Foot-and-Mouth Disease - *Global and Regional Epidemiological Overview (2023–2025)*
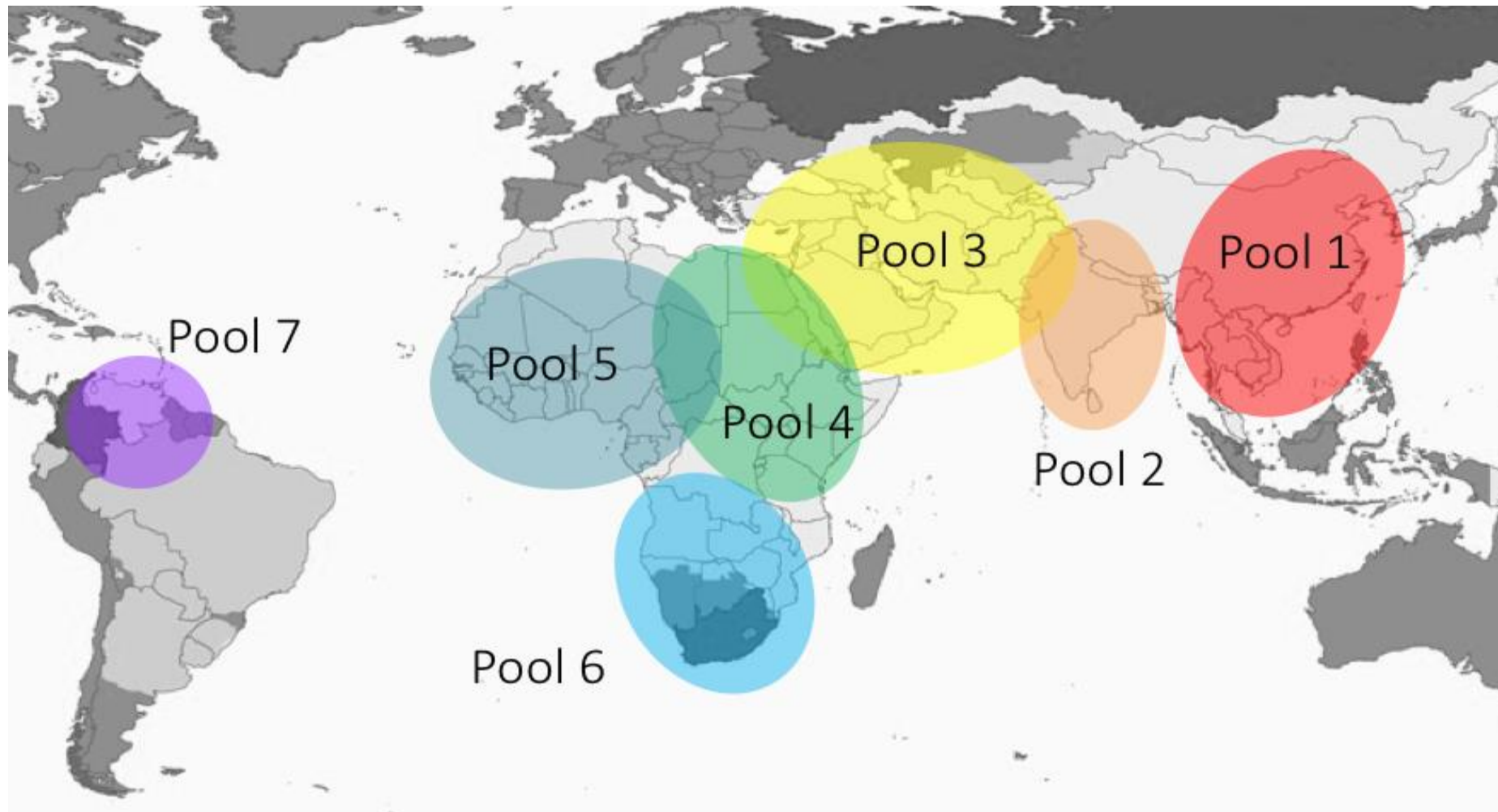
Dónal Sammin, Executive Secretary, EuFMD

WOAH-EEC Seminar on Bluetongue & FMD; 30 June 2025

Global epidemiology of FMD

Global epidemiology of FMD
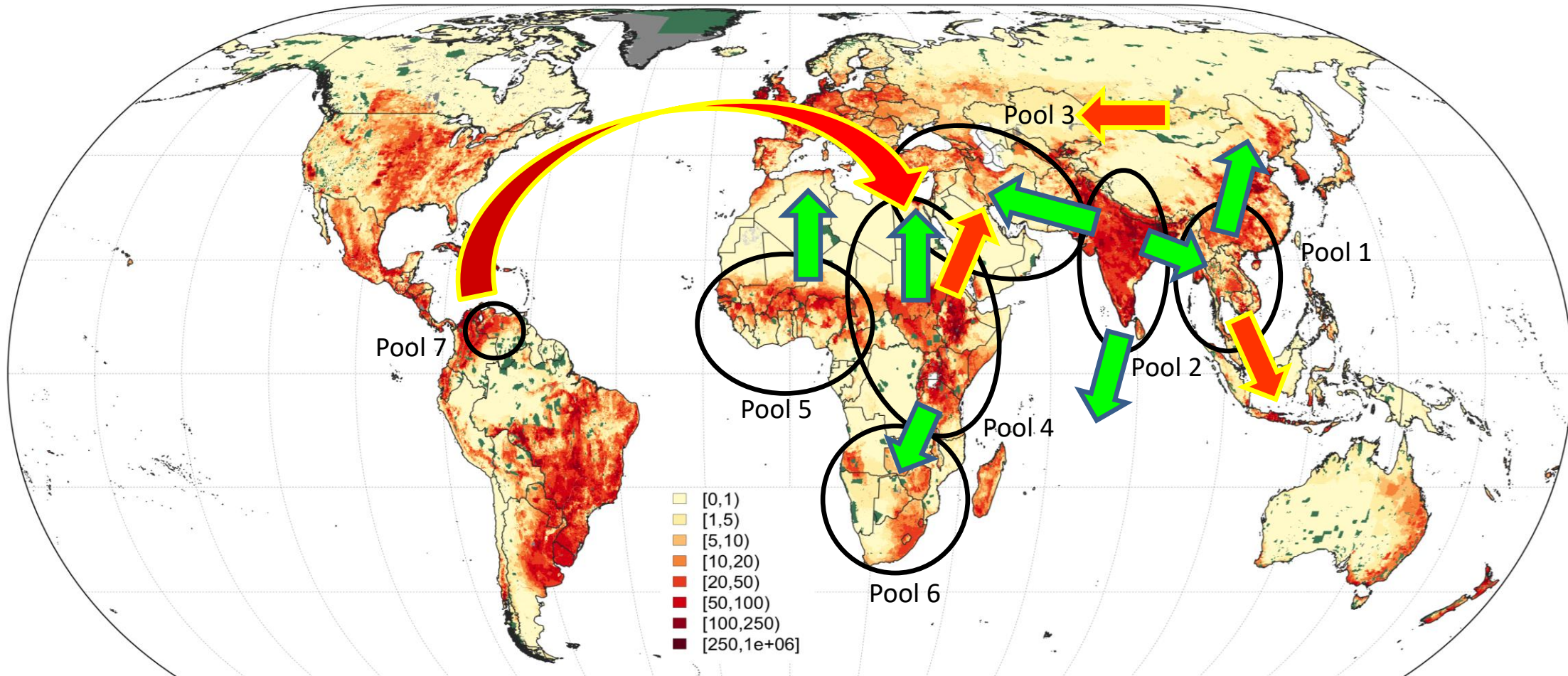
Cattle density map

