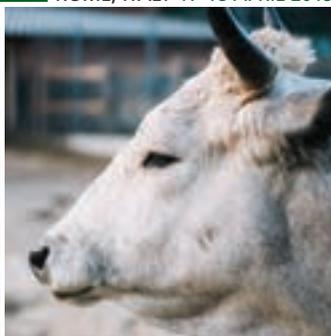




Food and Agriculture
Organization of the
United Nations

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

ROME, ITALY 17-18 APRIL 2019



Report

43RD GENERAL SESSION OF THE EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE (EuFMD)

FAO Headquarters
Rome, Italy
Iran Room (B116)

**43rd General Session of the
European Commission for the Control of
Foot-and-Mouth Disease
EuFMD
17-18 April 2019 – Rome, Italy
Report**

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Recommendations of the 43rd General Session of the EuFMD Commission

Considering

1. The enormous economic consequences of even single FMD outbreaks in FMD free countries;
2. The risk of incursions posed by co-circulation of FMD, PPR, capripoxviruses and similar transboundary animal diseases in several parts of the European neighbourhood, and in much of sub-Saharan Africa, the Middle-East and Asia;
3. The recent repeated FMD incursions of FMD viruses from West Africa into North Africa, in 2017 and 2018 with epidemics continuing into 2019, and the diverse range of FMD viruses circulating in the eastern Mediterranean and West Eurasia eco-systems;
4. The progress made to improve virus intelligence on the strains circulating in West Africa over the past two years, but the concerning gaps in information from other regions, notably South Asia;
5. The scale of animal movements into the European neighbourhood that could bring with them the risk of FMD, PPR, and other FAST diseases, and the potential of risk mapping to better target surveillance for viruses circulating as a result of these risks;
6. The progress made by GF-TADs in the implementation of the Global Strategy for FMD over the past five years and the significance of FMD risk from the number of countries that remain in stage zero or one of PCP-FMD, and the importance of continued support to countries to develop national strategies which have appropriate FMD control plans;
7. The progress made to further develop and use an epidemiological simulation model known as EuFMDis as a decision-support tool for member states to assist preparedness and risk assessment, contingency planning and targeting of interventions;
8. Development of risk-based scoring systems such as Biocheck.Ugent®, to evaluate the quality of on-farm biosecurity in a scientific and independent way that also enables assessment of the strength and weak points of the on-farm biosecurity, and that the Biocheck system has been used primarily as a self-assessment system but also adopted by some MS veterinary services as a more formal tool;
9. The need for sharing best practises and a comprehensive range of resources to cover the major elements required for emergency preparedness, the management of simulation exercises and for training;
10. The demand for support to national training programmes to better equip national trainers in provision of courses to update and train their staff, and ensure positive impact of the cascade training;
11. The findings of the evaluation of EuFMD training conducted by an independent expert committee in 2018;
12. That FMD and Similar Transboundary (FAST) diseases remain as global and inter-regional challenges and that the risk of introduction of FAST to Europe from North Africa, Middle East and West Eurasia remains very high;
13. The lack of “global vaccine security” as one of the most pressing issues in global risk management of FMD that affects the implementation of national control plans in endemic countries as well as epidemic control decisions in free countries.
14. That registration and effectiveness of new vaccines affect the application of vaccination in the emergency management of FMD and similar transboundary animal diseases;
15. The importance of the application of the Minimum Standards for laboratory containment of FMD virus, for prevention of escape of FMDV from laboratories responsible for diagnosis and vaccine production.

Acknowledges

The support of the European Commission (DG-SANTE) through the four-year Phase IV of the work programme of the Strategic Plan agreed in 2015, and the excellent working arrangements that have resulted in efficient and timely emergency responses to situations arising in the European neighbourhood.

Recognizes

1. That the control of FMD risk remains the primary focus of the Commission and that projects and activities undertaken by the Commission to control the risks of similar transboundary diseases also contribute to achieve the purposes of the Commission, as set forth in the Constitution.
2. Progress with the implementation of the current Strategic Plan and the positive development of planning processes with the World Organization for Animal Health (OIE) and with FAO on matters relating to the programme of the EuFMD in countries which are not members of the Commission, and in regard to EuFMD support of the GF-TADS Global FMD Control Strategy.

Endorses

1. The Strategic Plan (“HOLD-FAST”) for 2019-2023, with the final version to be amended to reflect the discussions under Item 8 of the Session;
2. The indicative work program (objectives, key indicators and expected outcomes) as outlined in the Strategic Plan, for further development into a full workplan proposal to be presented to the European Commission following the Session;
3. The revision to the Terms of Reference of the Standing Technical Committee, and the revised rules of procedure relating to filling places on the Committee at each Session;
4. The proposal to establish a Special Committee for Surveillance and Applied Research (SCSAR), and the development of a project for networking and applied research studies that address priorities as agreed with the Standing Technical Committee;
5. The technical update of the revised Minimum Standards proposed by the Special Committee for Biorisk Management (SCBRM) to Member States;
6. The proposal for the budget of the MTF/INT/011/MUL (Administrative Fund) for the forthcoming biennium;
7. The proposal that at each regular Session, the increase in contribution of the member states be linked to the consumer price index, as recorded by the OECD and in accordance with the standard formula and data proposed in the Budget paper (Item 14);
8. The proposed programme of work and budget for Emergency and Training Fund (MTF/INT/004/MUL) for the next biennium, to the end of 2021;
9. The list of six experts for the Standing Technical Committee, the list of centres of expertise for the Special Committee for Surveillance and Applied Research, and for the experts for the Special Committee for Biorisk Management.

Recommends

1. The Member States review the risk associated with the developing FMD situation in North Africa and that additional effort is made to promote FMD control in the region under REMESA, and develop a mechanism for assured emergency vaccine supply to mobilize vaccines without recourse to vital antigen reserves held on behalf of the member states;
2. The EuFMD to continue supporting the Member States on the preparedness for an effective use of emergency vaccination in the case of an outbreak, but broaden the support to consider similar transboundary diseases;
3. The EuFMD continue supporting Member States to identify and assess their level of emergency preparedness through simulation exercises and other tools, for FMD and similar transboundary diseases;
4. That the work programme developed in agreement with the EC has an evaluation undertaken at a mid-point or suitable timeframe to assist the management and Commission to make changes as may be required in good time;
5. The EuFMD explores continued development of the EuFMD model to include additional EU countries, consider inclusion of additional pathogens, explore availability of national data, continue work to validate the model and communicate its outputs to policymakers;
6. The EuFMD continues to consider the application of existing biosecurity scoring frameworks in prevention, emergency preparedness and outbreak response;
7. The EuFMD implements the GET Prepared toolbox concept, supported by collaboration with Member States and other partners;
8. The EuFMD explores implementation of recommendations on quality assurance, impact assessment and certification of training, including the possibility of this being achieved through partnerships;
9. That a platform is established to better engage public and private sector stakeholders to engage upon issues affecting availability of effective vaccines for emergency responses to FAST diseases;
10. The continued development and delivery of joint initiatives with the OIE, including on the application of Public Private Partnerships in progressive control of priority diseases for GF-TADS such as FMD and PPR;
11. The Standing Technical Committee to meet as soon as possible to identify the optimum working arrangements to meet the expectations for their support to Executive Committee in the implementation of the new strategic plan;
12. Delivery of training on the application of the biorisk management standards for laboratories handling infectious FMD virus (Tier D) and under emergency situations (Tier C);
13. The EuFMD further develops the Pillar III work plan after discussions with GF-TADS management, relating to supporting and achieving a greater synergy between the GF-TADS FMD, PPR secretariats and in their work programmes, taking into consideration the potential contribution of training and expertise available from EuFMD;
14. The Executive Committee and the Secretariat to make every effort to find ways to increase the funding for research on FMD, exploring the possibility for national or other agencies to jointly fund research via the EuFMD-FAR fund or through other means;
15. The Executive Committee to review the benefits to the EuFMD of updating to the Constitution, including the benefits and conditions for associate or additional membership (Recommendation carried over from the 42nd Session).

Calls upon

The International community to recognize the impact of contagious animal diseases upon livelihoods and human health and to promote and support the regional co-ordination of FMD control as part of an integrated approach to control the most contagious and devastating TADS in Africa and Asia under the Global Strategies for FMD and PPR control.

REPORT

The 43rd General Session of the EuFMD Commission was held in Rome, at the headquarters of FAO, on the 17-18 April 2019. Delegates participated from 29 of the 39 Member States of the Commission, and official Observers from the European Commission (EC), the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE), and from Civil Society Organisations (CSO) participated in the two-day meeting.

The Session was opened by Dr Berhe Tekola, Director of the Animal Health Division, FAO. His address is given below.

“Honorable Delegates of the Member States; Dr Stone, Representative of the DG of the OIE; Dr Füssel, Head of the Delegation from DG-SANTE of the European Commission; Observers from FAO Member States from across the world, invited experts. As Director of the Livestock Division let me welcome you to Rome on behalf of the ADG of AG, Mr. Bukar Tijani, and the DG FAO, Mr. Graziano de Silva.

