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Australian Aid

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SEACFMD Laboratory Network Meeting

Regional FMD situation and Emerging Risk SAT1

Bolortuya P
Animal health officer
SRRSEA

10-11 November 2023
Manila, The Philippines

Outline

- ✓Regional epidemiological situation
- ✓Surveillance and epidemic intelligence
- ✓Emerging risks
- ✓Discussion

FMD reported cases (2019-July 2026)



Country	2019	2020	2021	2022	2023	2024	2025	2026 *
Thailand	**194**	**218**	47	110	16	2	0	0
Cambodia	32	248	36	23	37	46	16	5
Indonesia	0	0	0	27	119	111	107	0
Vietnam	25	31	89	22	19	66	19	16
Mongolia	0	0	101	3	0	0	3	4
Malaysia	39	52	26	13	8	15	11	5*
Lao PDR	63	55	0	0	0	0	0	0
Myanmar	28	3	4	0	0	5	0	0
China	6	4	3	1	3	3	3	2

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FMD reported cases (2025-July 2026)

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REGIONAL FOOT AND MOUTH DISEASE SITUATION

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Total cases

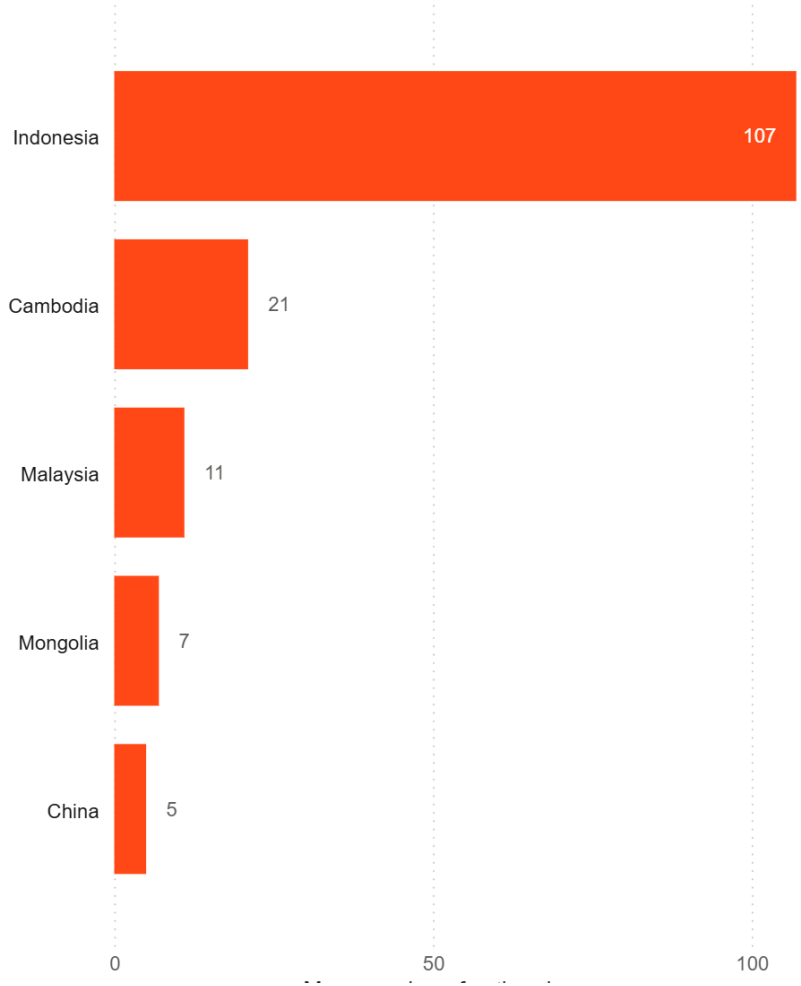
151

Year
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025
- 2026

Country
- Cambodia
- China
- Indonesia
- Malaysia
- Mongolia

FMD spatial distribution





FMDV Serotype dynamics

Serotype O:

- O/ME-SA/Ind2001e
- O/ME-SA/Ind2001d
- O/ME-SA/Pan Asia
- O/SEA/Mya-98

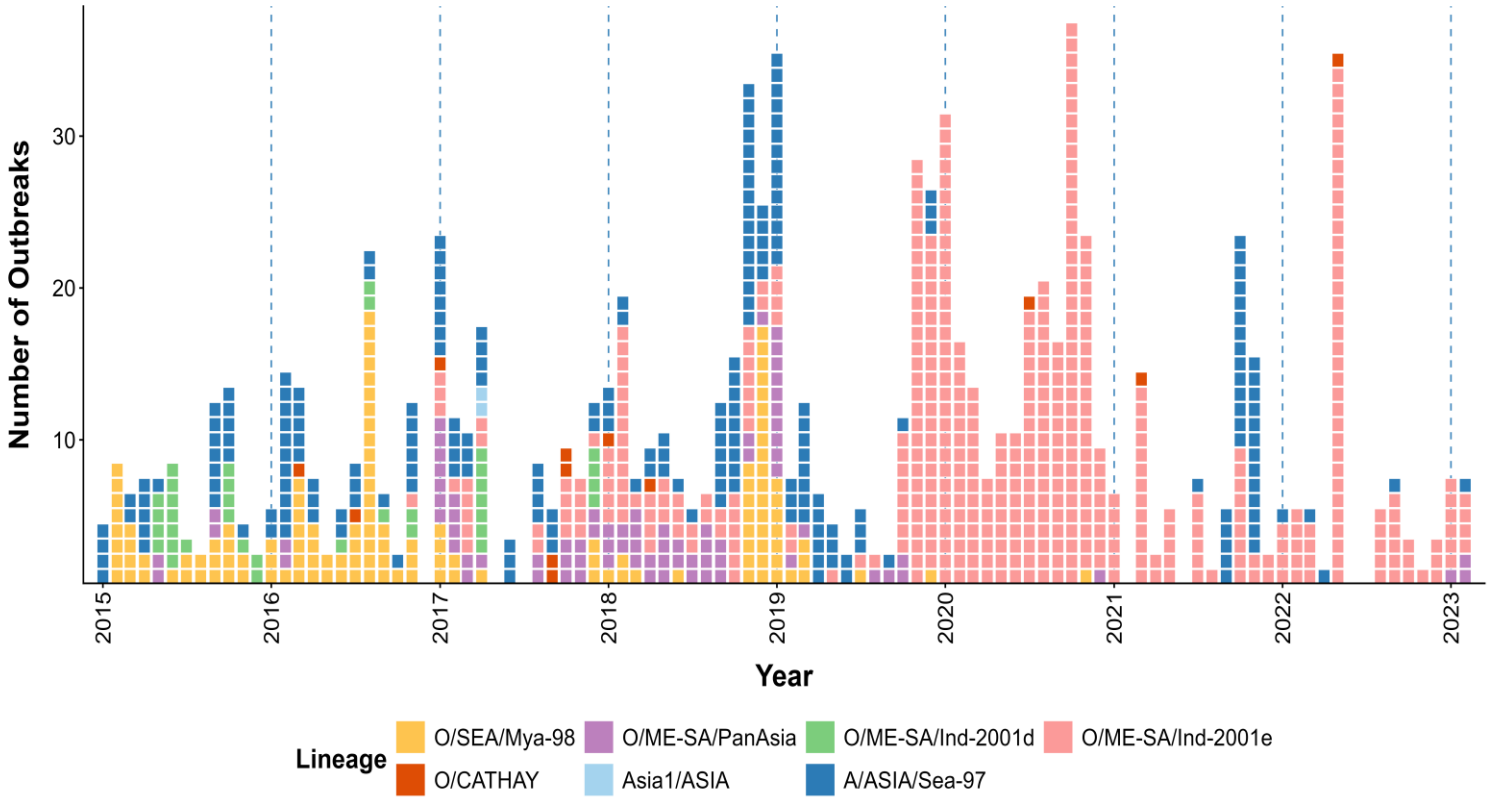
- O/Cathay (pig adapted)

