



World Organisation  
for Animal Health  
Founded in 1924

# SEACFMD Bulletin

Foot and Mouth Disease Situation  
January to December 2023



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](mailto:srr.seasia@woah.org)

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# Summary

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- 1) The present issue summarizes the Foot-and-mouth disease (FMD) outbreaks in the SEACFMD region in 2023 and the characterization of detected FMD viruses (FMDVs).
- 2) In total, 202 FMD outbreaks were reported in mainland Southeast Asia and China. Among these, 18 cases were detected as serotype O and 1 as serotype A. Serotyping was done by laboratory testing, and the rest of the outbreaks were either not sampled or not typed. Serotype Asia-1 was not reported.
- 3) Member countries reported that samples were not collected or typed for **89%** (183 out of 202) of the reported FMD outbreaks.
- 4) **O/ME-SA/Ind-2001e** is still dominant in the region.
- 5) **O/ME-SA/PanAsia** has been detected in Malaysia which the last reported was in 2020.
- 6) **Serotype A** was not reported in Thailand, despite significant cases being recorded the previous year.
- 7) The highest number of outbreaks were observed from the end of January to the beginning of February in 2023.
- 8) **Brunei, the Philippines, and Singapore** did not report any FMD outbreaks in 2022 and maintained their official status of FMD free without vaccination.

## Introduction

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### 1. Aims

Following the previous issues of the SEACFMD Bulletin presenting the regional FMD situation from 2015 to 2022<sup>1</sup>, the current issue was developed to summarize the FMD situation in the entire year of 2023 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 1<sup>st</sup> - December 31<sup>st</sup>, 2023

### 3. Data source

Sources of information in this report include data submitted by members to WOAHP through the World Animal Health Information System (WAHIS) and submissions by Member Countries' Veterinary Services via email, as the ASEAN Regional Animal Health Information System (ARAHIS) faced challenges due to an outdated system and some technical issues. In addition, reports from the WOAHP FMD Reference Laboratories in Pirbright (UK) and the ASEAN Regional Reference Laboratory for FMD in Pakchong (Thailand), as well as country reports from the 26th

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<sup>1</sup> <https://rr-asia.oie.int/en/projects/fmd/seacfmd-bulletin/>

SEACFMD National Coordinators Meeting held in August 2023 in Kuala Lumpur, Malaysia, were considered.

An 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).

#### **4. Data analysis**

The descriptive analysis was performed based on official reports and country presentations by SEACFMD members during the period. The MS Excel program was used to handle the data. The spatial and temporal distribution of FMD, heatmaps, and circulating FMD virus serotypes were generated using QGIS, Power BI, and SaTScan software. The FMD information based on the available data has been regularly updated on the [SEACFMD dashboard](#) on the WOA regional website ([South-East Asia, China and Mongolia Foot and Mouth Disease \(SEACFMD\) Campaign WOA - Asia](#)).

# Outbreaks of FMD in SEACFMD Countries in 2023

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## 1. Overview of the regional situation in 2023

In 2023, FMD outbreaks continued to affect traditionally endemic countries (Cambodia, China, peninsular Malaysia, Indonesia, Thailand, Vietnam), whereas Lao PDR, Mongolia and Myanmar did not report any new outbreaks. (Figure 1).

Of the total 83 outbreaks were reported in Cambodia, China, Malaysia, Thailand and Vietnam. Indonesia, meanwhile, reported 119 outbreaks, constituting most of the outbreaks reported in member countries. 18 outbreaks of the total 202 (including Indonesia) were due to serotype O, and one outbreak was identified as serotype A, and the remaining 183 outbreaks were not typed due to the absence of, insufficient samples collected, or delayed laboratory testing.

Serotype A was detected only in Malaysia <sup>2</sup>. The number of total reported FMD outbreaks it was almost like the previous year (199 outbreaks were reported in 2022), however it might be not representing the true picture of the FMD outbreak situation due to under reporting, lower proportion of FMD outbreaks that are subjected to investigate and subtype of the FMD virus.

The samples sent to WRLFMD from Thailand were identified as the predominant lineage O/ME-SA/Ind-2001e. However, samples sent from Malaysia detected the O/ME-SA/Pan Asia strain, which was found in Cambodia, Thailand, and Vietnam from 2017 to 2019, with the last detected case reported in Malaysia in 2020 ([reference: WRLFMD country reports](#)).

Cattle/buffaloes were affected in 171 outbreaks, pigs and sheep/goat were involved in few outbreaks. Infection involving small ruminants and pigs was commonly noted in Indonesia and Vietnam. The highest number of outbreaks were observed in Indonesia followed by Cambodia, Vietnam, and Thailand with specific clusters in some places (Figure 2). The highest outbreak was observed from the end of January to the beginning of February in 2023. (Figure 3).