FAO has long ago established the legal possibility that member states make agreement with each other in specific treaties that have international obligations and are supportive to the mandate and priorities of FAO. One such example is the EuFMD Commission, established in 1954 by 6 MS and now with 39 MS. These article XIV bodies are governed by their members and this is the 43rd Session of the Commission and may be one of the most significant in its history. FAO has been honoured to host the Commission for over 65 years and to witness the many decisions and developments in this period, and the increasingly important contribution made by the Commission at the global level with its innovative training programmes and expertise. It is for the member states to decide on the policy and strategy for the coming years, and for FAO to respond to your decisions, and support as far as we can the Commission to develop in a way that serves your needs. As delegates from the Veterinary Services across Europe, I do not need to remind you of the disease threats in the European neighbourhood, which include PPR, Lumpy Skin disease, African swine fever as well as potential threats such as Rift valley fever. FAO has been investing funds in response to each of these crises, in Eastern Europe as well as North Africa and Mid-East, in the past two years. Colleagues, the repeated incursions of transboundary, emerging disease threats in our neighbourhood may affect our energy and confidence to make a difference and you may question what difference international action can make. **In this situation, there remains some good news – and always hope.** For the past 8 years, FMD cases have not occurred in the free countries of Europe – the longest period of freedom in the history of EuFMD. This freedom has occurred despite the serious epidemic situation around the European borders – so together, collectively, **something successful has happened – and your actions, our actions, have here some evidence of success.** I am tempted to conclude it is because of the **tireless work behind the scenes of many people** that Europe has not had a case of FMD in 8 years – a success built on a lot of hard work, partnerships, and systems. **Perhaps, Europe has been lucky, but at the least, it has had a Commission to keep reminding everyone of the risks.** That may have made the difference, but is only part of the story. Turning to the future, **FAO is very supportive to the proposal that the EuFMD Commission should contribute more broadly to TADS control in future.** There are many areas of synergy where the effort on FMD can spur greater control of other TADS. The strategic plan, as proposed, has our support. We believe the GF-TADS system for co-ordination of activities between FAO and OIE remains a good one and that under this system, we that the EuFMD activities can actively support the decisions taken at the GF-TADS management level or regional steering committees. In short, **there is NO overlap - GF-TADS NEEDS EuFMD** to play its full role and use its many capacities. Regarding the question of the need to change the Constitution, the opinion of the FAO Legal Council is that the policy change on the work programme comes first from the member states and comes in front of the process of updating of the Constitution - which can be addressed if needed at later Sessions. Do not be concerned on this point now. The decision is **therefore one for the Member States to make** and FAO will support you in what you decide at this Session. **I re-iterate that FAO supports the proposal and urges you to give it your full consideration.** “

Opening addresses were then given by Dr Stone for the OIE and Dr Füssel, for the EC.

Dr Stone of the OIE commended the EuFMD on activities of the last two years. He mentioned collaboration on training on the OIE codes and the Public-Private Partnership (PPP) training between the EuFMD and the OIE. He also pointed out the challenges of African Swine Fever (ASF) and other diseases that can affect food security as a whole. Dr Stone advised that the Tripartite (OIE/FAO/EuFMD) will need to focus on the urgent need to build on capacities of veterinary services. He then emphasised the importance for EuFMD to continue with its programme of high-quality training which is assisting to improve standards of FMD management. He strongly endorsed the HOLD-FAST strategy and the contribution the EuFMD could make to control of other TADs. Aligning work programmes (OIE/FAO/EuFMD) to ensure global framework for control of TADs was also mentioned.

Dr Füssel of the DG SANTE, emphasized that FMD remains priority of the European Commission and should continue to be so for the EuFMD. He mentioned that extension of the scope to other diseases is supportable where there are significant synergies and similarities. He brought attention to the financial constraints and the competing priorities that affect decisions on the EU contribution. He underlined to the Member States (MS) that they are the ones to own the Commission and added “It is yours to guide”.

The three Pillars of the EuFMD



Item 1. Adoption of the Agenda

Dr Angot, Chairman of the EuFMD Commission, welcomed the representatives of Member States and introduced the Agenda (**Appendix 1**). The Agenda was adopted without change.

Item 2. Global Foot and Mouth Disease (FMD) surveillance report

*Documents provided: Monthly report on the FMD situation in March 2019 - EuFMD (**Appendix 2**); World Reference Laboratory (WRL) report (**Appendix 3**).*

Document provided: Summary paper including Key Messages

Key Messages

- Recent concerns in Europe have been raised by trans-Saharan movements of two serotypes into North Africa.
- The WRLFMD (and partner laboratories within the OIE/FAO FMD Laboratory Network) monitors the performance of FMD vaccines and provides information to support FMD control programmes within the Regional Roadmaps. A new initiative, funded under the OIE Global fund, will develop capacity for independent assessment of FMDV vaccines in Africa (at AU-PANVAC, Ethiopia).
- With support of EuFMD, WRLFMD also works to improve the diagnostic capacity through training missions, eLearning modules and proficiency-testing schemes for FMD Reference Laboratories.
- WRLFMD (Pirbright) provides the secretariat of the global Network of OIE and FAO FMD Reference Laboratories, to support global surveillance of FMD and the global GF-TADS Strategy. Since 2013, it has received financing support under Component 3.3 of the EC/EuFMD Programme that partially funds these global services.

The report of the World Reference Laboratory (WRL) for FMD was provided by Dr Don King, Head of the FAO-WRL for FMD at The Pirbright Institute, UK (**Appendix 3**).

The WRL was first recognized by FAO/EuFMD in 1958, and has provided FMD virus typing and other services to the Commission ever since. In 2004, the role was extended when the OIE/FAO FMD Laboratory Network (<https://www.foot-and-mouth.org/>) was established as a mechanism to exchange laboratory and epidemiology data, as well as to harmonize and improve the quality of diagnostic testing carried out by international and national FMD laboratories. The WRL work in support of GF-TADS Global Strategy was recognized with financial support from the EC from 2013, channelled via the EuFMD. A key function of the Network is to monitor the spread of viral lineages that are maintained in the different endemic pools across the world, and continuously review the risks to livestock industries in countries that are free of FMD (with or without vaccination). The guidance on principle viral lineage risks and the vaccine priorities to cover the risk are indicated in the figure below (output from the PRAGMATIST tool; further discussed under Item 10).

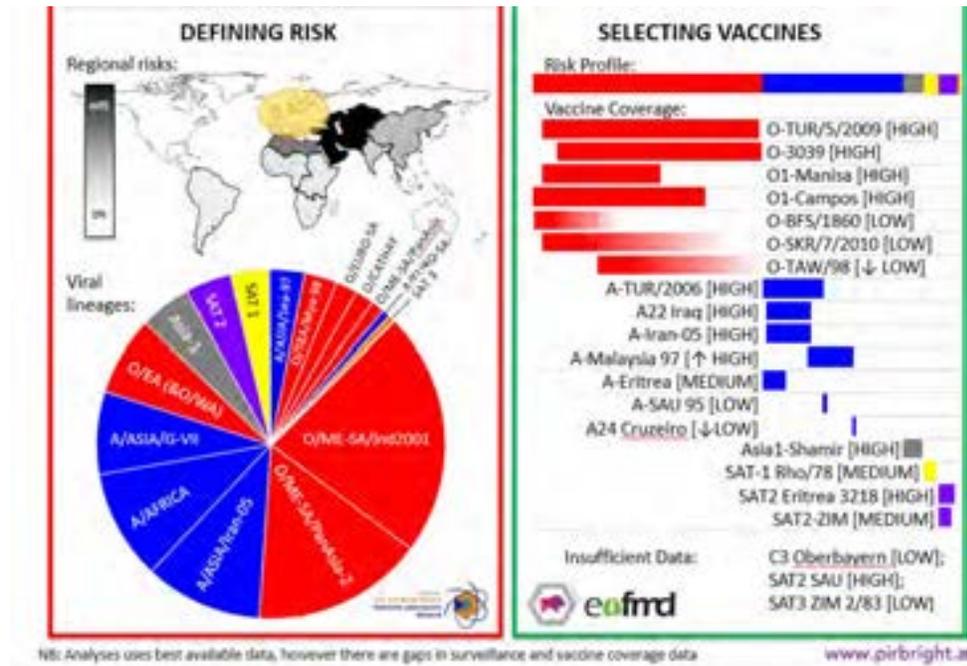
During 2017-19, particular attention has been focused on the emerging situation in North Africa where outbreaks due to serotypes O and A have been reported. Current outbreaks in Algeria, Tunisia and Morocco have been characterized as belonging to the O/EA-3 topotype, most closely related to viruses circulating in West African countries (including Burkina Faso, The Gambia, Guinea, Mauritania, Senegal and Sierra Leone) where there appears to have been an upsurge in cases due to FMD. Taken together with the outbreaks in 2017 that occurred in Algeria and Tunisia due to A/AFRICA/G-IV, the emergence of these new FMD lineages in Maghreb is a significant change of epidemiological status. This change may substantiate new trans-Saharan connections between North and West Africa which raise the onward risks to FMD-free countries in Europe.

Another example of a viral lineage which is now spreading widely is represented by O/ME-SA/Ind-2001, which has “escaped” on many occasions beyond its normal geographical range in South Asian countries (Pool 2), to becoming an important endemic virus lineage in the Gulf States of the Middle East (Pool 3) and Southeast/East Asia (Pool 1). This lineage has been divided into two sub-lineages (O/ME-SA/Ind-2001d and O/ME-SA/Ind-2001e). O/ME-SA/Ind-2001e appears to now dominate the situation in Pool 1 where the O/ME-SA/Ind-2001d has not been reported since 2015. Other recent trans-pool FMD virus movements out of Pool 2 include the spread of A/ASIA/G-VII to countries to the West, and serotype Asia 1 causing outbreaks in Myanmar in 2017. In Pakistan, a new serotype O antigenic variant has been observed. It has very poor antigenic match with commercial vaccines from MSD and Boehringer-

Ingelheim. Although only two isolates with these properties have been detected to date (in the Punjab), the spread of this lineage needs to be monitored closely especially in cases where there is reported vaccination failure in the field.

Together, these events highlight the ease by which new FMDV lineage can emerge and cross international boundaries and emphasize the importance of the work undertaken by OIE/FAO FMD Laboratory Network to continuously monitor the global epidemiology of FMD.

Vaccine Antigen Prioritisation: Europe



The Chairman thanked Dr King for the report and for the services provided by the WRL.

