SEMINARIO INTERNACIONAL PRE-COSALFA: LA EXPERIENCIA DE EUROPA COMO LIBRE DE FIEBRE AFTOSA SIN VACUNACION

Overview

Summary – talk 1

EuFMD – its role and history

Brief history of FMD control in Europe and elsewhere

European experience of transitioning to freedom-without-vaccination

Lessons learnt

Summary –talk 2

Current risks of FMD incursions to Europe

Mitigation measures in EU

Actions taken to mitigate the global risk

SUMMARY : What did Europe learn from the move to non-vaccination?

1. **MUST - INCREASE preparedness, MAINTAIN discipline across all countries - to prevent FMD entry!!**
2. **That it is Essential to maintain**
   - full-time **regional co-ordination structure** (EuFMD with EU)
   - Very strong controls over imports and at borders (products, vehicles, people)
   - National contingency plans – audited, tested
   - Emergency reserves of antigens/vaccine banks
   - Political will to maintain controls

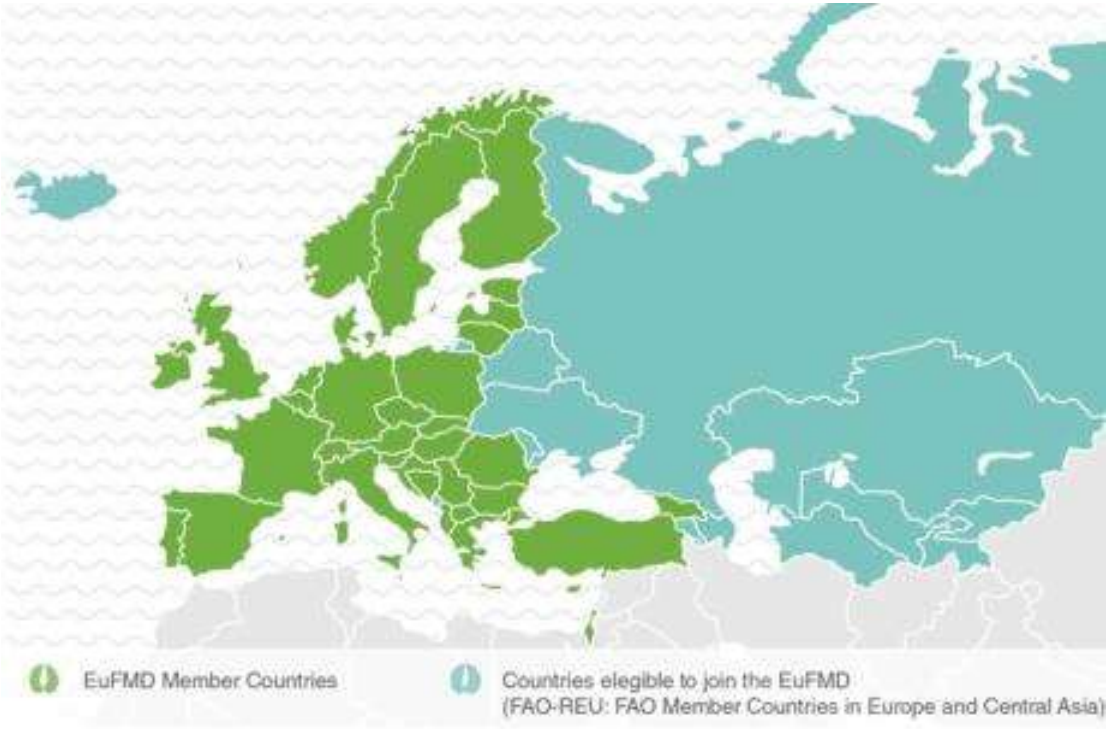
2. **FMD can come at any time, from anywhere -**
3. **Risks are real from distant sources**
4. **Awareness reduces over time: can lead to much bigger epidemics**
5. **Risk of big epidemics increasing : as greater cross-European trade in animals**
6. **Need for constant action at 3 level; Europe, neighbouring regions and global**

Who are we?

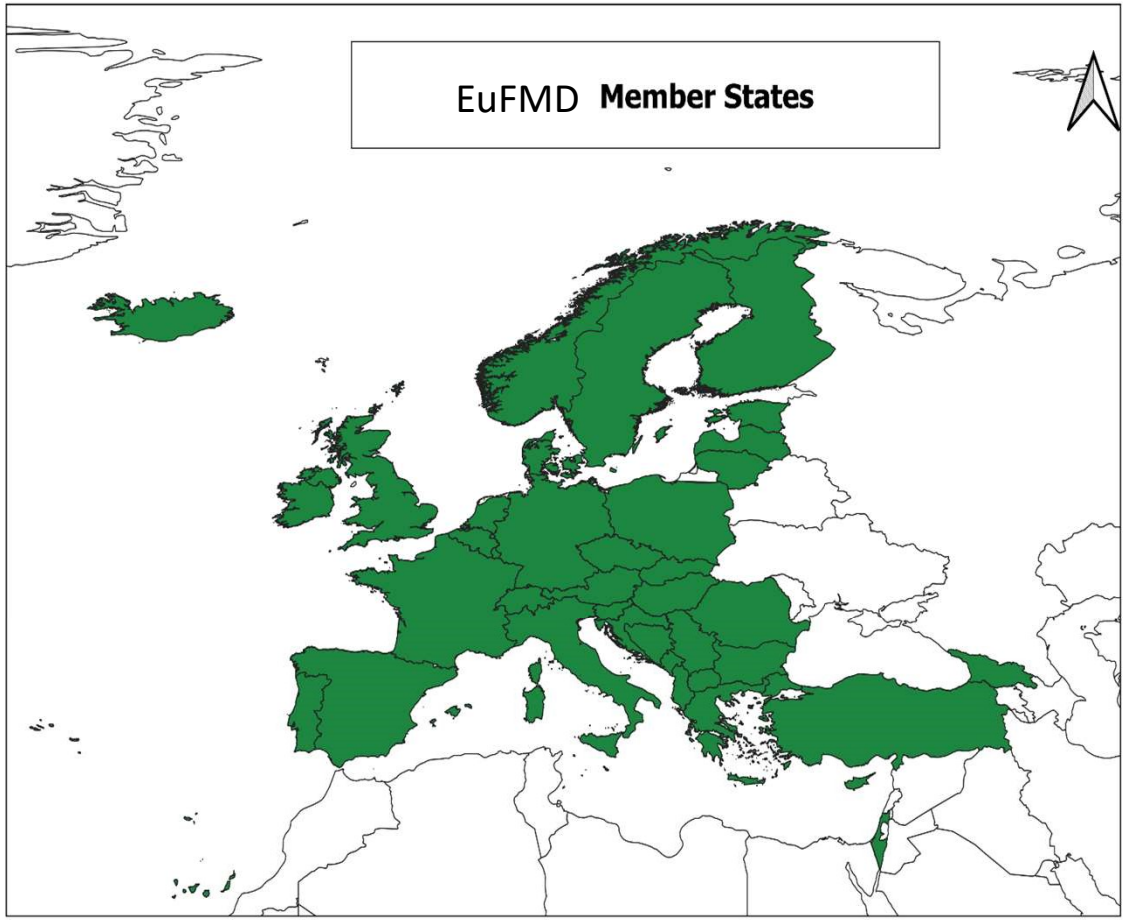
EuFMD:

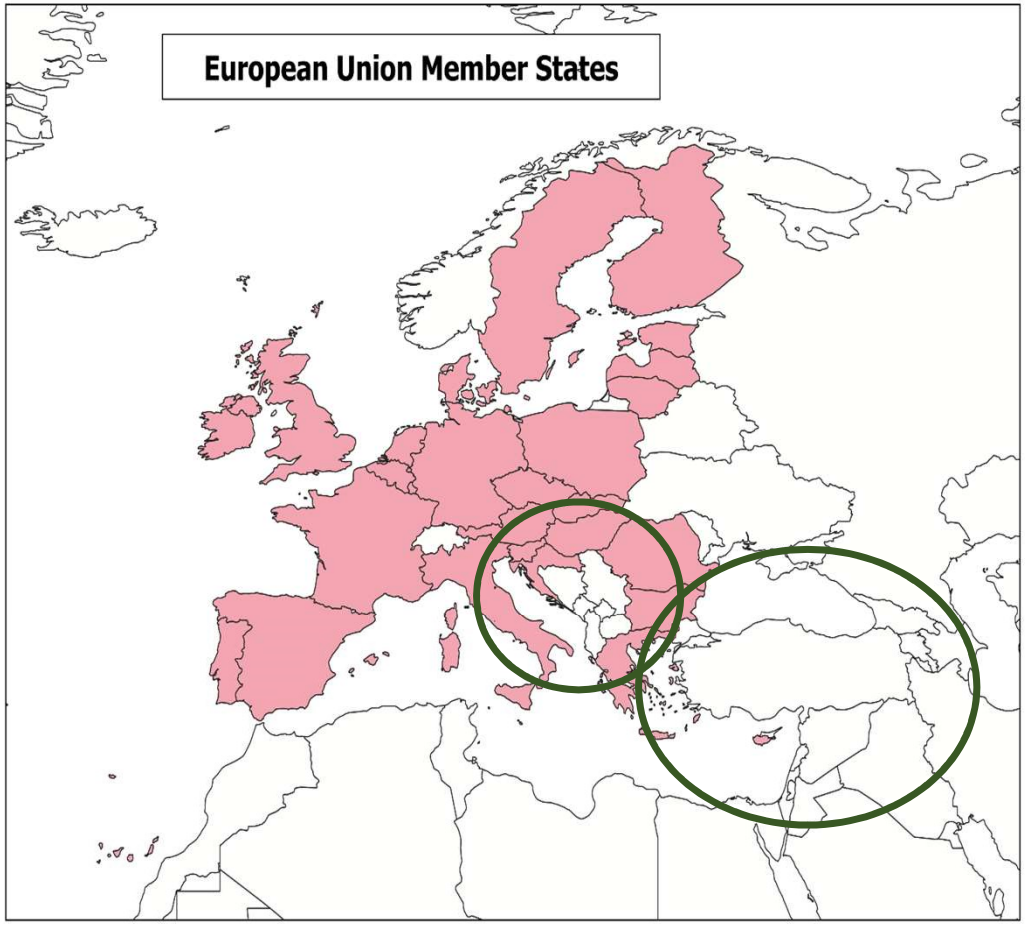
The European Commission for the Control of Foot and Mouth Disease is a commission of FAO (established 1954)

- **We are NOT the EU!!!**
- Commission of the **member countries** (39) in the European region - to prevent and control FMD
- Funded by Member States and the European Commission



EuFMD (39 MS) – is not the same as the EU (28)





The Three Pillars Strategy

1) **Improve readiness** for FMD crisis management by member states

2) **Reduce risk** to Members from the FMD situation in the European Neighbourhood

3) **Greater implementation of the Global Strategy** for the control of FMD

(and at all times maintain availability of expertise required for emergency response)

European FMD control : 3 main periods

1. **Before 1951: quarantine & stamping-out (huge epidemics)**
2. **1951-1991: control by mass vaccination period when member states committed either to**
   1. Slaughter policy or
   2. Vaccination with slaughter policy applied when cases occur
   3. Fully immune, vaccinated population (all species)
3. **1992- current: freedom <u>without</u> vaccination**
   - All 28 EU member states recognised as FMD free
   - 36 of 39 EuFMD member states
   - Vaccination permitted in emergency basis (option to retain vaccinates in population since 2003)

EuFMD Commission : our changing role

1950s: the Commission formed, developed European control

1960s: role in supporting the European FMD control Strategy:

- Co-ordination
- Responding to emergencies: exotic (SAT1+) threats.
- Research – vaccine production
- Standards - meat imports

1970s: Co-ordination and preventing exotic incursions

1980s : Co-ordination - preparing Europe for non-vaccination

1990s: preventing incursions from Turkey/mid-East , emergency response

2000s: life after 2001 - re-thinking crisis management options, re-thinking exposure to global risks

2010-19s: SUPPORTING European freedom:

- Preparedness
- Risk reduction
- Global - support to progressive control , endemic regions (PCP)

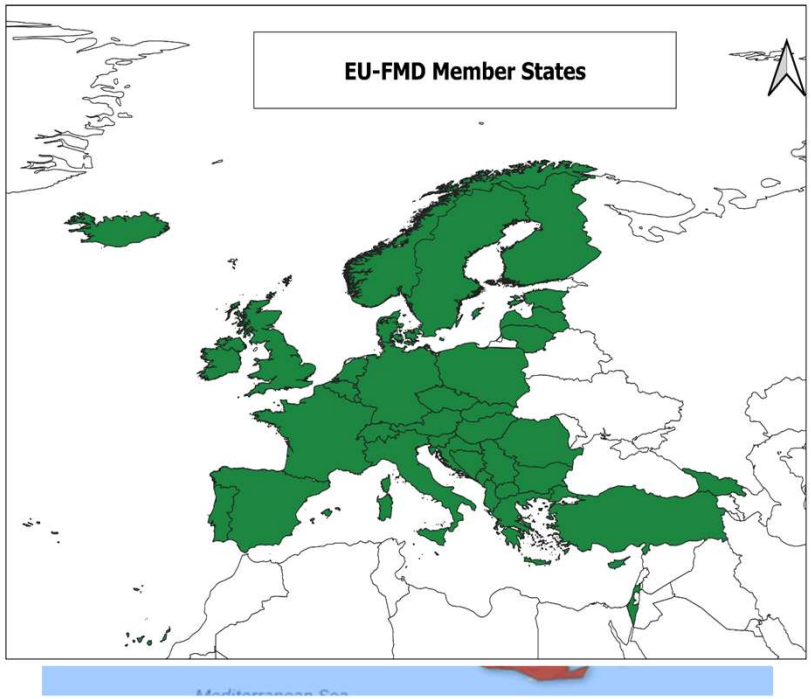
The EuFMD role in co-ordinated international “”defence””actions

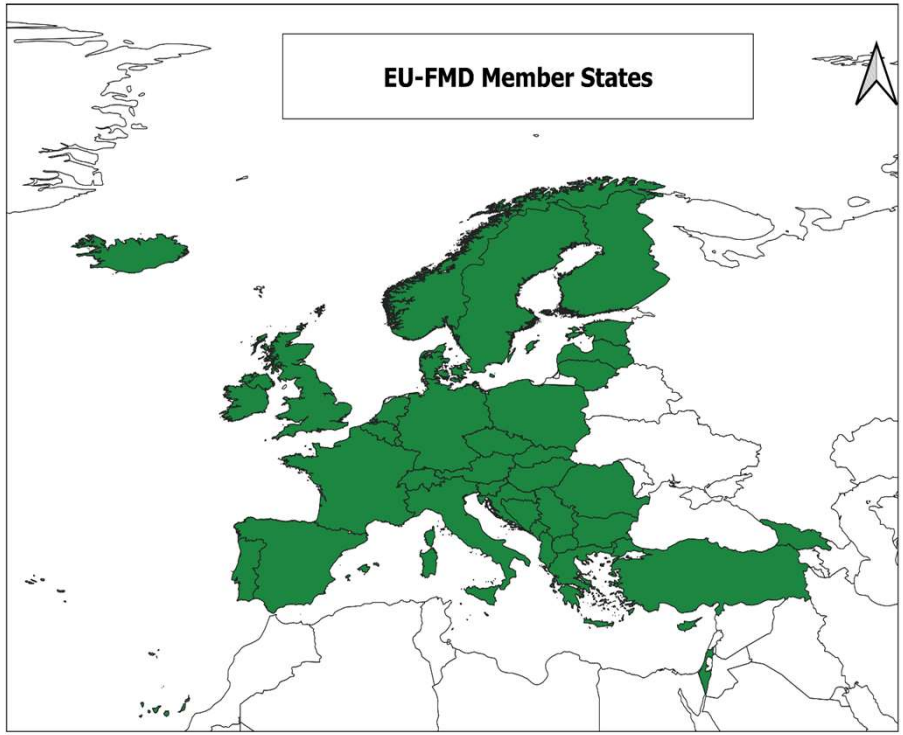
1962: exotic FMD (SAT1, from Africa) in Mid-East threatened Greece/Bulgaria

Tripartite (FAO/EC/OIE) with EuFMD providing the implementation of buffer zones in South-East Europe (Thrace)

- **Against SAT1 epidemic: 1962-64**
- **A22 threats in 1965-66**
- **A22 and Asia-1 campaigns 1972-75**
- **Asia-1 campaign in 1984**
- **A Iran 05 campaign (2006-7)**

- **ANNUAL Tripartite meetings - for over 50 years!**





The EuFMD

EuFMD Strategic Plan 2015-19

THREE Pillars

1. Member states – preparedness
2. Neighborhood –reduce risks
3. Global – support and promote global strategy

NEW EUFMD STRATEGIC PLAN
(FROM APRIL 2019)

ANIMAL HEALTH SECURITY
THROUGH BETTER PREPAREDNESS AND REDUCED RISK
FROM FMD AND SIMILAR TADS
(''HOLD-FAST"")

STAYING TRUE TO FMD.
HOLDING OFF THE
STORM OF SIMILAR TADS

History of FMD in Europe: first 400 years

1514: Italy. Described by Girolamo Fracastoro

1500s-1800s: FMD importance masked by severity of rinderpest epidemics

1752: Hungarian epidemic described

1860 onwards: first control measures proposed (Germany)