Robinson et al., 2007

Risk for Europe – FMD virus movements over the last 15 years

O/ME-SA/Ind-2001d
O/ME-SA/Ind-2001e

O/ME-SA/PanAsia-2
O/ME-SA/SA-2018
A/ASIA/Iran-05
Asia-1
A/ASIA/G-VII

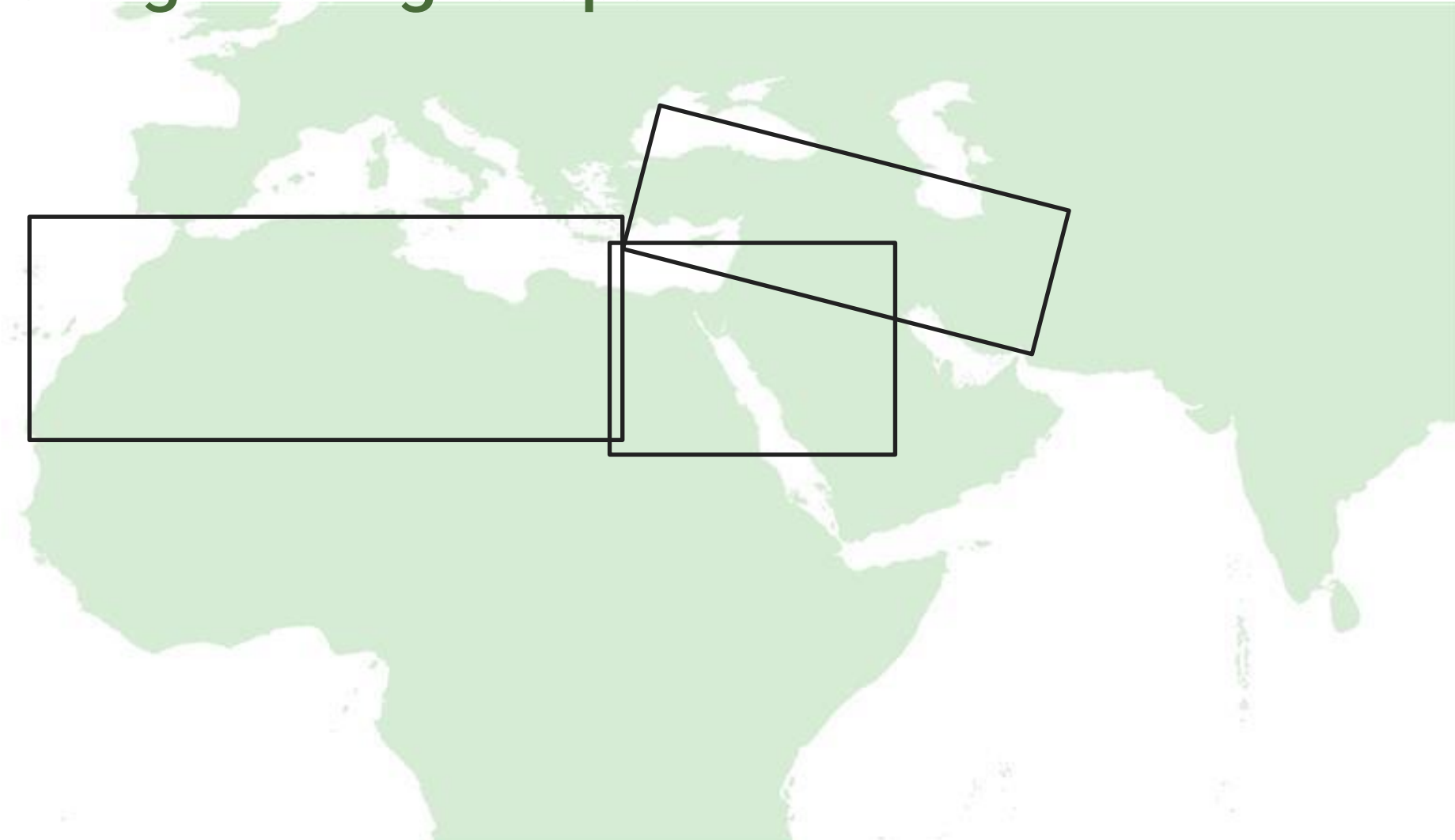**A/Africa/G-IV**

O/EA-3

SAT 2/VII
SAT 2/XIV
SAT 2/V

SAT1

A and O South America
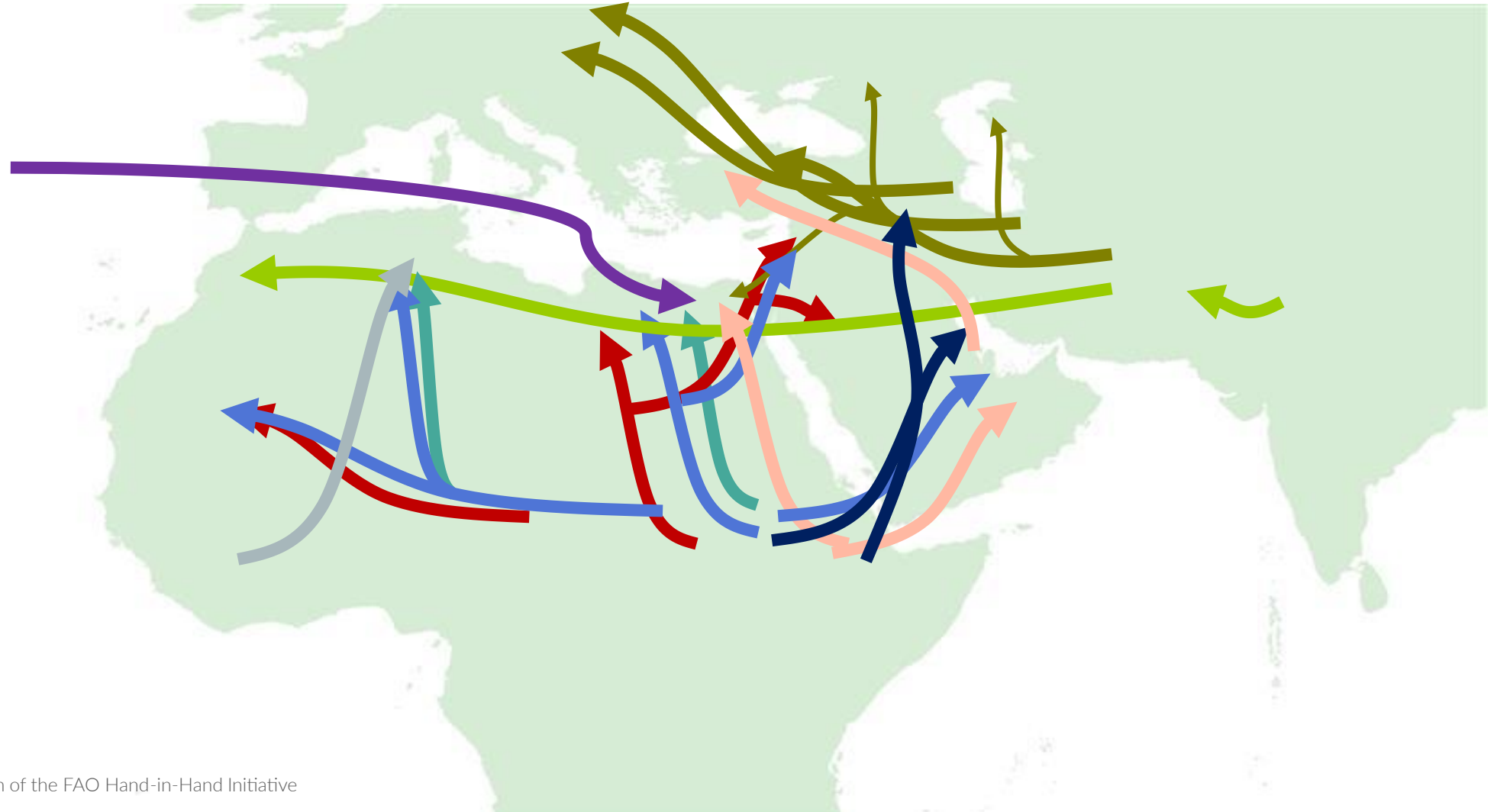
Map: adapted from the Geospatial Platform of the FAO Hand-in-Hand Initiative
(https://data.apps.fao.org/)..