Discussion

The representative of Denmark asked about the reason for new long distance movements of FMD virus. Dr King mentioned several recent movements appeared to involve live animals, but also others, where livestock products may be the mechanism, and others again where people may be the mechanical vector. He underlined the high rate of people moving between the Middle East and South Asia, such as farm workers, but also the difficulty of attributing entry mechanisms. In addition, he emphasised on mass migration of people from Sub-Saharan to North Africa. These are all considered potential risks but they need to be quantified and there should be increased focus on trying to define the relative importance of these routes.

Dr Füssel (DGSANTE) stated that these risk patterns should be looked in to. FMD seems to move north in South East Asia but ASF has moved south. The entry via livestock products into areas without pigs may be occurring but unnoticed as pigs provide a “release” risk. For example South East Asia has a high pig population and may be expected to be at risk of ASF but also exotic FMDV, compared to the Middle-East for instance. Therefore, these reports from islands or regions where entry has occurred via pigs, may indicate the level of risks associated with livestock products from endemic regions, which could be a source for Europe if introduced. The EuFMD should follow up these risks in more detail. Similar movements from the East to the West, on PPR, may be important. He mentioned the need to combine sources of information to map out some more how key diseases spread globally – not just the potential entry to Europe, and to not forget how close the European Union is to these areas.

Item 2. Progress of the Global FMD control strategy

Document provided: Summary paper including Key Messages

Presentation: **Appendix 4**

Key Messages

- The global control strategy was developed in 2012 with the aim to reduce the burden of FMD in endemic countries and protect the investment of free countries. FMD has a significant impact on poverty and livelihoods of millions where livestock play an important economic role and offer quality nutrition.
- The global strategy has been implemented gradually since its development. By 2018, 79 countries in virus pools 2-6, are currently engaged and were assessed for their success and challenges in FMD control. Out of 79 countries, nine countries/zones achieved OIE status, 29, 26 and four countries reached PCP stages 1, 2 and 3, respectively. Only nine countries stayed temporarily behind in PCP stage 0.
- FMD- endemic countries need to enhance capacity to control FMD through (i) conducting FMD risk assessment; (ii) strengthening laboratory capacities to improve monitoring of the disease and reporting of outbreaks (iii) strengthening Veterinary infrastructure through legal framework support, and (iv) promoting public awareness on impact of FMD and training of veterinary personnel on deployment of advanced tools for the gradual reduction of endemic disease incidence.
- The PCP guidelines and principles were recently reviewed and updated. The second PCP edition depicts the streamline advancement from the PCP stage to OIE status, and the use of the fast-track scheme, if eligible.
- FMD does not recognize borders, and its control requires a harmonized regional effort to understand animal movement and the associated risk along with the adaptation of the national strategy within the region (Asia and Africa). This effort started in West Africa and Southern Asia.
- OIE-FAO reference laboratory network is critical to coordinate, harmonize and enhance the quality of the global diagnostics that is pivotal in the implementation of the national control strategy. Such support important to re-invigorate regional laboratory networks, with better linkages to epidemiology networks, to ensure better technical expertise development at regional levels.
- As more countries advance in FMD control, the need for technical expertise in vaccine and vaccination is rising. The guideline manual for FMD vaccine and post vaccination monitoring has been vital in training and is being translated to Arabic, Russian and French.

The progress report was presented by Samia Metwally (FAO) and Matthew Stone (DDG-OIE), who provided a comprehensive report on the activities at Global and Regional levels under GF-TADS, and the priorities and progress of the GF-TADS Working Group. The speakers thanked the EuFMD for its support to the Global Strategy which had been effective and high impact.

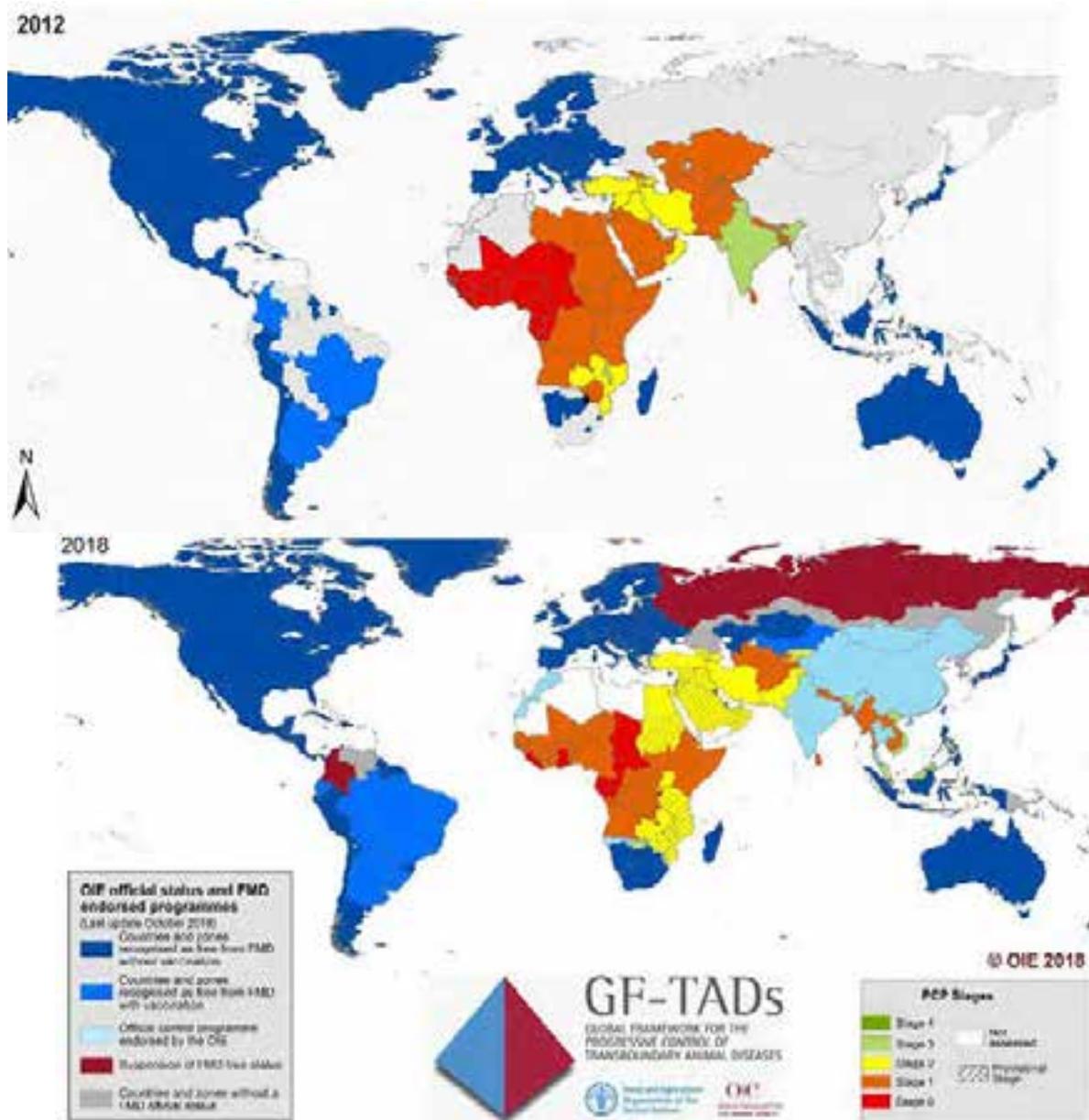
Each speaker also highlighted relevant specific actions of FAO and OIE under their specific mandates.

Significant progress has been made since the 42nd General Session of the EuFMD in 2017, in technical guiding documents and tools (revised, 2nd Edition of the PCP-FMD, PCP-support officers system (PSO), delivery of multiple Roadmap meetings and e-learning) that were achieved in collaboration with and support from, the EuFMD. To improve the process of PCP assessment at national level, and global stage endorsement, new tools include a updated self-assessment questionnaire for PCP assessment, development of the online self-assessment tool, post vaccination monitoring guidelines and others. Support to countries is on rise especially relating to preparation of control plans (for entry into Stages 2 and 3).

Further, since the vision and action plan of the GF-TADS Working Group for 2019-20 was approved by the GF-TADS management committee, the partners are agreed at the highest level on what support from EuFMD they desire. They trust this can be provided to support implementation.

Evolution of FMD global situation between 2012 and December 2018

OIE official FMD-free status, endorsed national official control programme for FMD and PCP stages



Dr Piergiuseppe Facelli, GF-TADS Global Secretariat highlighted that the GF-TADS WG on FMD is undertaking important work. He thanked the EuFMD for its strong organisation and level of delivery, which has helped greatly with improved communication of GF-TADS actions on FMD.

Discussion followed as to why the only countries without PCP status are in North Africa and the relevant REMESA actions. It was mentioned that these countries were not in a Roadmap process, but had previously been seeking OIE

endorsement of their control plans or recognized freedom, until incursions of FMD occurred, with a reversal of progress in the past five years. As the PCP-FMD is an integrated pathway from GF-TADS to OIE status, it now follows that countries who lose their OIE endorsed control programme should be considered to be in the PCP pathway. This may also assist them to re-establish the national capacity for control.

Conclusions

1. There has been significant progress made by GF-TADS in the implementation of the Global Strategy for FMD over the past two years, and there is evidence that the support given to the GF-TADS by EuFMD is appreciated and is proving to be effective.
2. There remain a significant number of countries in PCP stage zero or one of PCP-FMD, in West and Central Africa, which therefore will continue to be a region of concern and a potential long term source of infection for North Africa and Europe.
3. The GF-TADS partners are encouraged to ensure that countries in North Africa develop national FMD control programmes that meet the requirements for recognition by GF-TADS or OIE, according to their stage.
4. Given that the OIE Code and Manual chapters relating to FMD and other similar diseases continue to develop, further collaboration between EuFMD and OIE in relation to training programmes could assist to ensure better understanding and application of the chapters to utilise developments in emergency situations and reduce the risks in international trade.