1890's: UK adopts a stamping out policy (mirrors rinderpest policy from 1860's)

Foot-and-Mouth Disease : Europe and South America

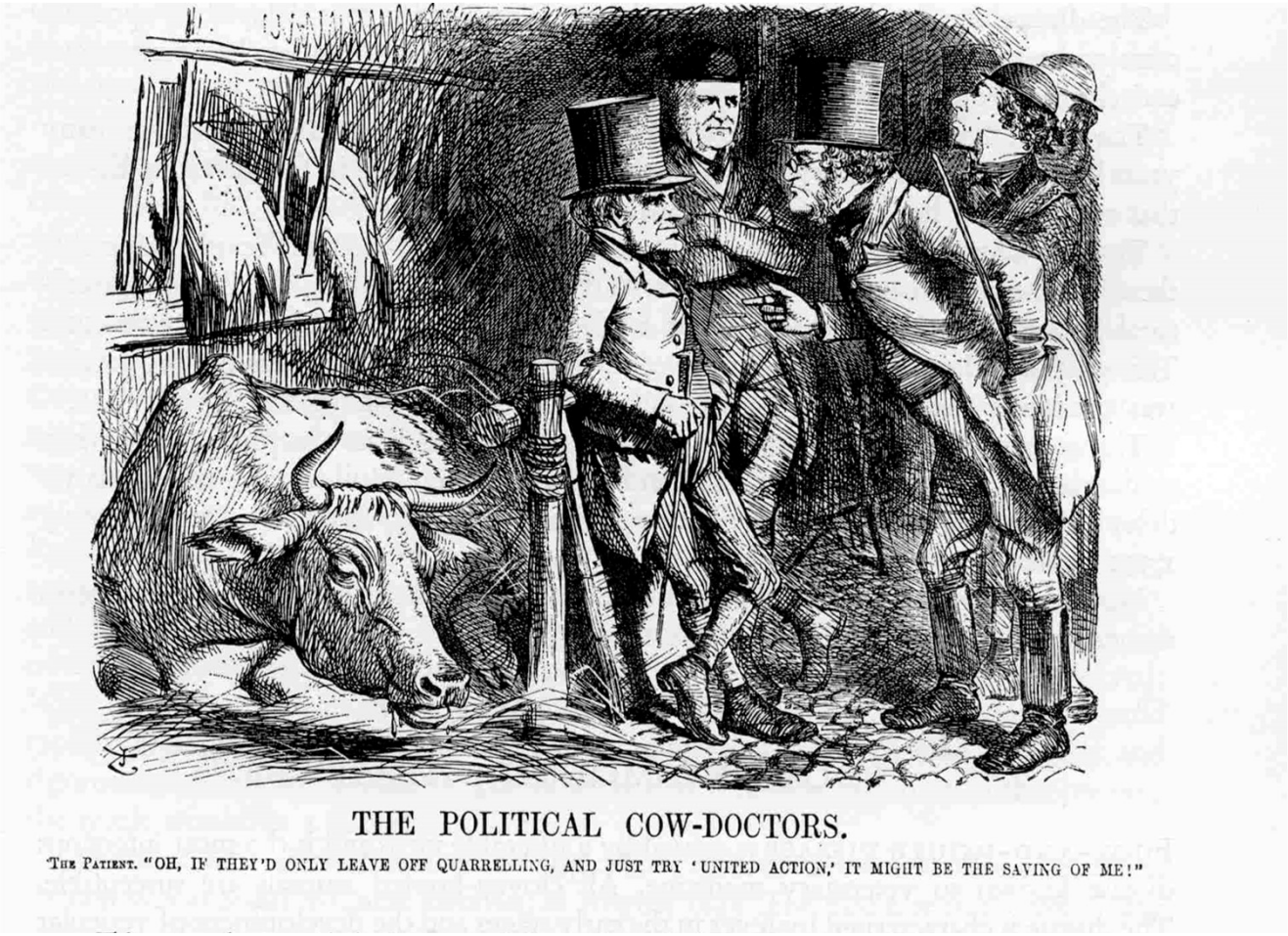
Political cow-doctors : 1865

Rinderpest, UK (1865)

FMD : first cases in Argentina (1865).

The link?

- **Railways across Europe**
- **International live animals movements into – and from UK**

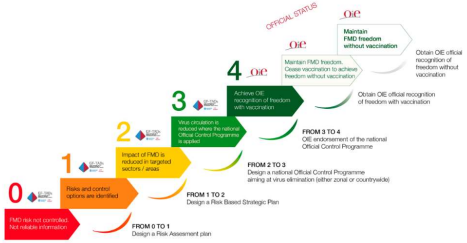


THE POLITICAL COW-DOCTORS.

THE PATIENT. "OH, IF THEY'D ONLY LEAVE OFF QUARRELLING, AND JUST TRY 'UNITED ACTION,' IT MIGHT BE THE SAVING OF ME!"

The development of FMD Control: five ages

1. Isolation and quarantine (1514 to 1890)
2. Control before virology, 1890-1924 : stamping out and keep-it-out
3. Europe: development of first vaccines (1925-38) and use in generalised vaccination (1945-)
4. Free regions without vaccination, : 1980- 2008 (Europe, Southern Cone of South America)
5. The Progressive Control age (PCP); strategies for national progress in endemic regions (Global Strategy 2012-2027)



Fracastoro: principles for control by isolation from the “”spores – and spread by fomites””

Some key dates

- **1860-70s: severe epidemics Europe, spread to South America**
- **1890's: slaughter policy UK , discovery of virus**
- **1920's: O, A, C serotypes; first vaccine trials**
- **1930: US policy recognises ""FMD free countries"" : basis of trade**
- **1951-52:**
  - last huge epidemic –Europe.
  - FMD reaches Venezuela/Colombia
  - PANAFTOSA established
  - Netherlands: first country to adopt national mass vaccination of all cattle
- **1954: EuFMD established, European strategy for control of FMD agreed**
- **1960's:**
  - mass vaccination in Europe, initiated in South America (Argentina 1961)
  - Mass production of vaccines (suspension cultures)
  - Risk of meat imports (boned –in beef and lamb) recognised -
- **1970's : quality of vaccines and safety improved, methods for vaccine concentration (vaccine banks)**
-

Key dates after 1970

1981 : Chile - freedom without vaccination, PHEFA

1980s: Eradication plans – Europe, and PHEFA (Hemispheric EradcicationProgramme)

1991: prophylactic vaccination programmes cease in EU/Europe

1994 : cessation of vaccination in Argentina (followed by others in southern cone)

2001: Massive Epidemics in free countries: UK/Europe , Argentina/Uruguay/Brazil

2002: OIE Code changes in support of emergency vaccination

2008:-9 Progressive Control Pathway (PCP) developed ,1st Global FMD Conference (Paraguay)

2012: Global Strategy for FMD Control launched (OIE/FAO)

FMD in Europe : endemic for the first half of the 20th Century

- **Mainland Europe**: repeated waves of disastrous epidemics every 5-10 years
- **Sources**: neighbouring areas of MidEast/Asia and less often, north Africa
- **Sporadic/endemic FMD between major waves**

- **1910-11**: Asian epidemic via Russia to Western Europe
- 1st recognition of multiple serotypes (1920's), O and A, then C
- **1937-9:** from N Africa to France, to rest of Europe. Two MILLION farm (outbreaks). First vaccine tested in field (Waldman)

From war and disaster - a new Europe, 1950's-

Devastating European Panzootic (new subtype A5) 1950-52: 900,000 outbreaks in 2 years

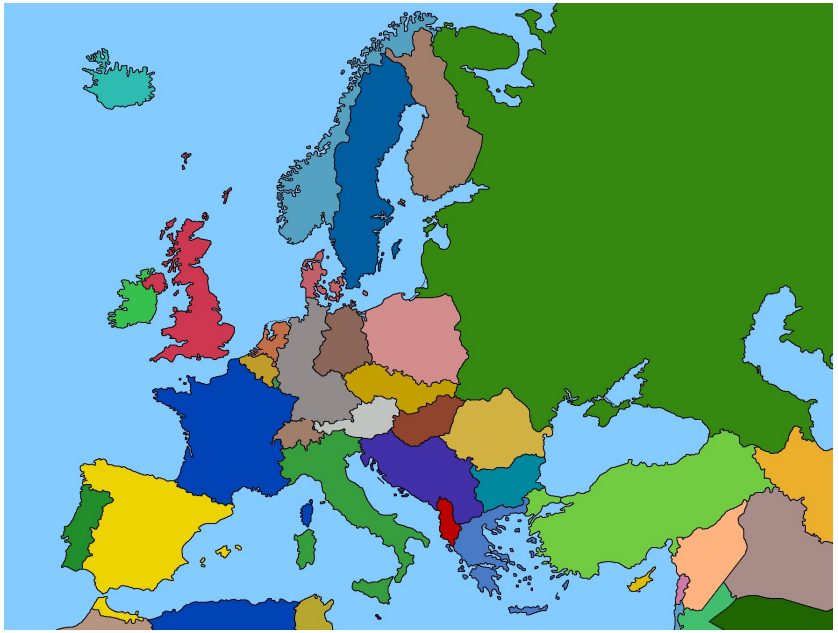
- **Italy 430,000, France 330,000**
- **Netherlands 280,000, West Germany 204,000**
- **Belgium 59,000, Greece 57,000, Denmark 28,000**

Ring vaccination applied with some impact - but supplies inadequate

Strong political pressure to co-ordinate at European level

1954: EuFMD Commission established with 6 founding members

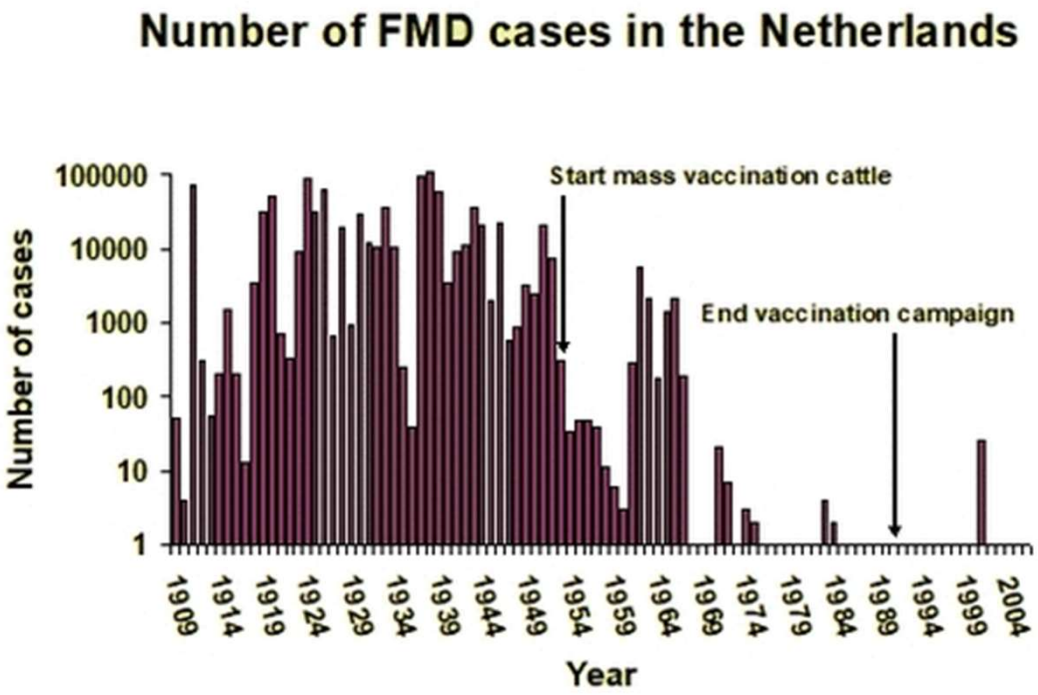
1958: World Reference laboratory for FMD (Pirbright) – supported by EuFMD/FAO



Frenkel's In-vitro culture method for vaccine production–enabled control

NL first country with nation-wide prophylactic and emergency vaccination

Followed by other European countries



From Aldo Dekker

Eradication of FMD in Western Europe

- **From 900,000 outbreaks to zero: in 30 years**
- **In reality - what role did vaccination play?**
  - **Prevented massive epidemics? (none after 1952)**
- **Consider:**
  - **other measures may have contributed more?**
    - Controls on meat products (Deboned, lymph tissues removed from meat imports after 1967)
    - Co-ordinated actions at land borders : and campaigns at border with Turkey
    - Laboratory escapes addressed
    - Failure to inactivate vaccines : addressed
- **Carriers must have been present – never were removed (no DIVA vaccines or NSP testing)**

Cessation of mass vaccination in Europe in 1991. What drove this?

- Economic and political:
  - Free movement of agricultural goods/livestock
  - FMD vaccination a barrier to internal movements
  - FMD vaccination a barrier to exports
- Non-vaccinating countries (UK, Ireland, Denmark) saw vaccination as a hindrance to European export development
- Regional Economic Community (EEC): drove change
- CVOs and veterinary stakeholders had severe concerns over the change

Decision on cessation of vaccination in Europe, 1990 – was not easy!

FOR:

- Outbreaks in 1980s were few and related mainly to laboratory escapes, and poorly inactivated vaccines
- Many vaccine producers at national level - ""national vaccine stocks for emergencies""
- High awareness and veterinary service capacities – in vaccinating countries
- Regional economic community (EEC) – and exporting countries
- Non-vaccinated pigs and sheep acted as sentinels in almost every country
- Positive benefit: cost savings estimates over 10 years

AGAINST:

- No DIVA vaccines – or tests to prove FMDV was not circulating in niches!
- Private Veterinarians – vaccinating cattle was a big income!
- Countries at higher risks with less capacity to manage emergencies
- Risks associated with break-up of Soviet bloc: countries that may fail to control FMD

Other political changes around the time of the decision in 1990

1986-90: bovine spongiform encephalopathy (BSE) fears – promoted bovine ID/traceability

1989: Poland, Hungary, fall of Berlin wall - end of Cold War

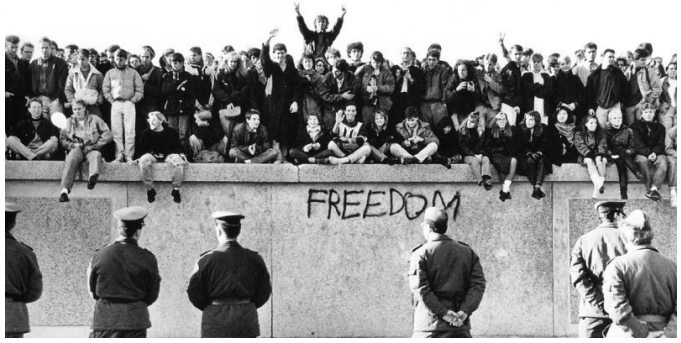
1990: re-unification of Germany

Political changes promoting livestock trade with former Eastern bloc countries (Poland, Czechoslovakia, Hungary, Romania,…)

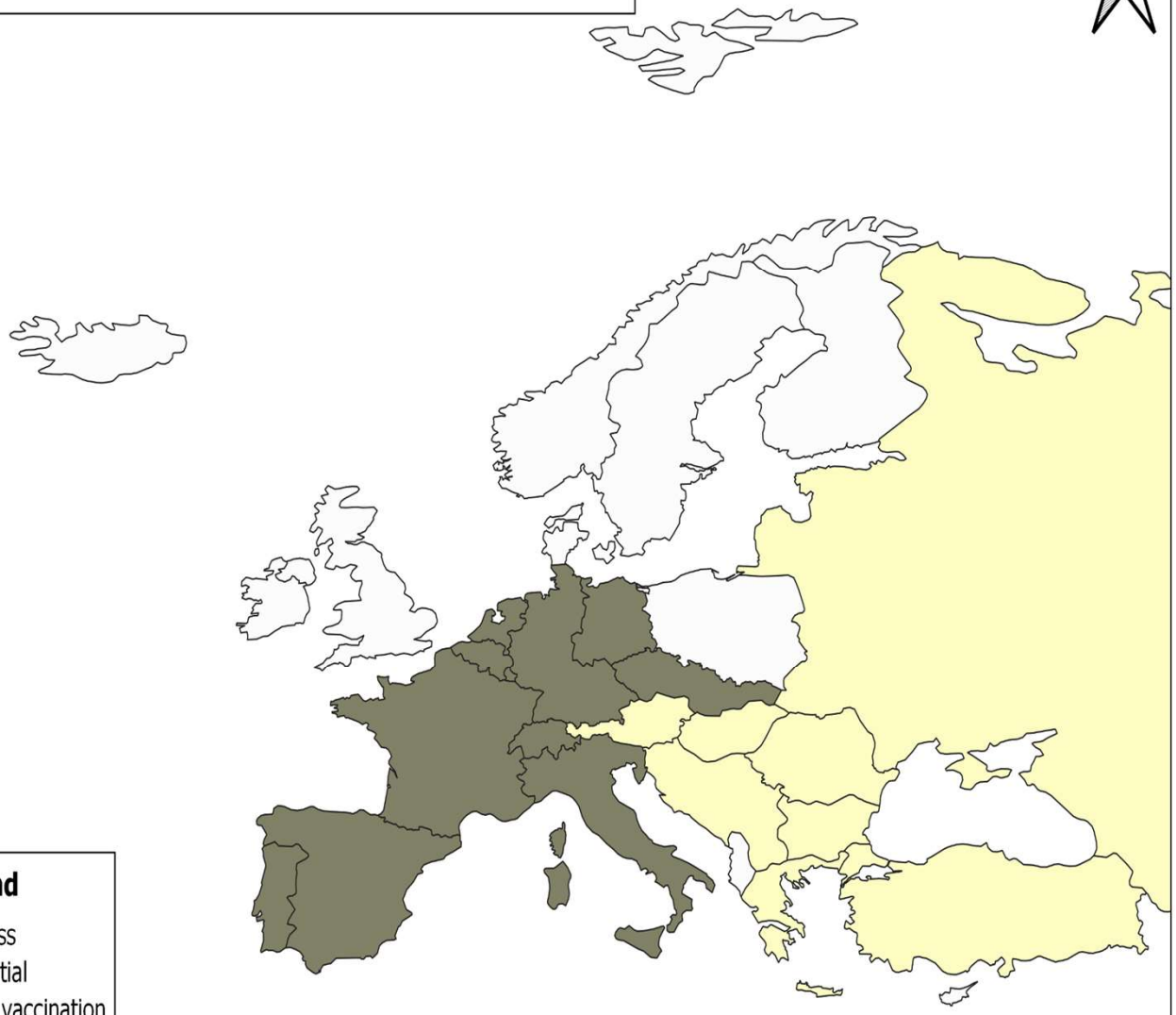
Eastern bloc countries : Only Czechoslovakia routinely used mass vaccination

