and Malaysia (sequences) and identified pre-dominant lineage O/ME-SA/Ind-2001e.

Cattle/buffaloes were affected in 191 outbreaks, pigs and sheep/goat were involved in few outbreaks. Infection involving small ruminants was commonly noted in Malaysia and Mongolia. The highest number of outbreaks were observed in Thailand, Indonesia, Cambodia, Vietnam, and Malaysia with specific clusters in some places (Figure 2). There was no seasonal pattern throughout the year (Figure 3).

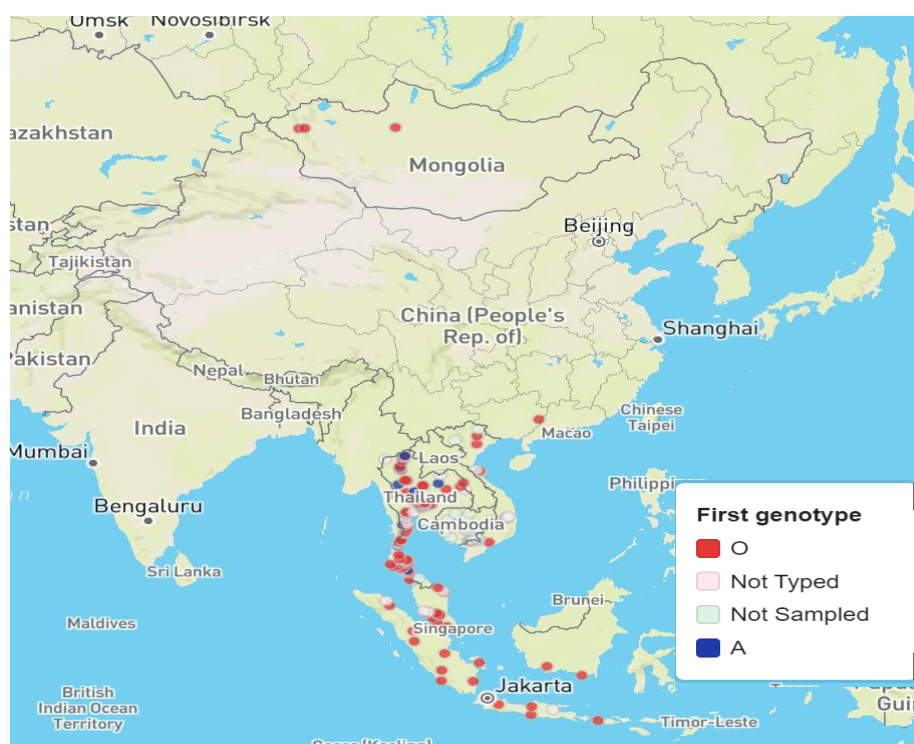


Figure 1. Distribution of FMD outbreaks in SEACFMD countries, 2022.