Item 3 Transboundary disease risks in the European region

Situation report, co-ordination arrangement and priorities for future actions to reduce risk

Document provided: Summary paper including Key Messages

Presentation: **Appendix 5**

Key message

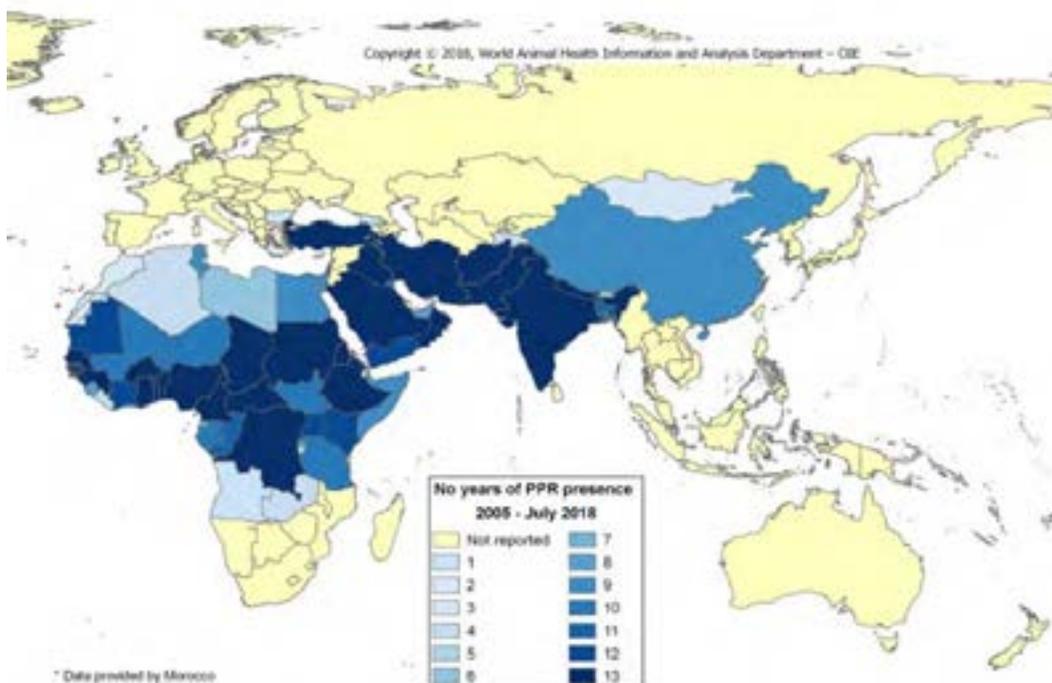
- The presence and regular re-occurrence of Foot and Mouth Disease and Similar Transboundary Animal Diseases (FAST) in countries neighbouring to European borders represents a constant risk of introduction and FAST spread into Europe. Actions aimed at improving the surveillance and control in European neighbourhood can reduce the risk and provide more timely information to risk managers.
- FMD is present in the European neighbourhood with different serotypes and lineages circulating. The increased animal movements driven by seasonality, climatic conditions, social and economic factors enhance the risk of FMD spreading towards EU borders, as demonstrated by the genotyping results of the isolates delivered to international reference laboratories from different regions.
- Improvements have been recognized in countries of South East Europe and East Mediterranean that have tackled with the PCP. The instability of some countries such as Libya and Syria remains a problem connected to the reduced capacity of FAST control and increased animal mobility across the borders with improved risk for the regions and beyond.
- North Africa has been affected by different FMD serotypes and lineages in the recent years that showed trans-Saharan connections between North and West Africa and increased risk for Europe. The situation in Algeria has been recently complicated by the co-circulation of Peste des Petits Ruminants.
- Implementation of vaccine control strategies for LSD and PPR in the European neighbourhood have contributed to improve the control of the diseases that still represent a threats for free European countries as showed by the events occurred in the recent years in Bulgaria, Greece and in the Balkans.
- Results of modelling studies considering different factors showed that sustained Rift Valley Fever transmission outside the endemic regions (e.g. in North Africa and South East Mediterranean) is real if introduction events coincide with optimal conditions.
- There has been increased frequency of epizootics of Bovine Ephemeral Fever in Middle East during the past 20 years and it will remain a threat with the potential to cause significant economic losses in Turkey, Middle East and also European countries.
- Early detection systems and improved regional expertise in epidemiology and laboratory diagnosis together with increased availability of vaccines and assessment of their performance can improve the capacity to FAST detection and better response.

Dr Rosso provided the presentation on the regional risk situation (**Appendix 5**). The summary paper and presentation showed that the presence and regular re-occurrence of Foot and Mouth Disease and Similar Transboundary Animal Diseases (FAST) in countries neighbouring the European borders, represent a constant risk for introduction and FAST spread into Europe. Actions aimed at improving the surveillance and control in European neighbourhood can reduce the probability of FAST spreading towards European borders. Furthermore, the constant monitoring of the epidemiological situation can provide relevant risk information and contribute to increase awareness on major animal disease threats.

He highlighted the following:

- Foot and Mouth Disease (FMD)
 - o Implemented control strategies have contributed to reduce the seroprevalence and number of outbreaks (382 outbreaks detected in Turkey in 2018 with only one serotype circulating and no outbreaks in Transcaucasus countries and Turkish Thrace). More than 900 outbreaks still occurred in the I.R of Iran in 2018 with three serotypes circulating (A, O, Asia 1), thus presenting risks to Turkey and the Transcaucasus countries.

- A review of the recent epidemic history in the South-East Mediterranean showed there is a frequent exposure to strains from West Eurasia and North –East Africa (in Egypt a co-circulation of serotypes A, O and SAT 2).
 - North Africa has been a major concern in the past and current years with epidemics of FMD caused by different serotypes (O/ME-SA/Ind-2001 in 2014-2015, A/AFRICA/GIV in 2017, O/EA-3 in 2018-2019), showing the constant risk of introduction of new serotypes and strains in the region from different origin. The FMDV genotype O/EA-3, which occurred more recently in North Africa and particularly in Algeria and Tunisia in 2018 and in Morocco in 2019, has been recognized to be similar to the strains identified in West Africa (Guinea, Gambia, Senegal, Mauritania, Cameroon), with a clear epidemiological link between the two regions. The FMD situation in North Africa has been complicated by the co-circulation of PPR virus in Algeria with problems for differential diagnosis in the field and confirmation in the laboratories.
- Peste des Petits Ruminants
- PPR was recorded in most African countries from North Africa to Tanzania, and in nearly all Middle Eastern countries and in Turkey. The vaccination campaigns implemented in the recent years in European neighbouring regions and the development of National Strategies to progress in the control of the disease, has contributed to the reduction of clinical cases and number of outbreaks detected. The consistent small ruminant population and the intense animal movements represent a constant risk for reoccurrence of the disease in many countries.
 - The most likely pathway to introduce PPR into Europe has been recognized to be through animal movements from infected areas mainly by the illegal transport of infected animals. Of less importance is the introduction of PPRV via fomites into the EU, which is considered to be unlikely (EFSA, Scientific Opinion 2015).

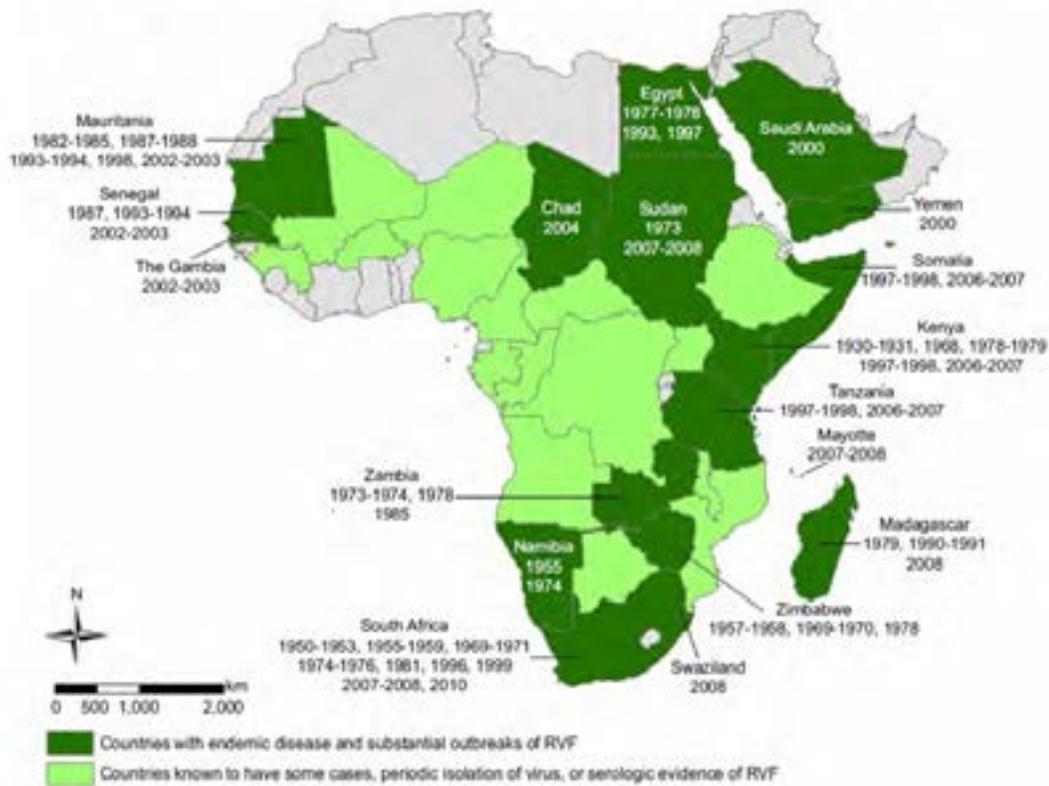


Source: OIE, 2018

- Rift Valley Fever

Recent studies indicated that sustained virus transmission risk outside the endemic regions (e.g. in North Africa and South East Mediterranean) is concrete, if introduction events coincide with optimal conditions. Attention was drawn to positive serology findings from southern Morocco (2009), Tunisia (2014). The evidence of RVFV activity in countries bordering the Southern part of Libya supports the hypothesis of a continuous risk of introduction of RVFV through animals imported from endemic neighbour countries (A.Mahmoud et al., 2018). Egypt has been affected by RVF on multiple occasions, with a main risk of RVFV introduction is posed by the continuous flow of large number of camels coming from Sudan.