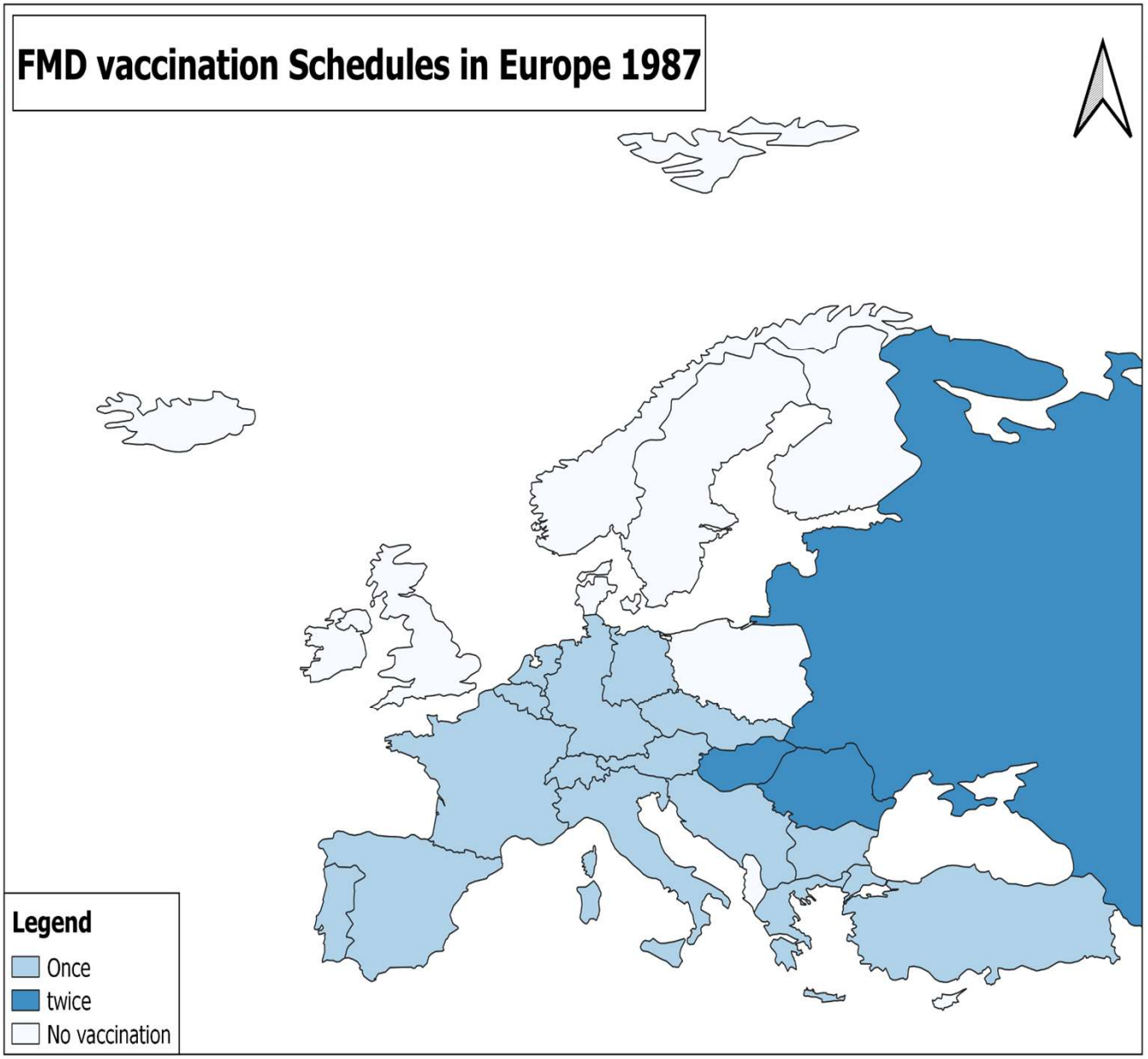
This facilitated opening trade in livestock across Europe

Note: Only one outbreak (1993, into Italy) later associated with animal imports (forged certificates) via former Eastern bloc countries

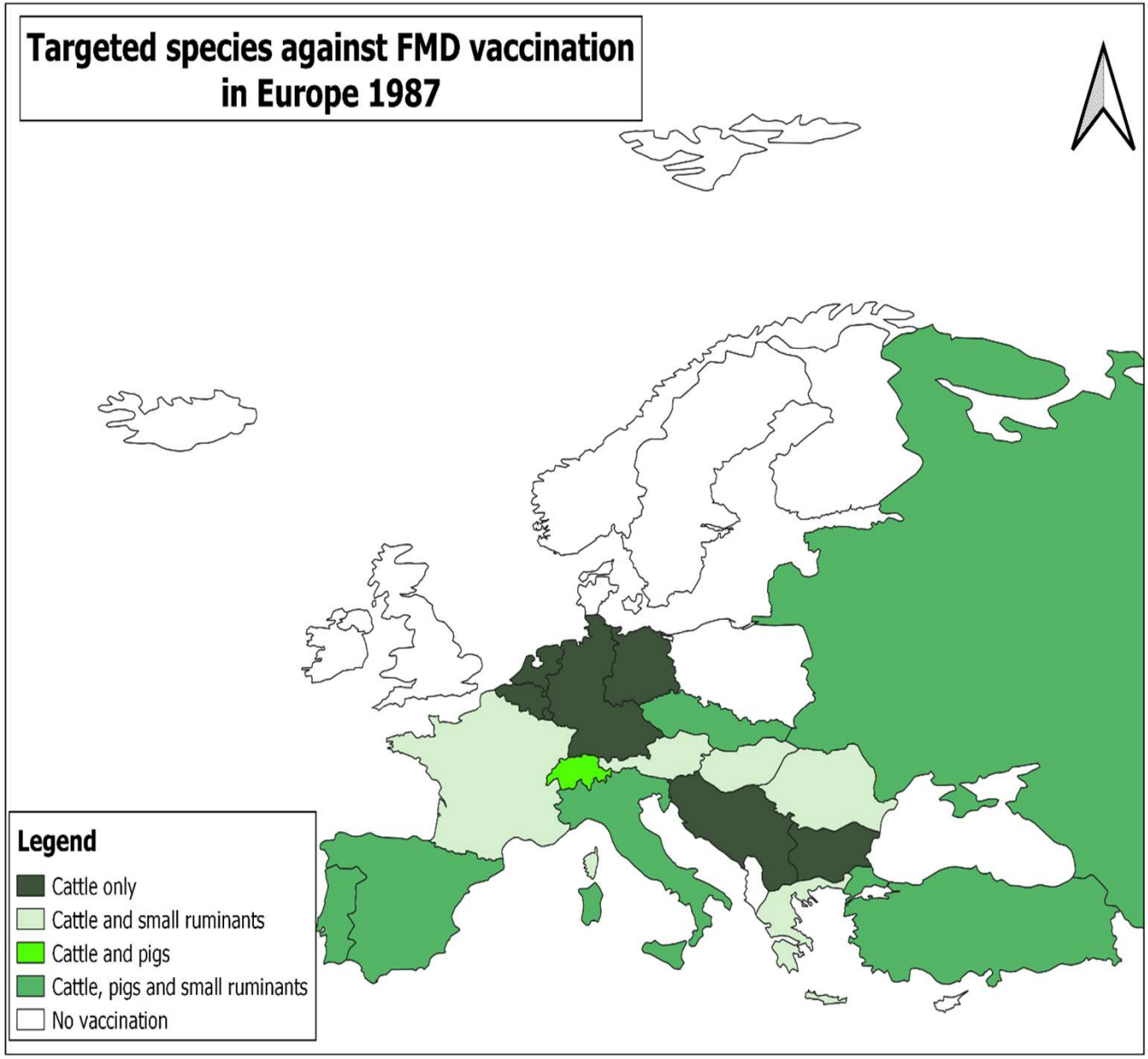


FMD vaccination strategies in Europe 1987





Schedules in adult cattle after full primary course from 3-4 months


Targeted species against FMD vaccination in Europe 1987
Legend
Cattle only
Cattle and small ruminants
Cattle and pigs
Cattle, pigs and small ruminants
No vaccination

EU decision in June 1990: vaccination to cease within 18 months

12 EU members, 8 vaccinated preventively

Based on risk assessment and economic models:

Model predictions over 10 year period:

- non-vaccination "policy: 13 to 1,963 outbreaks (central 273)
- With vaccination policy : 20 to 3,020 (central 420)

Directive banning vaccination (1990) also required the following:

Legal:

- **Member states to each have FMD Contingency Plans <u>approved by the EC</u>**
- **Creation of European vaccine bank**
- **Facilities handling FMD virus to follow EuFMD Standards for biocontainment**
- **Import conditions for animals and meat products from vaccinating countries**

<u>Bioecurity:</u>

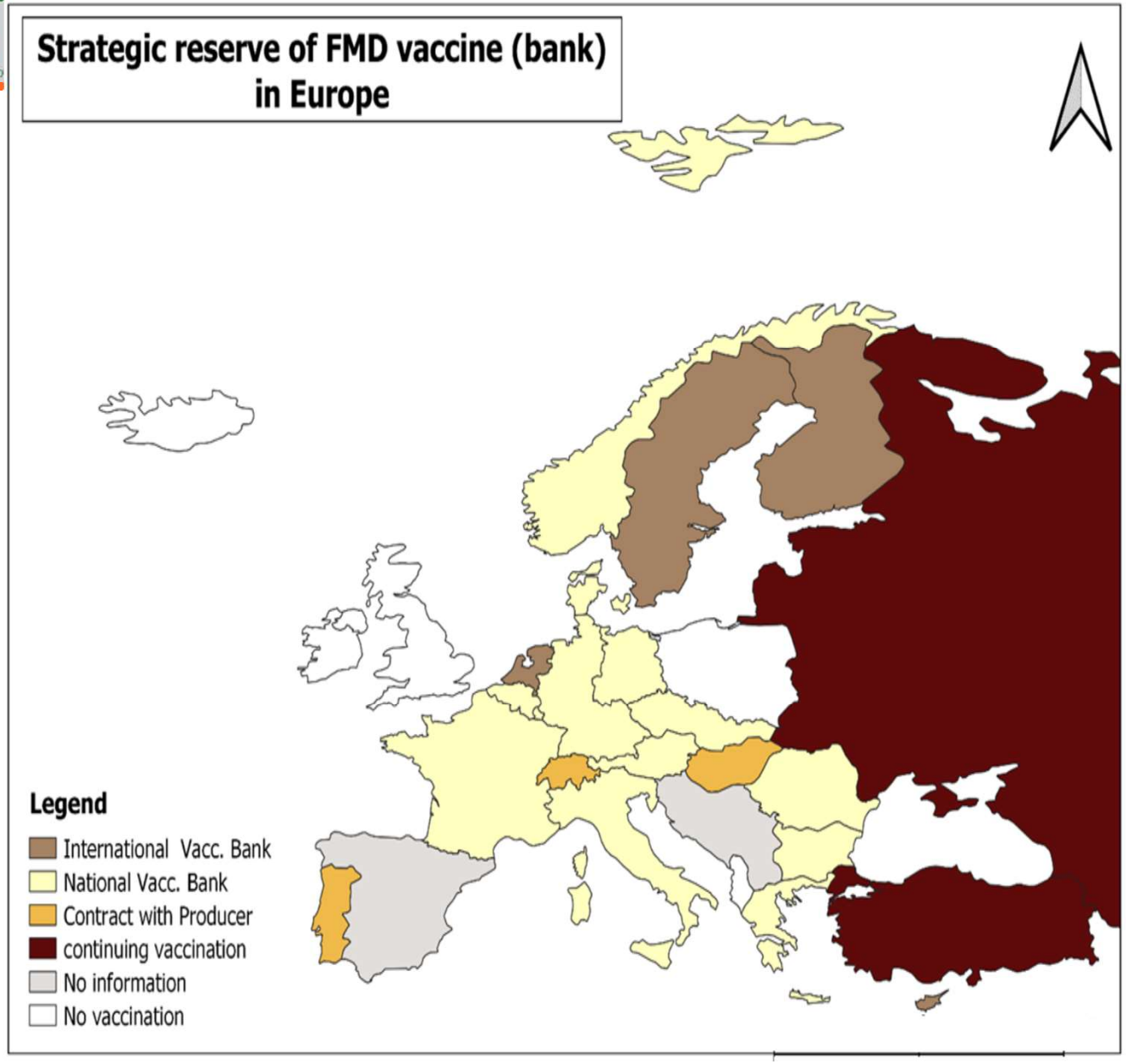
- **Tightened laboratory containment (escapes): Minimum Standards**
- **Additional Import restrictions**

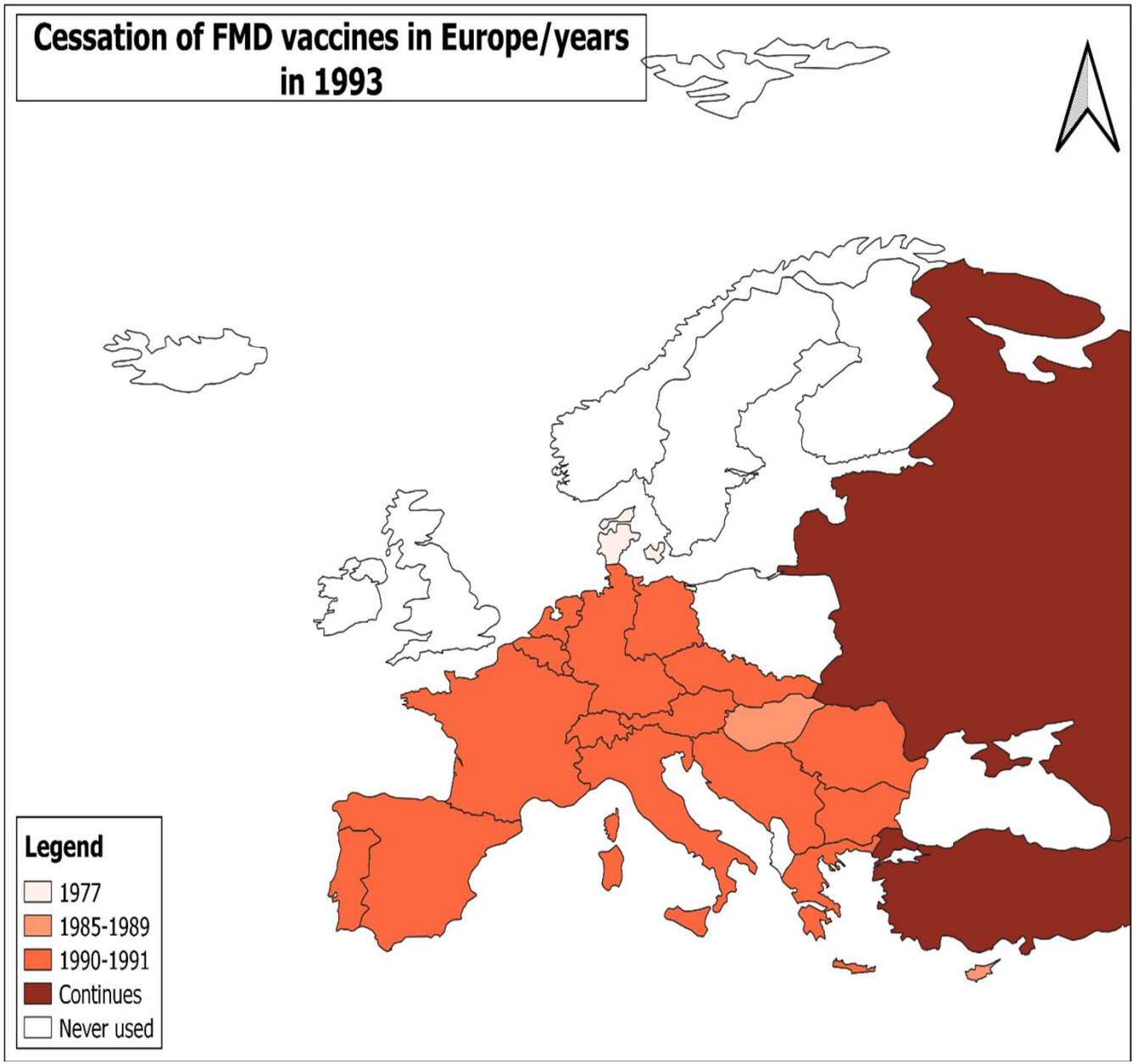
<u>Considered at the time but not taken forward:</u>