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<sup>2</sup> Data submitted by country

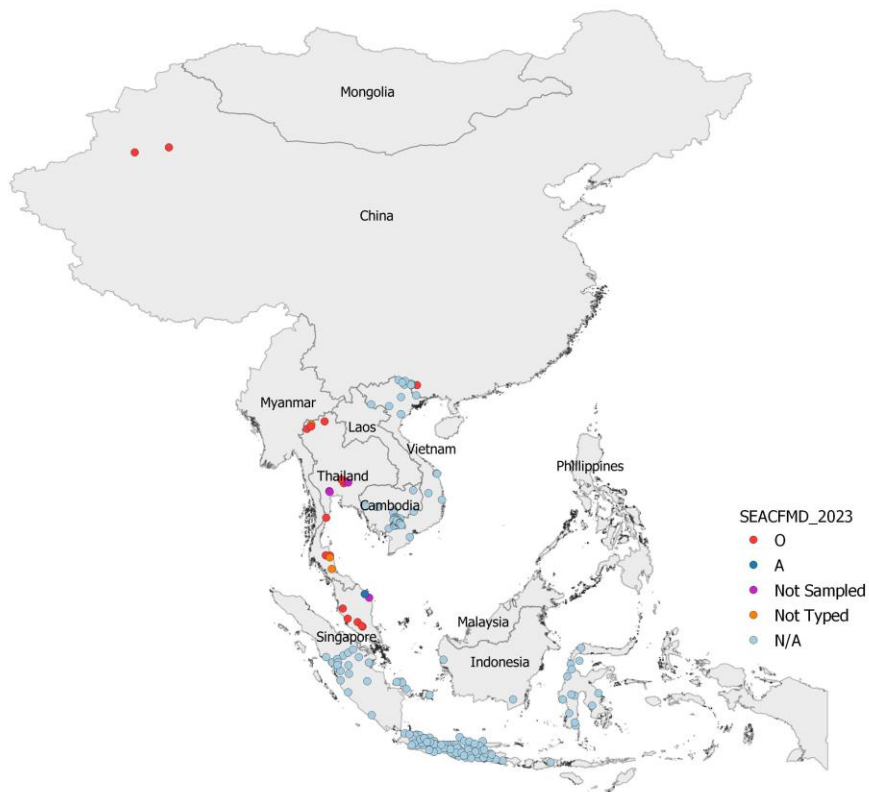


Figure 1. Distribution of FMD outbreaks in SEACFMD countries, 2023.