Serotype A/ASIA/Sea-97

Serotype Asia 1

Serotype –SAT1

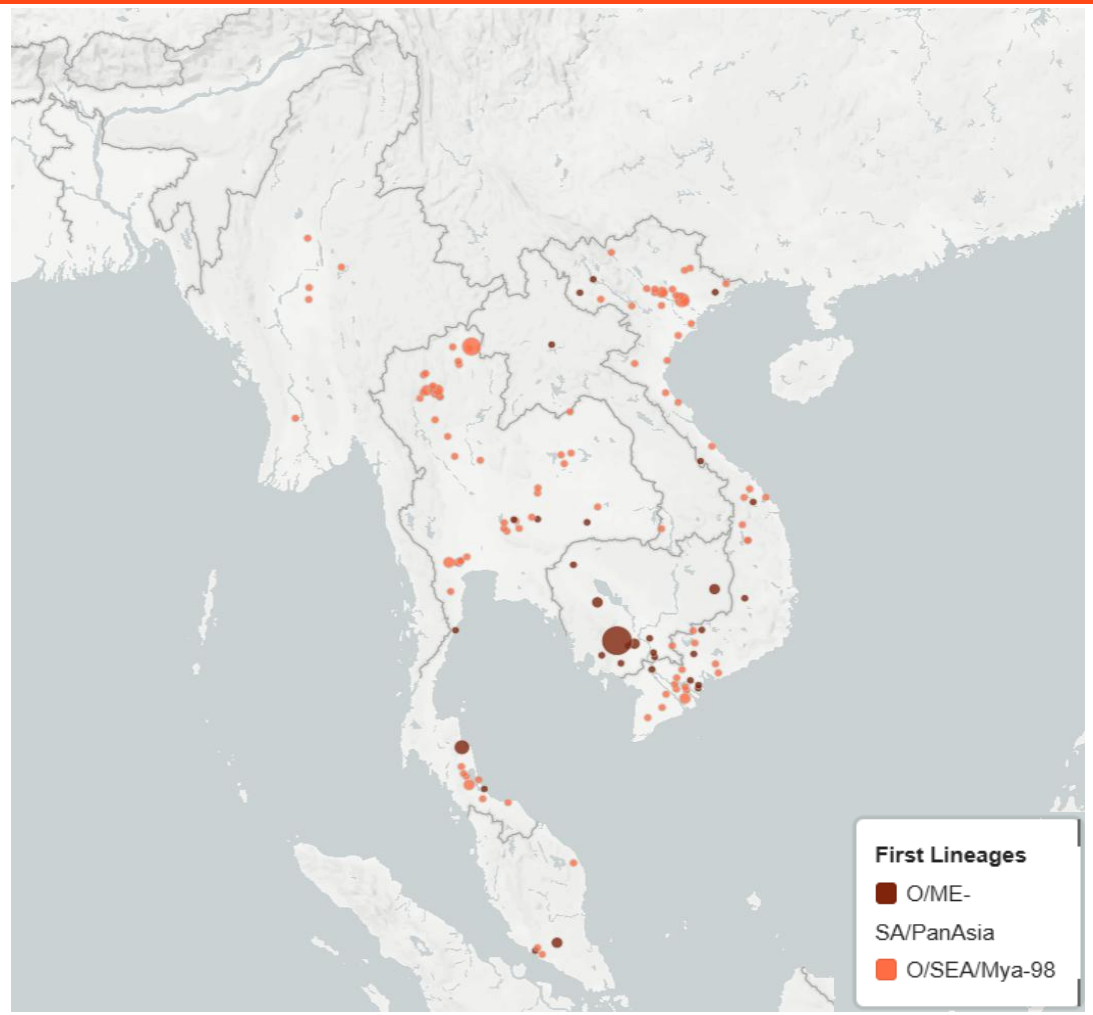
Regional serotype distribution



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FMDV Serotype- O/SEA/Mya-98 ad O/ME-SA/Pan Asia



O/SEA/Mya-98

	Cambodia	China	Laos	Malaysia	Mongolia	Myanmar	Thailand	Vietnam
2015						*		
2016	*	*				*		
2017	*	*				*		
2018								
2019						*		*
2020		*						
2021						*		
2022								
2023								
2024								
2025								
2026								*

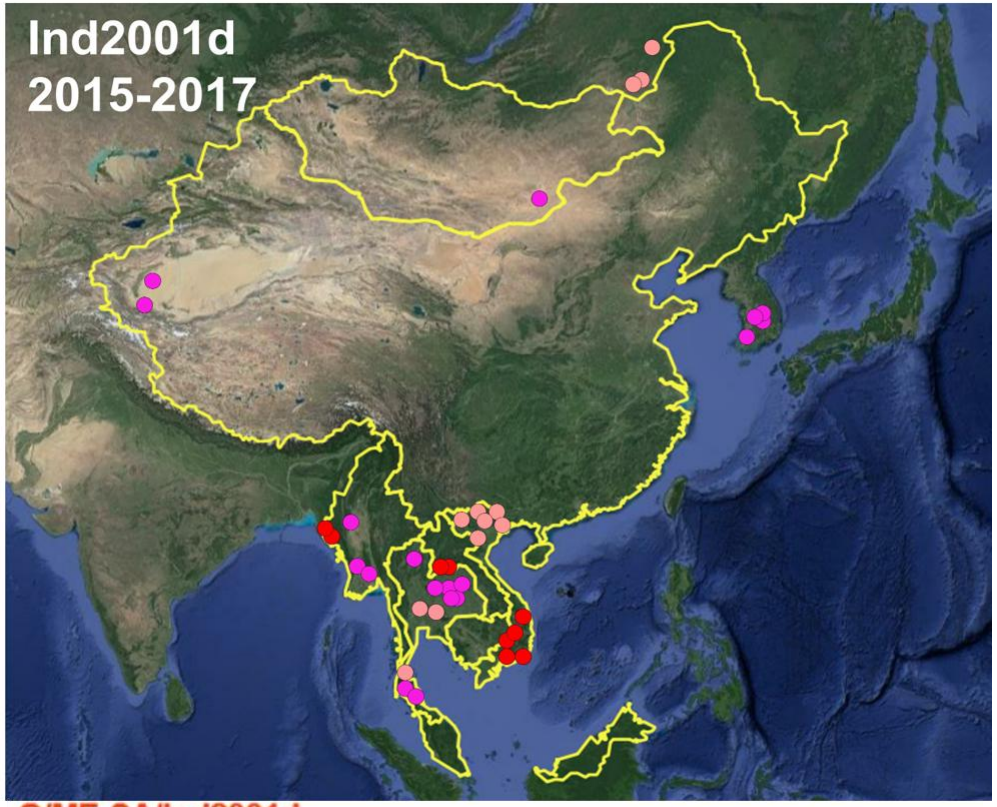
O/ME-SA/ Pan Asia

Year	Cambodia	China	Laos	Malaysia	Mongolia	Thailand	Vietnam
2015							
2016							
2017							
2018							
2019		*				*	
2020							
2023							

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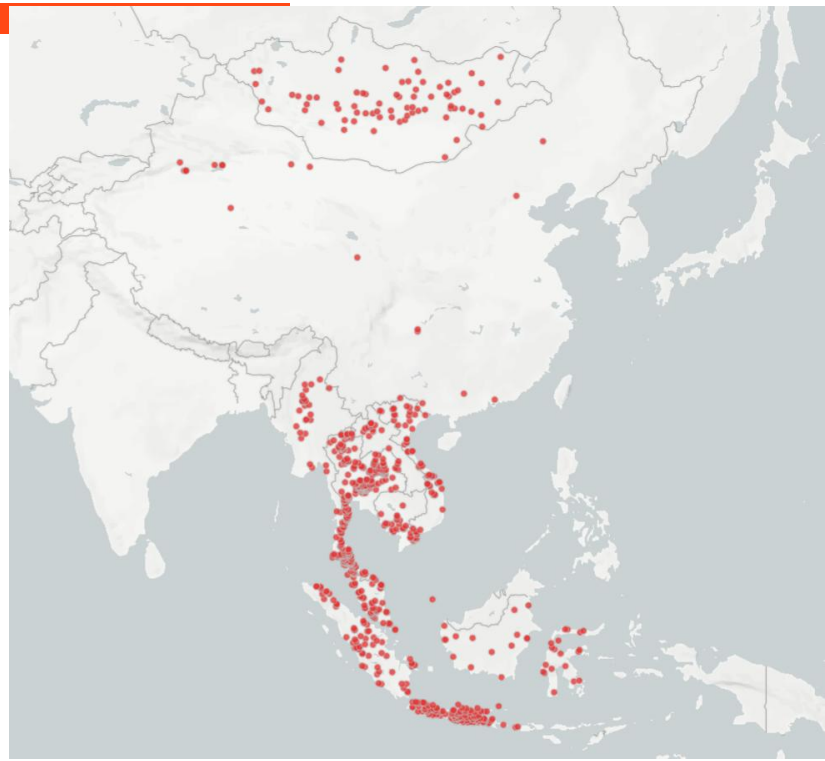
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FMDV Serotype- O/ME-SE/Ind 2001



O/ME-SA/Ind2001d

2015- Laos, Myanmar (isolated 2016), Vietnam
2016- Thailand, Vietnam
2017-Myanmar, China, Mongolia, Korea and Russia