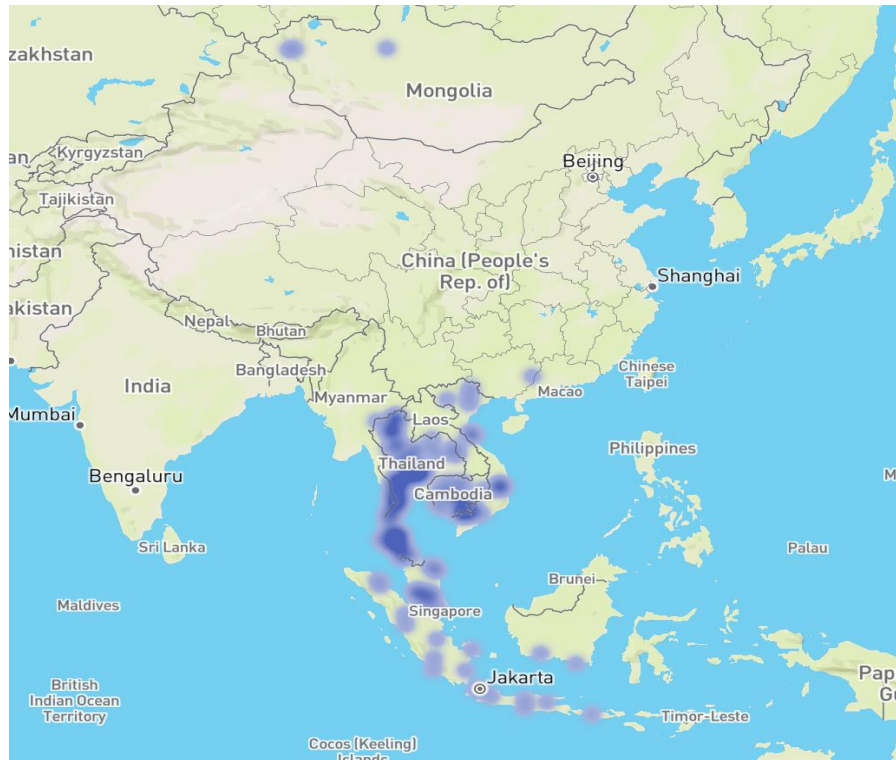


Figure 2. FMD heatmap in SEACFMD countries, 2022

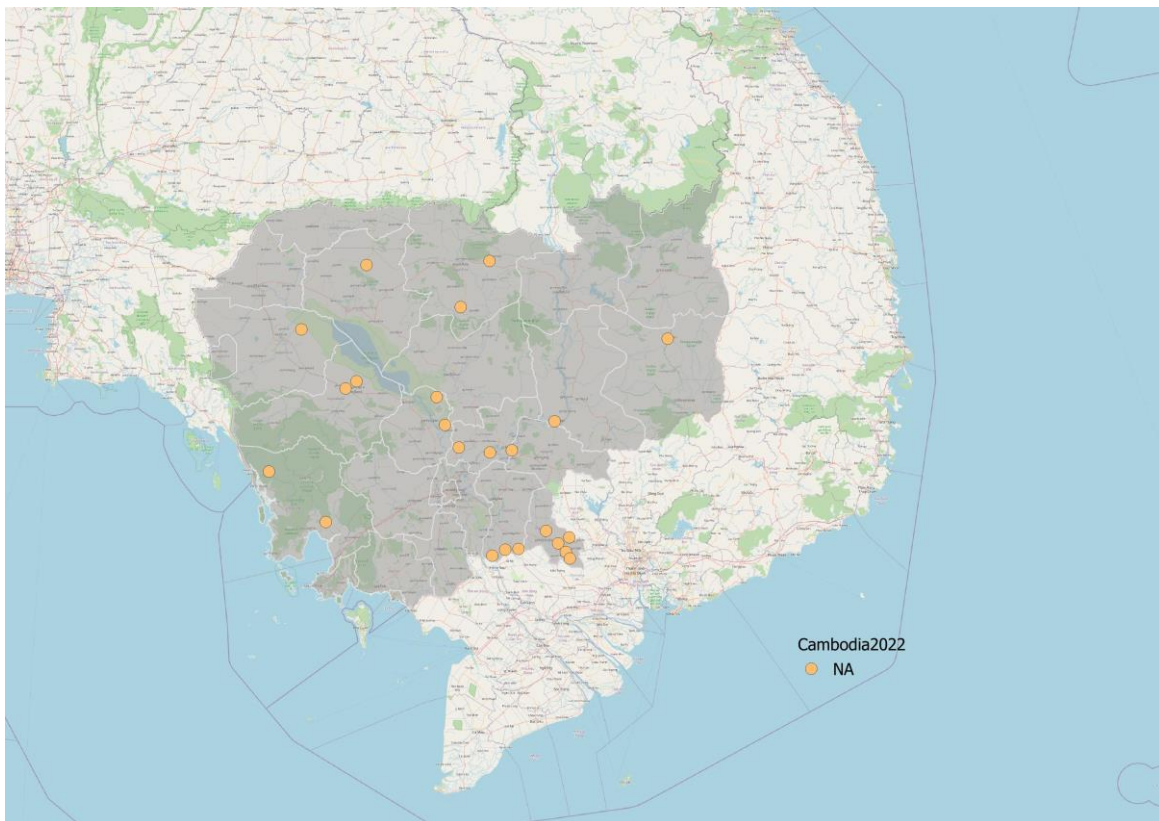


Figure 3 Temporal distribution FMD outbreaks in SEACFMD countries 2022

2. FMD situation in SEACFMD countries

Cambodia

Cambodia reported 23 FMD outbreaks across the country in 2022⁴ throughout the year. The FMD occurrence was stable in comparison to the previous year. Affected animal species included cattle and buffaloes. No data is available for the characteristics of the circulating FMDV.



⁴ Data from country report

China

In 2020, China reported a single FMD outbreak from Guanxi province⁵. The outbreak was caused by O serotype, and only pigs were affected.