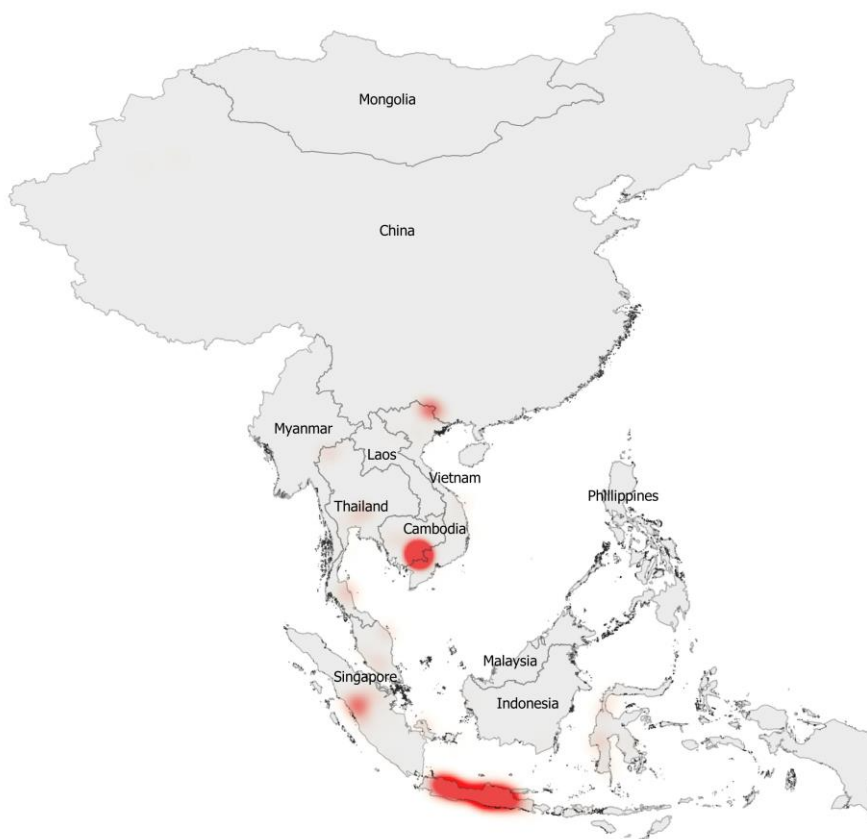


Figure 2. FMD heatmap in SEACFMD countries, 2023

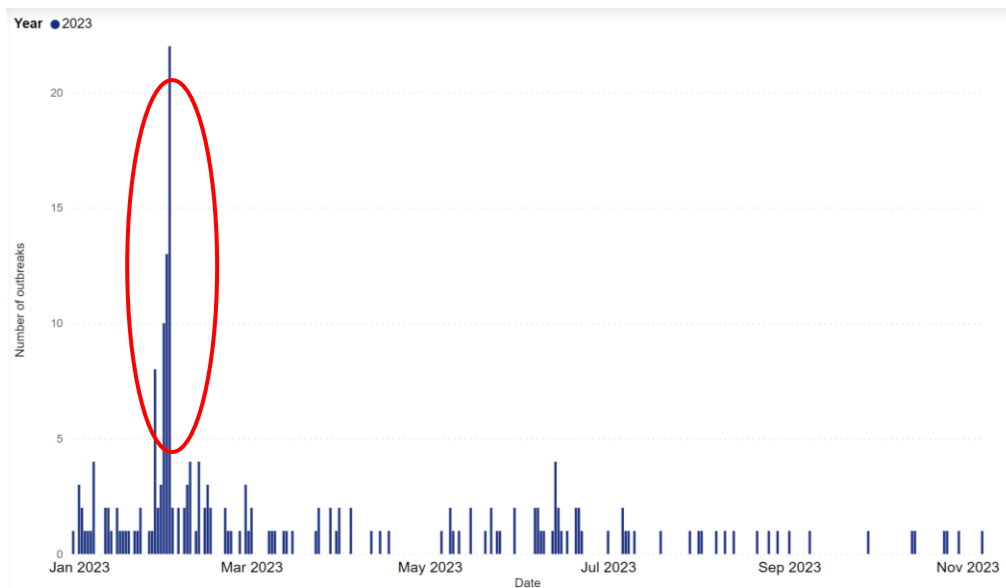


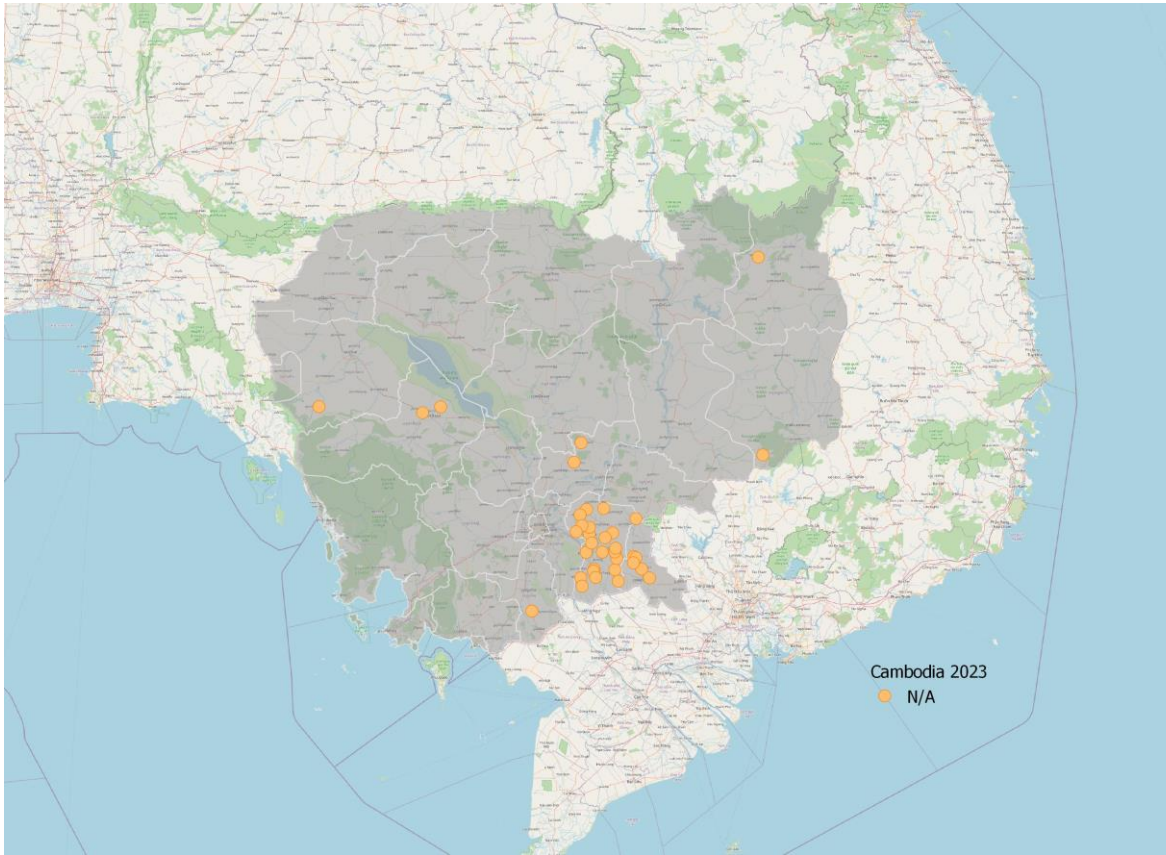
Figure 3 Temporal distribution FMD outbreaks in SEACFMD countries 2023

## 2. FMD situation in SEACFMD countries

### **Cambodia**

Cambodia reported 37 FMD outbreaks across the country in 2023<sup>3</sup> throughout the year. The FMD occurrence was stable in comparison to the previous year. Affected animal species included cattle and buffaloes. Diagnosis has been based on clinical signs, and no data is available for the sampling and characteristics detection of the circulating FMDV.