Geographical distribution of Rift Valley fever virus

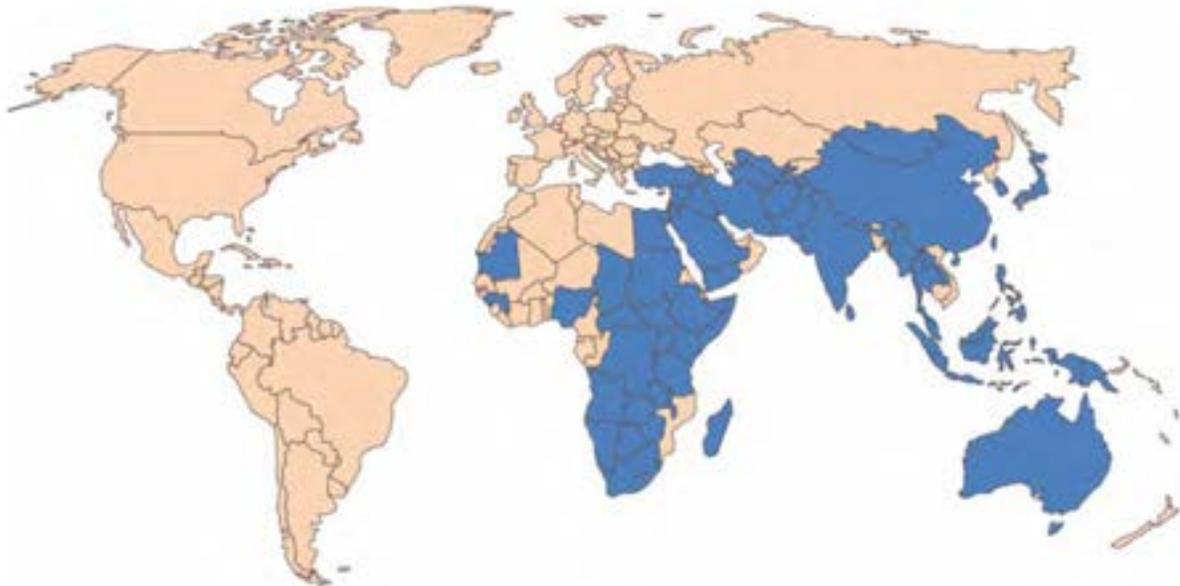


Source: Al Rolin et al 2013

- Bovine Ephemeral Fever (BEF)

BEF risk to Europe must be considered on the basis of the increased frequency of epizootics of BEF in the Middle East during the past 20 years, and severity of impacts in Israel. Several observations suggest there may be a connection between the outbreaks which have occurred simultaneously in Israel, Egypt and Saudi Arabia in 1990, in Turkey, Israel and Egypt in 1999–2000, in Egypt and Israel in 2004, and in Turkey and Israel in 2008. Considering the presence of vectors responsible for the transmission of BEFV and the potential origin of the epizootic from different regions, BEFV infection will remain a threat with the potential to cause significant economic losses in Turkey, Middle East and European countries.

Known geographical occurrence of BEF



Source: Walker and Klement, 2015)

- Lumpy skin disease

The extension of LSD to the Balkans in 2015-16 was a major animal health matter after an incursion in Northern Israel in 2012 led to regional spread involving Turkey in 2013. In 2018, no lumpy skin disease (LSD) outbreaks were reported in the Balkan region, after the decline reported in 2017 (385) compared to 2016 (7,483). This confirms the effectiveness of the vaccination campaign based on the LSD homologous vaccine strain, which continued throughout 2018 with over 2.5 million animals vaccinated, keeping the mean vaccination coverage above 70% (EFSA, 2019). The situation for Transcaucasus/Russian Federation remains of concern, as in 2018, LSD outbreaks were reported in Russian Federation (63 outbreaks), Turkey (51 outbreaks in Anatolia) and Georgia (6 outbreaks).

- Sheep and goat pox

Historically, the global distribution of SPP and GTP has been wider than LSD. The disease is known to be endemic in the region of North Africa (Morocco, Algeria, Tunisia and Libya), Middle East, including Egypt, Iran, Afghanistan, Turkey, Iraq and the Indian subcontinent with specific features in each country.

188 SGP outbreaks were reported in Turkey in 2018, but none in Thrace. The last SGP outbreak in Turkish Thrace was reported in 2017. However, some of the SGP outbreaks are in the coastal regions bordering the Greek Islands. The last SGP outbreak in Greece was reported at Island Lesvos in January 2018.

An integrated approach for FAST risk based surveillance and control in European neighbourhood and availability of timely risk information to risk managers is needed, and this will also require an increased capacity to early detect and promptly react to FAST incursion and circulation. Several FAST diseases are vector borne and there are few options to prevent spread except for emergency vaccination campaigns, and in this regard much more attention is needed to address the lack of suitable vaccines for several of the FAST diseases, such as RVF and BEF.

Discussion

The President thanked Dr Rosso for the comprehensive review which highlighted the complexity of the risks to member states from the situation in the near neighbourhood. The situation is “FAST” and changing as a result of insecurity and climate change.

Dr Füssel mentioned that this talk demonstrated risks and synergies in understanding preparedness for vaccination, for example. He mentioned that Lumpy Skin Disease (LSD) programmes could provide information to those for FMD. He added that these diseases need to be looked into together, to learn from the situation about disease movement and entry pathways. Dr Füssel concluded by stating that understanding the introduction of Sheep and Goat Pox (SGP) can be a lesson to learn for an FMD incursion, therefore there are synergies in understanding risk to assist the Member States.

Item 4. Technical point 1: *Modelling FMD, EuFMDiS*

Document provided: Summary paper including Key Messages

Presentation: **Appendix 6**

EuFMDiS brochure: **Appendix 7**

Key messages

- Europe remains vulnerable for TAD incursions, which have a high impact on livestock production. Well-developed contingency plans are needed for countries to be prepared for mitigating this risk. Simulation models are best placed to test this preparedness
- EuFMDiS is a powerful and easy-to-use tool that simulates FMD spread within and between countries, allows easy click-on configuration of numerous control and scenario options and provides real-time display and reporting of outbreak attributes.
- EuFMDiS provides high value for EU-wide contingency planning as it models spread, impact, success of control measures, and availability of resources at a multi-country level.
- Contribute to Europe-wide systematic support to risk assessment, contingency planning and targeting of interventions through modelling of national and regional control measures for FAST diseases.
- It would be an opportunity to further develop EuFMDiS to model FMD and transboundary diseases at European scale.

Dr Koen Mintiens, EuFMD, presented the progress made to develop the “European Foot-and-Mouth Disease Spread Model – EuFMDiS” to assist countries with improving or testing their preparedness for controlling FMD-outbreaks. EuFMDiS is a multi-country extension of the Australian Animal Disease Model (AADiS) (Bradhurst et al 2015¹), and is a powerful tool which takes all features and components of FMD outbreak control into consideration and allows estimating the impact of various control options. It was developed with the collaboration of seven pilot countries in South-East Europe (Austria, Bulgaria, Croatia, Hungary, Italy, Romania, and Slovenia) and has been prototyped for these countries. In addition, Spain and the Republic of Ireland are currently working on the collection of data to adapt the model to their national context and some other countries, such as North Macedonia, have expressed their intention to join EuFMDiS. Presentations of the EuFMDiS model at the EuFMD 2018 Open Session and to the European Union (EU) Working Party of Chief Veterinary Officers, received considerable interest. Several additional countries are now considering to request national EuFMDiS versions.

Marko Potocnik, Slovenia, reported -via AdobeConnect- of a study using EuFMDiS to compare the use of emergency vaccination with applying preventive culling, while the time until first detection of infection was considered. Several output variables (e.g. number of infected holdings, duration of control, control costs, animals vaccinated or culled) and scoring approaches were considered to describe the extent of the outbreak and to identify to the ‘best solution’ for control. In conclusion of the study, the importance of early detection and increasing of cost proportionally with the duration of the outbreak was stressed.

EuFMDiS has been used as a training tool in a recent EuFMD workshop "Putting vaccination into practice". Consultations with current and potential users has identified areas for further EuFMDiS development and application. A ‘EuFMDiS Advisory Group’ was established to advise on the strategy and objectives for EuFMDiS within the 2019-2023 EuFMD workplan. The group identified priorities for development within the FMD context, such as additional spread pathways (seasonal common grazing on pasture) and trade through markets. Location of rendering plants and slaughterhouses need to be specified and considered for disease spread. The impact of implementing additional on-farm biosecurity measures on disease spread needs to be modelled. The effect of the different disease control options on animal welfare need to be assessed and estimated. The costs related to post-outbreak

¹ Bradhurst R.A., Roche S.E., East I.J., Kwan P. and Garner M.G. (2015). A hybrid modelling approach to simulating foot-and-mouth disease outbreaks in Australian livestock. *Frontiers in Environmental Science*, 3(17). doi:10.3389/fenvs.2015.00017

management need to be evaluated. The risk for disease spread from, to and within susceptible wildlife populations needs to be modelled. The EuFMDiS model also has scope for extension to simulating additional FAST diseases. In summary EuFMDiS has a potentially very high worth for use in EU-wide contingency planning, even if not all countries participate at a full level. The value is both for the national and regional application, potentially contributing to a Europe-wide systematic support to risk assessment, contingency planning and targeting of interventions through modelling of national and regional control measures for FAST diseases.