Regions neighbouring Europe

FMD situation in North Africa 1999-2025

1999-2013

No outbreaks in Algeria, Morocco and Tunisia

O/ME-SA/Ind-2001 via Libya

2013-2015

A/AFRICA/G-IV

2017

O/EA-3

2018

2022-ongoing

Re-emergence of O/EA-3 in Tunisia, Algeria and Libya

SAT2/V-on-going

2023

6
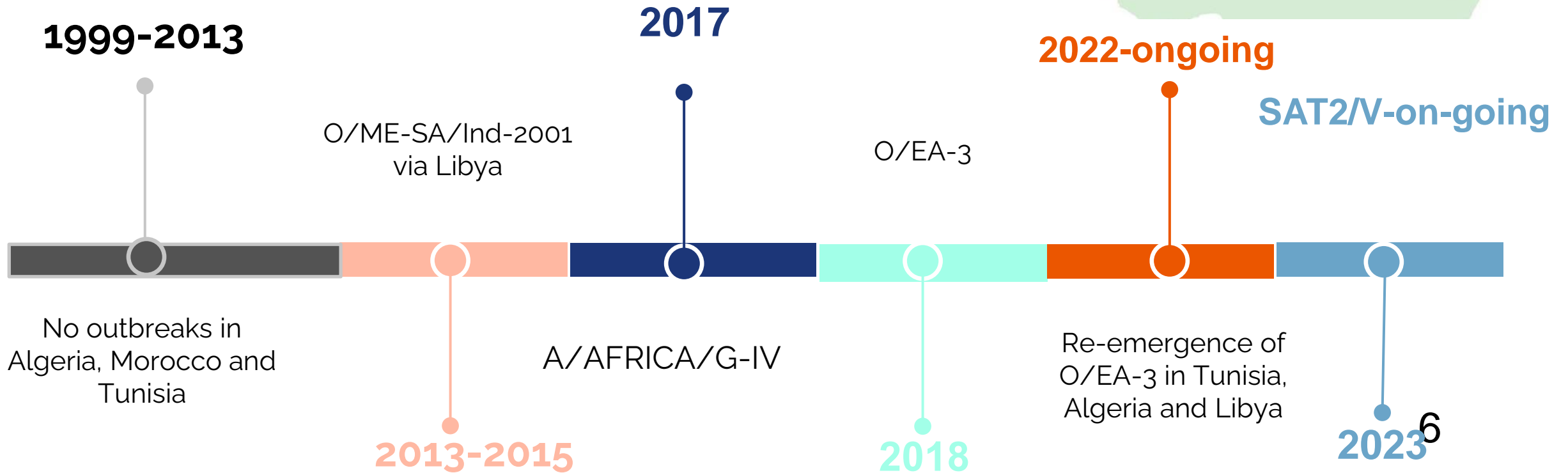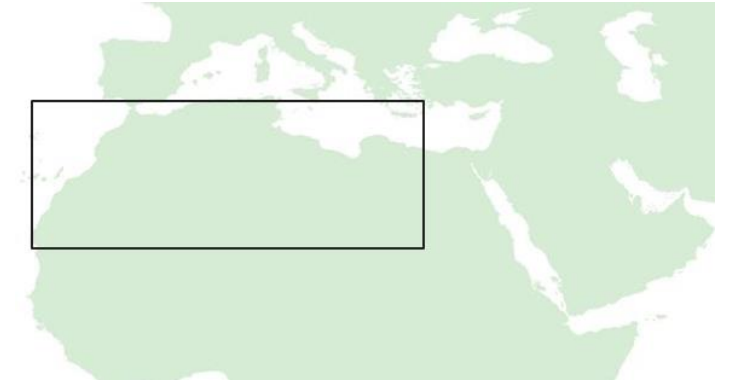
Genotyping results suggest that A/AFRICA/G-IV , O/EA-3 & SAT2/V originated in West Africa

FMD situation in the Near East 2023 - 2025

	2023	2024	2025
O/ME-SA/Pan Asia2 (ANT-10)	Jordan (2022), Israel, Palestine AT (2023)		
O/ME-SA/SA-2018	UAE, Oman (2023)	Palestine AT (2024) Israel, Syria (2025)	
A/AFRICA/G-IV		Egypt (2024)	
SAT2/XIV	Jordan, Oman, Bahrain (2023)		
SAT1/I	Qatar (2023)		Bahrain, Kuwait (2025)