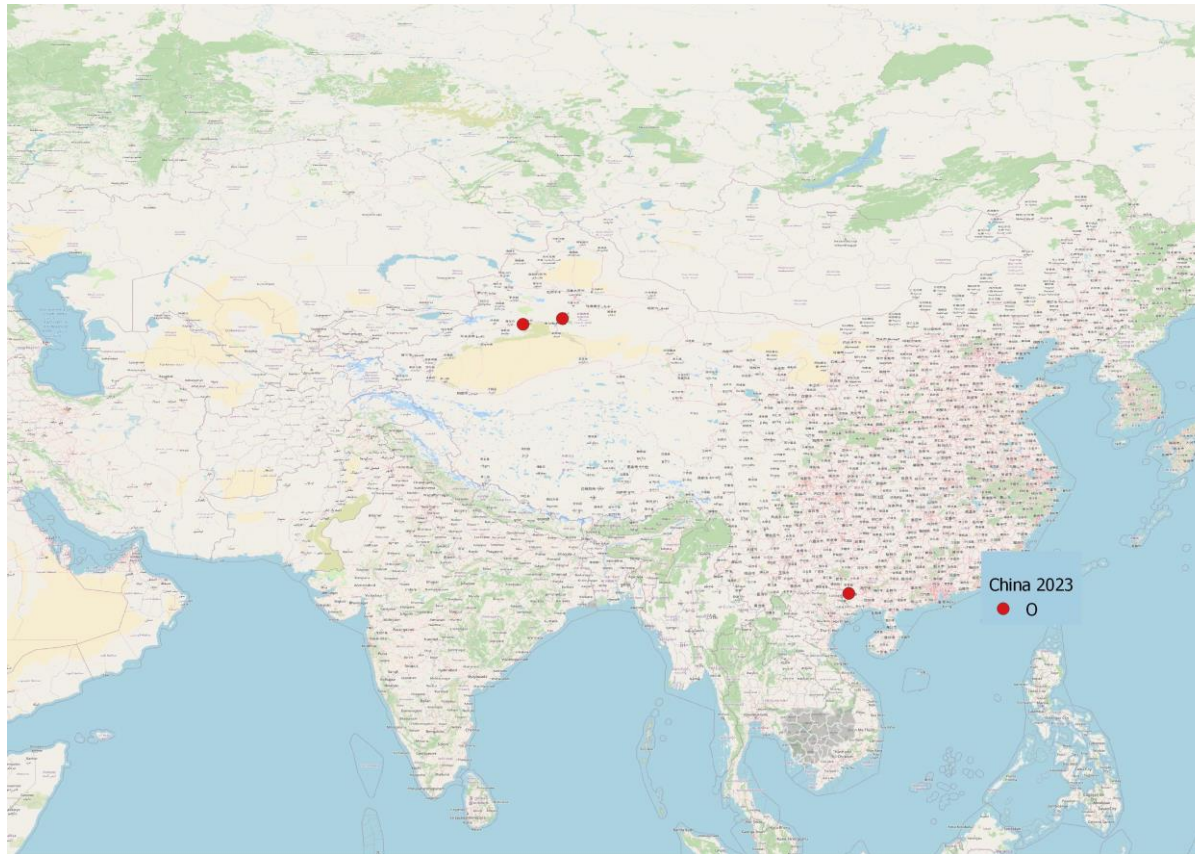
<sup>3</sup> 26th SEACFMD National Coordinators Meeting





## China

In 2023, China reported three FMD outbreak from Guanxi and Xinjiang Uygur provinces<sup>4</sup>. The outbreak was caused by O serotype, and amongst FMD susceptible species only cattle were affected.

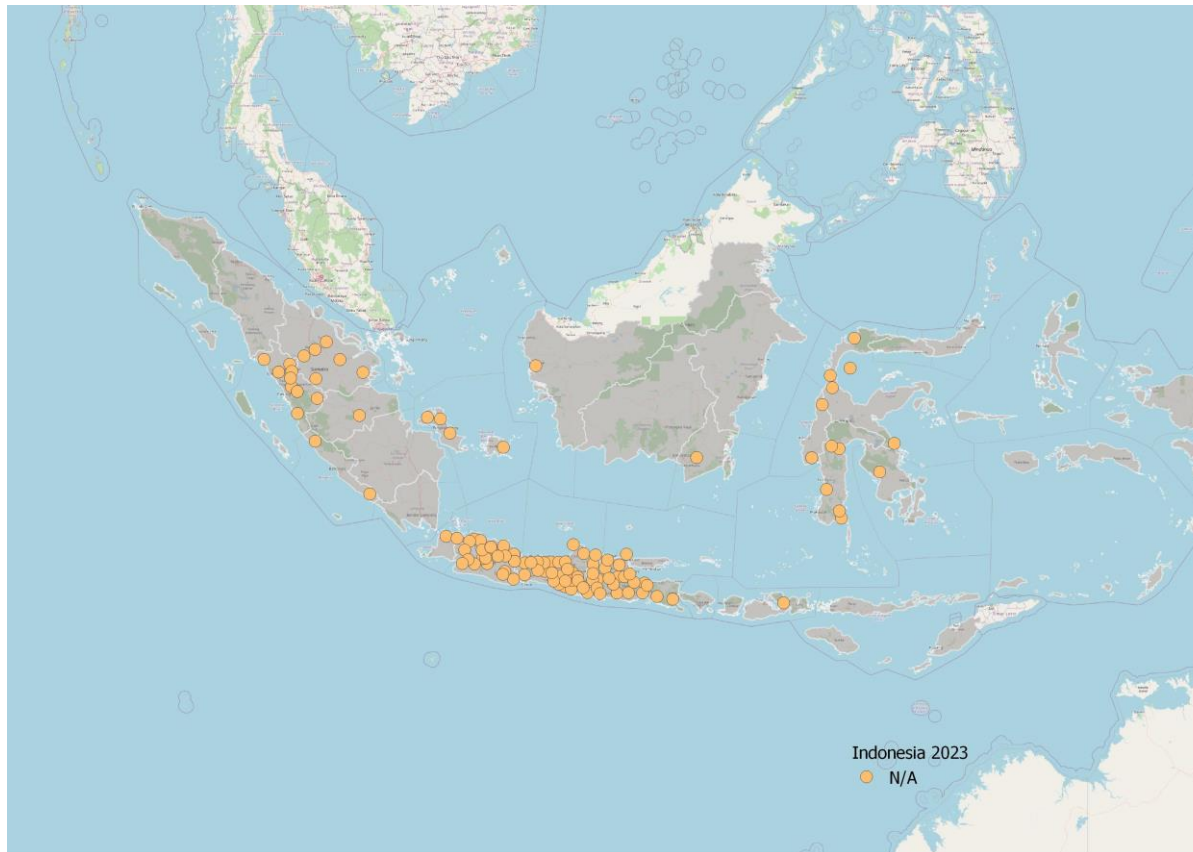


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<sup>4</sup> Data from WAHIS