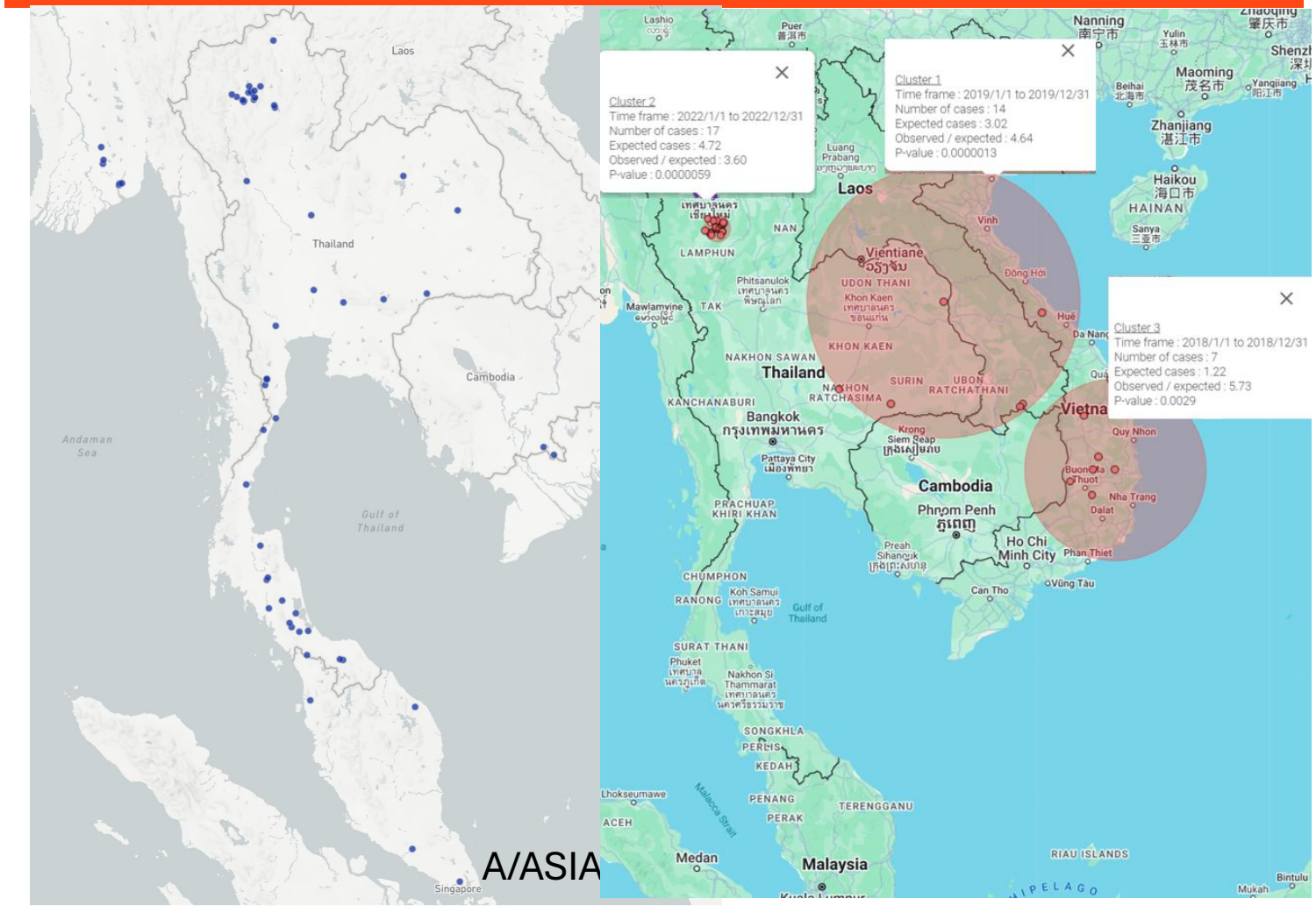
Ind2001e

Year	Cambodia	China	Indonesia	Lao PDR	Malaysia	Mongolia	Myanmar	Thailand	Vietnam
2015									
2016									
2017		*					*		
2018		*							
2019		*							
2020							*		
2021		*					*		
2022									
2023		*							*
2024		*			*		*	*	*
2025									
2026									*

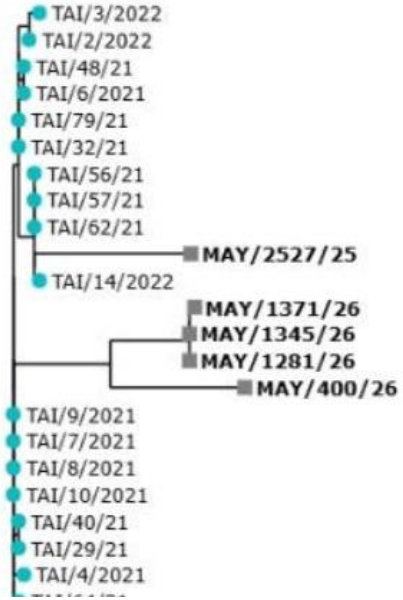
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FMDV Serotype - A/ASIA/Sea-97



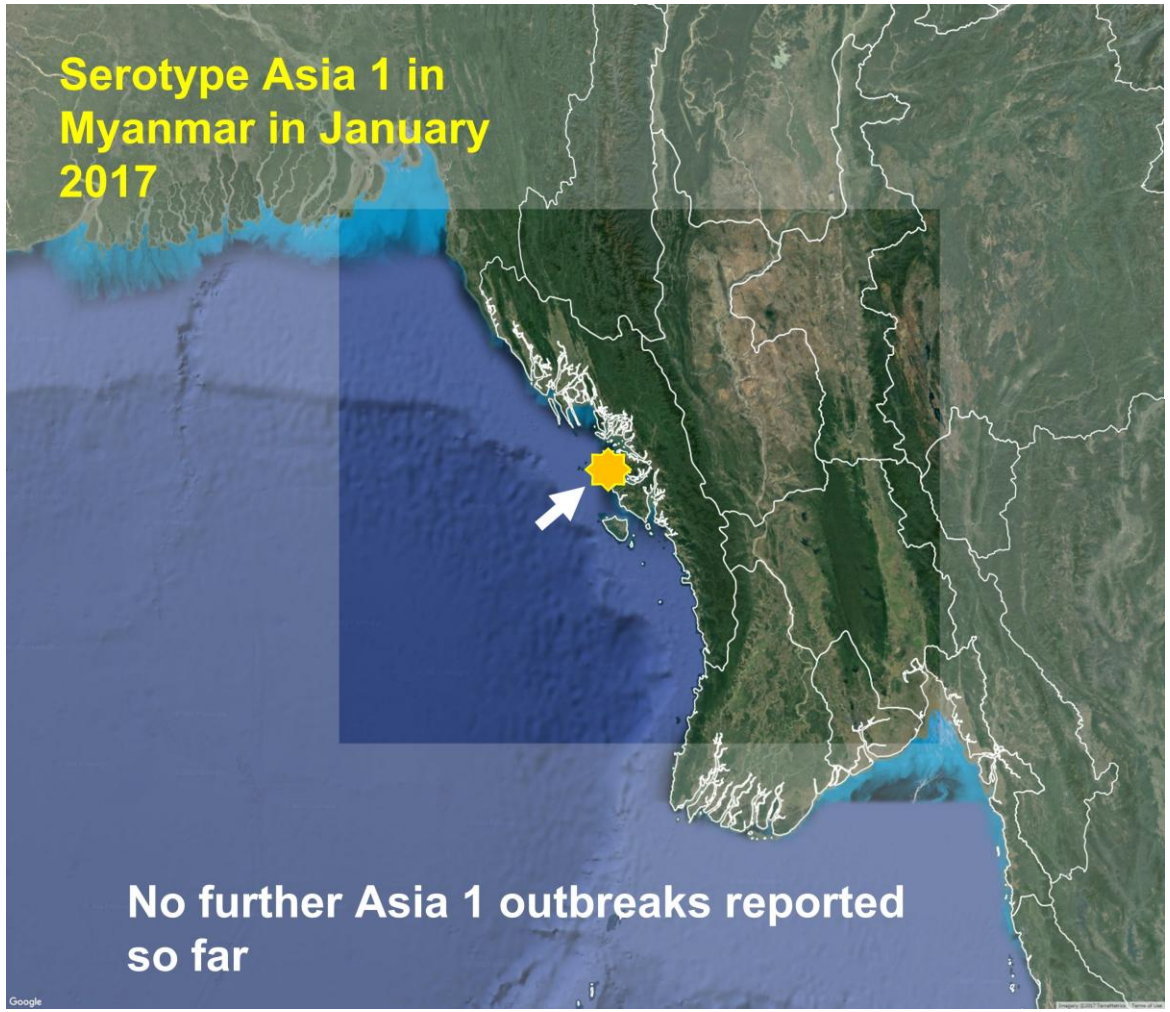
A/ASIA/Sea-97								
Year	Cambodia	China	Laos	Malaysia	Mongolia	Myanmar	Thailand	Vietnam
2015								
2016								
2017	*							
2018		*						
2019	*							
2020								
2021						*		
2022								
2023								
2024								
2025				*				
2026				*				*