Data from FMD quarterly reports, GVA meeting reports
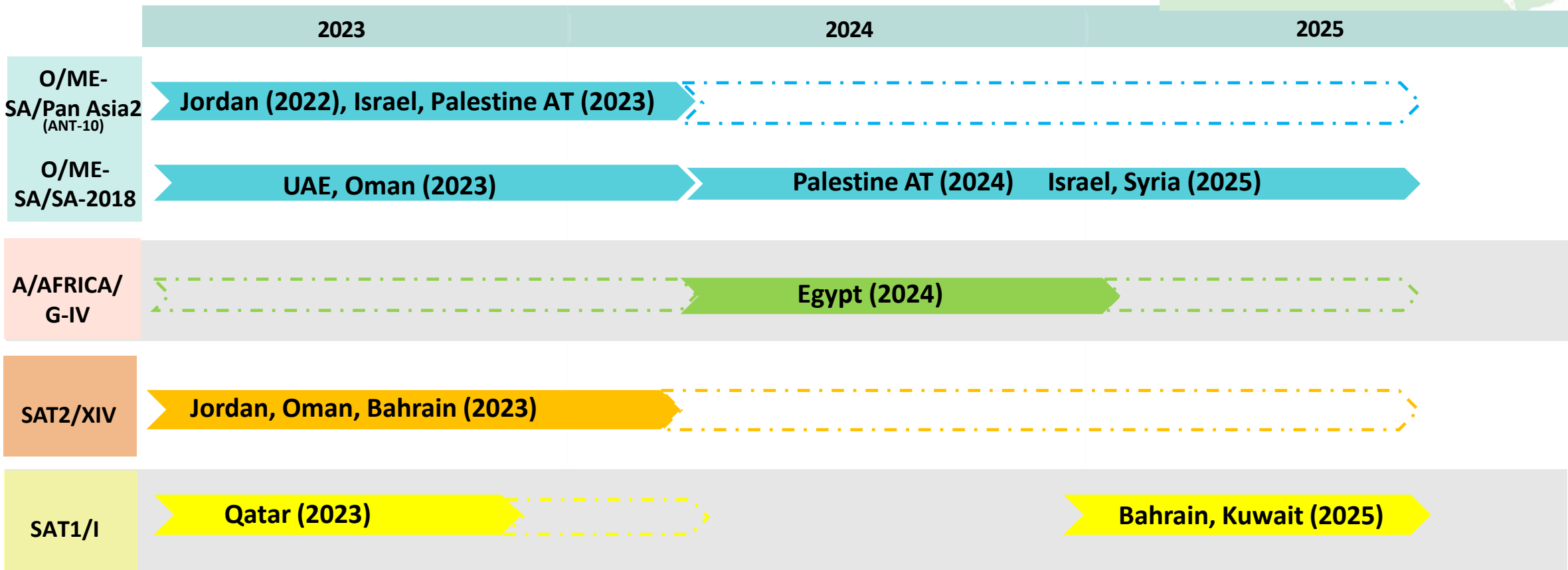
Recent introductions of exotic viruses into Pool 3

Iraq, Jordan, Türkiye, Oman, Bahrain
2023
SAT2/XIV
(from Pool 4)

Kazakhstan and Russia
2021-22
O/ME-SA/Ind-2001e
(from Pool 1
via Mongolia?)

Palestinian AT
2021
O/EA-3
(from Pool 4)

Bahrain and Oman
O/EA-3 (2020-21)
A/AFRICA/G-I (2018-21)
Qatar
SAT1/I (2023)
(from Pool 4)

UAE, Oman, Iran;
O/ME-SA/SA-2018
(from Pool 2)

Pakistan
2019-20
O/ME-SA/Ind-2001e
(from Pool 2)

Pool 4

Pool 2

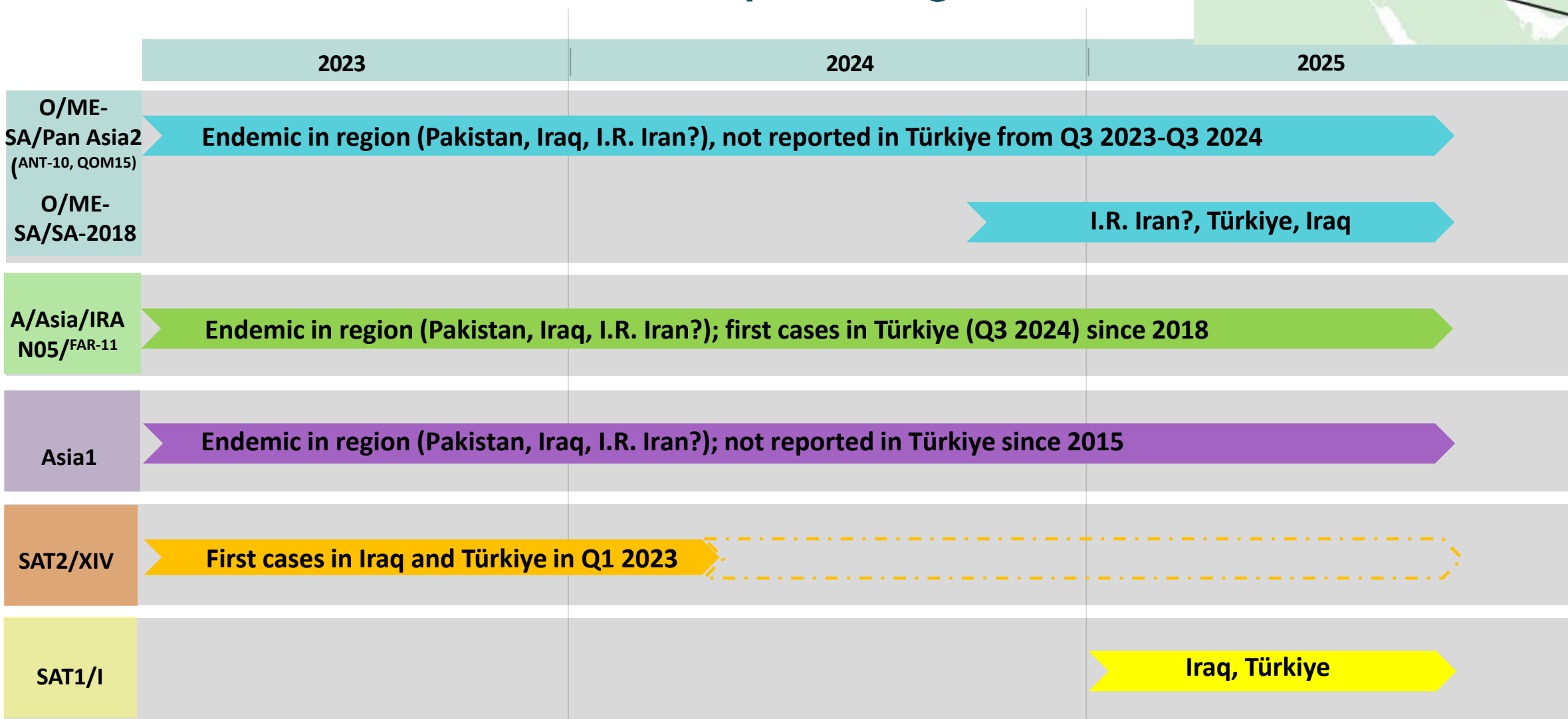www.pirbright.ac.uk
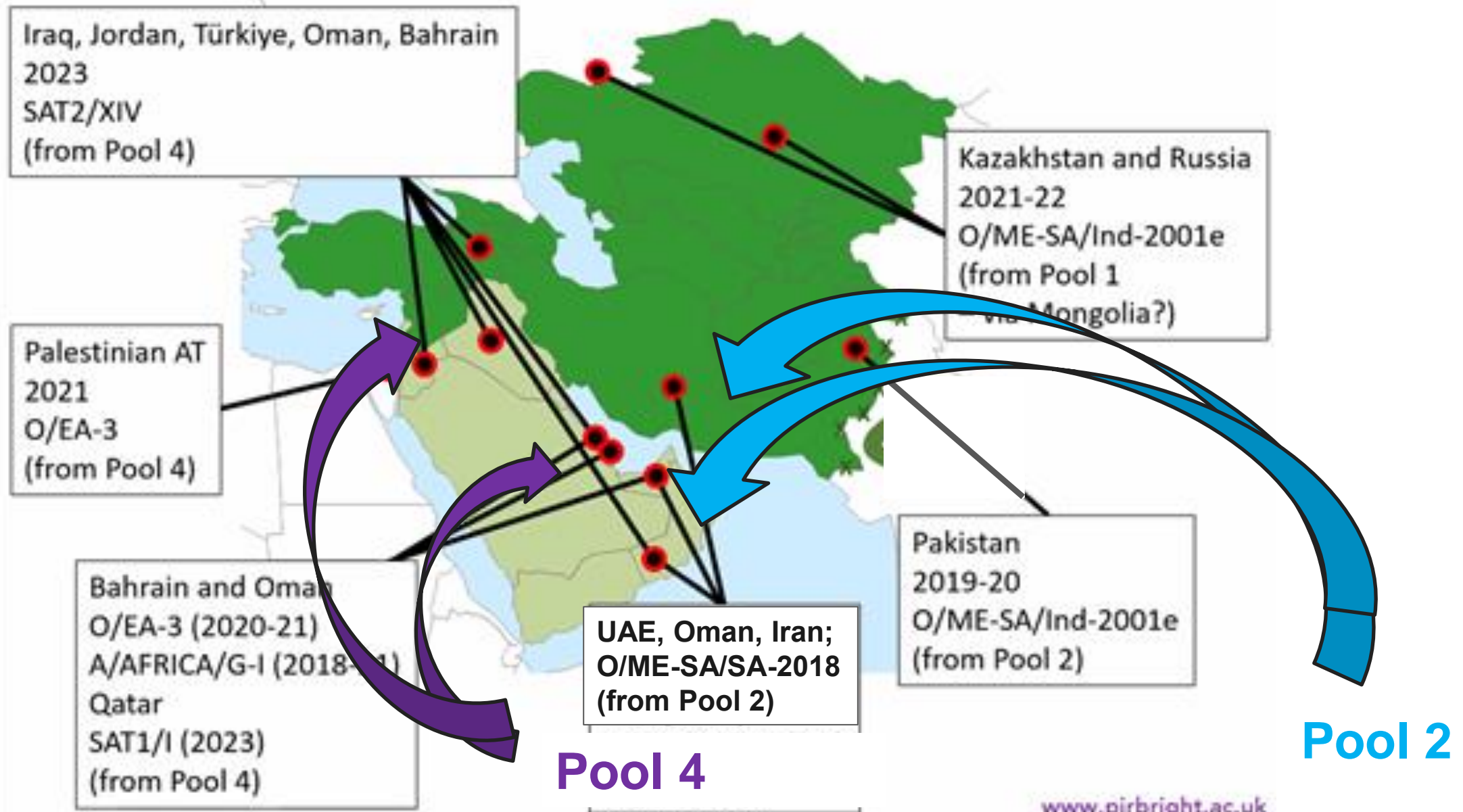
New samples submitted from Ethiopia (2022/23)
new insights about the origins of SAT2/XIV in the Middle East