## Indonesia

Indonesia was free from FMD for more than 30 years, with the last case reported in 1986. However, a new FMD incursion was detected in April 2022, with outbreaks identified simultaneously in East Java and Aceh provinces. Since then, the disease has spread to other provinces and islands. In 2023, FMD infection continued, with 119<sup>5</sup> outbreaks reported across 17 provinces, affecting 19,187 animals. The outbreak was caused by O/ME-SA/Ind-2001e<sup>6</sup>.



<sup>5</sup> Data submitted by country

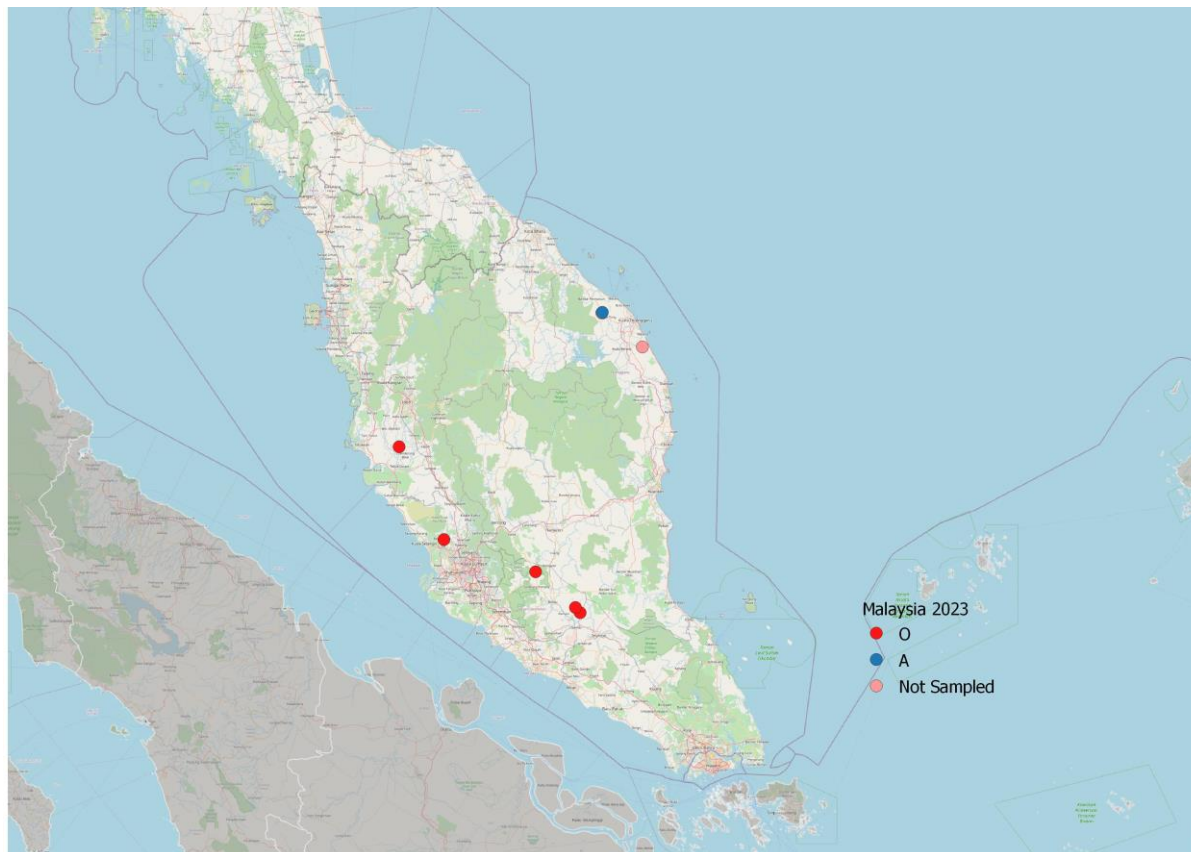
<sup>6</sup> 26th SEACFMD National Coordinators Meeting

## Lao PDR

Lao PDR did not report any FMD outbreaks in 2023.

## Malaysia

Malaysia reported 8 FMD outbreaks across the peninsular region, with only cattle being affected. Five outbreaks were typed as serotype O, a single case was identified as serotype A, and the remaining cases were not characterized. Two samples were sent to Pirbright, identified as the O/ME-SA/Pan Asia strain, with the last detected case reported in 2020.