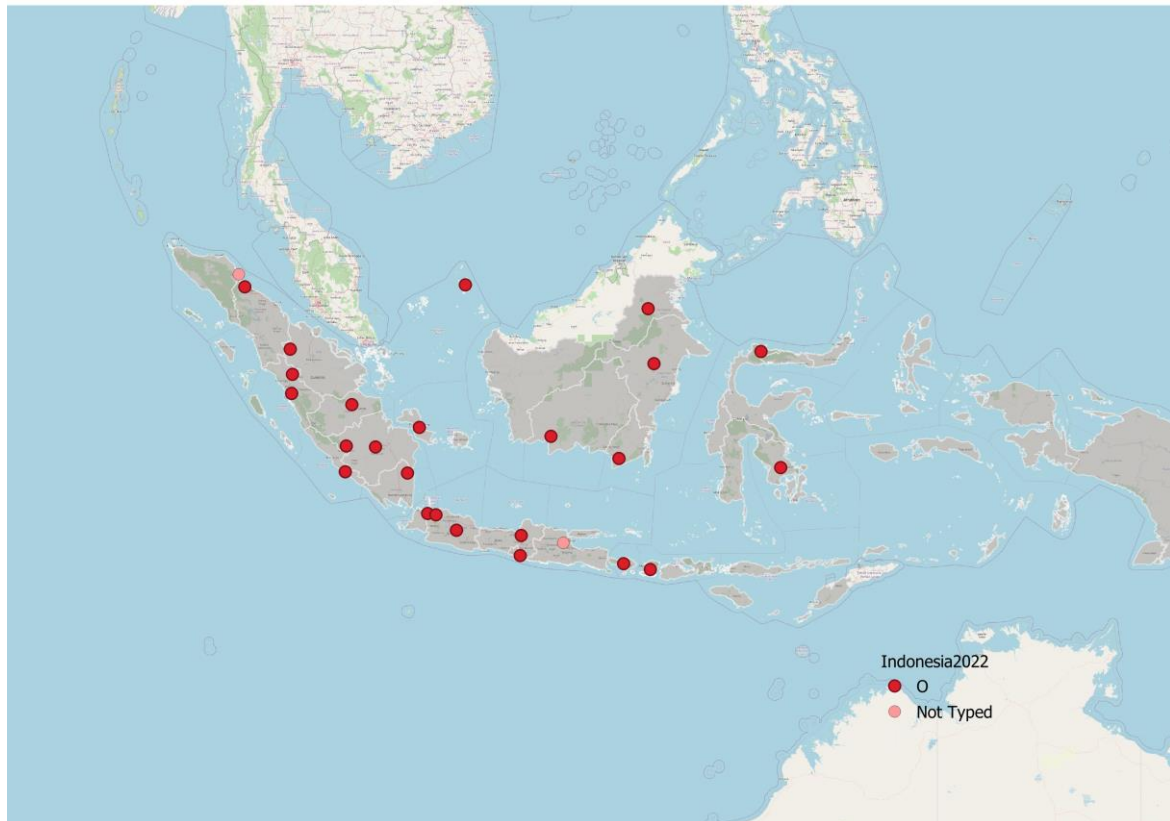


⁵ Data from WAHIS

Indonesia

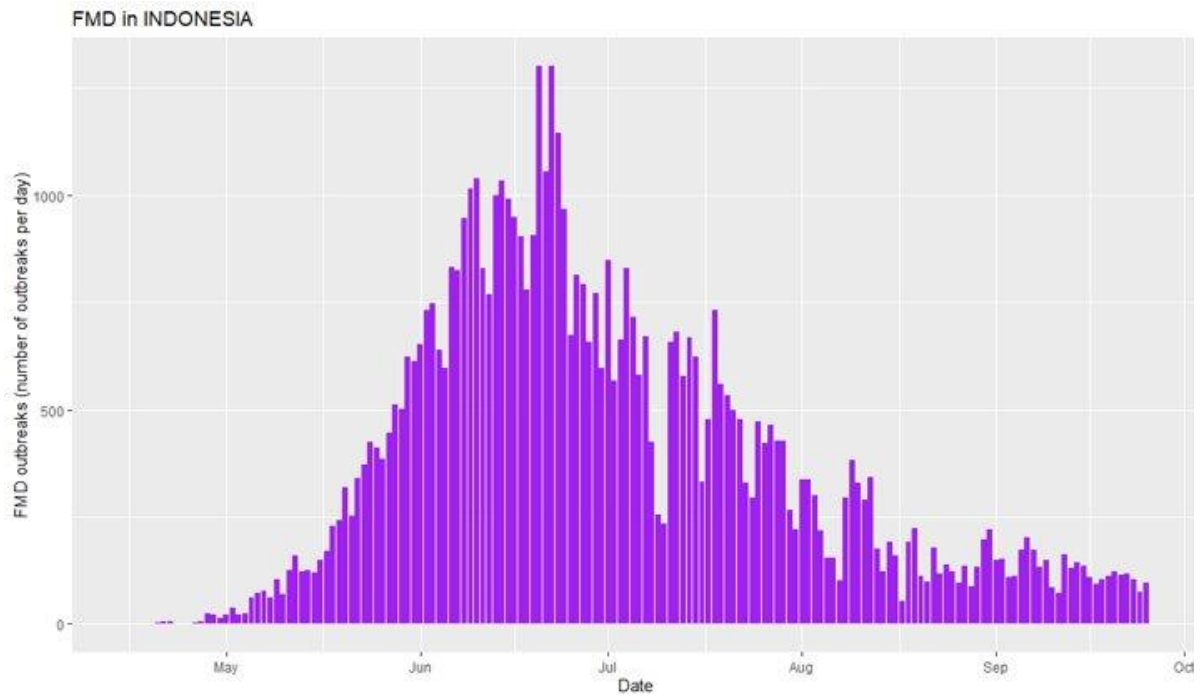
Indonesia was free from FMD for more than 30 years, with the last case reported in 1986.