- Large batch of samples collected from different locations in Ethiopia

- >40 SAT2/XIV sequences are interleaved with samples from the Middle East

- Full genomes provide further support for multiple (5) introductions of SAT2/XIV into the Middle East

Ethiopia   Bahrain   Türkiye
Oman   Jordan   Iraq

www.pirbright.ac.uk
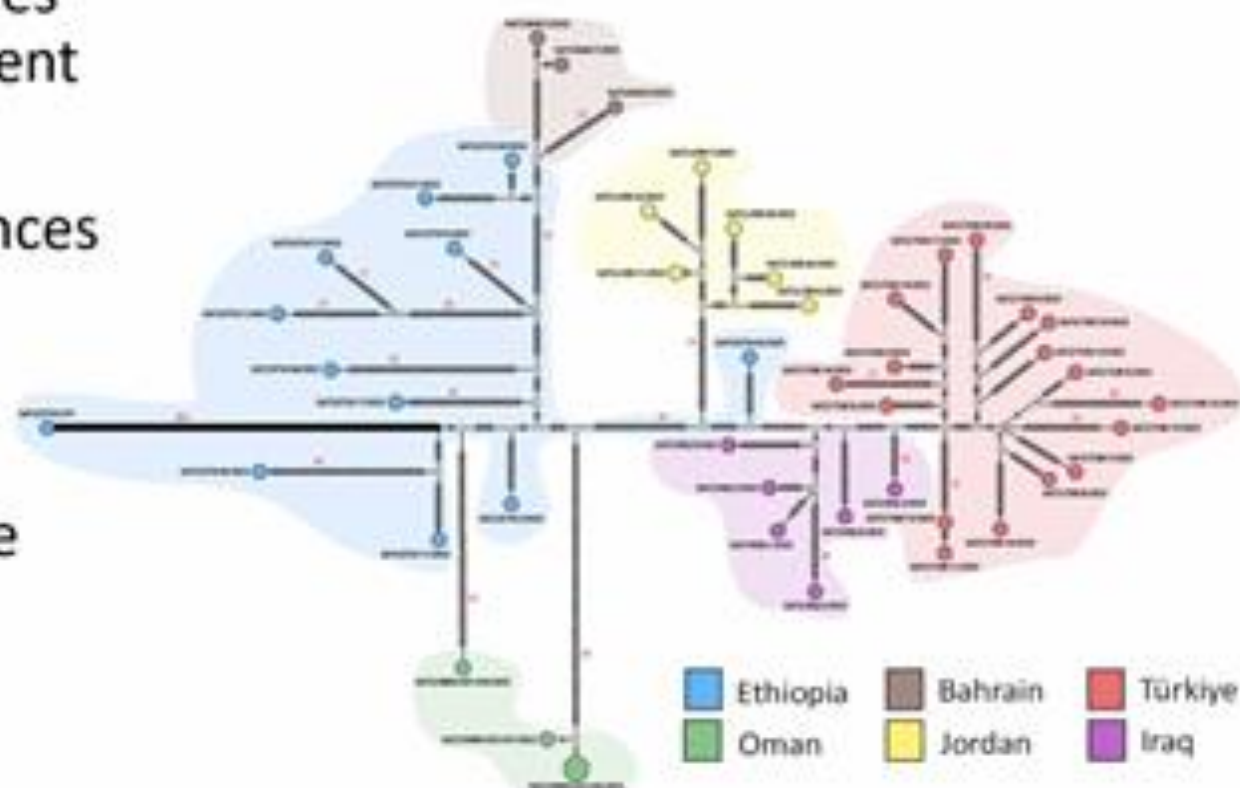
FMD situation in the South-East European Neighbourhood

	2023	2024	2025

O/ME-SA/Pan Asia2 (ANT-10, QOM15)
Endemic in region (Pakistan, Iraq, I.R. Iran?), not reported in Türkiye from Q3 2023-Q3 2024