Discussion

The President commented on the usefulness of the EuFMDiS model, which by being a multi-country model was already a unique tool for Europe, even if limited to seven countries at this point. He asked for remarks on further development, especially regarding extension to other countries and diseases.

Discussion followed with a consensus that such models are extremely useful as they estimate resources needed, predict farm visits required per day and other details. A Danish model already provides this and it would be positive if EuFMDiS could assist to achieve this for other countries. Professor Stark indicated Switzerland is motivated to engage and use the model but would like to see other diseases included, and were queried if the data collection, is a substantial investment. Professor Stark further asked about contacts with EFSA and was told that meetings had been implemented in an effort to align projects, particularly with data collection. Professor Conraths, Germany, mentioned their use a modified version of the Danish model.

A process of validation was being followed for EuFMDiS, to be completed by August 2019. Matthew Stone, DDG-OIE suggested that connecting modellers with policy-makers is important, and that policy-makers need a strong validation process. He also mentioned that the AADIS model had been compared under the Quads (Australia, Canada, New Zealand and United States of America) work with a number of EU, and that the comparison process can be an important part of validation. Slovenia's representative thanked EuFMD for the support to develop the model, which had already proven useful. The representative of the UK added that the key is understanding the assumptions in the model and communication with policy-makers. The comparison of models helps understand the different data available but sometimes, she remarked, the best model is the one you understand most. There is also interest from the UK in the use of TRACES data.

Conclusion

1. The development of the EuFMDiS model, for national use by the seven pilot countries and as a tool for simulating regional spread in South-Eastern Europe, is of real significance.
2. The tool has potential for extension to a Europe-wide model for FMD, and for simulating other FAST diseases. The continued development of the tool and support to adaptation to other MS is merited.
3. The recommendations of the advisory group on EuFMDiS are noted and every effort should be made to support the proposed priorities for EuFMDiS development in order to increase its utility to contingency planners, especially those in the major livestock trading countries in northern Europe.

Item 5. Technical point 2: *On-farm biosecurity is crucial for controlling FMD outbreaks*

Document provided: Summary paper including Key Messages

Presentation: **Appendix 8**

Key message

- Enhancing biosecurity is crucial for both preventing and controlling FMD-infections.
- Farmers who invest in enhanced on-farm biosecurity, could avoid severe control measures in the phase of an epidemic.
- The biocheck.ugent® scoring tool allows to quantify the level of biosecurity in pig and cattle herds.
- By means of this scoring system, the effect of enhanced biosecurity measures on the disease transmission risk can be simulated.
- Such simulation scenarios would allow to determine minimal biosecurity levels that may allow farms to avoid severe control measures.

This item was presented by Professor Dewulf (University of Ghent; **Appendix 8**), who drew attention to the potential ways that the better estimation of biosecurity at farm level could assist before and during an outbreak of FMD. Information generated by users of the Biocheck.Ugent®, a risk-based scoring system, is already substantial and through specific estimations relating to FMD transmission pathways, parameters for modelling the impact of biosecurity differences between farms on spread in the “silent spread” period and during control operations could be obtained. This development offers a number of potential new avenues for exploring, if high biosecurity farms might be treated differently in restrictions, without loss of control. This might be an important avenue to explore and lead to a better balance between disease control, animal welfare and business continuity in emergency situations.

Discussion

The President commended the speaker on the progress made, which has a relevance not only for FMD but for a range of FAST diseases. Dr Borrello (Italy), stated that animal welfare issues and use of drugs need consideration and perhaps should be included in wider assessment system.

The Executive Secretary commented on the validation of the self-assessed biosecurity scores. For application to movement management in emergencies, it would be important to have sufficient external evaluation of biosecurity. This is currently used mainly as a tool for farm advisors, but Ireland has adopted the Biocheck system officially, as has Finland in relation to ASF threat and other MS are thinking of adopting it officially. The advantage is that it is not so difficult to validate, through a farm visit.

Discussion followed on the importance of open livestock systems, and the balance between animal welfare and the biosecurity issues of open system. The speaker replied that cattle systems are usually much lower rated on biosecurity than pigs, so there is more room for improvement for the cattle sector. In relation to animal welfare, there can be contradictions between biosecurity and welfare, and a compromise is needed, for which the tool may assist.

The collation of country data was also discussed, as countries are sensitive about indexing of data – it being asked, is there security in this system to stop the data being used in the wrong way? This was not directly answered, although effort is made to distinguish real farms and exercise data in the database. As a voluntary tool, it was stated that there is little incentive to cheat, whereas if it were a government-controlled system, this could be different. The presenter stated In Ireland and Finland, there are no major changes seen, in the way responses to the questionnaire are given, when moving to official use of the tool.

The representative of Finland mentioned that all their pig farms should apply Biocheck this year, as an initiative of industry, supported by the government. Belgium’s representative commented that in the framework of raising

awareness for ASF, they plan to make the use of Biocheck compulsory in Belgium. It would be filled out by farmers and veterinarians and it might be expected that people overstate their level of biosecurity. The result should give a good overview of how well biosecurity is applied in the pig industry.

Dr Sumption mentioned that, in 2015, the 41st General Session of the EuFMD included a presentation on business continuity- how to maintain farm business activities during an outbreak. The development of the use of Biocheck is in line with this, considering if livestock and product movements might be different for farms at different levels of biosecurity, without loss of control; modelling should assist to identify when this may be the case.

Dr Füssel mentioned that this is significant and very relevant to work in the European Commission on the Animal Health Law. He asked about the internal biosecurity air conditioning systems, and was surprised about the high biosecurity weighting given to semen.

Conclusion

1. The development and wide application of the biosecurity scoring system at farm level at a voluntary basis or as part of national schemes, has to provide data for better understanding of the range of farm biosecurity differences that can contribute to FMD spread between holdings, during a silent spread period or after confirmation of outbreaks.
2. Efforts to model the impact of these difference in biosecurity are called for, as is to explore the potential for different restrictions on holdings at different biosecurity levels, on disease management and on business continuity in outbreak situations.

Item 5. Technical point 3: *How prepared are we?*

Towards a framework for better planning and testing of emergency preparedness

Document provided: Summary paper including Key Messages

Presentation: **Appendix 9**

Key Messages

- Following a review of the Get Prepared concept, the EuFMD propose to update the concept from one focusing solely on simulation exercises, to a toolbox of resources for assessing and addressing gaps in preparedness.
- The interface would be a wall, with each brick in the wall being a component of preparedness and, behind each brick, would be links to the tools for assessing and addressing the gaps.
- The EuFMD will collaborate with DG SANTE.F2 and with EU Member States (through the EuFMD contact points) to identify significant gaps, plus criteria for, and examples of, good practice.
- The toolbox will composed of tools developed by EuFMD and the examples of good practice.
- Many of the tools will be generic for, or can be adapted for, other Transboundary Animal Diseases.
- The focus initially will be on the components, not yet addressed, that have greatest impact on effectiveness of disease control – killing, disposal and scaling up of resources.
- The tools will not only benefit EU Member States, but also other member states, in particular those following EU rules.
- The benefits to EuFMD include linking and improved use of EuFMD tools such as the Knowledge Bank, Self-Assessment Tool and EuFMDis.

The paper was delivered by Sally Gaynor, EuFMD (**Appendix 9**). In recent years, the EuFMD has focused emergency preparedness efforts on testing of preparedness, using simulation exercises and by developing a self-assessment tool. Experience has shown that when gaps are identified, it would be useful to have tools to address these. Whilst there are tools that have been developed by EuFMD, e.g. during the epidemiological investigation for FMD, there are other areas of emergency preparedness that EuFMD has not had any involvement to date, such as culling and disposal of animals. At the same time, many examples of good practices can be found in EU Member States, in particular those that have experienced outbreaks of various diseases in recent years. Gaps in preparedness and good practices have been identified by auditors in DG SANTE Directorate Health and Food Audits and Analysis. Discussions with SANTE.F2 have been positive towards a collaboration to make use of these and develop criteria for inclusion as good practice. The EuFMD could then follow up on examples of good practices identified by the unit, through the EuFMD focal points.

Dr Gaynor asked the MS to consider the components of emergency preparedness as a wall, with each brick in the wall being a component, and behind each brick would be links to the tools for assessing and addressing the gaps. The wall is to give the idea of “building up preparedness”. At the base are the foundations, and then the three epidemiological phases of outbreaks – **alert, emergency and restoration** – the phases being aligned to terminology of the FAO Good Emergency Management Practices -GEMP (in its current stage of review). The toolbox will contain tools for each component, and will include three categories: **self-assessment, assessment of resource requirements, and examples of good practice**. These may include the self-assessment tool, questionnaires, or simulation exercises for self-assessment; use of EuFMDis or resource calculators for assessing resources; and guidelines, templates, videos, webinar recordings, checklists, videos, job-aids as examples of good practice. The focus will be initially on the components which currently have no tools and which have greatest impact on effectiveness of disease control – culling, disposal and scaling up of resources.

The toolbox will not only benefit EU Member States, but also other member countries, in particular those following EU rules. Many of the tools could be used for, or adapted for, other Transboundary Animal Diseases. The benefits to EuFMD include linking and improved use of EuFMD tools such as the Knowledge Bank, Self-Assessment Tool and EuFMDis.

Discussion

The President thanked the presenter, and considered that the consultations with DG-SANTE Directorate F and with FAO (Emergency Management Centre) were proceeding well, with the clear gap in guidance tools being addressed in a practical way. The potential for this work to support strongly the OIE/FAO EMC and the project on resilience against agro-crime were also mentioned.

The representative of Serbia thanked the EuFMD team for support to the recent national simulation exercise, which had taken place the previous month. He stressed the importance of regional collaboration, and the core role of the EuFMD in bringing other interested parties to Serbia, to allow for a wider training. The psychological impact of the UK FMD outbreaks in 2001/07 was mentioned by the CVO of the United Kingdom and that a recent wellbeing survey of Government Officers had identified the residual impact. She added that preparedness must include wellbeing issues, especially for recruitment of staff to government service as the memories of that extremely difficult period (such as killing of livestock on a big scale) are still vivid.