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FMDV Serotype Asia 1



Received: 4 May 2018 | Revised: 22 November 2018 | Accepted: 12 December 2018
DOI: 10.1111/tbed.13112

SHORT COMMUNICATION

WILEY

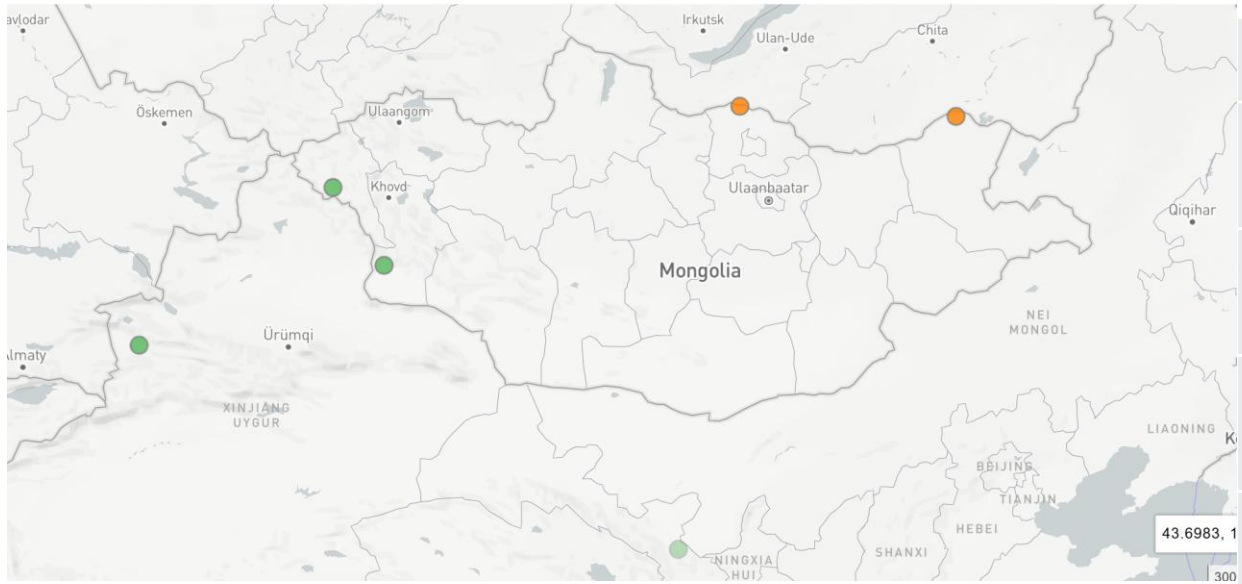
Foot-and-mouth disease outbreaks due to an exotic serotype Asia 1 virus in Myanmar in 2017

Lin Lin Bo[1,*] | Khin Sander Lwin[2,*] | Sahawatchara Ungvanijban[3] | Nick J. Knowles[4] | Jemma Wadsworth[4] | Donald P. King[4] | Ronello Abila[5] | Yu Qiu[5]

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FMDV SAT1

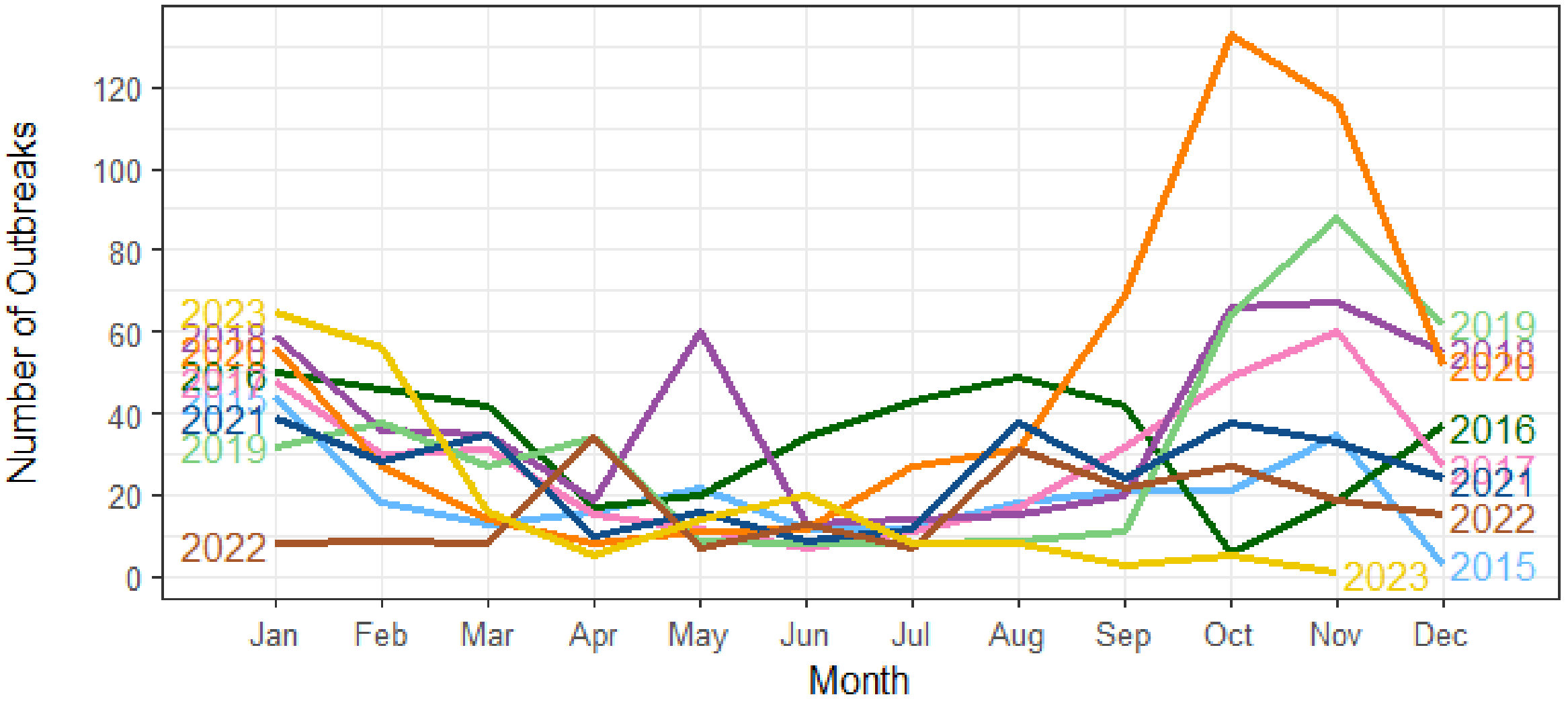


China	Gansu	Wuwei	Heshui	21-Mar-26
China	Xinjiang Uygur	Ili Kazakh	Yining	21-Mar-26
Mongolia	Hovd	Bulgan		21-May-26
Mongolia	Bayan-Ölgiy	Altai		21-May-26
Mongolia	Dornod	Dashbalbar		26-August 2026
Mongolia	Selenge			12-Sep-2026

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Temporal pattern



Source: Study on Epidemiological Characteristics, Temporal Change Points, and Space-Time Clusters of Foot and Mouth Disease Outbreaks in SEACFMD Region, Dr Veerasak Punyapornwithaya, Chiang Mai University

Risk monitoring and surveillance



Changes in reporting modality

ASEAN Animal health information system (ARAHIS) into WAHIS

Objective

Use WAHIS as one portal to submit information for ARAHIS purposes

Approach

Report 7 listed diseases on a monthly basis using early warning module
(HPAI, FMD, classical swine fever, African swine fever, LSD, Newcastle disease and rabies)

ARAHIS-WAHIS one portal reporting (pilot approach)

Transition

Close support for ARAHIS countries to implement this approach. Review progress after 3 and 6 months

ARAHIS dashboard

Data will be extracted from WAHIS to populate an external ARAHIS dashboard

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ARAHIS into WAHIS

Real-Time Reporting

No need to wait six-month cycles for stable diseases; immediate notification and monthly follow-up reports.