O/ME-SA/SA-2018
I.R. Iran?, Türkiye, Iraq

A/Asia/IRAN05/FAR-11
Endemic in region (Pakistan, Iraq, I.R. Iran?); first cases in Türkiye (Q3 2024) since 2018

Asia1
Endemic in region (Pakistan, Iraq, I.R. Iran?); not reported in Türkiye since 2015

SAT2/XIV
First cases in Iraq and Türkiye in Q1 2023

SAT1/I
Iraq, Türkiye

Türkiye: refers to the Anatolian part
IR Iran: no reports received since Q1 2023

Data from FMD quarterly reports, GVA meeting reports

FMD in Europe in 2025

Last FMD outbreak in the EU - Bulgaria in 2011

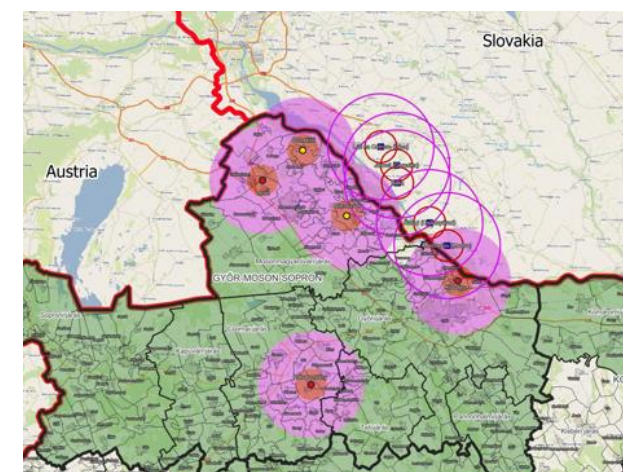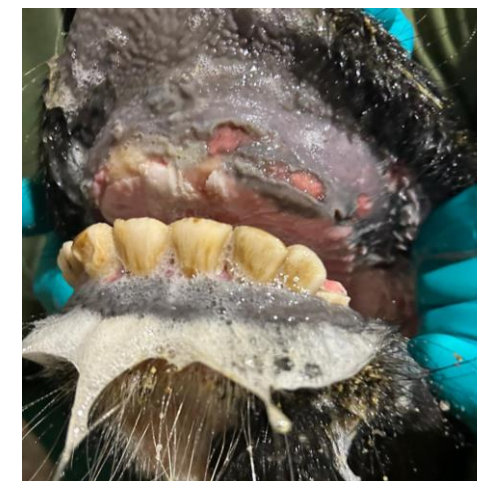**Two separate serotype O virus introductions into the EU during Q1 2025**

O/ME-SA/SA-2018   **Germany**

O/ME-SA/PanAsia2^{ANT10}   **Hungary → Slovakia**

Food and Agriculture
Organization of the
United Nations

eofmd
european commission for the
control of foot-and-mouth disease

FMD in Europe in 2025

Risk information & Risk monitoring

Risk information – analysis and reporting

FMD Analytics

openFMD facilitates the retrieval, analysis and dissemination of FMD surveillance data, including global epidemic intelligence, genome sequences and disease determinants.

openFMD provides a portfolio of analytical resources for FMD with optimised workflows to reduce analysis time and user-friendly interfaces to effectively navigate through the applications.

These tools makes use of both genetic sequence and epidemiological data, along with associated geographical as well as species-specific data, to help researchers understand how FMD viruses evolve and spread, and facilitate data interaction and exploration through customizable filters, sophisticated queries and intuitive visualisation further enabling download of data.

Genomics
use tools to explore FMDV evolution and retrive FMDV sequence data

→

Surveillance
explore historical and current epidemiological trends of FMDV

→

Vaccine antigen prioritisation
select FMDV vaccines based on current epidemiological risks

→

- Dashboards are being developed to display and exchange data with the wider community (https://www.openfmd.org/)
  - FMDbase – viral sequence database
  - FMDtype – genotyping reports
  - FMDwatch – global surveillance
  - PRAGMATIST – vaccine selection (functional)
- System went "live" in 2024 with Webinars to introduce functionality

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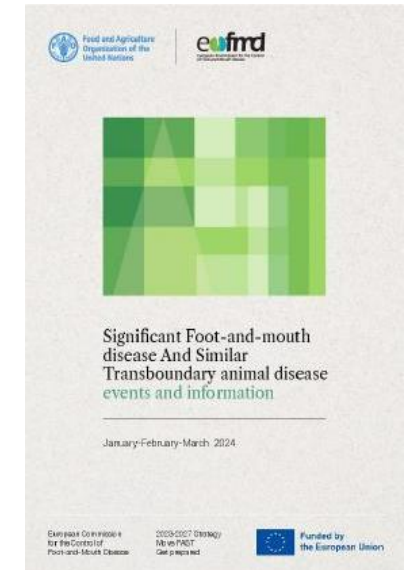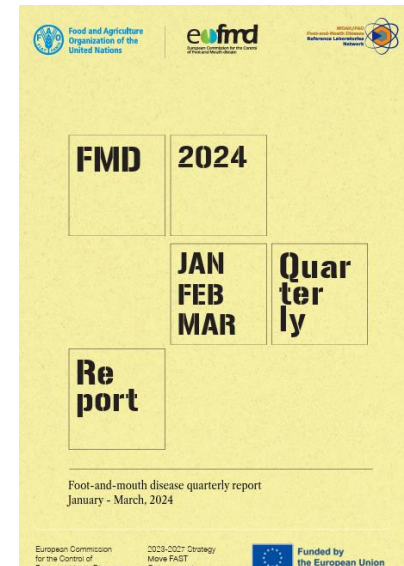
The Risk Monitoring Tool for FAST diseases (RMT-FAST)

- A **semi-quantitative** generic risk assessment framework developed by EuFMD (spreadsheet and web application)

- Aim: **rank the risk of introduction** of FAST diseases in MNs (or any interested country) from European Neighbourhood.

<u>Premise</u>

Risk of entry of a new pathogen is proportional to:

- The **epidemiological situation** in the source country
    - Occurrence of the disease
    - Control measures implemented

- The **strength of connection** between the source country and the target country
    - Different types of connection: Geographical proximity, trade...
    - Connections contribute to one or more spread pathways

- **Effectiveness of each pathway**

Welcome to the Risk Monitoring Tool for FAST diseases

The **Risk Monitoring Tool (RMT)** is a simple and easy-to-use tool designed to assist animal health authorities to identify and prioritize the risks related to the introduction of **Foot-and-mouth And Similar Transboundary (FAST)** animal diseases. This information can be used to target preventive measures (e.g. surveillance, border controls and trade restrictions) to reduce the probability of entry of new pathogens.

Get prepared

Emergency preparedness – training & resources

Training menu 2025-27

Main updates

- **Increased flexibility for countries**: The 2025–2027 training menu reflects increasing demand for virtual courses, as a more readily available and adaptable option for strengthening emergency preparedness and response.

  - Multiple **online courses** are now freely accessible.;

  - **In-person courses**: continue to be provided on request

- **Greater focus on providing training in local languages**: in response to requests from member nations, there is more emphasis on making material available in local languages and adapting courses to local needs.