The important potential bottleneck of rendering capacity was raised by Mr Füssel - capacity in Europe is currently only fit for day-to-day demand. Keeping spare capacity is expensive, and the ASF problem is such that it must now be arranged for carcasses to be moved across borders, as a result of this. Resources must be ready and available for an emergency.

The representative of Malta reported on a recently concluded four-day simulation exercise and concluded that each exercise costs, but is valuable for policy-makers. One lesson learnt is that there is a value to test ourselves in bad weather rather than good weather and was pleased to note that the EuFMD is already applying this concept – by conducting the exercise in Bulgaria in January.

Dr Sumption commented that the novelty of the “wall” is that it is a first attempt to build a truly comprehensive toolbox for preparedness planning – including the so-called hard and uncomfortable issues that had not been a feature of the more menu-driven training programme. It will take some time to ensure the wall is complete and so the proposal is to set a two-year deadline.

Conclusions

1. The development of a truly comprehensive tool box to assist the member states in preparedness planning is called for.
2. A close working relationship with Directorate F of DG-SANTE in this process is encouraged.
3. The provision of assistance to countries to run national or regional simulation exercises has been appreciated. Continued support in this regard will be important, including reinforcing exercises for other major TADS, as a means to also gain experience of value to the wider MS, should be considered.

Item 6. Technical point 4

Early warning and better preparedness for FMD and similar transboundary animal diseases in the European neighbourhood: the case for an integrated approach

Document provided: Summary paper including Key Messages

Presentation: **Appendix 10**

Key Messages

- Risk of introduction of FMD and similar TADs (FAST) in Europe remains very high. The regions of North Africa, Middle East and West Eurasia are key areas for a number of emerging risks for Europe.
- A better knowledge of the livestock flows in the European neighbourhood would be a core for the assessment of dangers threatening Europe and would provide useful information for the national veterinary services for designing more effective national disease surveillance and control programs.
- The collection and sharing of risk information between neighbouring countries can facilitate the regular updating of the risk assessment carried out at national and regional level. Information sharing tools and well established regional networks can facilitate the systematic collection, collation, analysis and sharing of relevant data for the risk assessors.
- Maps resulting from the assessment of animal mobility and other risk information (e.g advancement of vaccination programmes, outbreaks occurrence, and circulation of new strains) can be used to develop ongoing risk based surveillance in hot spot locations and optimize the veterinary service resources deployed in the field.
- The capacity for early detection of FAST incursions, depends largely on sensitivity of the primary surveillance, on effectiveness of the disease reporting system, and on the active surveillance implemented in risk hotspot areas. The capacity to collect regularly and submit isolates to the international reference laboratories is essential to detect circulation of new virus strains in endemic areas.
- Involvement of stakeholders is important to improve the sensitivity of the primary surveillance. The use of tools such as apps, SMS and other online systems can contribute to the collection of timely information, and the adoption of a “negative reporting system” in high-risk areas can increase the detection of FAST circulation at an early stage.
- Laboratory capacity to confirm and investigate suspicions and epidemiological skills to adapt surveillance according to the risk are necessary to implement an early detection system with a good level of sensitivity. Regular training and networking between centers of expertise can contribute to build capacities in Europe and neighbouring countries.

This item was presented by Fabrizio Rosso, EuFMD (**Appendix 10**). In this paper, the case for an integrated approach for multiple TADS was made, considering the co-circulation of several TADS in parts of the neighbourhood region, and the lessons from spread patterns for each TAD that can inform better prevention of FMD. A key to risk factor for several TADS is the livestock flow into the neighbourhood. The implementation of specific surveys and the monitoring of proxy indicators of animal movements, especially in areas with a general lack of national animal identification systems and movement monitoring (e.g. North Africa), are key elements for tailoring a risk-based approach for surveillance and for the development of early warning and reaction systems. The combination of qualitative risk analysis and risk mapping contributes to assess the risk of introducing and disseminating FMD and similar TADs within the countries and across their borders. The resulting risk maps can be useful to develop disease surveillance programs focused on specific risk hubs, in order to optimize the veterinary service resources deployed in the field and improve the effectiveness of control measures implemented. Progress has been made through a EuFMD and CIRAD collaboration to promote an integrated method based on qualitative risk analysis, risk mapping, animal mobility, market prices data analysis and surveillance protocols. The work has been intense in the past year, but now offers the opportunity to national veterinary services to update regularly the FMD surveillance and control strategy in relation to risks of FMD introduction and spread. Considering that the risk can change over time, and that risk information must be re-assessed continuously, the proposed methodology can contribute to adjust health risks in a relevant and innovative way by improving the efficiency of the risk-based disease surveillance and control while streamlining costs. Furthermore, the sharing of risk information between neighbouring countries is an important part of regional risk reduction and such sharing should not be dependent on international intermediaries – in the example of Greece, Bulgaria and Turkey, direct CVO to CVO contact has been important and appreciated.

The **Statement of Intentions established in 2016** under the framework of Gf-TADs between the veterinary services of **Armenia, Azerbaijan, Georgia, Iran, Turkey** and the **Russian Federation** for an intensified collaboration in the prevention and control of FMD and similar TADs, can be a model adapted and adopted in other regions to improve effectiveness of control programmes and reducing the risks.

Dr Rosso drew attention to several elements of the current FMD early warning system that could be extended for an integrated approach for FAST diseases:

1. Primary surveillance and reporting system. With the example of the exercise to assess the sensitivity of the primary reporting system for FMD, have been carried out in Thrace (border between Turkey, Bulgaria and Greece) and North Africa within the EuFMD workplan, and with the participation of stakeholders and the identification of gaps and priorities for improvements.
2. Active risk-based surveillance in hot spot locations. The risk assessment based on animal mobility and other risk information (such as advancement of vaccination programmes, outbreak occurrence, and circulation of new strains) can be used to develop ongoing risk-based surveillance in hot spot locations. Such a system has been successfully applied for six years for various diseases (FMD, PPR, SGP), to provide confidence in absence of virus circulation, and has been already discussed for the Thrace region. Other similar surveillance have been implemented for FMD in other areas such as in North Africa to detect silence circulation of the disease among the small ruminant population in 2017-2018. The surveillance showed disease circulation in risk border areas of Morocco and Tunisia and a wider spread in Algeria.
3. Monitoring of circulating strains. The system for FMD has been to support sample shipments from areas where information is most needed. This systematic approach to address gaps does not exist for other TADS. An integrated system should prioritize shipments based on the importance of the potential information they will provide.
4. Better preparedness. National laboratory capacity is necessary for an effective early detection system. The support to FMD –NRLs in the neighbourhood has been a feature of the EuFMD Pillar II programme. In future, networking between European and neighbouring centres of expertise can contribute to mutually important capacities - for example the daily practise of surveillance for TADS outside Europe could assist for confirmation in a crisis.

In conclusion, an integrated, ongoing active and primary surveillance for multiple TADs in risk hot spot locations can be built as a natural extension of the recent work on FMD and can contribute to optimize the use of the available resources and early warning system in the European neighbourhood.

Discussion

The Chairperson of the Standing Technical Committee, Dr Ryan, thanked the speaker for the presentation and commented upon the effort needed to both increase the participation of neighbourhood countries and to provide information on an increased number of TADS. What has been learnt from the challenge of doing this for FMD in the neighbourhood? It was highlighted that first of all, regular contact was seen as key and as well as having Short Term Placements (STPs) from the regions, working with the EuFMD. Then, extending expertise learned in one region to another has been helpful, for instance Libyan trainees going to Jordan.

Conclusions

1. Given the weaknesses in information on circulating of FAST diseases in several parts of the European neighbourhood, and the scale of the challenge to address this, integrated approaches making use of information from multiple sources, and optimization of additional efforts on the basis of risk and efficiency, and involving sufficient regional partners to provide sufficient quality of information for early warning, must be further explored.
2. The collaborative and continuous surveillance programmes operating under the THRACE programme (Greece, Bulgaria and Turkey), and the Statement of Intentions (SOI) between the six countries in the Caucasus region, may provide a model that may assist countries in the south and eastern Mediterranean regions.
3. The interest of countries, particularly those with locations frequently affected by FAST diseases, to participate as part of an integrated, neighbourhood surveillance system needs to be explored in REMESA and other regional co-ordination meetings.

Item 7. Report of the Executive Committee on the actions since the 42nd General Session

Document provided: Summary paper Executive summary

*Presentation: **Appendix 11***

The full Report was provided to the participants to the General Session. A short presentation was given by the EuFMD team, with an introduction by Dr Sumption - with the work relating to Europe, the neighbourhood and the global strategy presented by Maria de La Puente (coordinator of Pillar I), Fabrizio Rosso (Pillar II) and Nick Lyons (Pillar III). Etienne Chevanne managed the transitions between Pillar presentations.

In his opening, the Executive Secretary drew attention to the remarkable eight year freedom from FMD in the European Union, all the more notable given the regional situation. A part of the overall success must be the continuous effort between the agencies as well as the role of the three "Pillars" of the EuFMD programme in information generation, communication and training for response.

Under Pillar I, there has been a continued high demand for training courses and a strong delivery of e-learning at national level in a variety of European languages. The development of the EuFMDis model, starting with seven countries in Central Europe, brings an exciting new capacity to contingency planning in those countries that can be applied to other diseases as well. The expertise in the member States has also assisted the EuFMD to support countries in the Balkan regions, and Spain and Portugal to run national and regional simulation exercises.

Under Pillar II, the efforts have been intense to assist countries to improve their national FMD control plans and monitoring their effectiveness. The epidemics in North Africa have focused attention on risk pathways from sub-Saharan Africa to North Africa, and a solid collaboration with CIRAD (France), has assisted to bring livestock movement data into risk mapping in North Africa.