"One Portal" Efficiency

WAHIS serves as the single- entry point, meeting the needs of both ARAHIS and WAHIS while avoiding duplication of effort.

Simplified Administration

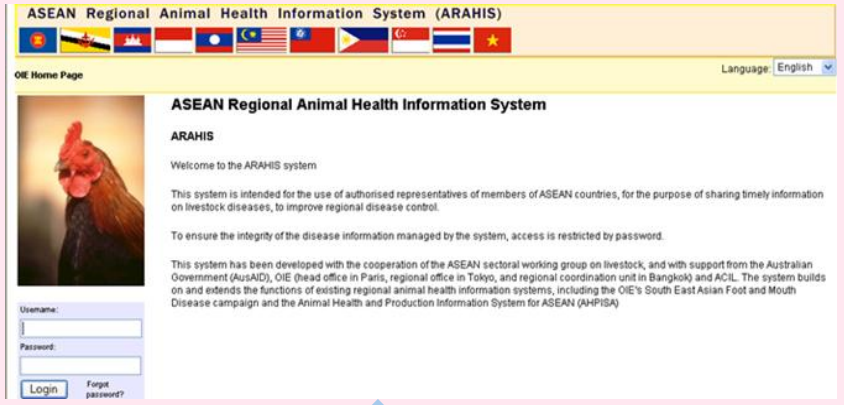
A unified system allows a single focal point to manage all reporting, eliminating the need for separate dedicated roles.

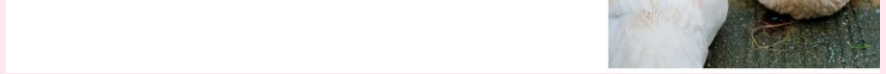
Enhanced Data Detail

The WAHIS Early Warning module enables sharing of detailed information about specific diseases.

Dynamic Visualisation

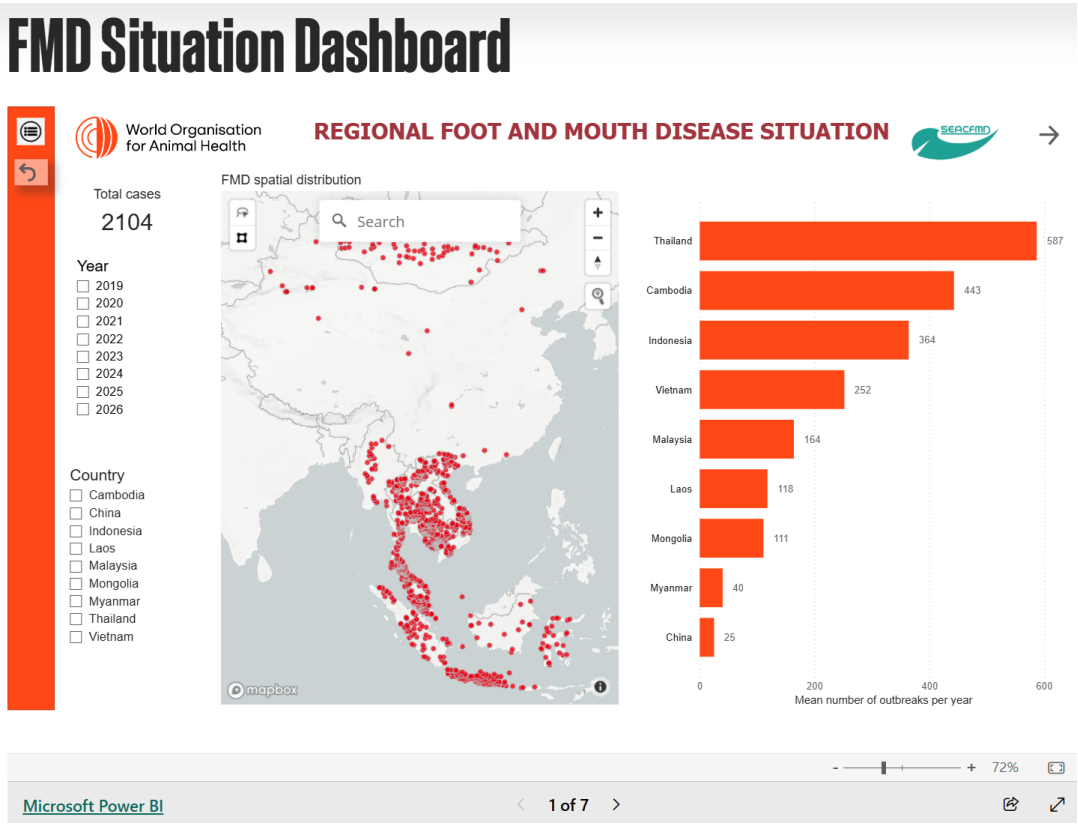
Data extraction populates a live dashboard for sharing and analysing regional disease trends in real-time.





ARAHIS into WAHIS

☐	🟡	Cambodia	FUR_3	Foot and mouth disease virus (Inf. with)	O
☐	🟡	Indonesia	FUR_3	Foot and mouth disease virus (Inf. with)	O
☐	🟡	Mongolia	IN	Foot and mouth disease virus (Inf. with)	O
☐	🟡	Malaysia	FUR_1	Foot and mouth disease virus (Inf. with)	A
☐	🟡	Malaysia	FUR_2	Foot and mouth disease virus (Inf. with)	O
☐	🟡	Mongolia	FUR_1	Foot and mouth disease virus (Inf. with)	SAT 1
☐	🟢	Mongolia	FUR_1	Foot and mouth disease virus (Inf. with)	O
☐	🟡	China (People's Rep. of)	FUR_1	Foot and mouth disease virus (Inf. with)	SAT 1
☐	🟢	Mongolia	FUR_1	Foot and mouth disease virus (Inf. with)	O
☐	🟢	China (People's Rep. of)	FUR_1	Foot and mouth disease virus (Inf. with)	O
☐	🔵	Cambodia	FUR_4	Foot and mouth disease virus (Inf. with)	Not sample
☐	🔵	Malaysia	FUR_2	Foot and mouth disease virus (Inf. with)	O