  - **Translation of** non-tutored courses into local languages can be arranged on request and **in collaboration** with the Member Nations concerned.

Making training more accessible
# - translation into local languages

FMD preparedness and response

These resources can be translated as part of an Emergency Response Package

Resource	Description
FMD Emergency Preparedness course	Virtual course (12h)
Introduction to FMD course	Open access virtual course (2.5h)
Microlearning resources	PDFs, microlearning, posters
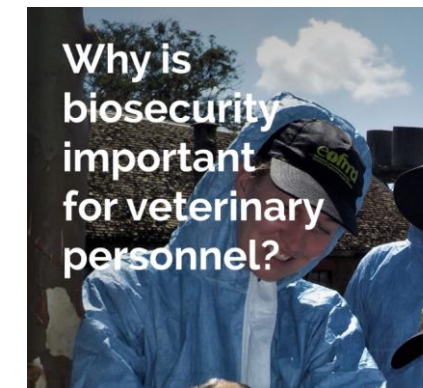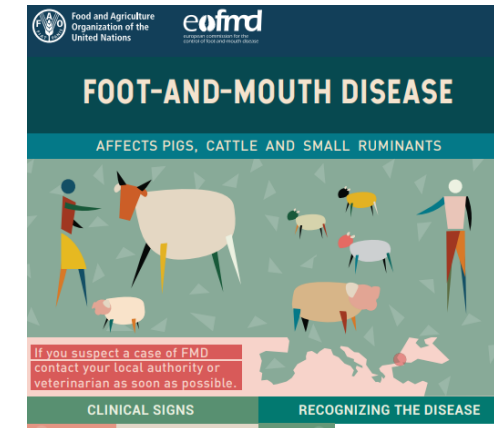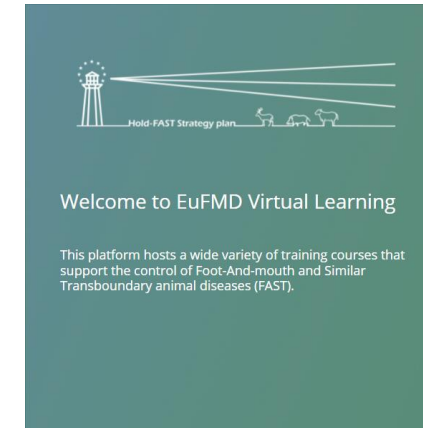
Delivered via the web and social media platforms

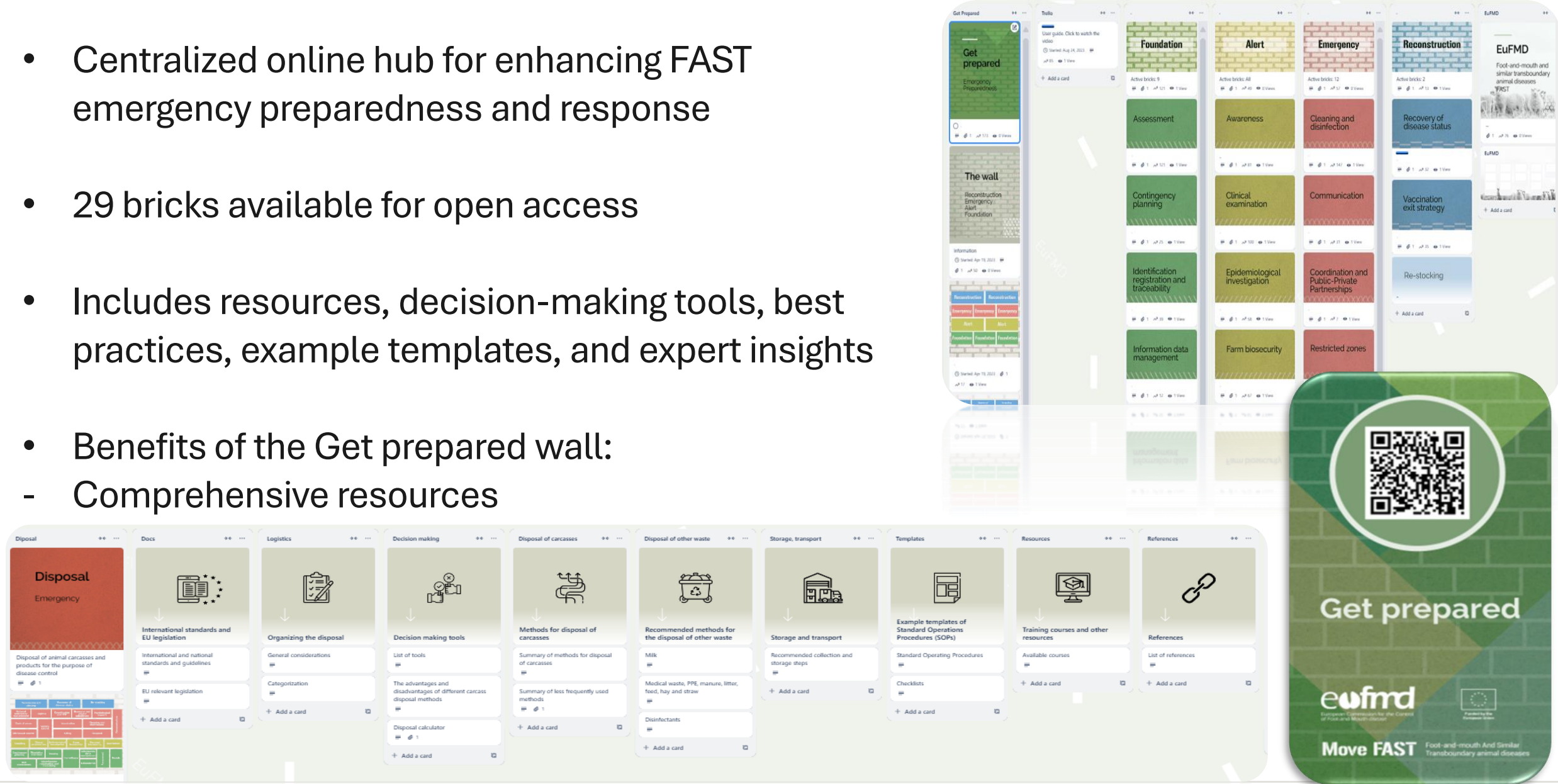# Real-time Training (RTT) in an FMD-endemic country
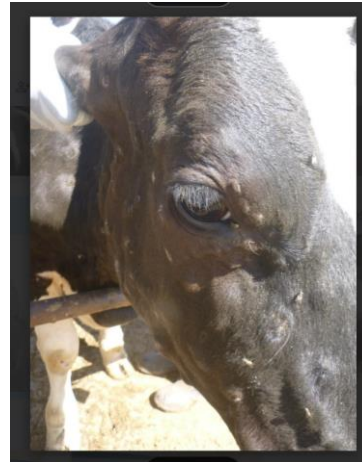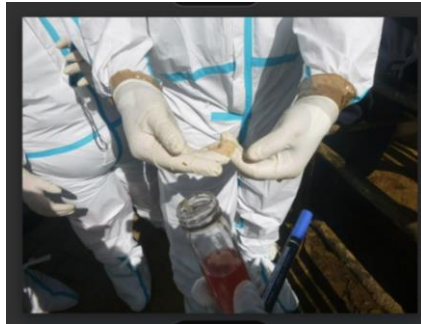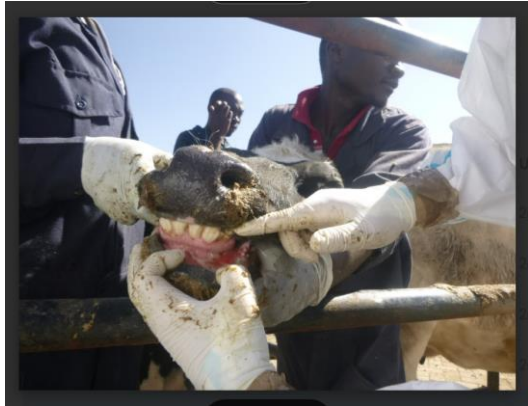
Learning objectives