A new FMD incursion was detected in April 2022 with identified cases in East Java and Aceh provinces simultaneously which has since spread to other provinces and islands. FMD infection continued spreading in 27 provinces with the prevalent strain identified as O/ME-SE/Ind2001e. The total number of affected villages was 58,527⁶ with 216,378 cases in susceptible animals.



FMD affected provinces (Source: 25th SEACFMD National Coordinators Meeting, October 2022)

⁶ Country report 25th SEACFMD National Coordinators Meeting, October 2022 (https://rr-asia.woah.org/wp-content/uploads/2022/10/5-indonesia_rev.pdf)



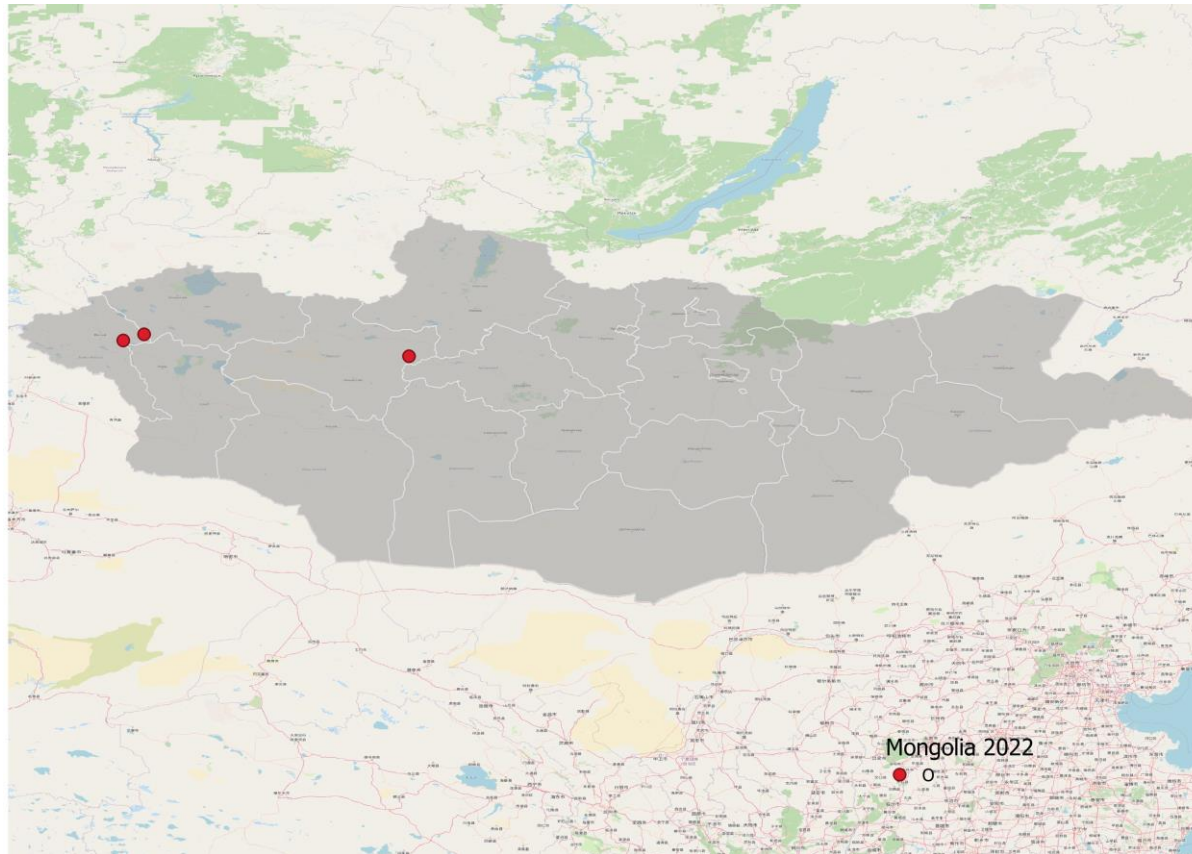
FMD temporal distribution (Source: 25th SEACFMD National Coordinators Meeting, October 2022)

Lao PDR

Lao PDR did not report any FMD outbreaks in 2022.

Mongolia

Mongolia reported 3 FMD outbreaks⁸ caused by serotype O. Cattle and sheep/goats in mixed herds were affected. A significant decline was observed compared to the previous year where 101 outbreaks were reported through WAHIS.