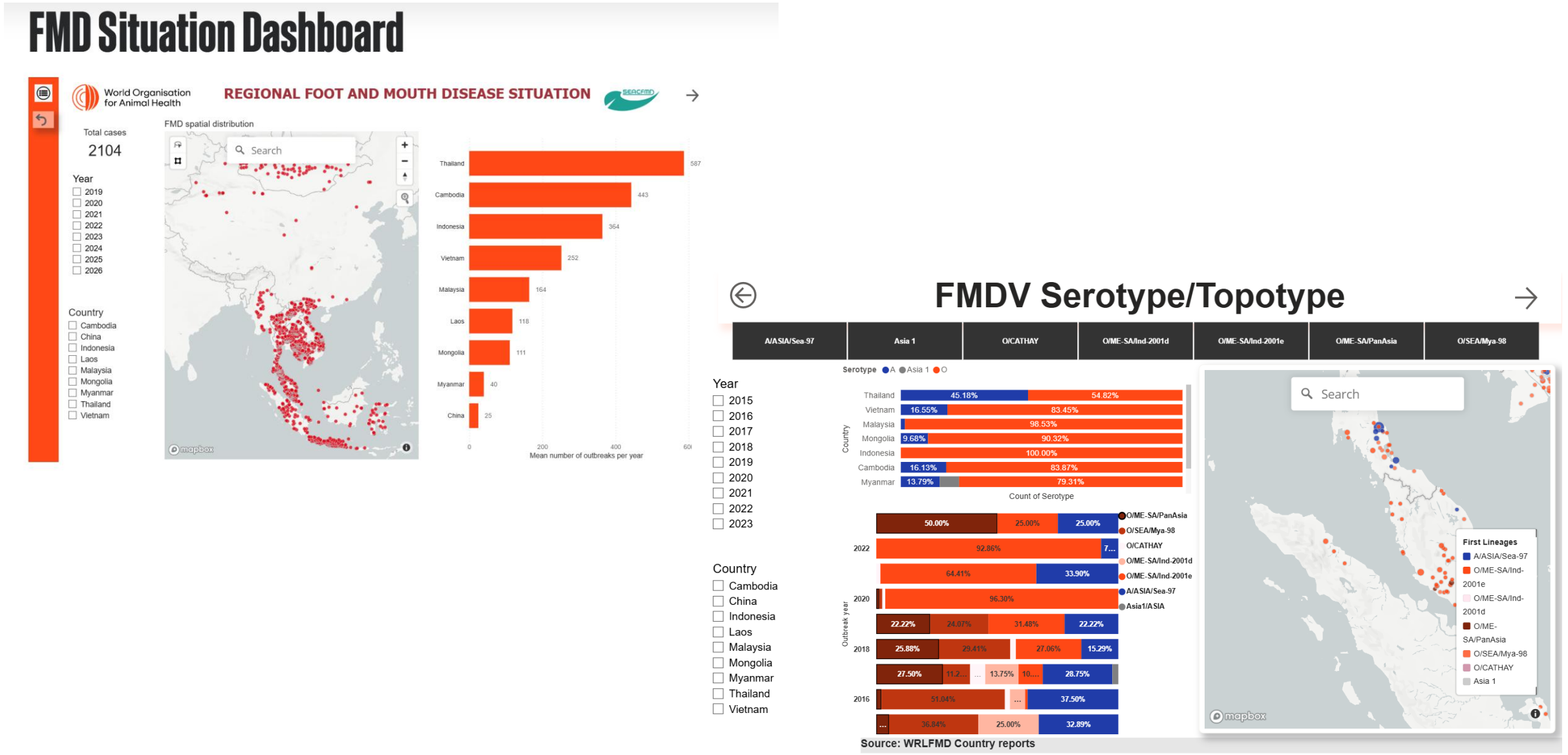


South-East Asia, China and Mongolia Foot and Mouth Disease (SEACFMD) Campaign WOAH - Asia

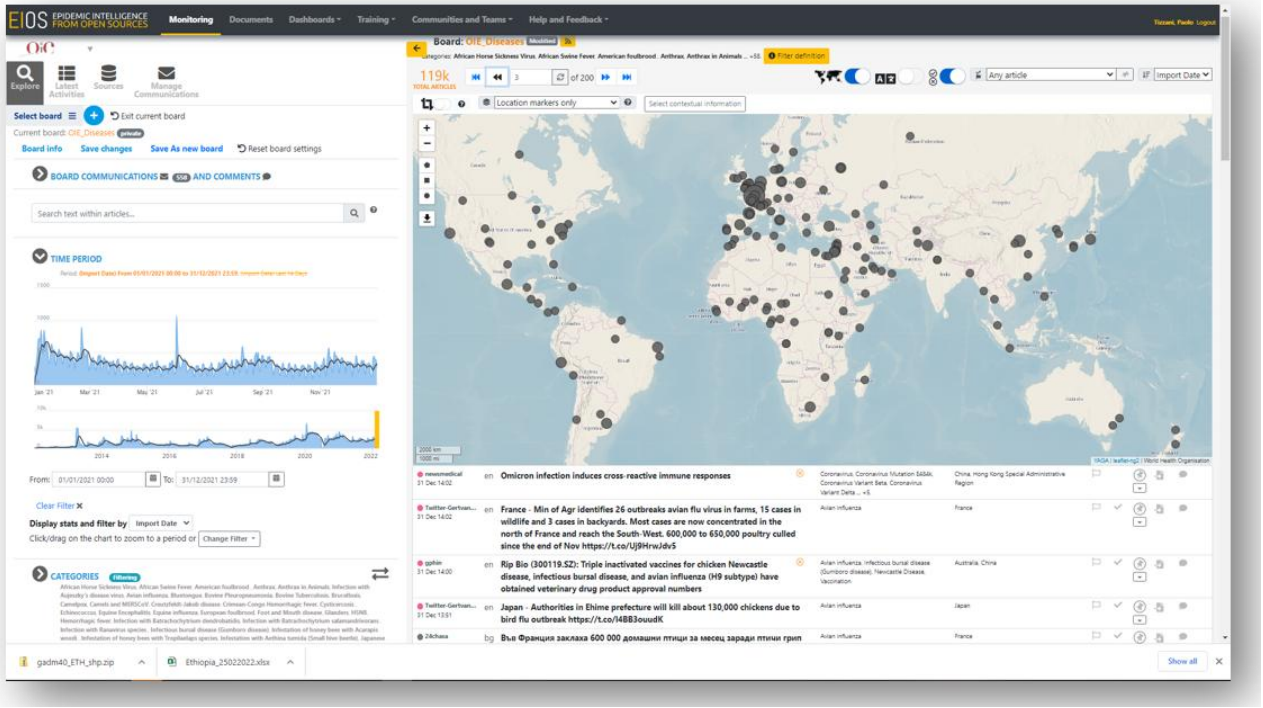
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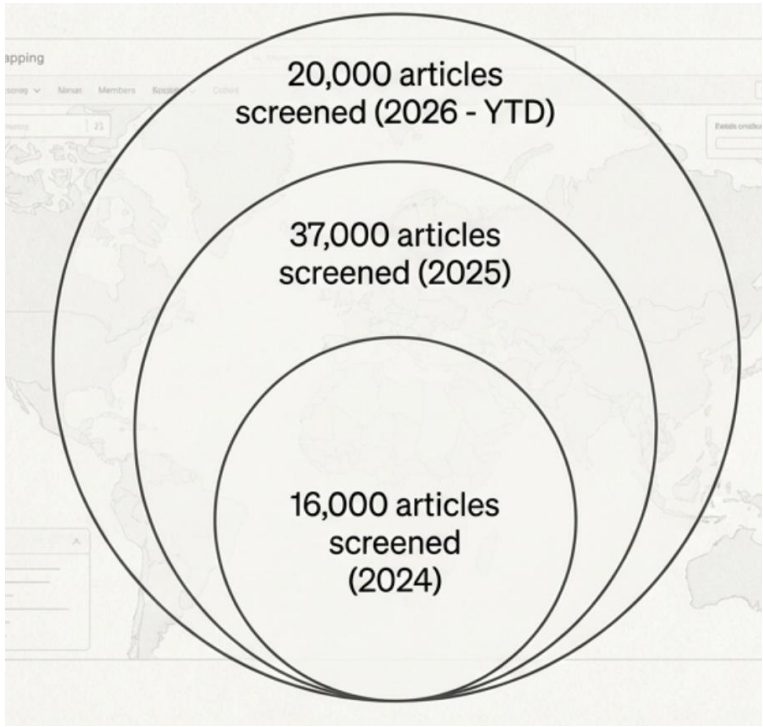
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Live dashboard