Biosecurity standards for large pig farms (risks associated with airborne spread creating massive epidemics)

National reserves: Situation in 1993

UK was a member of the IVB




Cessation of FMD vaccines in Europe/years in 1993
Legend
1977
1985-1989
1990-1991
Continues
Never used

What happened after 1991? (non-vaccination era)

21 primary outbreaks/322 secondaries in 10 years (includes Russia and European part of Turkey)

Every year except for 3 year period (1997-99)

1997-1999: no primary outbreaks

Serotypes:

- **O (9 countries)**
- **A (4 countries)(1 Lab Escape –Russia, 3 in Balkans (imported meat on bone from India)**
- **Asia-1 (1 country – Greece)**

Origins of FMD primary outbreaks after vaccination ceased (1990)

Source	Primaries	Secondaries (total)	
Unknown	3	< 60	Bulgaria 1990, 1996; Greece 2000
Live animal imports (forged certificates/illegal)	4	<60	Italy 1993, Turkish Thrace & Greece 1995, 96;
Wildlife associated (?)	1	10	Bulgaria, 2011
Laboratory escapes	1		UK, 2007
Illegal Immigrants	1	39	Bulgaria 1996
Illegal introduction of animal products and swill feeding	1	2059	UK/Ireland/France/Netherlands 2001
Import of meat on bone from endemic country	1	130	Albania/FYROM.FR Yugoslavia 1996

Lessons learnt in the first decade of non-vaccination (1991-2001)

Primary outbreaks in 40 countries (2.1/year) were DOUBLE predicted (1.3 /year) for 12 (EU) countries

Secondaries

- **15.3 per primary (Excluding 2001): is less than “”central”” prediction (20 per primary)**
- **UK/France/Ireland/NL: 2060 cases for single introduction**
  - Worst case prediction in 1990 was for 1,963 secondaries over 10 year period

Conclusion

- *EC prediction was therefore quite accurate*
- *Worst case scenarios do also occur*
- *Introduction through meat/swill feeding was associated with much larger outbreaks and involving multiple countries (1996, 2001)*

What happened in the second decade ? 2000-2019

Excluding Turkey (Anatolia) and Russian Federation

Six incursions.

1. **UK/Ireland/France/NL : 2001**.
   - Massive epidemic in UK that spread to 3 EU countries
   - More than 2000 cases in UK.
   - Stamping-out (3 countries) , emergency vaccination in NL
2. **UK, 2007**. Laboratory escape from the Pirbright site
   - (Vaccine producer and UK –Research facility on same site).
   - Stamping out applied.
   - Limited geographical area affected but massive cost in exports lost
3. **European Turkey (Thrace)** : 2006, 2007, 2008 (separate introductions). Controlled by re-vaccination.
4. **Bulgaria**, **2011**.
   - Four-month outbreak in forested ecosystem with wildlife (wildboar/deer) implicated in local spread. Took 18 months to prove freedom as difficulty to samle sufficient wildlife

Third decade: 2011- 19 : no FMD incursions into EU

The longest in European history – why?

Control policies used in response to incursions after 1990

	# primaries controlled	Country/year
Stamping-out	11	Bulgaria (93,96, 2011), Italy (93), Greece (94, 96), FR Yugoslavia (96), UK (2001, 2007), Ireland (2001), France (2001)
Stamping-out+vaccination	10 (but only 5 of these were in normally non-vaccinated populations)	Bulgaria (91), Russia (93), Turkish Thrace (95, 96, 2006, 2007, 2008), Russia (95), Albania (95), FYROM (95).
Stamping –out plus vaccination (vaccinates later slaughtered)	1	Netherlands (2001)

CONCLUSIONS

Conclusions

1. **Europe managed the move to non-vaccination with success - over first 10 years fewer incursions than predicted.**
2. **Withdrawing vaccination did NOT result in cases from residual “”carriers”” (NSP positives) in the populations.**
3. **The actual role played by vaccination of the cattle population is not clear since other protective measures (over imports, and border controls) also were greatly increased after mid-60’s.**
4. **Maintaining strong central co-ordination (EU) with external actions (EuFMD) in the neighbourhood may be a reason why FMD outbreaks have not occurred in past 8 years in 37 of 39 EuFMD MS.**
5. **Maintaining freedom needs constant action at 3 levels; Europe, neighbouring regions and global**

Talk 2

Current risks of FMD incursions to Europe
Mitigation measures in EU
Actions taken to mitigate the global risk

Origins of outbreaks in Europe after 1990 (Leforban 2002, updated)

1. **Illegal introduction of live animals from neighbours (Italy 93, Greece 94)**
2. **Legal/illegal importation of meat and animal products (Russia 95, Balkans 96, UK 2001)**
3. **Escape from laboratories (Russia 93, UK 2007)**
4. **Indirect contacts : immigrants (Greece 96)**
5. **Unknown/Wildlife as indicator: Bulgaria 2011**
6. **Unknown : Bulgaria 93, 96, Greece 2000**

Origins of FMD primary outbreaks after vaccination ceased (1990)

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Lessons learnt relating to risks of incursion

Under-estimated:

- FMD risks from far distant origins (UK 2001, Albania/FYROM 1996)
- FMD entry/spread through wildlife (Bulgaria, 2011)

Swine (domestic and wild) are critically important as entry point for infection

Large epidemics associated with:

- lack of early detection (swine, sheep)
- Infection passing through Live animal markets (especially for sheep)
- Pasture fed ruminant production systems (low biosecurity)

Response to these lessons

1. **Swill-feeding**: Complete ban (2001)
2. **Revised EU Directive**, 2003: includes conditions for vaccination-to-live policy in emergencies in EU
3. **Preparedness**: Greater scrutiny , simulation exercises (2 exercises every 5 years)
4. **Lab Containment**: Revised Standard (EuFMD) for Laboratory Containment of infectious FMD virus
    1. Tier D standard: vaccine producers, diagnostic/research laboratories
    2. Tier C standard for laboratories to handle FMD diagnostics in emergency setting
5. **Wildlife**: risk assessments, inclusion in emergency plans
6. **Awareness and Recognition of FMD**: EuFMD programme of training (2010 onwards, 39 countries)
7. **Risk-based measures at entry points**: e.g supporting costs of disinfection of returning vehicles from infected countries
8. **EuFMD programme: decisions to continue funding actions to reduce risks**

Lessons from FMD global spread between regions in past 5 years

1. **FMD virus can arrive ANYWHERE**
   - Mauritius/Indian Ocean epidemic
   - Especially where pigs are kept
   - risk associated with meat /meat products
2. **FMD virus travels with people**
   - Inter-regional movement of vets and farm workers
   - South Asian workers on mid-east farms
   - Israel/Vietnam : type O Panasia spread
3. **Civil unrest destabilises control of FMD:** *Syria, Libya,….*
4. **Long distance movement overland and sea**
   - New trade routes across the sahara
   - Live animals on ships (South Asia to mid-East and South-East Asia)
5. **India/South Asia, South-East Asia/China** : remain major sources for inter-regional spread

FMD : people present a big risk for inter-continental spread

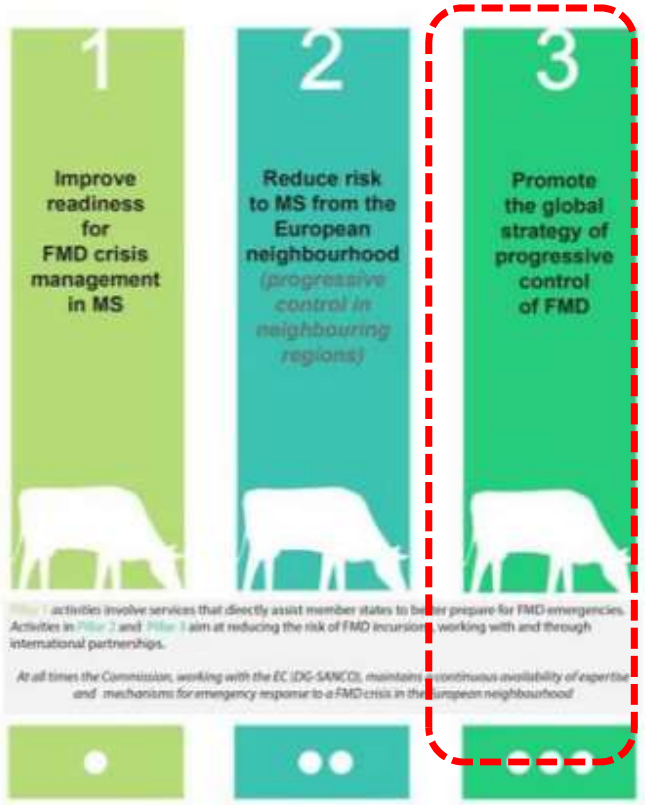
Real example (2018):– technicians with no biosecurity equipment , walking onto heavily infected farm, planning to visit other farms then returning in 2 days to NLi

dairy technicians from Netherlands, BIG-Company; visiting Kenya

Our training team explain why biosecurity equipment is obligatory!!!

Our response to Global threat? – support the global FMD strategy

Pillar 3 actions 2013- present



Components supported

3.1 – Global **Monitoring of progress**

3.2 – **Support to progressive control programmes (PCP)**

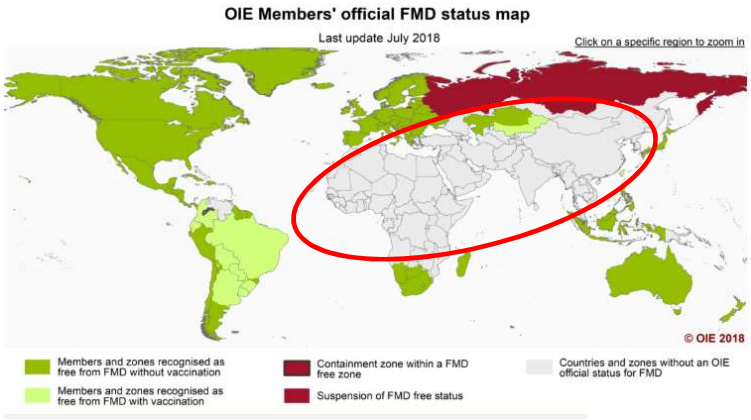
3.3 – **Global** Network (OIE/FAO) **Laboratory support**

3.4 – **Global access** to **PCP-FMD training** resources

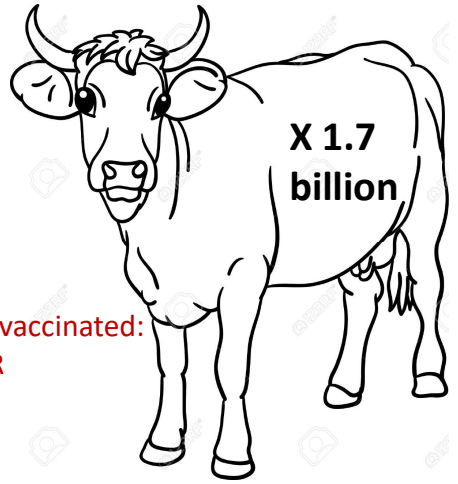
How an understanding of global risks assists European preparedness

FMD CONTEXT (2019)
Free countries *(70), countries with free zones (19)*

Non –free (*Endemic): Africa, Asia, Mid-East*



Global large ruminants 1,782 MILLION:
~ One billion* of these are in FMD endemic countries
[Hundreds of millions of owners]



*Not regularly vaccinated:
~700 million LR

Global burden of FMD

- Estimated (2012) that around 2% of the world's cattle population has FMD in a year (90% uncertainty range: 2–5%)
- Global estimate of 32 million livestock units (LSU) are affected by FMD in a year (but maybe >250 million*)
- **Frequent and high risk disease for cattle producers** in endemic regions
- **based on serological surveys compared to reported cases*

OIE/FAO Foot-and-Mouth Disease Reference Laboratories Network

THE Pirbright INSTITUTE

Global Status Report for FMD:

Tracking the emergence and spread of new viral lineages

Donald King

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BBS bioscience for

Department for Environment Food & Rural Affairs

eufmd

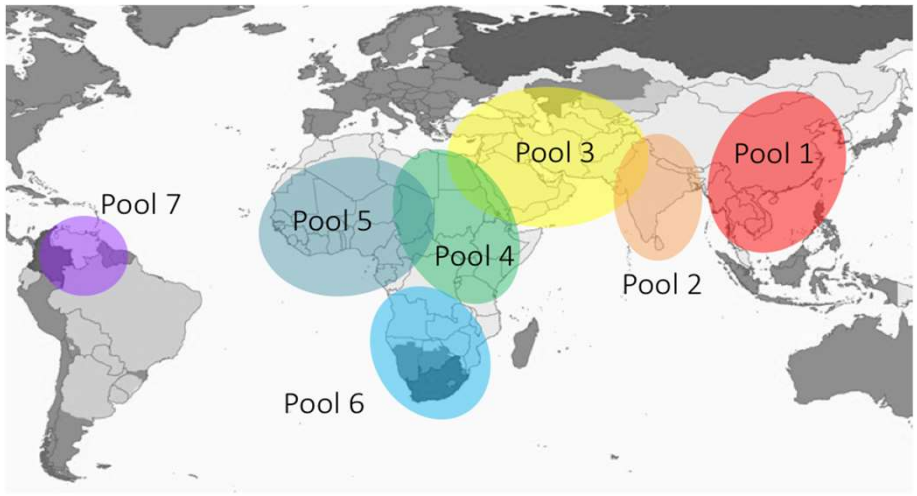
OIE FMD Reference Laboratory

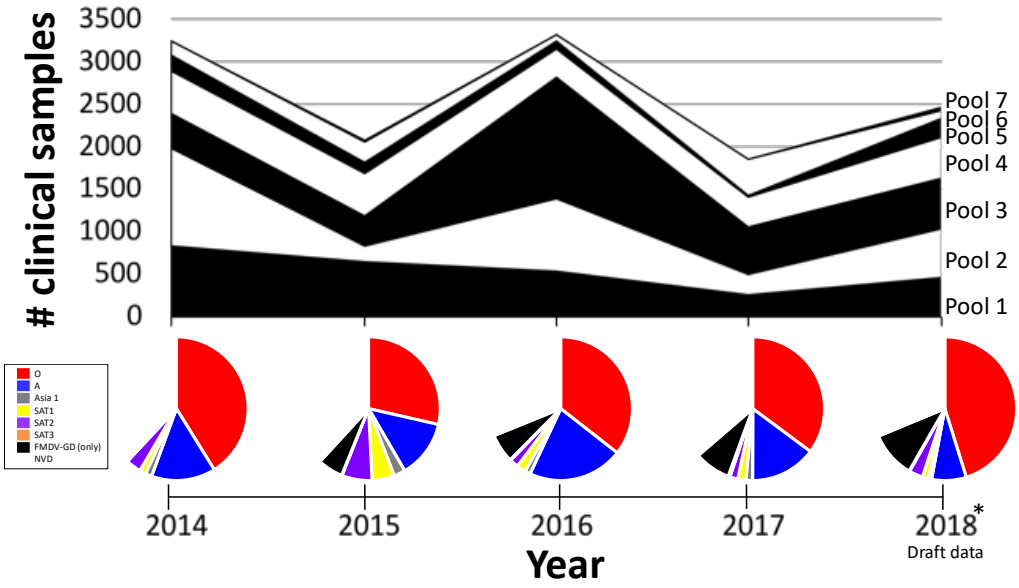
FAO FIAT PANIS

.ac.uk

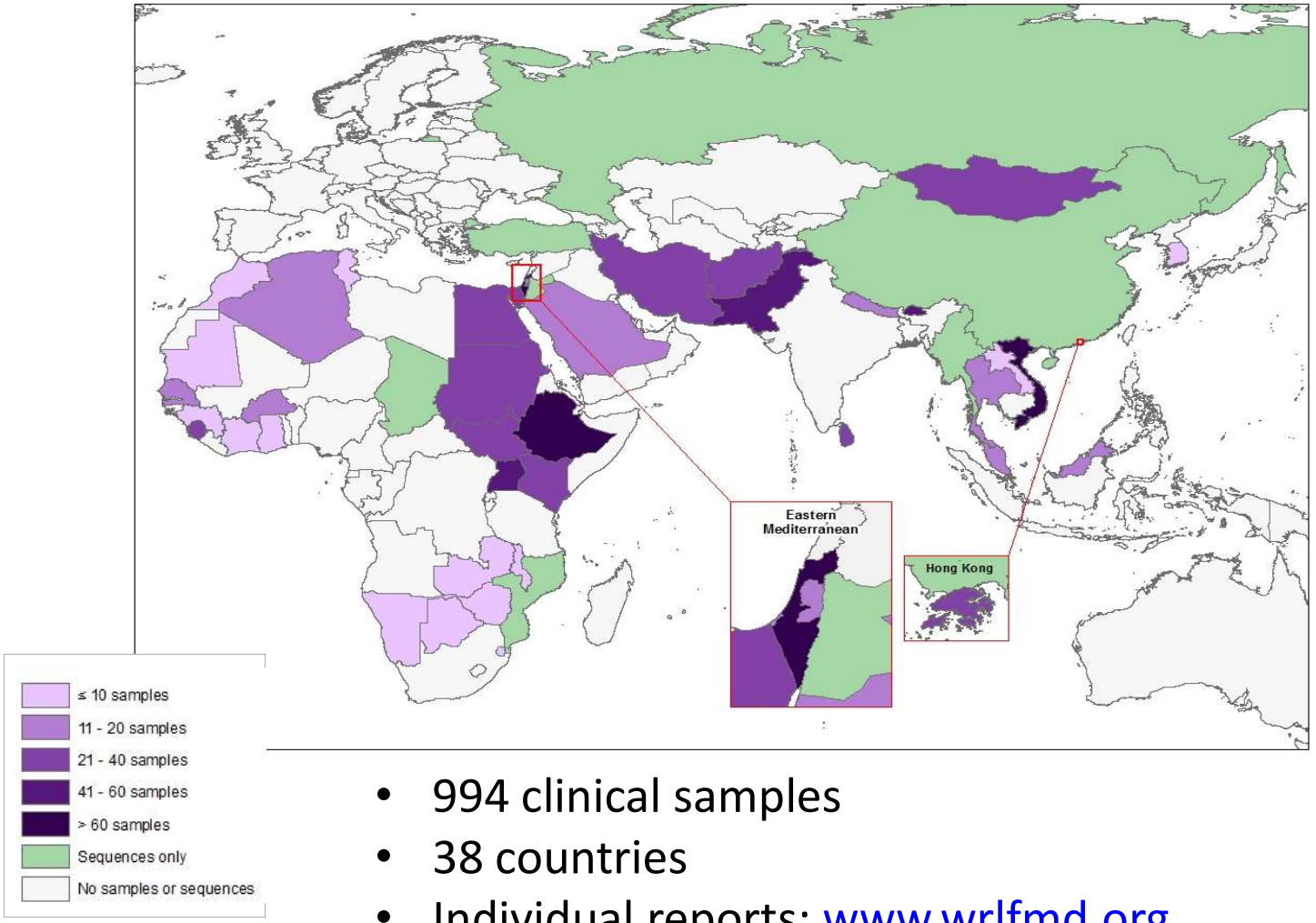
Samples tested by the OIE/FAO FMD Laboratory Network