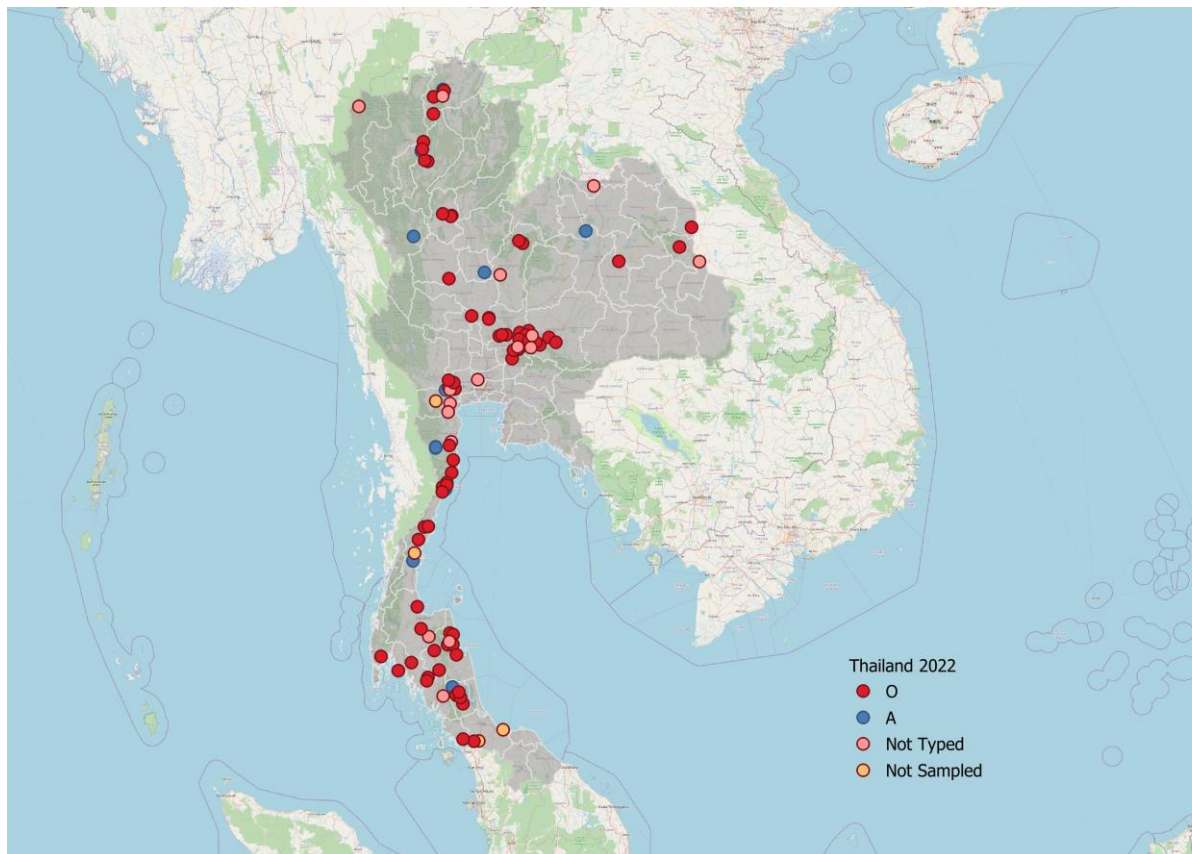
Myanmar

⁸ Data from WAHIS

Myanmar did not report any FMD outbreaks in 2022.