Epidemic intelligence– Nonofficial news tracking





Asia and Pacific team scans twice a week

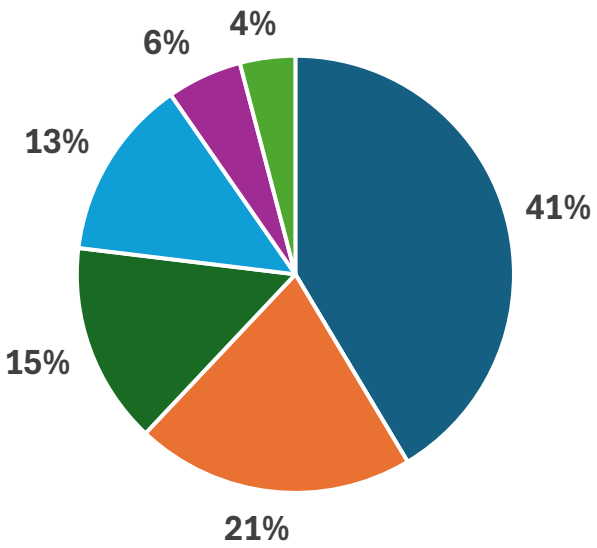
Follow up members to verify the news

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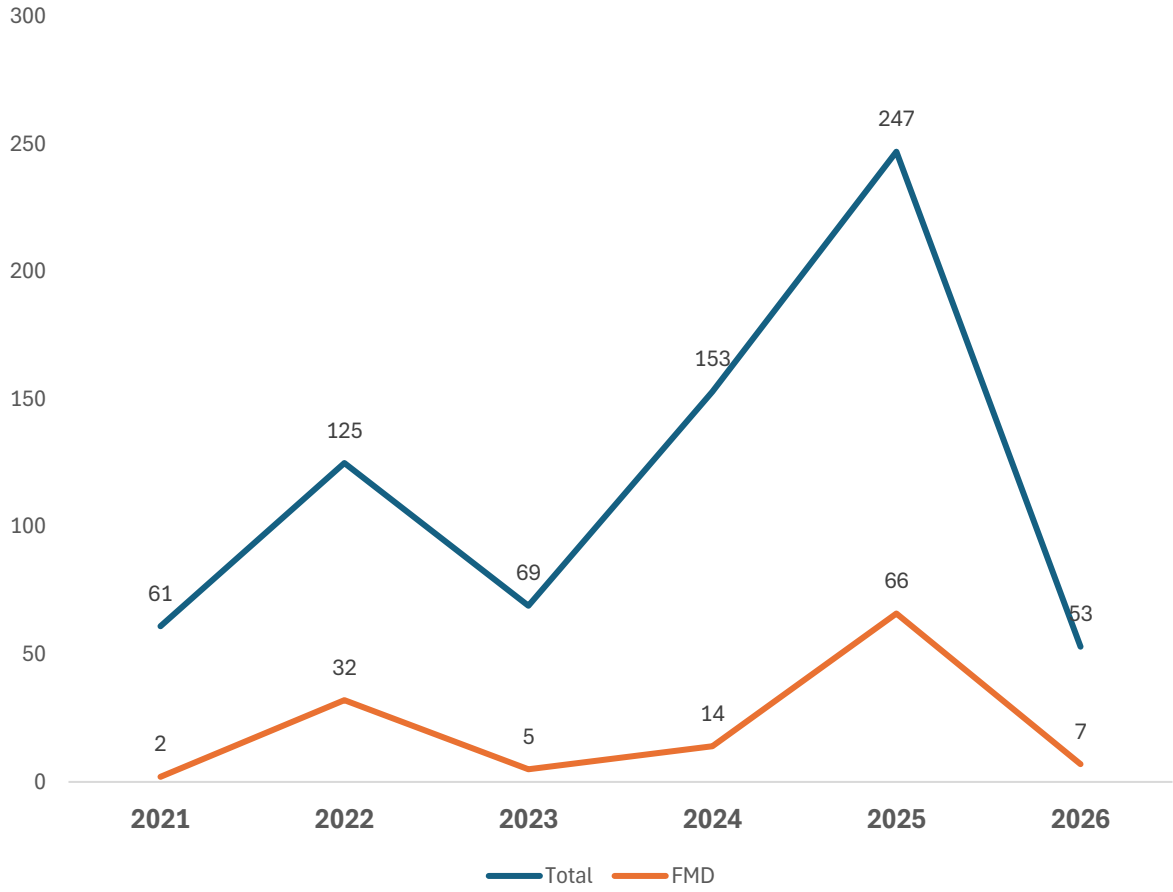
Epidemic Intelligence: Non-Official News Tracking

Top 5 Diseases Detected in the News



- African Swine Fever
- Foot and Mouth Disease
- Avian influenza (HPAI,LPAI and human)
- Rabies including human cases
- Lumpy skin disease
- Anthrax including human cases

Total detected news vs FMD news



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FMDV Asia 1 study

Preventive Veterinary Medicine 244 (2025) 106663

Contents lists available at ScienceDirect

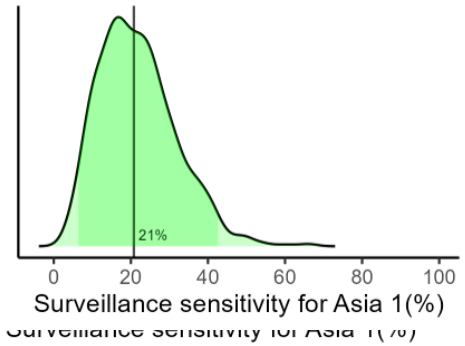
Preventive Veterinary Medicine

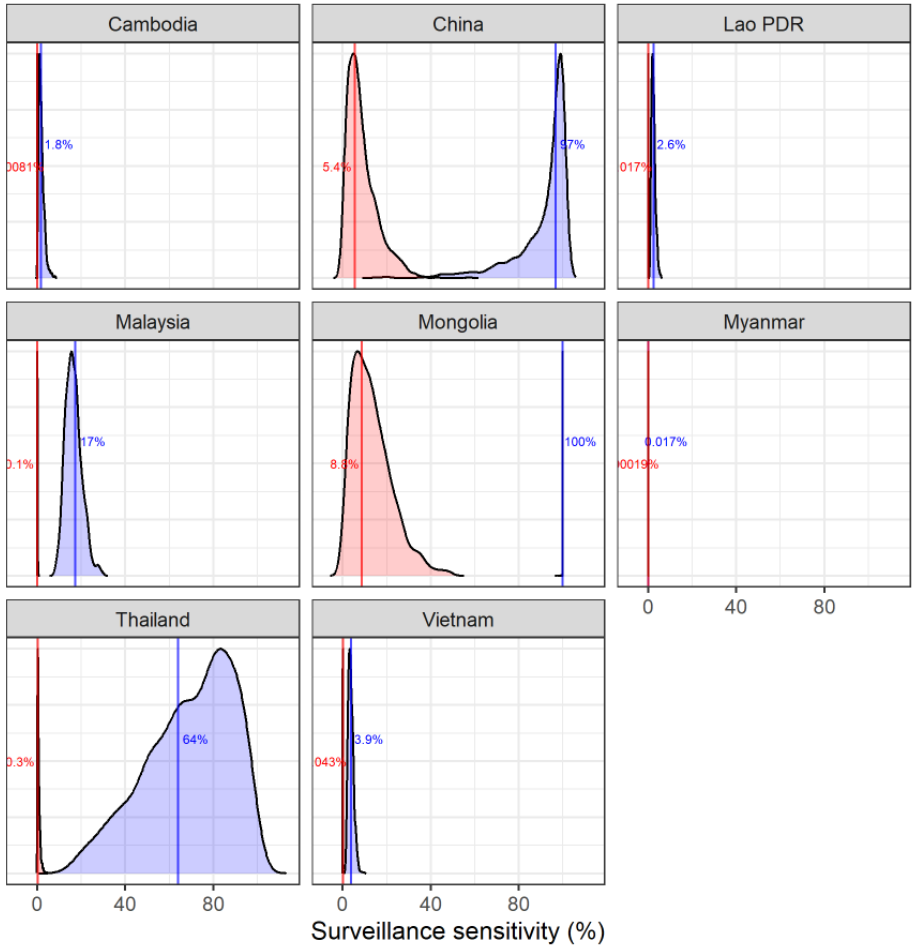
journal homepage: www.elsevier.com/locate/prevetmed

Probability of freedom from foot-and-mouth disease virus serotype Asia 1 in Southeast Asia, China and Mongolia

Masako Wada [a,*], Jun-Hee Han [a], Bolortuya Purevsuren [b], Karma Rinzin [b], Ashish Sutar [b], Ronello Abila [b], Supatsak Subharat [a]

[a] EpiCentre, School of Veterinary Science, Massey University, Palmerston North, New Zealand
[b] Sub-Regional Representation for South-East Asia, World Organisation for Animal Health, Bangkok, Thailand





Scenario tree models:

probability of detecting FMDV of ***any serotypes or specifically serotype Asia 1 by passive surveillance***

- Mongolia and China the highest surveillance sensitivity of approximately 100%.
- Thailand- a moderately high detection probability of 71%, followed by Malaysia at 16%.
- Cambodia, Lao PDR, Myanmar and Vietnam had low surveillance sensitivities of below 4%

While there are border checkpoints, unofficial movements of animals may occur with unknown frequency due to porous border security. The reintroduction risk likely varies across countries by year due to differences in policies, border security and market demands, as well as distance.

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https://www.sciencedirect.com/science/article/pii/S016758772500248X

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Animal movement study

Movement pathways and market chains of large ruminants in the Greater Mekong Sub-region