- 2000-3500 samples tested annually
- Data used to define relative importance of different FMD virus lineages in each Pool
- Surveillance gaps in Pool 5 (W. Africa) and Pool 6 (S. Africa)
- Reports available: http://www.foot-and-mouth.org/





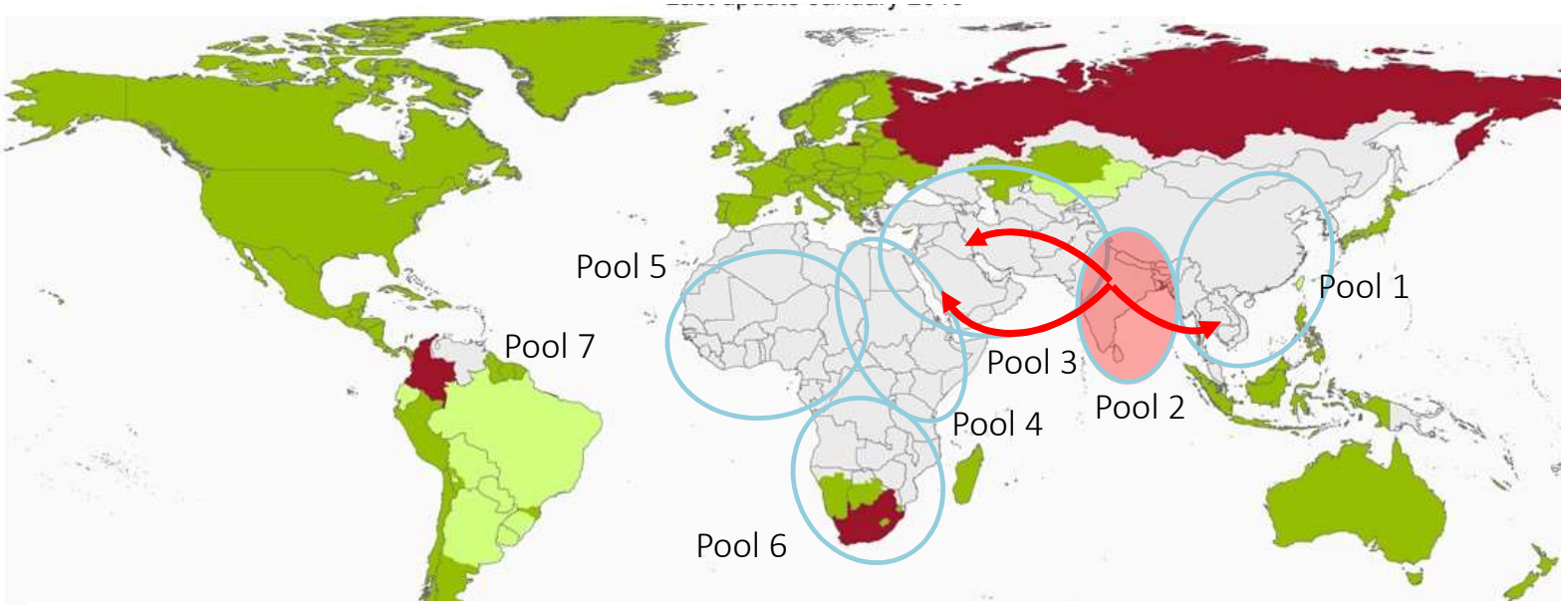
Submissions to WRLFMD (Q4 2017 - Q1 2019)



- 994 clinical samples
- 38 countries
- Individual reports: www.wrlfmd.org

FMD – Global status

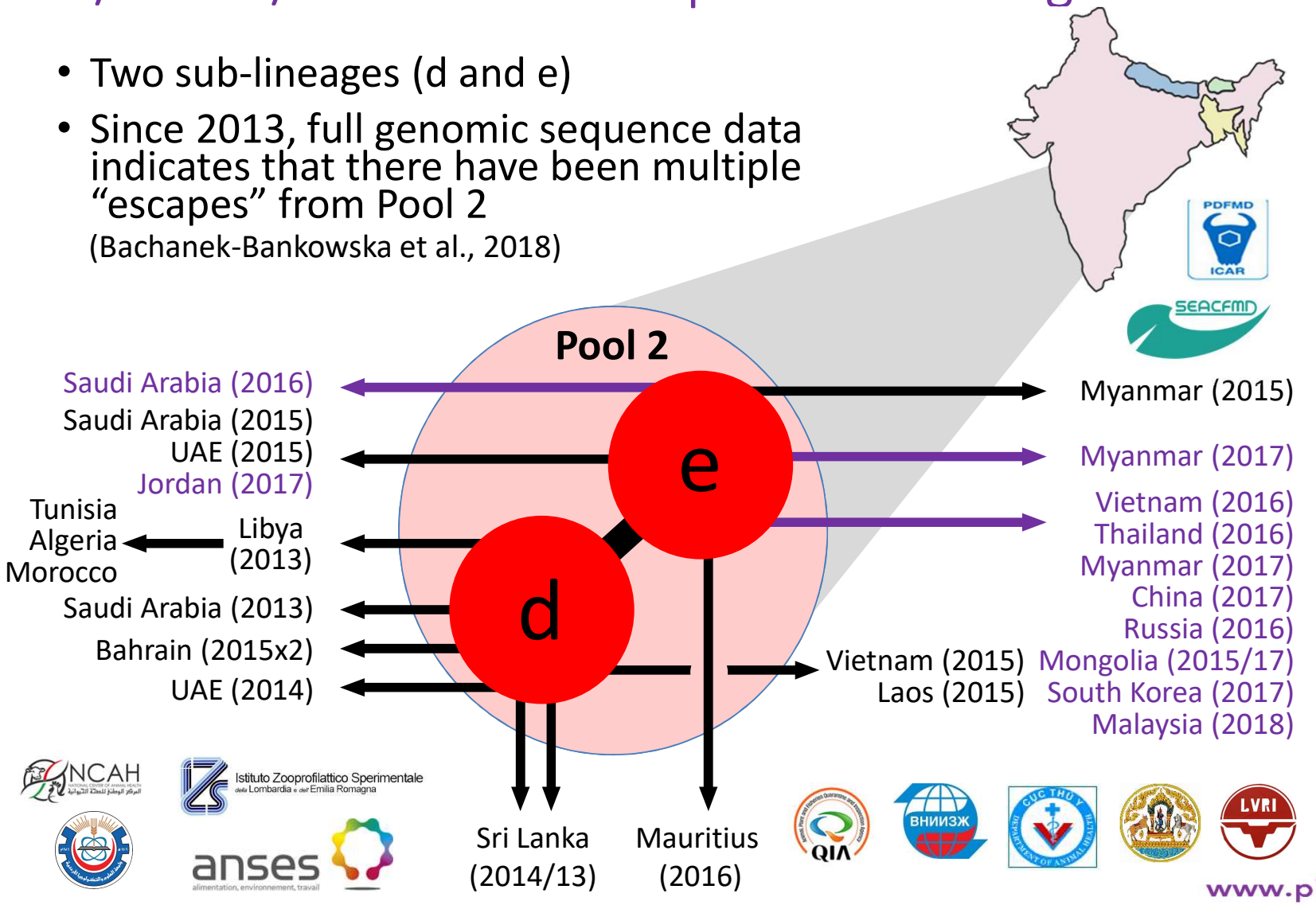
Recent “trans-pool” spread from **Pool 2**



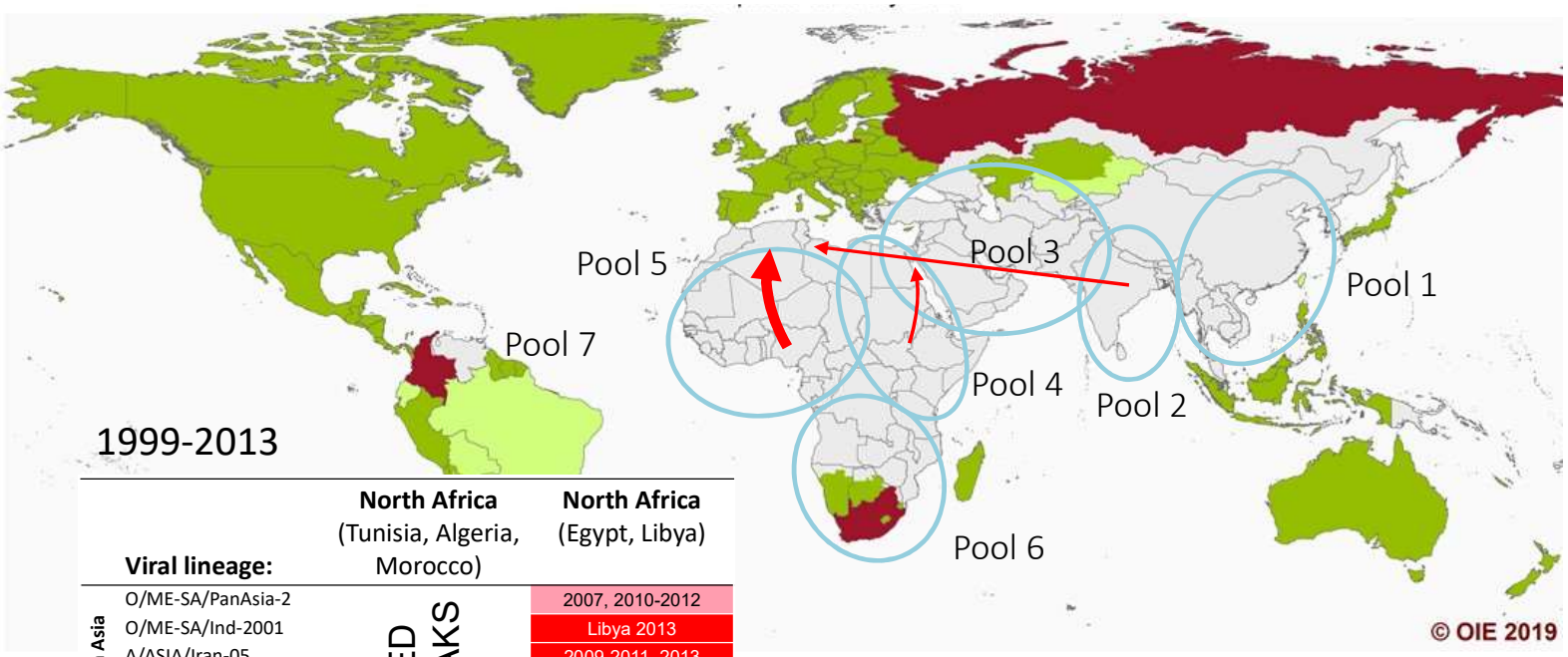
- Spread of FMD viruses endemic from Pool 2 (India, Bangladesh, Nepal, Bhutan)
- 2015: **A/ASIA/G-VII** into West Eurasia (Iran, Turkey, Saudi Arabia, Armenia and Israel)
- 2017: **serotype Asia 1** into Myanmar

O/ME-SA/Ind-2001: a new pandemic lineage?

- Two sub-lineages (d and e)
- Since 2013, full genomic sequence data indicates that there have been multiple "escapes" from Pool 2
  (Bachanek-Bankowska et al., 2018)



New FMD outbreaks in North Africa (Maghreb), new threats to Europe?



	Viral lineage:	North Africa (Tunisia, Algeria, Morocco)	North Africa (Egypt, Libya)
From Asia	O/ME-SA/PanAsia-2	NO REPORTED FMD OUTBREAKS	2007, 2010-2012
	O/ME-SA/Ind-2001		Libya 2013
	A/ASIA/Iran-05		2009-2011, 2013
	A/ASIA/G-VII		
	Asia-1		
From Africa	O/EA-3		2012-2013
	O/ME-SA/Sharqia-72		2006, 2008, 2011
	A/AFRICA/G-IV		2012-2013
	A/AFRICA/G-VII		2006, 2009, 2012
	SAT 2 topotype VII		2012-2013

- 2013-2015: O/ME-SA/Ind-2001
- 2017: A/AFRICA/G-IV
- 2018/19: O/EA-3

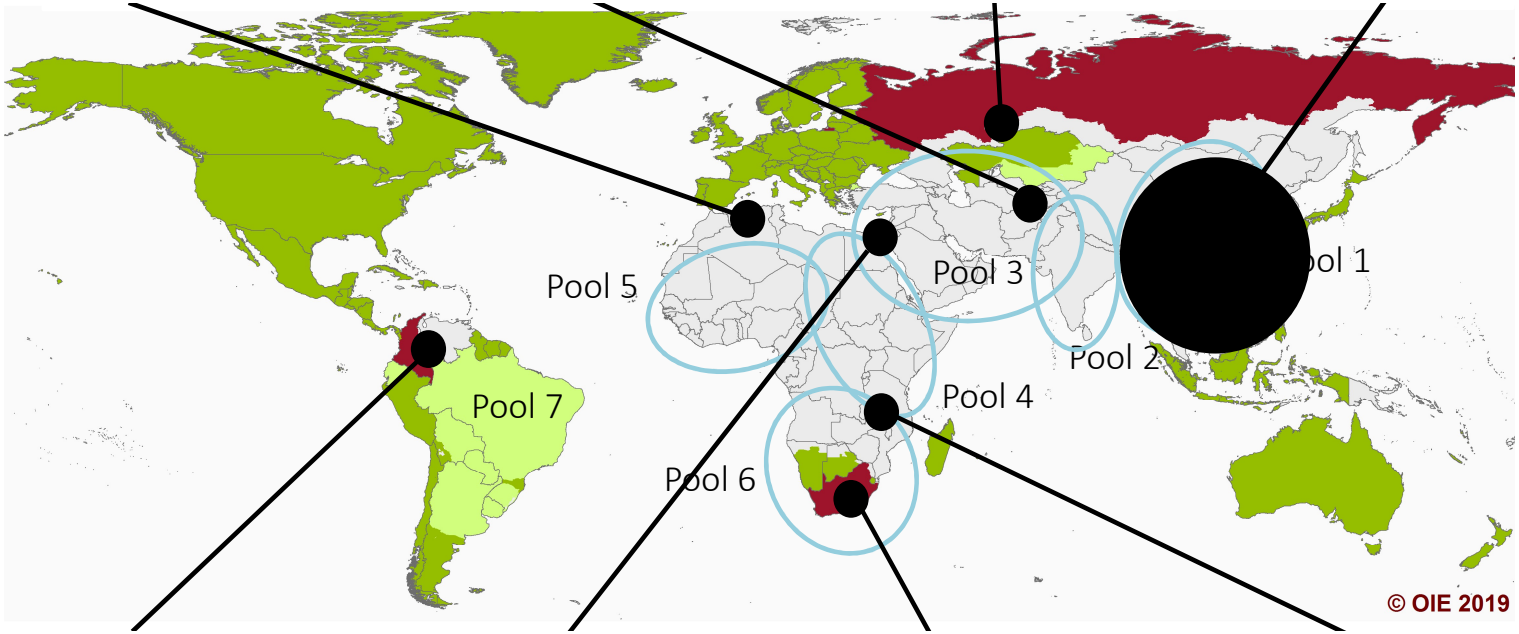
Summary and headline events (2017-2019)