Thailand

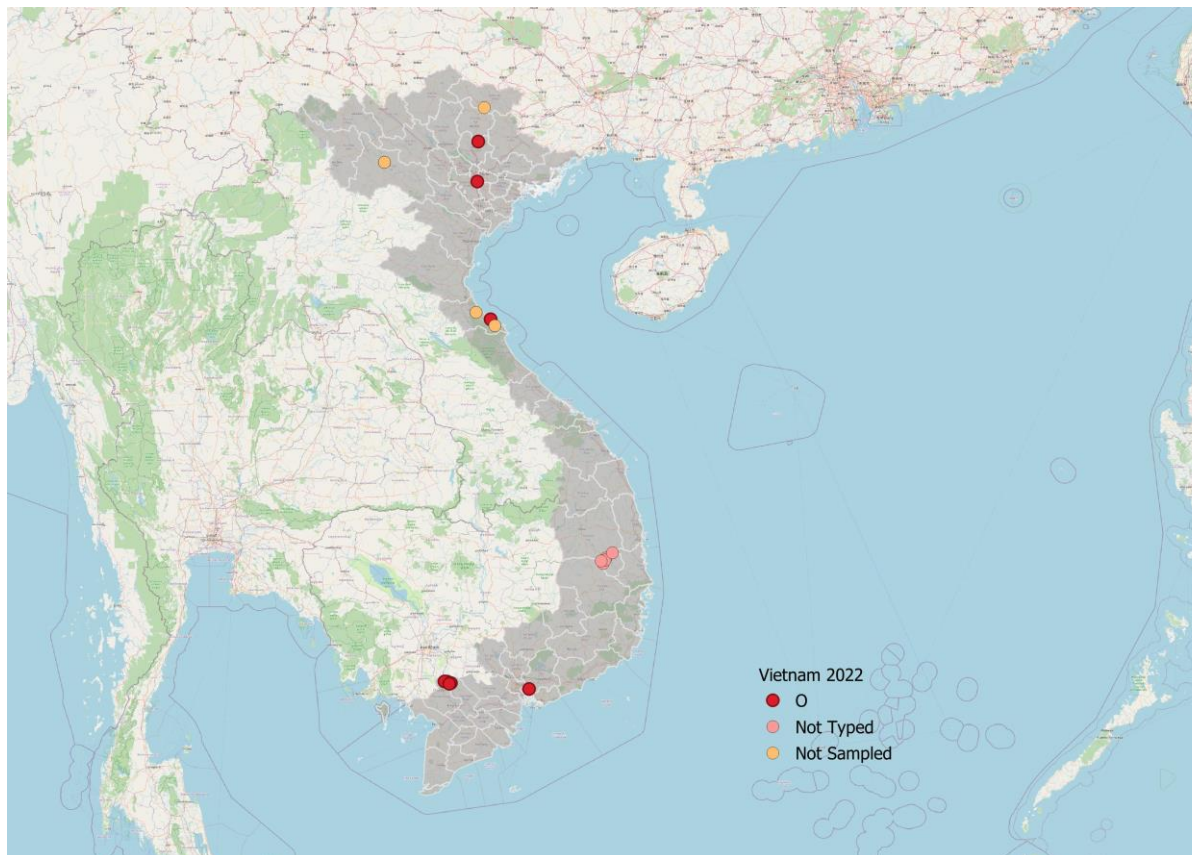
In 2022, Thailand reported 110 FMD outbreaks across the country⁹. Affected animals include cattle and buffaloes. The number of FMD outbreaks doubled compared to the previous year (47 outbreaks in 2021). Although Serotype O caused most cases, Serotype A still plays a crucial role in FMD occurrence in Thailand.



⁹ Data from ARAHIS and country report

Vietnam

Vietnam reported 22 FMD outbreaks in the North and the South region of the country¹⁰. FMD outbreaks involved only cattle and buffaloes. Ten outbreaks were identified as serotype O and 12 were not sub-typed or not sampled. The number of outbreaks dropped significantly compared to the reported cases in the previous year (89 cases reported in 2021).



¹⁰ Data from ARAHIS and country report

Characterization of FMDVs in SEACFMD Countries in 2022

In 2022, some FMDVs were sequenced in the VP1 coding region, by which the following strains were detected:

- Serotype O: O/ME-SA/Ind-2001e
- Serotype A: ASIA/SEA-97

Table 1. FMDV strains detected in SEACFMD Member Countries in 2022.

Country	Serotype O	Topotype...				Serotype A ASIA/ Sea-97	Serotype Asia-1 Asia/ G-VIII
		SEA/ Mya-98	ME-SA/ PanAsia	ME-SA/ Ind-2001	Cathay		
Cambodia							
China	+						
Indonesia	+			+			
Lao PDR ^a							
Myanmar							
Malaysia	+			+			
Mongolia	+			+			
Thailand	+					+	
Viet Nam							

+: the FMDV lineage present in the country.

Note: data were based on the genotyping reports of the World Reference Laboratory for FMD (WRL) <http://www.wrlfmd.org/country-reports> and ASEAN Regional Reference Laboratory for FMD, Pakchong Thailand and country reports presented at the 25th SEACFMD National Coordinator's Meeting, October 2022.

FMDV O/ME-SA/Ind-2001e was detected in samples submitted to WRLFMD from Indonesia, Mongolia, and Thailand and sequences from Malaysia in 2022. Serotype O remained the dominant serotype, with the Ind-2001 strain (e sublineage) continuing as the most prevailing serotype in the Region based on Reference laboratory and country reports.

Serotype A (ASIA/Sea-97) was detected at low frequencies in Thailand.

None of the SEACFMD member countries have reported serotype Asia-1 since its last detection in the Rakhine state of Myanmar in 2017.