2015



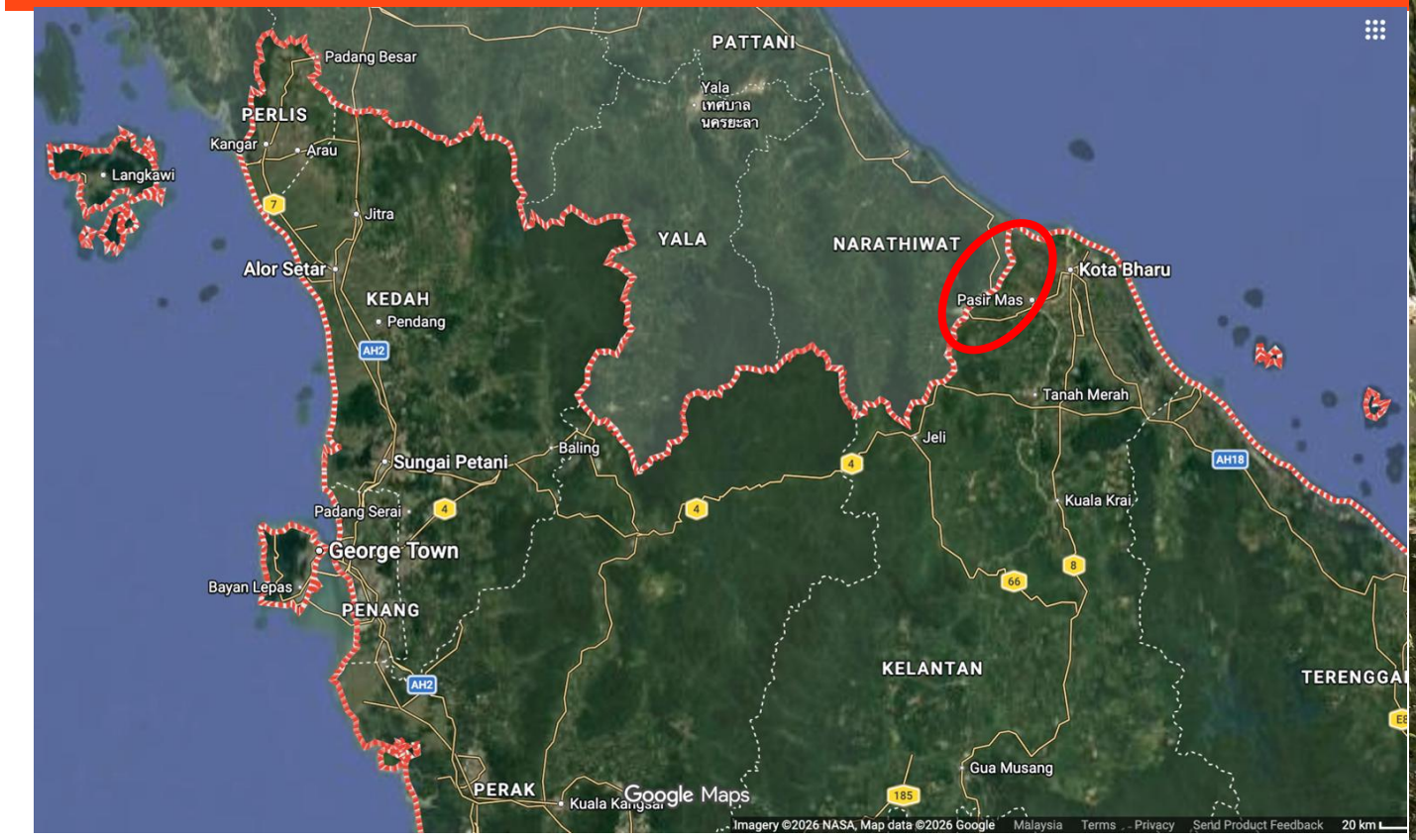
Animal movement pathways and value chain study in Asia

Pre-existing data collection & Field survey Approaches	1. Spatial Data Collection • Movement records • GIS mapping of routes • Markets & quarantine stations		
Field survey Approach	2. Stakeholder Questionnaire • Animal movement pathways • Roles and activities of stakeholders	3. Focus Group Discussion • Disease prevention and control • Value chain actors • Price differentials	4. KAP Questionnaire Survey • Knowledge • Attitudes • Practices
Data Analysis	Mapping animal movement pathway Animal movement statistics Stakeholder mapping and value chain analysis KAP of relevant stakeholders		

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Cross-border animal movement



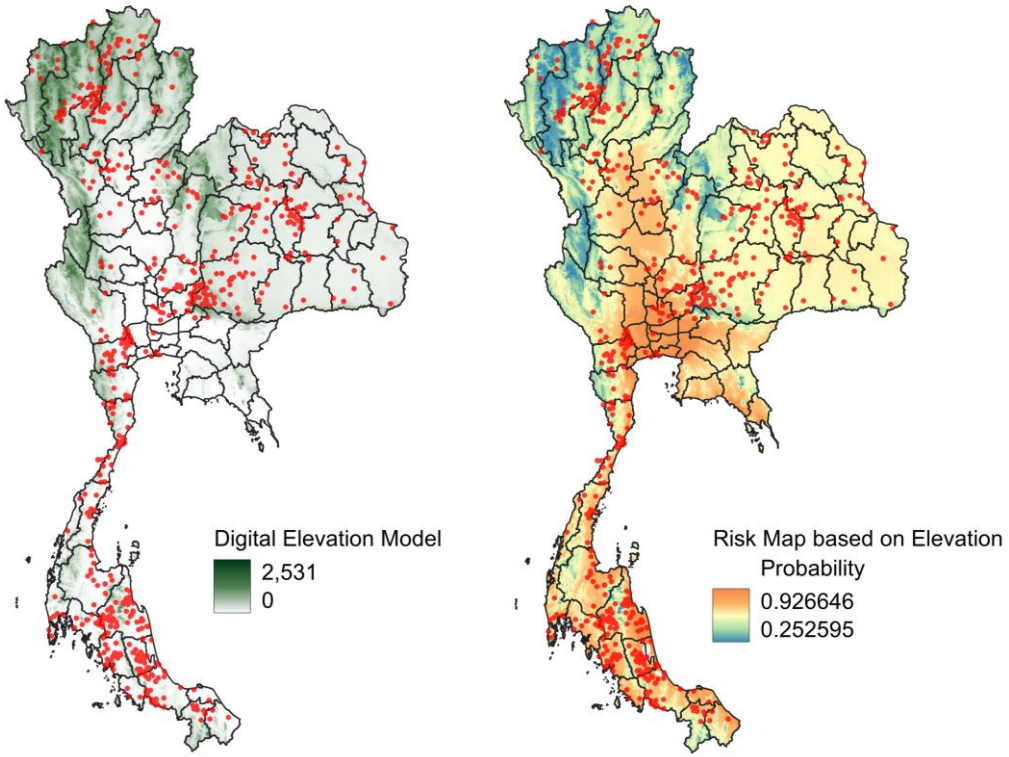




The Golok River (Sungai Golok) is a 103-kilometer transboundary waterway that serves as a natural border between Malaysia (Kelantan state) and Thailand (Narathiwat province).

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Risk mapping Upper Mekong region



Source: Dr Veerasak, Chiang Mai University

Multi-Criteria Decision Analysis (MCDA)

Data layers:

- Animal population density

Generate data from animal movement study:

- **Live cattle market locations**
- **Animal movement pathway**
- **Surveillance check point location/ cross border check point**
- **Road and land types (Data from Satellite)**

Data based on Expert opinion:

- 15 representative from UM countries (3 per Country) + 5 from International Organization

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Key observations

- FMD remains endemic in SEACFMD Region
- Serotype O continues to predominate
- SAT1 detected for the first time in China and Mongolia
- Cross-border animal movement continues driving spread
- ARAHIS-into-WAHIS integration is active, providing a single portal for regional data sharing
- Epidemic intelligence supports timely disease reporting and real-time information sharing

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Founded as OIE

REGIONAL FMD SITUATION

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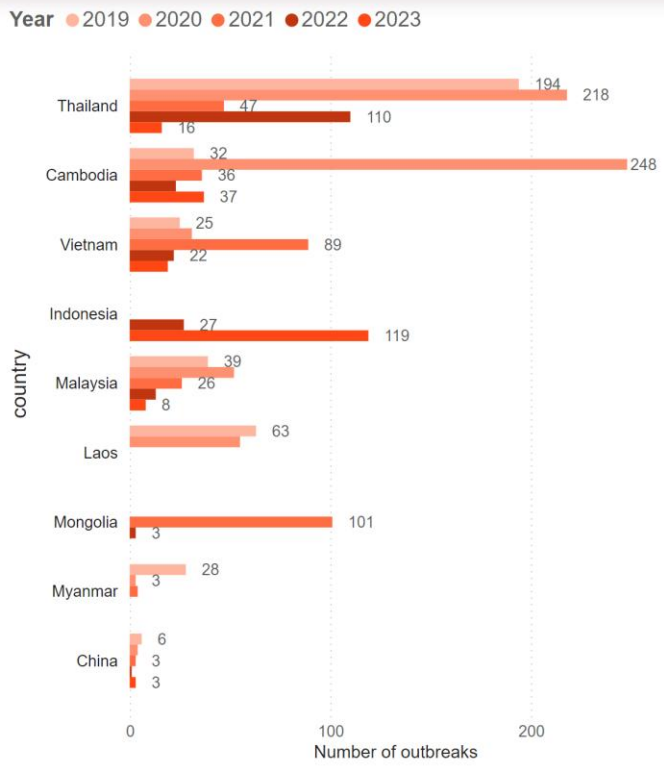
FMD OUTBREAK

Total cases

1705

Year
- 2019
- 2020
- 2021
- 2022
- 2023

Country
- Cambodia
- China
- Indonesia
- Laos
- Malaysia
- Mongolia
- Myanmar
- Thailand
- Vietnam



FMD spatial distribution



Thank You