## Mongolia

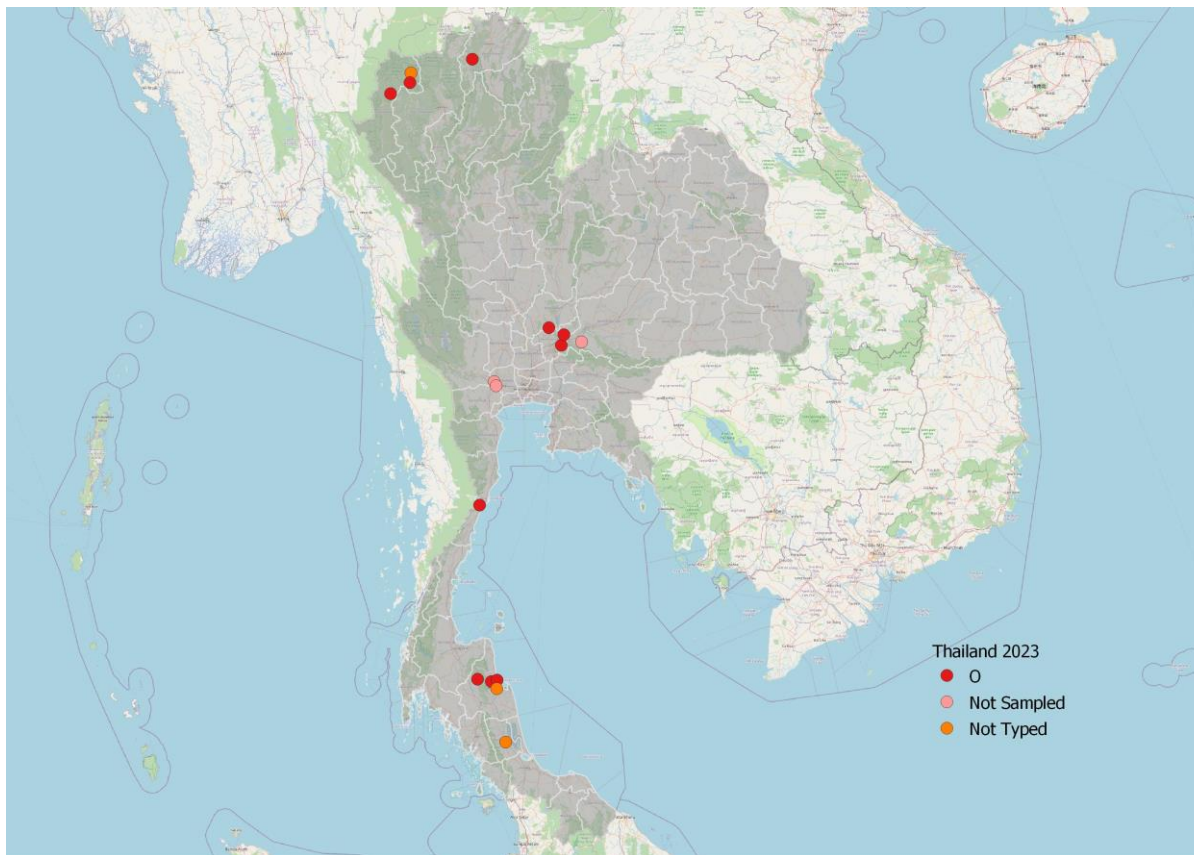
Mongolia did not report any FMD outbreaks in 2023.

### **Myanmar**

Myanmar did not report any FMD outbreaks in 2023.

### **Thailand**

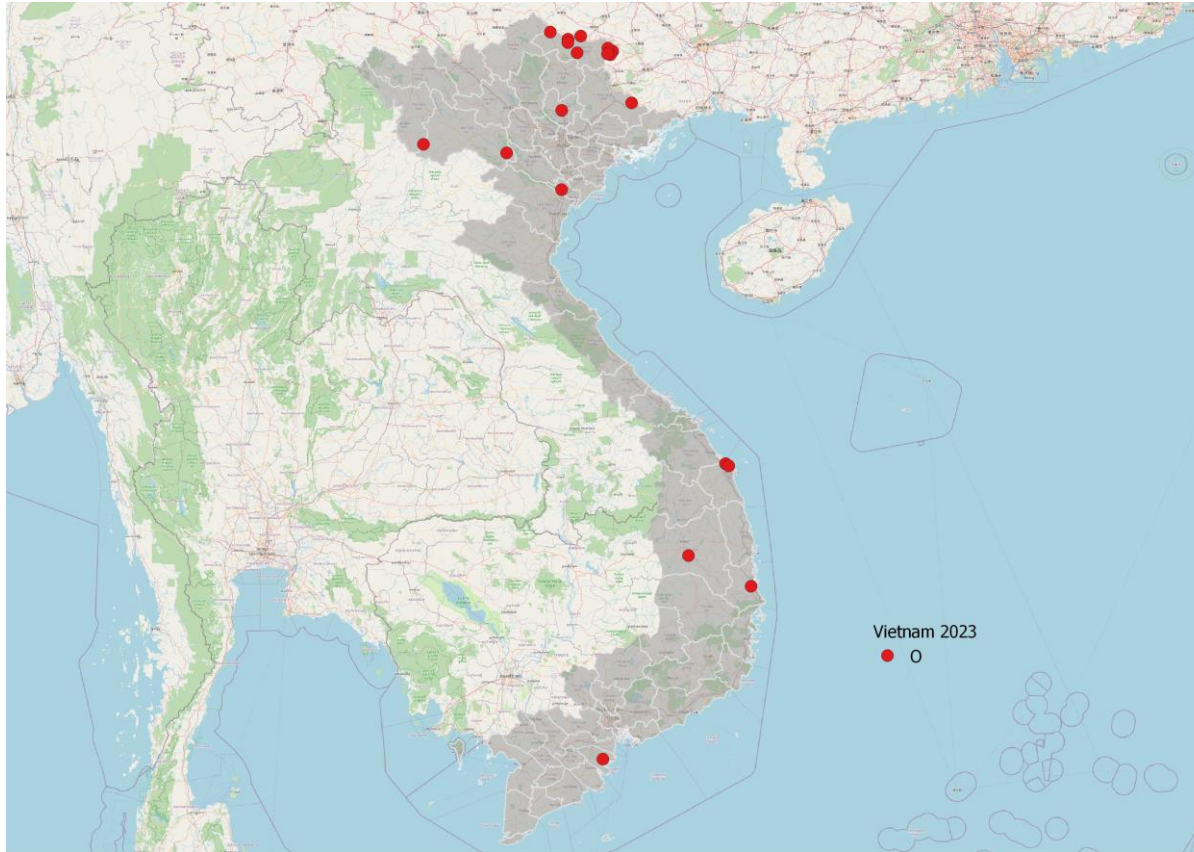
In 2023, Thailand reported 16 FMD outbreaks across the country, affecting cattle and buffaloes. This represents a significant drop compared to the 110 outbreaks reported the previous year. All cases were attributed to Serotype O, with the ME-SA/Ind-2001e strain causing most of the infections.