FMD related activities

1. Evaluation of the SEACFMD Campaign from 1997 to 2020

The SEACFMD Campaign now enters its 6th phase of implementation under the guidance of the SEACFMD Roadmap 2021–2025 which mainly focus to reinvigorate FMD prevention and control in SEACFMD member countries. Apart from continuing with the key elements in FMD prevention and control during the 6th phase, an evaluation of the SEACFMD Campaign including an in-depth assessment of the experiences and lessons learned since its establishment in 1997 and up until 2020 has been conducted. Several strengths and gaps were identified and some key recommendations to address the identified gaps were offered. Importantly, there was general agreement that the structural expansion of SEAFMD through SEACFMD to involve more countries beyond the Greater Mekong Subregion (GMS) was appropriate considering the increasing interconnectedness of FMD virus pools. Further, respondents from diverse roles and affiliations categories unequivocally agreed that the SEACFMD campaign has been extremely successful in orchestrating solid relationships between technical staff, facilitating fruitful coordination, collaboration and communication amongst member countries

Among the several gaps and recommendations, the following are the critical gaps identified with provision of key recommendations to address these gaps and guidance for the future SEACFMD Campaign.

- Inadequate political commitment and resourcing
- Lack of surveillance capacity
- Access to quality vaccines and effective vaccination
- Weak regional biosecurity
- Inadequate emergency preparedness and response capacity
- Insufficient Private sector participation

2. Establishment of the SEACFMD Portal

The SEACFMD Portal was launched during the 25th SEACFMD National Coordinators Meeting held in Bali Indonesia from 3 to 5 October 2023. The [SEACFMD portal](#) was developed to provide a common platform for stakeholders to access all information on the SEACFMD campaign. The portal aims to provide knowledge-based support and strengthen networking and coordination amongst SEACFMD Members and partners. The portal consists of i) a FMD dashboard on [WAOH regional website](#) which provides up to date information on FMD epidemiological situation in SEA; ii) the SEACFMD toolbox of technical resources relevant to FMD prevention and control; iii) a space to upload resources for Members and iv) and a discussion forum. A [tutorial](#) explaining the functions of the portal was shared with the meeting participants and SEACFMD Members. The SEACFMD portal will be updated periodically and will serve as a comprehensive library for FMD resources.

3. FMD Digital Awareness and Advocacy Tools

With the objective to facilitate clear, targeted, and effective communication, WOAHA developed FMD digital awareness and advocacy tools. The digital resources consist of leaflets, infographics, posters, and brochures and two animation videos targeted to specific groups of stakeholders.

Topics of the materials include:

- How to recognise FMD in your cattle and other farm animals?
- Action plan to fight against FMD outbreaks: A quick guide to manage FMD outbreaks Farmers, Veterinary Paraprofessional.
- Biosecurity: Three key principles to protect animals from FMD
- Biosecurity guidelines for traders: 4 steps to protect your animals, and preserve your profits
- How to avoid buying sick animals: An easy-to-follow check list for traders.
- Sampling for FMD diagnosis: The role of veterinarians and Veterinary Paraprofessionals.
- How to protect animals from FMD – video targeted to farmers.
- Safer transport to protect animals from FMD – video targeted to the transporters and traders.

Resources were published on the SEACFMD Portal and WOAHA website. WOAHA will support interested Members in the translation of these resources.

4. Field studies and research

In Mar 2022, one scientific manuscript titled Socioeconomic impacts of clinical foot-and-mouth disease and a risk-based partial vaccination campaign for smallholders in Lao People's Democratic Republic has been published in the International Journal 'Transboundary and Emerging Diseases'.

In 2022, the field study was conducted on defining incentives for farmers and community animal health workers to report and control foot and mouth disease in Lao PDR by Department of Livestock and Fisheries (DLF) and faculty of agriculture National University of Laos. The study facilitated by CIRAD supported by WOAHA. The study provided Laos Insights into farmers and Animal Health Workers intentions and challenges to actively report FMD suspected cases and to implement FMD control measures including vaccination, movement control and zoo sanitary measures.

Also conducted a study on Regional Animal Price Monitoring with support of "ASEAN Regional strengthening of FMD Control in SE Asia Project" funded by New Zealand. This report highlights that Animal Price Monitoring System (APMS) would require a large amount of livestock price data collected over a sustained period of time. Before any investment is made in trying to establish an APMS, further research and data collection at the country level was recommended. Therefore a country level animal price monitoring is being pursued by WOAHA in the selected SEACFMD Member countries.

5. SEACFMD Governance Meetings

The 26th SEACFMD Sub-Commission Meeting was held virtually from 16 -18 March 2022. The meeting was attended by 130 participants from SEACFMD Members, non-SEACFMD Countries, Partners, Academia, Vaccine Manufacturers and WOA. The detail of the 26th SEACFMD Sub-Commission including the presentations and meeting report are available [here](#).