- identify **clinical signs** of FMD, estimate lesion ages, document clinical findings

- take and **submit samples** to permit laboratory confirmation of disease

- **interpret** laboratory results

- construct an epidemiological **timeline** for backwards and forwards tracing

- design and construct an **investigation** using the principles of outbreak investigation

- assess **risk factors** for FMD spread and appraise **farm biosecurity**

- demonstrate **principles of biosecurity** when entering/exiting FMD infected premises

Get prepared wall

- Centralized online hub for enhancing FAST emergency preparedness and response

- 29 bricks available for open access

- Includes resources, decision-making tools, best practices, example templates, and expert insights

- Benefits of the Get prepared wall:
- Comprehensive resources

Decision support tools

EuFMD
eufmd
european commission for the
control of foot-and-mouth disease

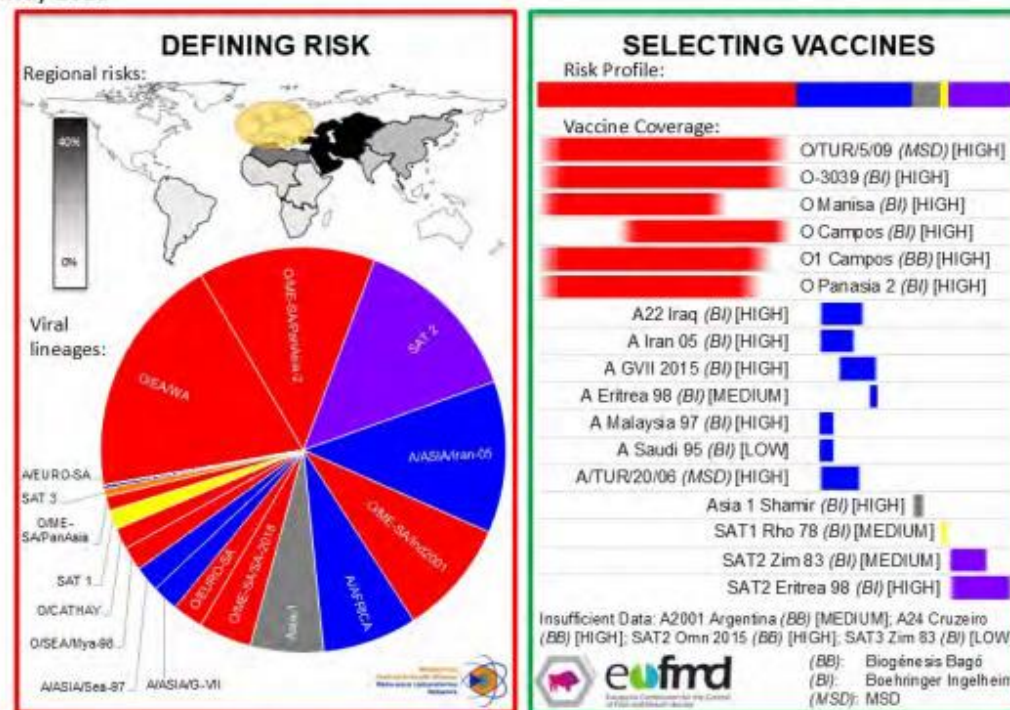Funded by the
European Union

PILLARS

Prioritisation of Antigen Management with International Surveillance Tool **(PRAGMATIST)**

1. Region at risk here: Europe

2. Threat posed by different lineages to Europe (estimate)

3. Protection conferred by available vaccines (according to defined lineage threats)

https://www.eufmd.info/pragmatist

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European FMD spread model (EuFMDiS)

Use of the EuFMDiS

- Better understanding potential outbreak scenarios and disease spread dynamics

- Assessing the potential impact of an outbreak

- Evaluation and optimization of control strategies

- Assessing resources needs

- Use for training purposes and simulation exercises.

EuFMDiS Modelling Centre

Established in 2024 to support the integration of the model into country contingency planning processes.

Vetmeduni Vienna
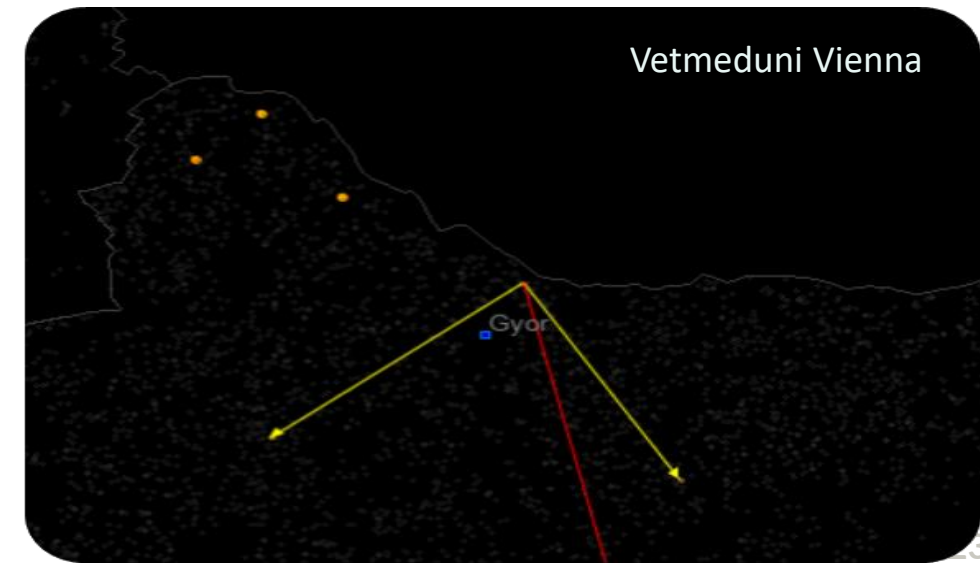
Thank you !

linktr.ee/Eufmd

fao.eufmd.org   eufmdlearning.works

#eufmd   #movefast

FAO Four Betters

SUSTAINABLE DEVELOPMENT GOALS

PROTECT RESPOND CONTROL

2023-2027 Strategy
Get prepared
Move FAST

Funded by the European Union