## Vietnam

Vietnam reported 19 FMD outbreaks in the northern and southern regions of the country. The outbreaks involved cattle, buffaloes, and a few pigs. All outbreaks were identified as serotype O at the country level, and no samples were submitted to a reference laboratory for further characterization.



## Characterization of FMDVs in SEACFMD Countries in 2021-2023

In 2021-2023, the following FMDV strains were detected:

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

Table 1. FMDV strains detected in SEACFMD Member Countries in 2021-2023.

| Year | Country              | Serotype O | Topotype O     |                   |                    |        | Serotype A      |
|------|----------------------|------------|----------------|-------------------|--------------------|--------|-----------------|
|      |                      |            | SEA/<br>Mya-98 | ME-SA/<br>PanAsia | ME-SA/<br>Ind-2001 | Cathay | ASIA/<br>Sea-97 |
| 2021 | Cambodia             |            |                |                   |                    |        |                 |
|      | China                | +          |                |                   | +                  | +      |                 |
|      | Lao PDR <sup>a</sup> |            |                |                   |                    |        |                 |
|      | Myanmar              | +          |                |                   | +                  |        | +               |
|      | Malaysia             | +          |                |                   | +                  |        |                 |
|      | Mongolia             | +          |                |                   | +                  |        |                 |
|      | Thailand             | +          |                |                   | +                  |        | +               |
|      | Viet Nam             | +          |                |                   | +                  |        |                 |
| 2022 | Cambodia             |            |                |                   |                    |        |                 |
|      | China                | +          |                |                   |                    | +      |                 |
|      | Indonesia            | +          |                |                   | +                  |        |                 |
|      | Lao PDR <sup>a</sup> |            |                |                   |                    |        |                 |
|      | Myanmar              |            |                |                   |                    |        |                 |
|      | Malaysia             | +          |                |                   | +                  |        |                 |
|      | Mongolia             | +          |                |                   | +                  |        |                 |
|      | Thailand             | +          |                |                   | +                  |        | +               |
|      | Viet Nam             | +          |                |                   |                    |        |                 |
| 2023 | Cambodia             |            |                |                   |                    |        |                 |
|      | China                | +          |                |                   | +                  |        |                 |
|      | Indonesia            | +          |                |                   | +                  |        |                 |
|      | Lao PDR <sup>a</sup> |            |                |                   |                    |        |                 |
|      | Myanmar              |            |                |                   |                    |        |                 |
|      | Malaysia             | +          |                | +                 |                    |        | +               |
|      | Mongolia             |            |                |                   |                    |        |                 |
|      | Thailand             | +          |                |                   | +                  |        |                 |
|      | Viet Nam             | +          |                |                   |                    |        |                 |

+: the FMDV lineage present in the country.

\* Information extracted from country reports

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 SEACFMD National Coordinator's Meeting and LabNetwork Meeting in 2022.

FMDV O/ME-SA/Ind-2001e has been confirmed in the samples sent to WRLFMD from Thailand.

FMDV O/ME-SA/Pan Asia was isolated from the samples sent to WRLFMD from Malaysia. According to WRLFMD, the detected lineage has a close relationship with the strain isolated in Malaysia in 2020, and in Cambodia, Thailand, and Vietnam between 2017 and 2019.

Serotype A (ASIA/Sea-97) single case was detected in Malaysia (country report).

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

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## 1. SEACFMD Governance Meetings

The 26th SEACFMD National Coordinators was held in Kuala Lumpur, n Malaysia from 22 – 24 August 2023. The meeting was attended by 55 participants from 12 SEACFMD Member Countries (Brunei, Cambodia, China, Indonesia, Laos, Malaysia, Mongolia, Myanmar, Philippines, Singapore, Thailand and Vietnam), non SEACFMD Countries in the Asia Pacific region (Chinese Taipei, Japan, Korea, Timor Leste and Papua New Guinea), WOAHA Reference Laboratories, donors (Australia, China) and Private Sectors (Biogenesis Bago and Boehringer Ingelheim). The detail of the meeting including the presentations are available [here](#).