The 25th SEACFMD National Coordinators (NC) Meeting was held in Bali, Indonesia, from 3-5 October 2022. It was the first in-person SEACFMD meeting since 2019. The three-day meeting was attended by 69 participants from WOA Members, SEACFMD and non-SEACFMD Members in the AP region, partner organisations including FAO, WOA Reference Laboratories and Academia (Massey University, University of Sydney) as well as Livestock Industries. Some participants from China including the Lanzhou Veterinary Research Institute (WOA FMD Reference Laboratory, LVRI) attended the meeting virtually. The detail of the meeting including the presentations are available [here](#).

In response FMD incursion in Indonesia in April and May 2022, the Special Meeting of the SEACFMD National Coordinators focused on FMD Preparedness and Response was held on 9 June 2023. The Special Meeting was attended by 84 participants from SEACFMD Member Countries (National Coordinators, EpiNet / LabNet Focal Persons and other technical staff), non-SEACFMD Countries in the Asia Pacific region; partner organisations such as FAO, ASEAN Secretariat, WOA Reference Laboratories, donors, Academic Institutions and Vaccine Manufacturers and WOA. The detail of the meeting including the presentations are available [here](#).

The joint virtual SEACFMD EpiNet and LabNet meeting was held on 8 December 2022. The meeting was attended by the SEACFMD EpiNet and LabNet Focal Persons and National Coordinators, WOA and Partners. The presentations and materials related to this meeting are available [here](#).

In collaboration with FAO, WOA SRRSEA organised the 3rd virtual meeting of the Regional Expert Group on FMD diagnosis on 2 June 2022. Sixteen FMD laboratory experts from the WOA Reference Laboratory (WRLFMD, the Pirbright Institute, Animal and Plant Quarantine Agency (APQA) Korea, LVRI and Yunnan Animal Science and Veterinary Institute, China); Pakchong FMD Diagnostic Laboratory, Thailand; Australian Centre for Disease Preparedness; National Institute of Animal Health (NIAH) Japan; and the Ministry of Primary Industry, New Zealand, attended the meeting.

Conclusions and discussions

In 2022, a total of 199 FMD outbreaks were reported in the SEACFMD region, lower than the previous year, which reported 306. The significant reduction observed in 2022 could be attributed to COVID-19 pandemic restrictions. Serotype O remained the dominant serotype, with the Ind-2001 strain (e sublineage) being the most prevailing genotype. The continuous outbreak of Serotype A in Thailand may require further investigation.

This report was based on the FMD reports submitted by SEACFMD Members through WAHIS, ARAHIS, and country presentations during the 25th SEACFMD National Coordinators' meeting in October 2022. Inconsistencies and underreporting of FMD outbreaks from the Members through ARAHIS/WAHIS were observed constantly and it's required to train focal points to report and integrate on WAHIS/ARAHIS platforms.

ASEAN Animal Health Information system-ARAHIS has been available for more than 17 years and members encountered issues in entering data into the system. Therefore, FMD outbreak details are still lacking during the reporting period that may result in demonstrating the true picture of FMD in the post-COVID situation. WOAHSRR SEA has resumed the ARAHIS/WAHIS Integration Project in collaboration with WOAHSRR team and Singapore, a lead country for ARAHIS for the synchronising of both reporting systems.

Based on the data from 2019 to 2023, SRR SEA has developed a dynamic SEACFMD dashboard that allows us to update outbreaks in a timely manner and share experience among members in emerging situations. This Dashboard has been published on the WOAHSRR Regional website <https://rr-asia.woah.org/en/our-mission/our-mission-regional-strategies/the-south-east-asia-and-china-foot-and-mouth-disease-seacfmd-campaign/> and will be updated frequently.

The recent incursion of FMD into a previously free country (FMD incursion in Indonesia) and rapid spread of emerging TADs such as ASF and LSD in South-East Asia, exemplifies the weakness of regional biosecurity systems and their failure to keep pace with the increasing TAD risks. To address this gap, there is a need for risk assessment studies, appropriate legislation and stronger enforcement of regulations, effective awareness campaigns, among livestock farmers and traders about the risks associated with uncontrolled animal movement, and better collaboration between countries in the region to address the risks of cross-border movement of animals. There is also need to strengthen the regional biosecurity strategies to stop spread of FMD and emerging TADs through elimination of informal cross border movement of livestock and their products and more effective border controls including quarantine facilities.

The SEACFMD Members and WOAHSRRSEA as Secretariat of the SEACFMD Campaign should pay attention to the critical gaps identified and recommendations provided during the evaluation of SEACFMD campaign from 1997 to 2020. The recommendations of this evaluation report should be used to improve the implementation of the SEACFMD Roadmap 2021-2025 and guide future SEACFMD Campaigns.



**World Organisation
for Animal Health**
Founded as OIE

WOAH Sub-Regional Representation for South-East Asia
c/o DLD, 69/1 Phayathai Road, Rachathewi, 10400 Bangkok, THAILAND
tel (+662) 653-4864 ; fax (+662) 653-4904 ; srr.seasia@wah.org