North Africa
A/AFRICA in 2017
O/EA-3 in 2018

Pakistan
Serotype O
Poor vaccine matching

Russia (2017)
Bashkortostan
Serotype O Unnamed

Southeast and East Asia
O/ME-SA/Ind-2001



Colombia
Serotype O
2018: 8 new outbreaks
Links to Venezuela

East Mediterranean
O/EA-3
A/ASIA/G-VII
Serotype SAT 2

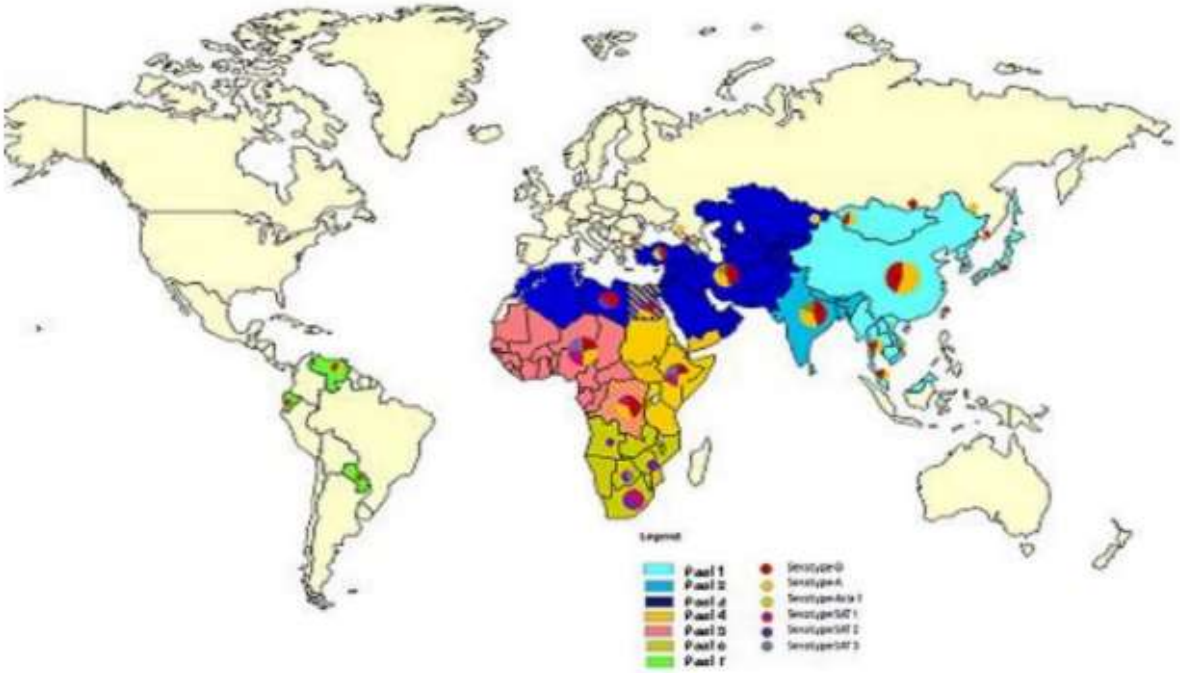
South Africa (Limpopo)
Serotype SAT 2
Initially within the protection zone
Jan 2019: spill-over into surv. zone leading to suspended status

Central Zambia
O/EA-2

PRAGMATIST: PRioritisation of AntiGen MAnagemenT with International Surveillance Tool

- EuFMD and WRL collaboration
- Assist risk managers make decisions about the FMD vaccines that they purchase/maintain, based on *current risks* to countries covered by the bank

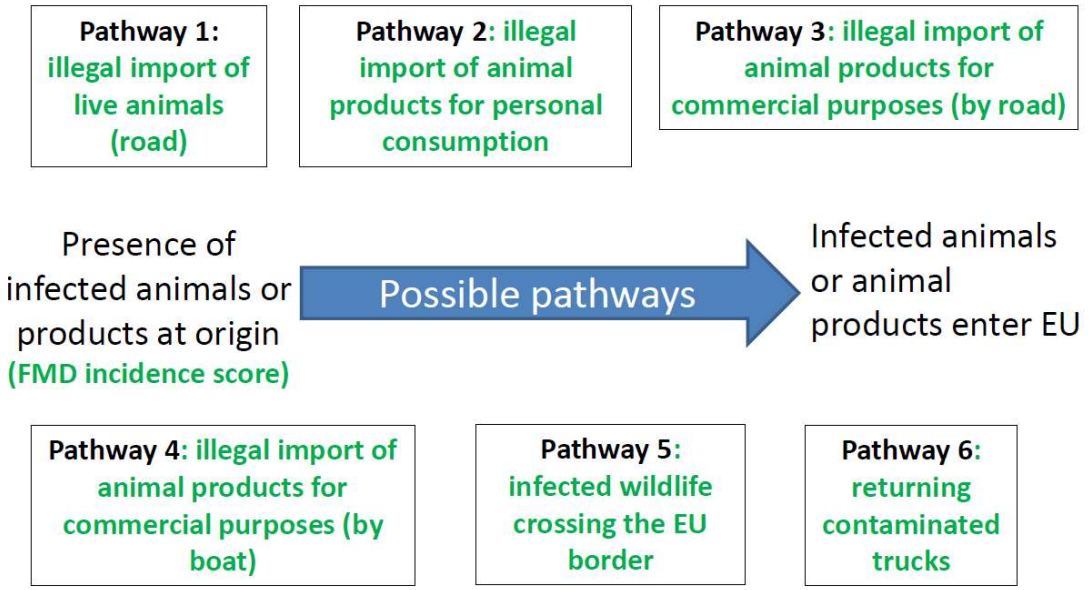
Foot-and-mouth disease (FMD) virus pools: world distribution by serotype in 2011-2015



Risk assessment in action: the PRAGMATIST tool for vaccine bank decisions

PRAGMATIST combines THREE information components :

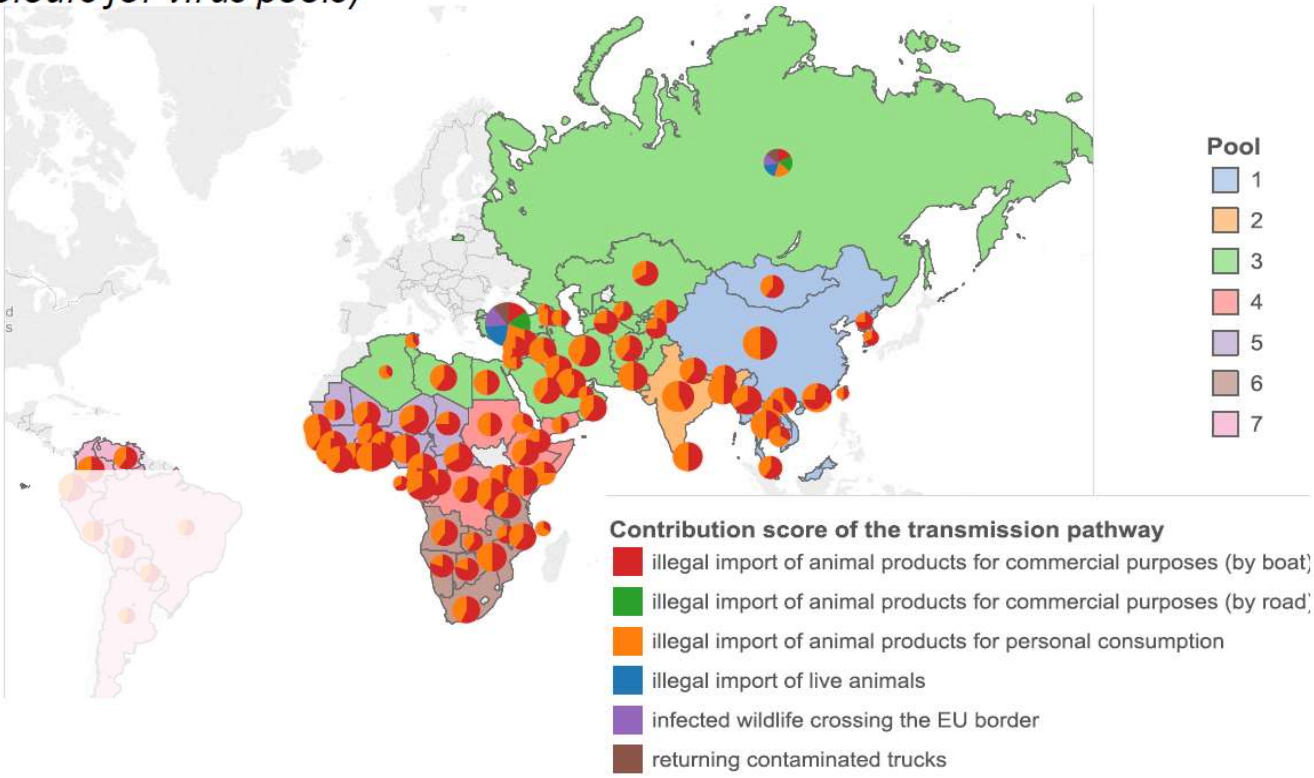
1. Global database on FMD virus circulation
2. Risk pathways exercise
3. Vaccine matching data



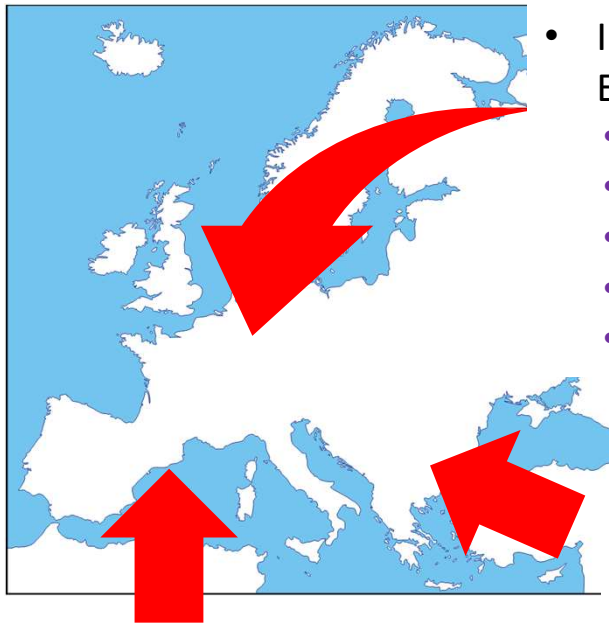
Approaches to estimating risk to Europe: EuFMD, 2015

Estimated relative importance of transmission pathways

(preliminary results: pie size reflects overall importance of country, map colours for virus pools)



Estimating risks
Expert elicitation exercise



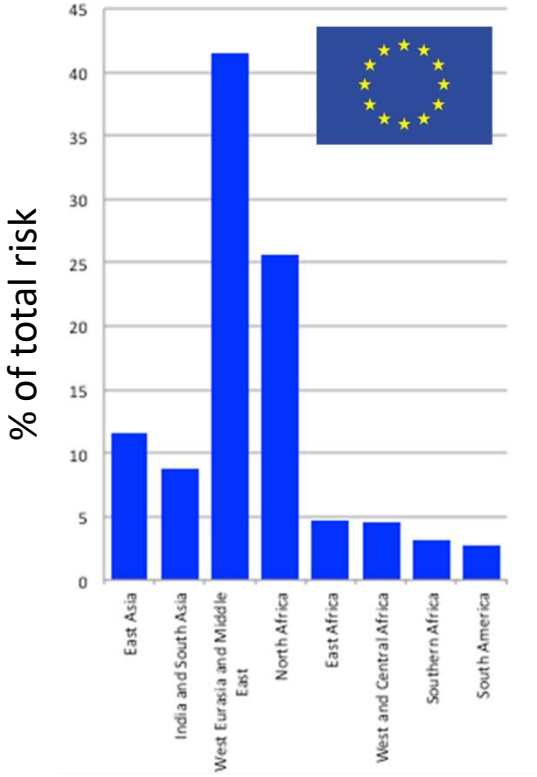
- Outbreaks in UK in 2001
- Increased FMD circulation in East Asia
  - O/ME-SA/Ind-2001
  - O/SEA/Mya-98
  - O/ME-SA/PanAsia
  - O/CATHAY
  - A/ASIA/Sea-97

- New FMD lineages in North Africa (previously FMD-free countries)
  - O/ME-SA/Ind-2001
  - A/AFRICA/G-IV
  - O/EA-3

2010-2011

- Outbreaks in Bulgaria
- FMD-free buffer zone in Turkish Thrace
  - O/ME-SA/PanAsia-2
  - A/ASIA/Iran-05
  - A/ASIA/G-VII
  - Asia 1/Sindh-08

NRL Workshop for FMD – Ascot, UK - May 2016



PRAGMATIST : calculates risk of viral lineages entry

Calculating the Antigen risk score

$$antigen\ score = \sum_{source\ area\ 1}^{source\ area\ n} (prevalence\ score * source\ score)$$

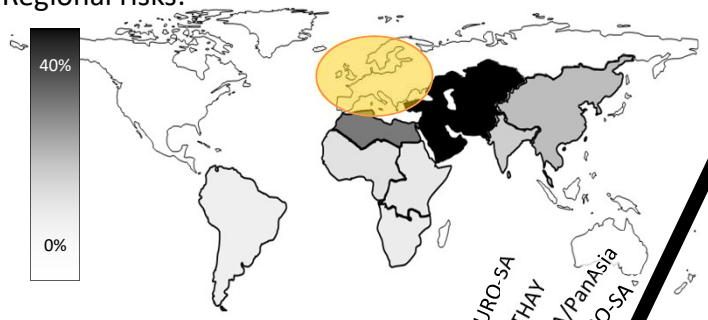
Circulating Strain	W. Eurasia		E. Asia		N. Africa		India & S. Asia		East Africa		West/ Central Africa		Southern Africa		S. America		Antigen score
source area score→		41		11		25		9		4		4		3		3	
O/ME-SA/PanAsia-2	30	1230		0		0	5	45		0		0				0	1275
O/ME-SA/PanAsia	10	410	10	110		0		0		0		0		0		0	520
O/SEA/Mya-98		0	32	352		0		0		0		0		0		0	352
O/ME-SA/Ind2001	5	205	3	33	24	600	90	810		0		0		0		0	1648
O/EA-3		0		0	54	1350		0	28	112	20	80		84		0	1434
O/EURO-SA		0		0		0		0		0		0		0	33	99.9	99.9
O/CATHAY		0	8	88		0		0		0		0		0		0	88
A/ASIA/Sea-97		0	36	396		0		0		0		0		0		0	396
A/ASIA/Iran-05	30	1230		0	15	375		0		0		0		0		0	1605
A/ASIA/G-VII	10	410		0			5	45		0		0		0			455
A/AFRICA		0		0	2	50		0	28	112	27	108		84		0	134
A/EURO-SA		0		0		0		0		0		0		0	33	99.9	99.9
Asia-1		0	11	121		0		0		0		0		0		0	121
Asia-1 Sindh-08	13	533		0				0		0		0		0			533
SAT1		0		0		0		0	8	32	26	104	40	24		0	24
SAT 2	2	82		0	5	125		0	28	112	25	100	40	84		0	291
SAT3		0		0		0		0	8	32	2	8	20	24		0	24
C		0		0		0		0		0		0		0	33	99.9	99.9
Cumulative Score	100		100		100		100		100		100		100		99.9	300	
Score adjusted for Route importance		4100		1100		2500		900		400		400		300		599	

Vaccine Antigen Prioritisation: **Europe**

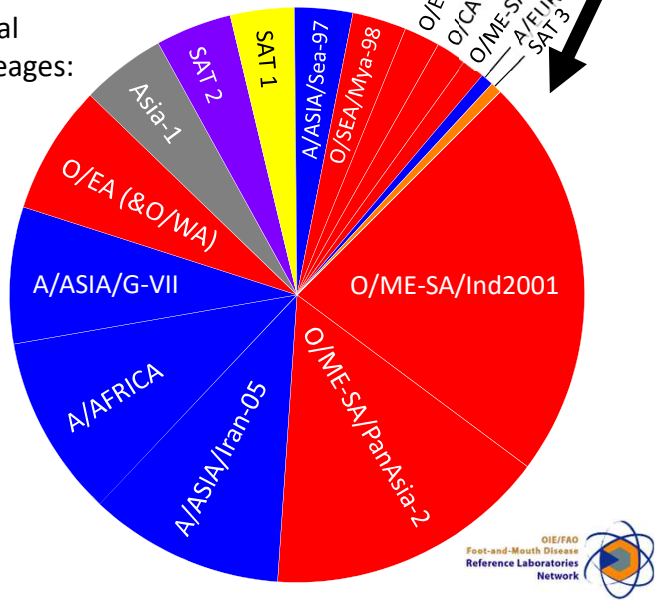
January 2019

DEFINING RISK

Regional risks:



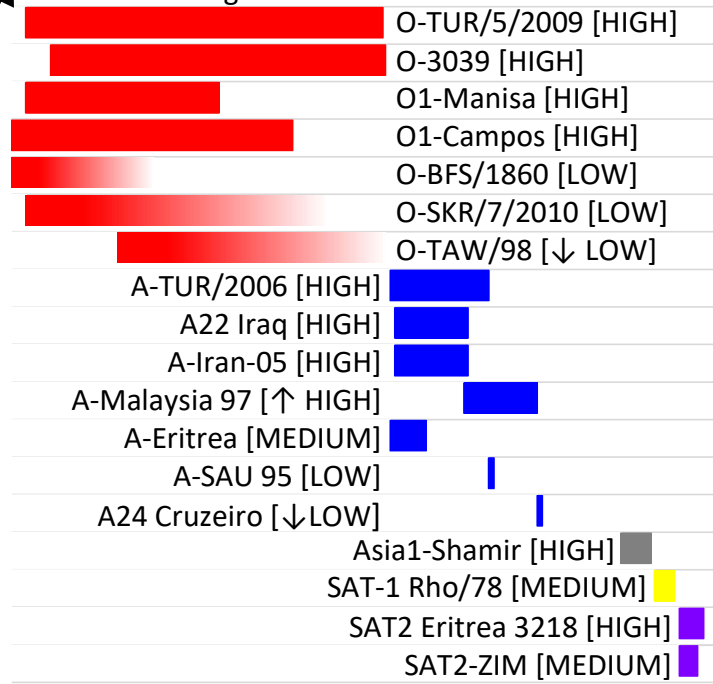
Viral lineages:



SELECTING VACCINES

Risk Profile:

Vaccine Coverage:



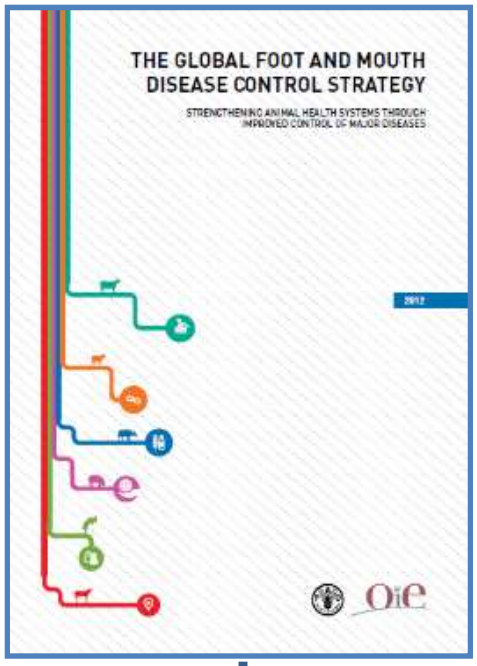
Insufficient Data:

C3 Oberbayern [LOW];
SAT2 SAU [HIGH];
SAT3 ZIM 2/83 [LOW]

eufmd

NB: Analyses uses best available data, however there are gaps in surveillance and vaccine coverage data

OIE/FAO Global FMD Control Strategy : since 2012



Three components

1. Disease control to freedom status

2. Veterinary Services reinforcement

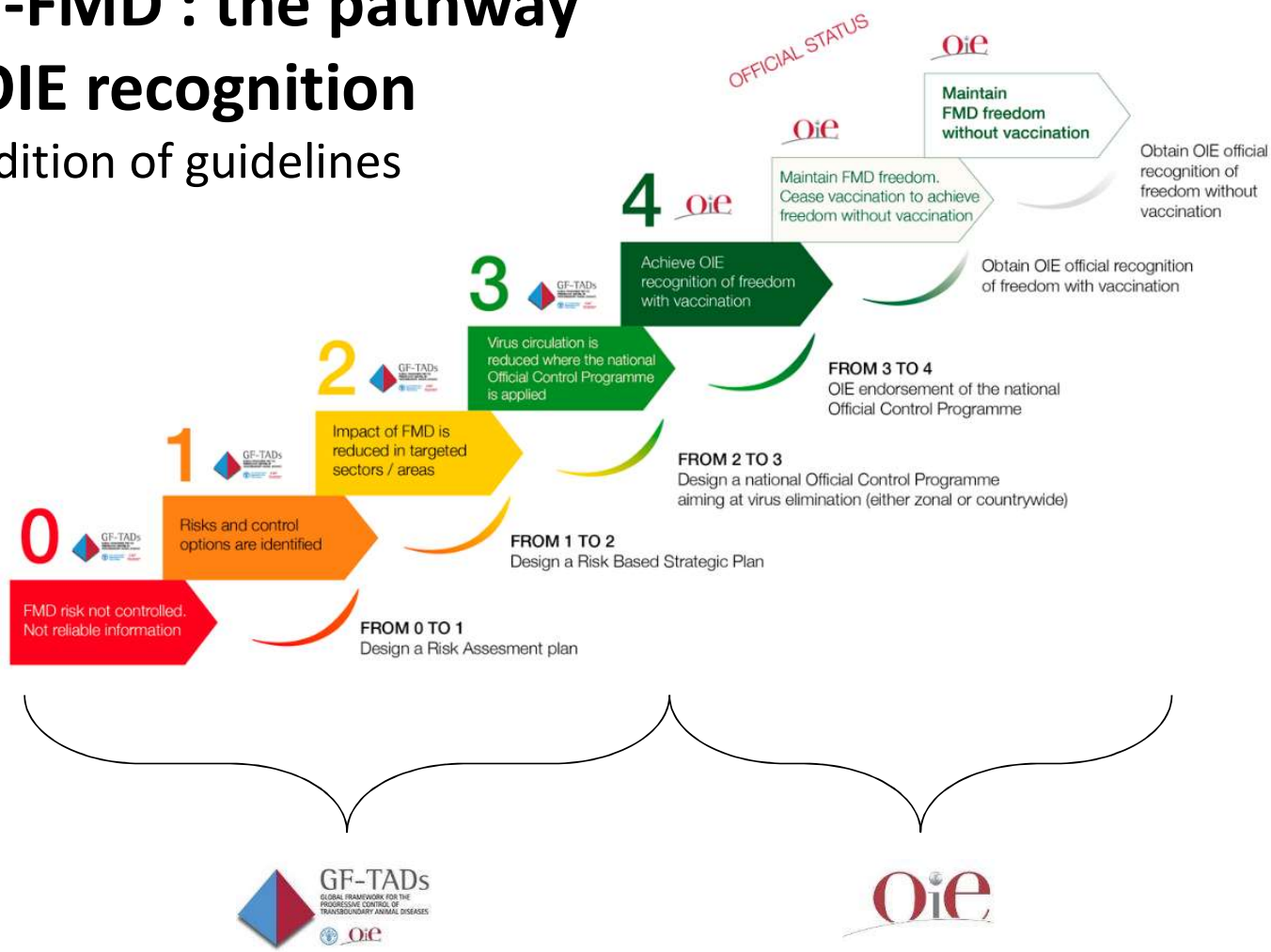
PCP

3. Reducing the impact of other major infectious diseases

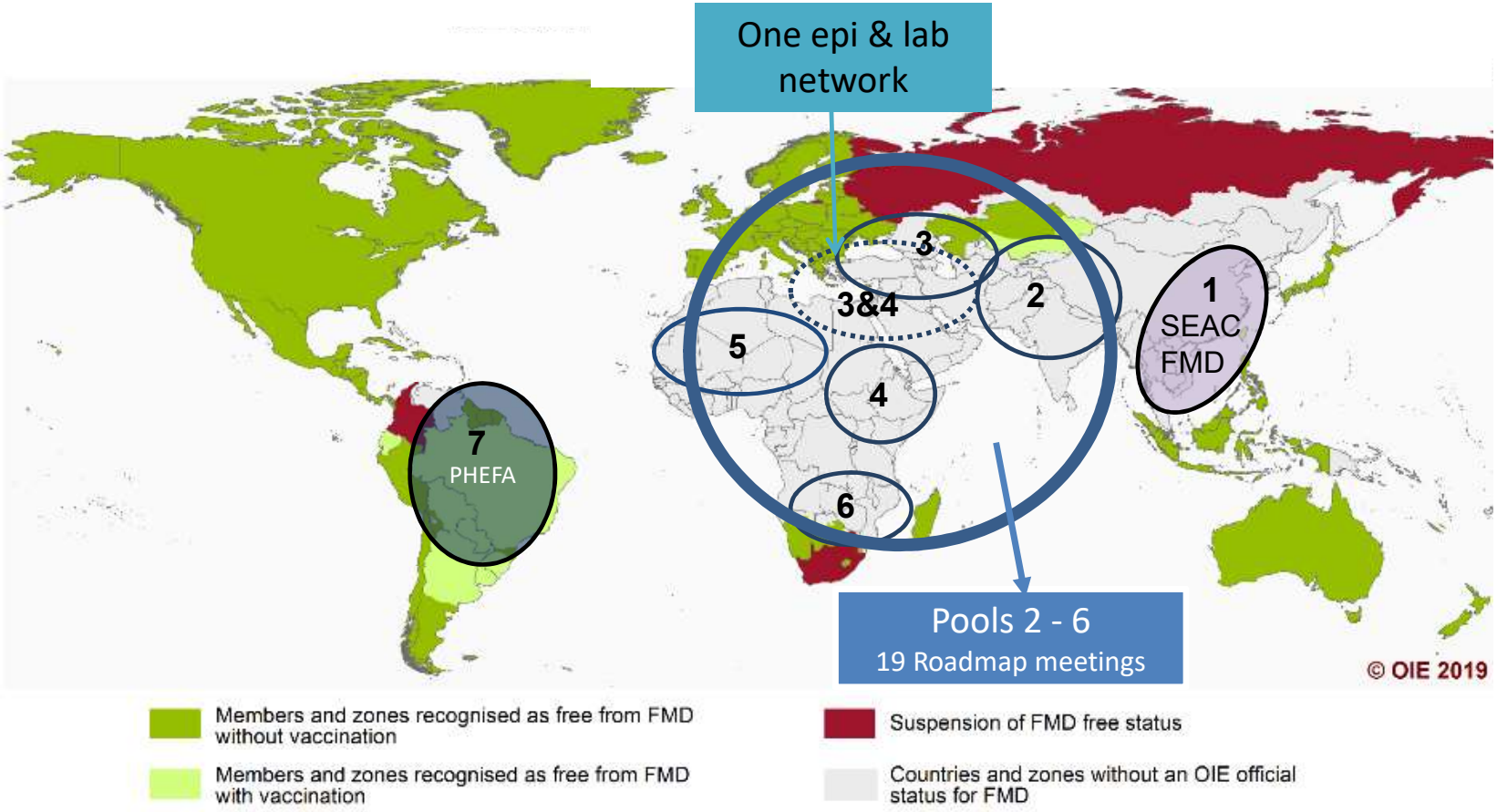
PVS Pathway

PCP-FMD : the pathway to OIE recognition

2nd edition of guidelines



Regional Co-ordinated actions (Roadmaps) and Network Meetings (2012 – 2019)



12 countries

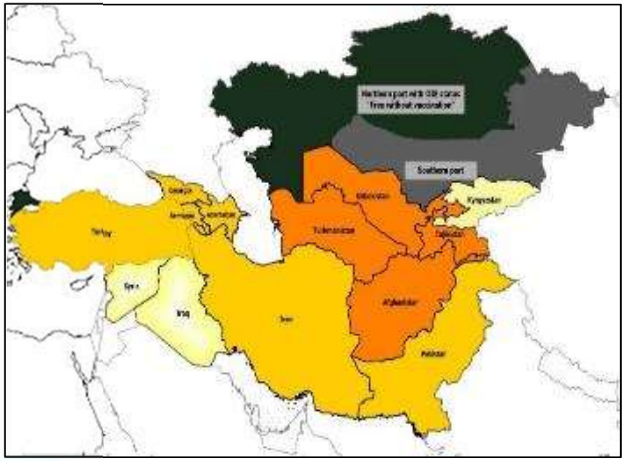
Example : West Eurasia

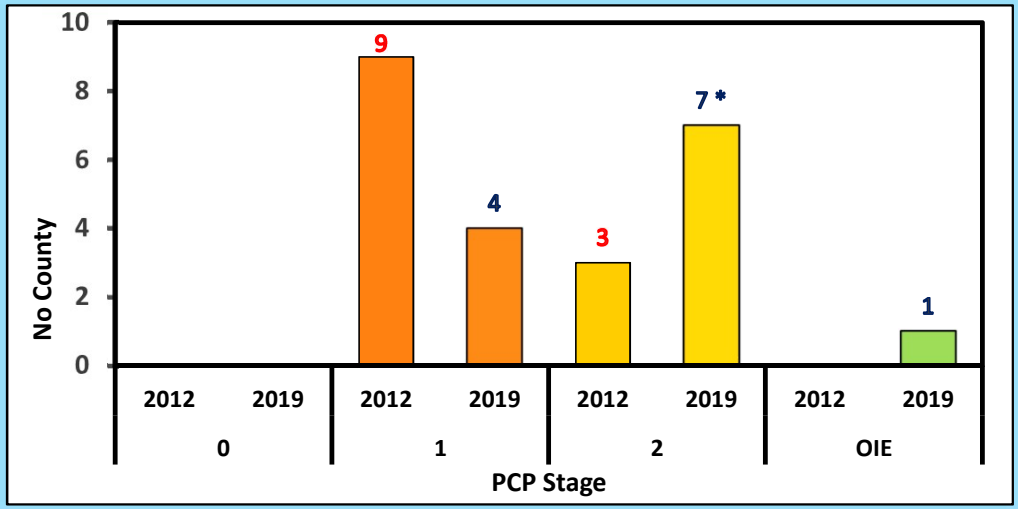
8th Roadmap in 2019

Countries absent from the meeting and not assessed in 2019

assessed foreseen

Countries	Validated Stages												Provisional Stages (not validated)					
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Afghanistan (absent)	0	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	3	4
Armenia	2	2	2	2	2	2	2*	2*	2	2	2	2	2	2	3	3	3	4
Azerbaijan																		
Abseron peninsula	2	2	2	2	2	2	2*	2*	2	2	2	2	3	3	3	3	4	4
Remaining	2	2	2	2	2	2	2*	2*	2	2	2	2	2	2	3	3	4	4
Georgia	2	1	1	1	1	1	2*	2	2	2	2	2	3	4	FwV	FwV	FnV	...
Iran	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
Kazakhstan																		
9 northern regions	1	1	1	1	1	1	2*	FnV	FnV	FnV	FnV	FnV	FnV	FnV	FnV	FnV	FnV	FnV
5 southern regions	1	1	1	1	1	1	2*	**	**	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV
Kyrgyzstan	1	0	0	0	1	1	2*	2*	2*	2*	2*	2	3	3	3	4	4	4
Pakistan	0	1	1	1	1	1	2*	2	2	2	2	2	2	3	3	3	3	3
Tajikistan	0	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Turkey																		
Thrace			FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FnV	FnV	FnV
Anatolia									2	2	2	2	3	4	4	FwV	FwV	FwV
Turkmenistan	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	3	3	4
Uzbekistan	0	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	3	4
Assessed by RAG Middle-East																		
Iraq		1	1	1	1	1	2*	2*	2*	2*	2*	2*	2	2	3	3	3	3
Syria		1	1	1	1	1	2*	2*	2*	2*	2*	2*	2	3	3	3	3	3





* Pending control plan

OIE/FAO message: April 2019

Global FMD Control Strategy

- Global FMD control is **feasible** and can be a driver to improve animal health systems, trade, nutrition and economic growth
- **System is established for assessing countries along the PCP**
- **PCP**-FMD approach and reinforcement of veterinary systems are gradually **gaining acceptance**. Seventy nine countries are engaged and closely monitored with notable evidence of advancement
- **Several countries developed and are implementing RBSPs**
- **A few countries have now advanced to OIE status**

Maintaining FMD free Status
European Experience

Dr. Alf-Eckbert Füssel
European Commission
SANCO/G2 - Animal Health

Health and Consumers

EU FMD-Policy

Objectives

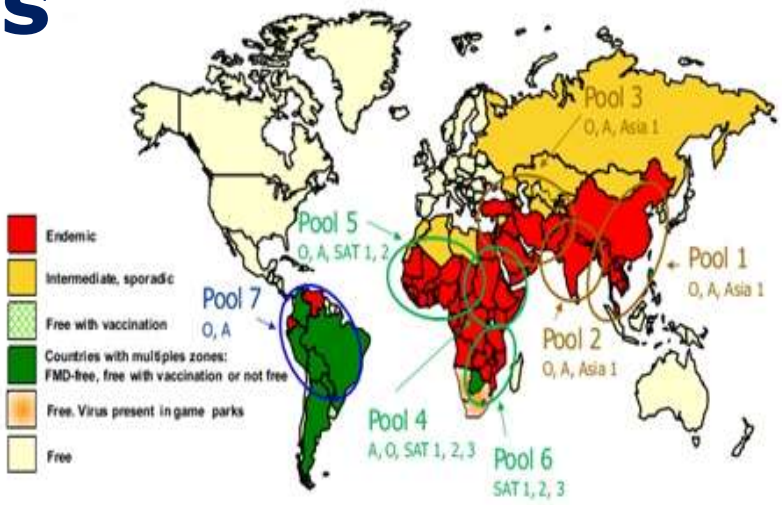
- Free of FMD and free of FMDV-infection without practising vaccination (Directives 90/423/EEC, 2003/85/EC)

Principles

- EU harmonized prevention and control measures
- Responsibility of Member States
- Co-ordination by Commission
- Flexibility of measures
- Transparent decision making process

Disease awareness

- FMDV intelligence
  - OIE
  - FAO
  - EuFMD/WRL
  - EU-RL
- Vaccine matching tests
- Heterologous challenge tests



Risk reduction at source

- Assistance to neighbouring countries, control of disease at source (EFSA opinion)
- Inspections in third countries
  - Evaluation of veterinary services
  - 125 FMD related Missions in 15 TC and all MS during 2001 and 2011
  - 21 FMD related Missions in 12 TC and 16 MS + CH during 2012 and 2018
    - > Imports
    - > Contingency Plans
    - > Outbreaks
    - > Animal movements

Keep it out

- Import policy
  - live animals, semen, ova, embryos - few countries free of FMD without vaccination
  - meat/milk - FMD free countries
    - OIE status, EFSA opinion*
  - other animal products - risk mitigation
- Border controls
  - checks of all animal health relevant commodities
  - personal luggage

* http://www.efsa.europa.eu/en/efsajournal/pub/347.htm

Disease preparedness – Legislation

- Strong veterinary services
- BUDGET!!!!!!!!!!
  - (Financial) Regulation (EU) No 652/2014
  - Compensation, Vaccine bank, EuFMD
  -
- Directive 2003/85/EC on FMD control
  - stamping out, standstill, movement restrictions, emergency vaccination
- Standard safeguard measures
  - export ban, movement restrictions, regionalisation


Europa EUR-Lex

Official Journal
of the European Union

L 306
Volume 46
22 November 2003

English edition — Legislation

Contents

I *Acts whose publication is obligatory*

* Council Directive 2003/85/EC of 29 September 2003 on Community measures for the control of foot-and-mouth disease repealing Directive 85/511/EEC and Decisions 89/531/EEC and 91/665/EEC and amending Directive 92/46/EEC (1) 1

(1) Text with EEA relevance

EN

Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.
The titles of all other Acts are printed in bold type and preceded by an asterisk.