The SEACFMD LabNetwork Meeting was held at Longheng Hotel in Lanzhou, China, from October 24 to 25, 2023. SEACFMD member countries' laboratory focal points (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Mongolia, Myanmar, the Philippines, Singapore, and Vietnam) were able to gather in this meeting. Additionally, experts from the World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD), the Australian Centre for Disease Preparedness (ACDP), the Pakchong FMD Diagnostic Laboratory in Thailand, and the Lanzhou Veterinary Research Institute-WOAH FMD Reference Laboratory were present. The detail of the meeting including the presentations are available [here](#).

## 2. Field studies and research

Following the recommendations from the 2021 Regional Animal Price Monitoring study, SRR SEA initiated a pilot study to monitor animal price fluctuations in Thailand. The study aims to determine the association between price trends and animal movements, and to anticipate potential changes in both. Through this project, the cross-correlation between price fluctuations of animals and animal products will be analyzed longitudinally, considering factors such as animal movements, disease outbreaks, and seasonality. Additionally, prediction models based on the Animal Price Monitoring System (APMS) will be developed to forecast livestock movements and the occurrences of TADs.

Following the request from DVS Malaysia, World Organisation for Animal Health (WOAH) commissioned the study to conduct the FMD in-depth risk assessment in 2023. The activity contributing to identifying risk nodes along livestock value chains in and around FMD-controlled areas of Johor and Langkawi; understanding and quantifying the extent to which animal movements and contact patterns contribute to the risk (including geospatial risk) of FMD incursions. These outputs will feed into developing appropriate risk mitigation measures which may reduce the impact of eventual FMD incursions. This support the DVS efforts to strengthen FMD control in target areas and potential plans to develop FMD control zone in the state of Johor in Peninsular Malaysia and Langkawi district in the state of Kedah, in order to facilitate safer trade of livestock.



### 3. SEACFMD Information, Education, and Communication (IEC) Materials

SRR-SEA developed eight IEC materials: two videos, four posters, one leaflet, and social media infographics. The objectives are to encourage the implementation of good practices and change behavior by providing guidelines on biosecurity, buying animals, detecting FMD, preventing FMD, safer transport, and sampling for diagnosis. The use of infographics and images delivers a clear understanding of key messages towards an audience with a low level of awareness. The stakeholders targeted are animal health professionals, animal traders, logisticians, and farmers. These materials have been translated into the languages of SEACFMD Member countries and Timor-Leste: Bahasa, Burmese, Khmer, Laotian, Malay, Mandarin, Mongolian, Tetum, Thai, and Vietnamese. The SEACFMD IEC materials are available [here](#).

## Conclusions and discussions

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In 2023, a total of 202 FMD outbreaks were reported in the SEACFMD region, which remained stable with 2022 with 199 outbreaks. Serotype O remained the dominant serotype, with the Ind-2001 strain (e sublineage) being the most prevailing genotype. The detection of lineage Pan Asia (FMDV O/ME-SA/PanAsia) in Malaysia indicate the risk of re-introduction in the region. The report of its which was circulating in the Region from 2017 until 2020. Besides, the report of Serotype A (ASIA/Sea-97) in Malaysia may require further investigation.

This report was based on the FMD reports submitted by SEACFMD Members through WAHIS, and country presentations during the 26<sup>th</sup> SEACFMD National Coordinators' meeting in August 2023. The under reporting of FMD outbreaks remains still a crucial issue because of which we may not get the true epidemiological pattern of the FMD situation in the region. Besides a very high percentage of (90%,183/202) of the reported outbreaks that were not subjected to virus characterization/ typed due to the absence of/insufficient samples collected or delayed laboratory testing is biggest challenge to get true estimate of circulating FMD virus serotypes. Thus it is recommended to train WAHIS Focal Point, SEACFMD EpiNet and LabNet Focal Persons on the outbreak/ epidemiological investigation, sampling and reporting of the FMD outbreaks.

The ASEAN Animal Health Information System (ARAHIS) has been available for more than 18 years, but members have encountered issues entering data into the system. In 2023, SRR SEA communicated with ARAHIS/WAHIS focal points to collect FMD data via Excel spreadsheets, which were archived in the Regional FMD dataset. As a result, FMD outbreak details are still lacking during the reporting period, which may prevent an accurate representation of FMD situation in the region.

WOAH SRR SEA has resumed the ARAHIS/WAHIS Integration Project in collaboration with the WOAH WAHIS team and Singapore, the lead country for ARAHIS, to synchronize both reporting systems. Using the WAHIS EWAR module for the ASEAN animal health reporting system is still under discussion with the WAHIS team and Member States and is not yet visible or functional.

Based on the data from 2019 to 2023, SRR SEA has updated a dynamic SEACFMD dashboard that allows us to inform outbreaks in a timely manner and share experience among members in emerging situations. This [Dashboard](https://rr-asia.woah.org/en/our-mission/our-mission-regional-strategies/the-south-east-asia-and-china-foot-and-mouth-disease-seacfmd-campaign/) has been published on the WOAH 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 being updated regularly.

Considering the absence of FMDV Asia 1 in the region since 2017, as reported in Rakhine, Myanmar, SRR SEA has initiated a study to determine the status of FMDV Serotype Asia 1 in SEA countries and estimate the probability of its detection if present. Massey University's research team has been contracted to conduct this study, with results expected to support the evaluation of current surveillance efficiency for detecting Asia 1 in SEA countries. This will inform actions for the next phase, potentially helping to determine the possible extinction of Asia 1 or predict the risks of its incursion.



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for Animal Health**  
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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](mailto:srr.seasia@wah.org)