[top] - [home] - [site map] - [search] - [help] - [feedback] - [?]

Health and Consumers

Disease preparedness

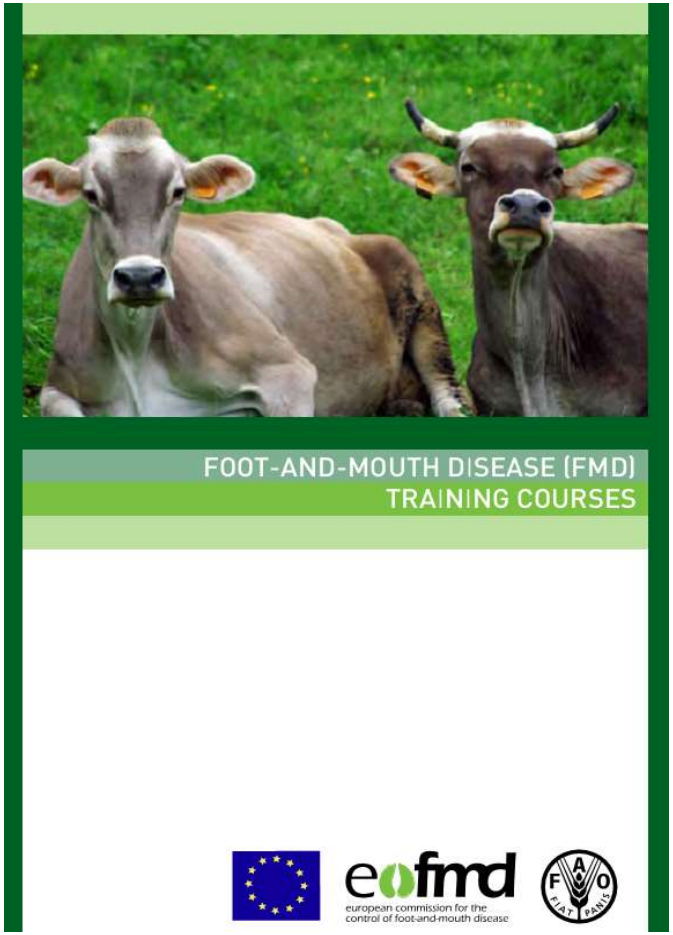
Practical arrangements

- Crisis units
  - chain of command
- Emergency teams
- Contingency plans (approved, audited)
- National and EU antigen banks

German Mobile Crisis Management Centre

Test preparedness

- Simulation exercises
- Modelling scenarios for control strategy
  - definition of DPLAs
  - emergency vaccination
  - use of Pen-site tests
- Training (e.g. Real-time training EuFMD)



Rapid Detection

- Passive surveillance
  - notifiability
  - investigation of suspicions
  - animal welfare rules
- Active surveillance
  - targeted surveillance (similar to AI and BT)
  - health programmes (e.g. IBR, BVD)
  - trade and export inspection and testing
  - ante- and post-mortem at slaughterhouses
- Diagnostic laboratories
  - confirmation and screening
  - EU-RL - proficiency testing

Minimise the risk of spread

- Keep and move animals daily with disease in mind
  - identification and traceability
  - biological risk management on holdings
  - responsible animal husbandry
- Prohibition on swill feeding
- Security of laboratories
  - security standards of diagnostic and vaccine producing laboratories (Dec. (EU) 2015/1358 – Security standards adopted 2013)

Control FMD vigorously

- Stamping out
  - definition of outbreak
  - preventive killing
- Limit impact of FMD
  - movement ban/ suspect restriction area
  - protection + surveillance zones (across borders)
  - surveillance in and around of restricted zones
    - Pen-site tests
- Carcass disposal (Reg. (EC) No 1069/2009)
- Release save animal products

Emergency Vaccination

Suppressive

- stamping out infected herds
- preventive killing of contacts
- insufficient processing capacity

Protective

- stamping out infected herds
- preventive killing of contacts
- marking of and movement controls for vaccinated animals
- treatment of products

Regaining FMD Freedom

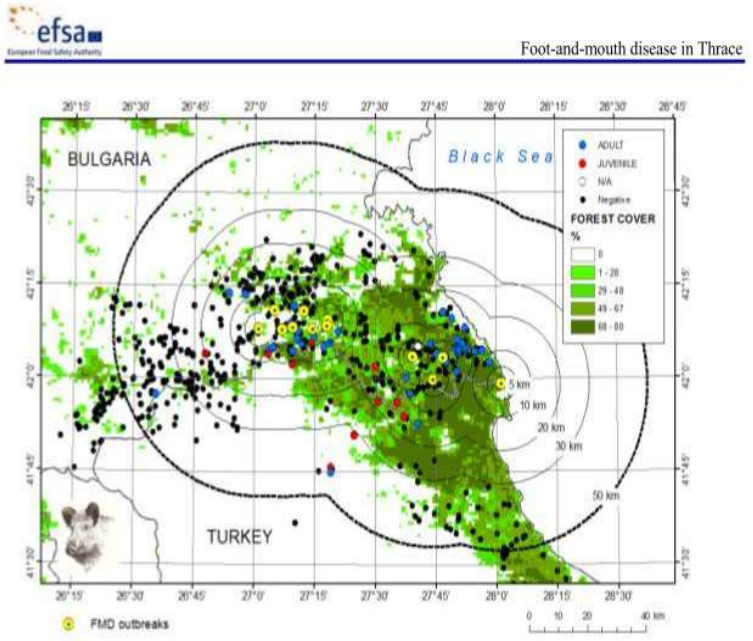
- Intelligent post-outbreak surveillance
  - trained personnel for clinical inspection
  - equipment to restrain animals (extensive holdings)
  - active surveillance to lift restrictions in line with guidelines of OIE and EU legislation
- Cleansing and disinfection
  - sufficient equipment
  - approved disinfectants (Regulation (EU) No 528/2012 – "Biocide Regulation")
- Controlled restocking
  - sentinels
  - prevent spread of other diseases

Control Plan for FMD in wildlife

- Restriction zone
  - big enough to contain wildlife
- Hunting and trapping of wildlife for surveillance
- Surveillance in domestic animals
- Restrictions on products from susceptible animals in the zone

FMD freedom in wildlife

- EFSA Opinion*
  - FMD unlikely to become established in European wild boar, deer or roe deer
  - surveillance needed for early detection
- Regional cooperation



* http://www.efsa.europa.eu/en/efsajournal/doc/2635.pdf

Conclusion

- FMD freedom
  - challenge and cost for operators and authorities
  - provides opportunities
- FMD outbreak
  - even more costly
  - limitation of opportunities

EU Animal Health Strategy
"Prevention is better than Cure"

Mitigating the FMD risks to Europe: an integrated approach

Integrated actions (EuFMD with EC)

European, Neighbourhood and GLOBAL

Geographic risk mitigation:

- South-East Europe (Thrace, Caucasus)
- North Africa and Mid-East

Global risk mitigation:

- Progressive control programmes (80 countries)
- Training and guidance support (EuFMD)
- Global laboratory surveilance
- VACCINE SECURITY

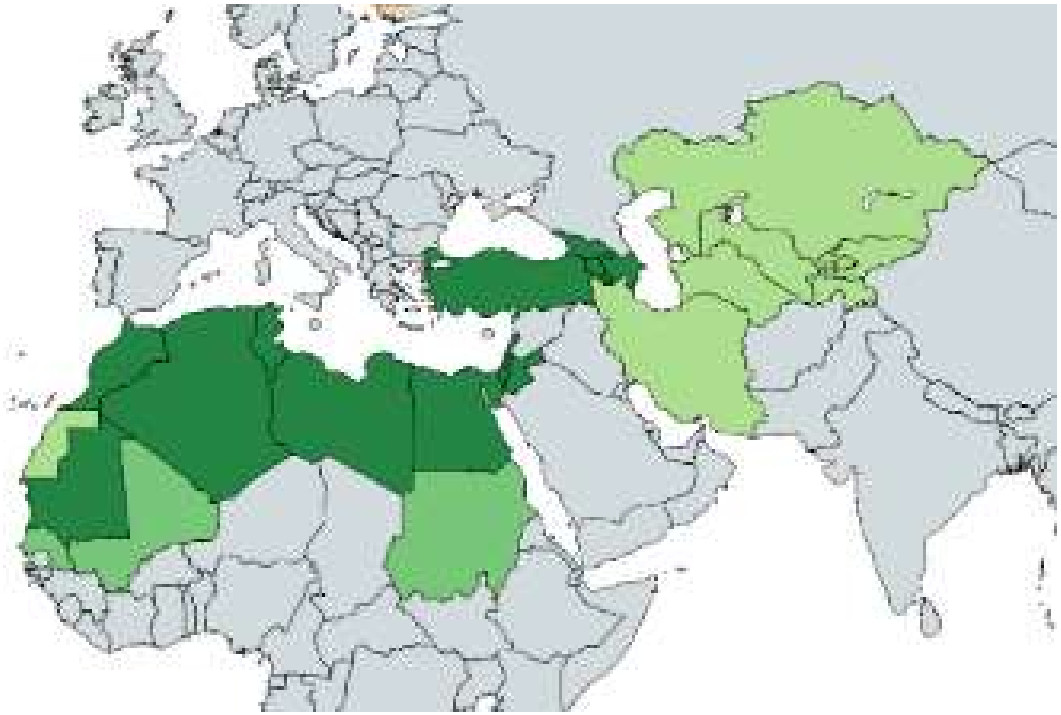
Geographic Risk Mitigation: SOUTH-EASTERN EUROPE THRACE and Balkans

EXPECTED OUTPUTS:

- **Improved emergency preparedness in the region**
- **Improved surveillance systems:**

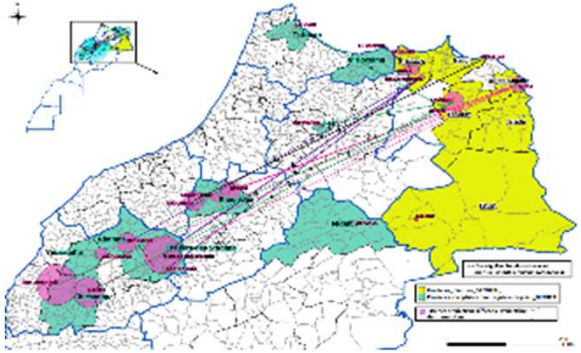
Greater confidence in freedom from FAST diseases and increased likelihood of early detection of an incursion

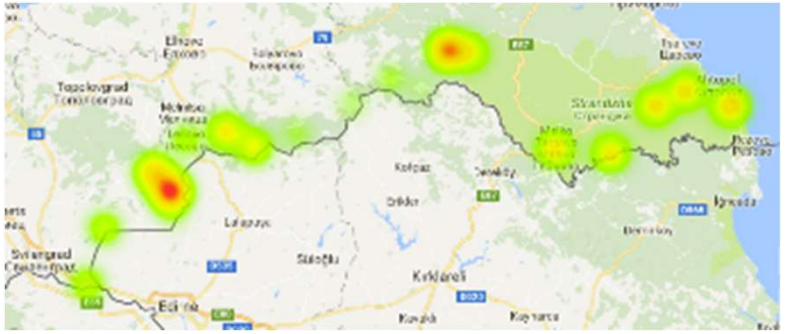
Geographic risk mitigation: European neighbourhood



Risk mitigation - by Improved early warning

- Collection and analysis of **risk information**
- Definition of **hot spot locations**
- Design **risk based** multi-disease **surveillance**
- Improve **collection and delivery of isolates**
- Prioritization of **vaccines** and improve their availability
- Facilitate **sharing of risk information**





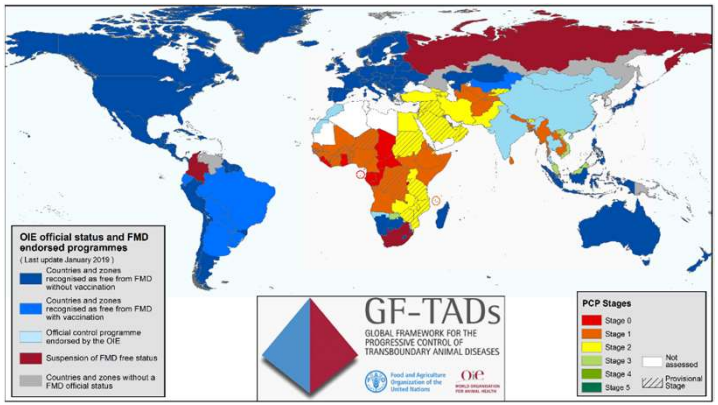
Risk mitigation by better implementation and monitoring of national programmes:

Capacity building matters!

- **Laboratory** capacity
- Vet Services capacity (e.g. clinical investigation, surveillance and control)
- Effectiveness of control measures (e.g. PVM)
- **Network** among **centres of expertise**
- Application of **Terrestrial Animal Health Code**

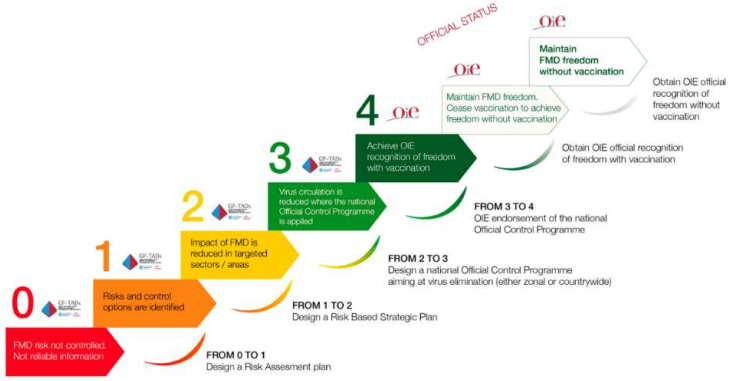
Risk mitigation – global risks

Through: *progress of the GF-TADs Global Strategy against FMD and the improved security and supply of effective vaccines*



Sustained Global Progress

- Monitoring national PCP progress provides risk information
- Sustained progress of GF-TADs Global Strategy (**reduces risk to free regions)**



Pillar III – Future workplan

Vaccine Security

- European Antigen Bank (EUVB – 35 m doses) + National Antigen Banks (40 m doses)
- Lack of sufficient vaccines to control FMD in Africa and Asia (the 1 billion cattle at risk)
- "**Global Vaccine Security issue**"
- public-private partnership platforms needed to advance supply
- South American vaccine producers could provide supply needed in other regions?

Conclusions

1. To maintain FMD freedom needs actions beyond the borders
2. Global burden of FMD virus circulation in Africa , mid-East and Asia remains very high – a daily threat
3. Increasing interest in every region to control FMD – with national public and private partnerships – and applying PCP approach
4. OIE, EuFMD and FAO working closely to support regional initiatives
5. Lack of FMD vaccine availability for Africa and Asia – limits progress, constrains private sector vaccination

Conclusion: lets work together!– COSALFA and EuFMD

EuFMD

- Risk assessment - global monthly reports
- Risk based surveillance in high risk borders
- World-leading training programmes
- Modelling capacity
- Vaccine banks for emergency supply
- Public-private platform –vaccine supply

COSALFA and members

- Vaccine quality
- Monitoring vaccination programmes and assessment of surveillance systems
- Capacity of regional vaccine producers
- Capacity to manage outbreaks (after non-vaccination)
- Could link better with EuFMD?