Under Pillar III, the EuFMD is now well integrated into the GF-TADS Global Working Group and has provided strong support to Regional Roadmaps held in East, West, and Central Africa, in the Mid-East, West Eurasia and South Asia. The specific focus upon West Africa and South Asia (agreed at the 42nd General Session) has been important, with over 1000 veterinarians trained through e-learning on FMD investigation. This has probably helped ensure the regional pandemic of type O EA-3 was well tracked as it moved through the whole of West and North Africa in 2018.

Dr Chevanne drew attention to the linkage between the parts of the programme - and how some common issues affect all countries - such as the acute shortage of vaccines to address epidemic or endemic FMD. This issue of "global vaccine security" was the theme of the EuFMD Open Session held in Puglia, Italy in October 2018, with over 250 participants at the meeting and 300 online.

The President, Dr Angot, concluded with a summary of the Executive's effort to support the programme and to communicate with member states, European Commission, REMESA and GF-TADS partners. He thanked the Vice-Chairs, FAO, OIE and EC for their daily engagement and concluded that the **positive FMD health status in Europe** at present is therefore something significant that has resulted from this relationship, and is really the achievement of all, and all are to be thanked.

Conclusions

1. The recommendations of the 42nd General Session (2017) have to a large extent been addressed and a very good level of progress made in delivery of the 16 components of the work programme agreed at the previous Session.
2. The Session noted the efficiency of the operational delivery of a large programmes and commended the Secretariat on this achievement.

Item 7. Report of the Training Evaluation Group

Document provided: Report of the Evaluation and the EuFMD management response (Appendix 12)

The Executive Secretary introduced the item. The EuFMD had invited an evaluation of the training programme as a result of concerns within the team of trainers and Secretariat staff that the very rapid expansion of the range of courses, the increased language offerings, might be affecting quality of course content and impact through the pressure of development and delivery upon a small team. An open call for experts in veterinary education was made in the autumn and from the call, three experts were invited, from the UK, Belgium and Italy, with experience in leading veterinary medical faculties and with individual expertise in cattle herd health, state veterinary officer service and international network "One Health" education. The evaluation group visited in December 2018, and the group was chaired by Wendela Wapenaar (University of Nottingham).

Dr Wapenaar summarized the report of the evaluation. The knowledge present in the team and the various training programmes were considered both invaluable and unique, and the group felt the quality of the courses offered was excellent. They considered the training could even be extended to a considerably wider audience and has the opportunity to develop into an accredited course within a higher education institution. **The weaknesses observed** during the evaluation visit were quality assurance of the offered training and impact assessment. **The strengths of the programme** are the team of people involved, their expertise and their attitude. The evaluators hope their report would be useful to help further develop a future strategy. The MS and EC were thanked for supporting the training programme and for the concerted efforts helping to control FMD worldwide to the benefit of animals and people.

Dr Sumption indicated the team had provided a response to the 37 points in the Report (summarized below). There would need to be significant effort placed in areas where funding and effort had not been retained before, for example upon impact assessment and the processes of quality assessment for courses at every stage of development to delivery.

EuFMD Secretariat –Response to findings (April 2019)

As a result of the evaluation, we propose the following to:

1. **Commit** funds to assess the impact of selected training courses delivered under Phase IV, such as the Real-Time Training programme, and from this, better understand how to build impact assessment into the course development and delivery.
2. **Develop** a new system for quality assurance of course development, delivery and impact assessment, with guidance from establishments in the Evaluation Team.
3. **Identify**, following point 1 and 3, core positions and responsibilities within the training team, to ensure the daily management follows the principles and practices agreed, with implementation starting from September 2019.
4. **Further explore** the possibilities of certification of courses on the basis of quality and relevance, including the potential that EuFMD training courses (on emergency preparedness for FMD and similar TADS) become in the near future part of a career development path for veterinary officers, under a wider "competency based training framework" such as being considered by the Association of European State Veterinary Officers chapter of the FVE.

Discussion

Prof Katerina Stärk praised the process of review and suggests that other areas of the programme would benefit from similar evaluation. She suggested that the European diploma system could be useful for certification processes. Dr Wapenaar commented that QA is a lengthy process and can be achieved through collaboration with Universities or another organizations. She added that the motivation behind undertaking training is crucial. The Focus of e-learning and training courses has been on government veterinarians, but s students and private practitioners should possibly be considered. Dr de la Puente (EuFMD) added that private vets are increasingly being given opportunities to take courses but for some regions, the completion rate from the private sector is not as high as for official vets, presumably because of the differing incentives or drivers for taking courses.

Dr Füssel emphasised that CVOs of MS should not forget to ensure that trainees after Real-Time Courses should be considered for proposal for the CVET emergency team lists, to be available potentially to respond to emergencies.

Conclusion

1. The external review of the training programme was considered to have provided a valuable opinion upon the quality of the training course development and delivery in relation to best practises in international education.
2. Progress to address the recommendations should be reported upon at future Executive Committee and consideration given to establishing a system for regular review by an education advisory group or external evaluators, given the importance of the training programme for the member states.

Item 8. Proposed updating to the four-year Strategic Plan (2019-22)

Document provided: Summary paper

Presentation: **Appendix 13**

New Strategy: **Appendix 14**

For Decision of the 43rd General Session of the EuFMD

1. The endorsement of the proposed Strategic Plan (“HOLD-FAST”), with any modifications as recommended by the Session;
2. The endorsement of the proposed arrangements relating to co-ordination with GF-TADS;
3. To take note of the proposal, to be made under a separate Item at the Session, of the revised Terms of Reference for the EuFMD Special Committee, which have the purpose of increasing the technical support to the Executive and Secretariat, in relation to the extended coverage of the strategy to include similar TADSs to FMD;
4. The proposal for securing financial resources to support the Strategy, recognising the needs to 1) ensure an adequate financing of the activities in order to maintain preparedness for FMD and essential risk reduction actions in the European neighbourhood, 2) commit the human resources in the Secretariat in support of the Strategy, and 3) leverage additional involvement and support of member states and other parties and partners to achieve a greater impact from the efforts funded through EuFMD.

The Executive Secretary introduced the item and outlined the new Strategic Plan “**HOLD-FAST**” (**Appendix 13, 14**). The **HOLD-FAST** plan had been developed in response to requests from the Officers of the Commission for a strategy that would respond to the issues raised at the OIE Regional Conference for Europe (Tbilisi, September 2018) of the need to leverage the EuFMD expertise to support preparedness for other TADS in the European region. The new strategy, recognizing the impact and risk of FMD, maintains a focus upon FMD risk reduction, but extends the scope of the preparedness and risk reduction activities to similar TADS which pose an immediate threat to the member states (*hereafter FAST is used for FMD and similar TADS*). The strategy will utilize the successful EuFMD training platform to cover the specificities of other TADS, and implement existing generic tools (spread modelling, simulation exercise support, risk-based surveillance) to improve preparedness for the additional threats. In the neighbourhood, early warning of FAST diseases should be greatly enhanced by multi-pathogen surveillance programmes in high risk hot-spots, and through support to greater networking between European and neighbourhood experts and reference centers. At global level, the EuFMD will continue to underpin the OIE and FAO (GF-TADS) Global Strategy, using its expertise in delivery of online training programmes, and it is expected that these will catalyse development of training on PPR and other TADS by GF-TADS partners.

Given the extension of activities beyond FMD, he emphasized the risks that had been considered important and that had to be addressed to ensure the implementation of an effective and well-coordinated programme with the increasing number of partners that would be involved. Closer co-ordination with GF-TADS Europe and EFSA will be needed, and a wider range of expertise (on multiple TADS) required in the expert groups called upon to provide specific guidance. To this end, a new Special Committee on Surveillance and Applied Research (SCSAR) is being proposed at the 43rd General Session. The Executive Committee will also require greater input from the Standing Technical Committee (STC) on issues of prioritization, given the dynamic disease landscape.

Dr Sumption outlined how the operational risks would be addressed, as well as the financing of the programme. He provided details on the funding identified as necessary for the new elements of the programme, including major new items such as the diagnostic bank. The support of the EC in this agreement would be vital, and the new programme had been calculated as requiring 4m€ per annum of which 1m€ would be from member states

(contributions for the Administration) and extra-budgetary support from funds received from additional surveillance and development or delivery of training.

The three Strategic Goals / Pillars

- I. **Improved preparedness** for management of FMD and similar TADS (“FAST disease”) crises by Members and across Europe as a whole.
- II. **Reduced risk** to Members from the FAST disease (FMD and similar TADS) situation in the European neighbourhood.
- III. **Sustained progress** of the GF-TADS Global Strategy against FMD and the improved security of supply of effective vaccines

Discussion

The representative of Denmark indicated support to the expansion of the mandate, considering how well the EU and EuFMD work together. He mentioned that the FAO, as an international organization, has a valuable synergy to that of the EU and that the EuFMD should keep the three pillar format. Progress in disease control in the risk countries for Europe is a lengthy process and it was suggested that EuFMD collaborate more with FVE to develop courses involving the private sector. The Executive Secretary confirmed EuFMD has discussed with FVE and joined a working group, under FVE, to consider training competences for veterinarians working on competent authorities. This could lead to a system that creates motivation for people to tackle longer training courses.

Sweden’s representative congratulated the EuFMD on work and presentations. They recognized the synergistic effects of EuFMD work, experience and system to support countries to manage other TADS. Sweden supports the plan, which is deemed balanced and pointing in the right direction, but reiterated the need for consultation during implementation to ensure priorities are properly addressed, as well as collaboration with FAO and OIE.

Dr Füssel mentioned that PPR should be a priority to start with, after FMD. The synergies between the Progressive Control Pathways for PPR and FMD should be explored in order to synchronize or link them. He supported the categorisation, with vector-transmitted diseases on the second step, after those primarily linked with movement of live animals in the neighbourhood, as the first priority. He added all should be aware that the programme will take time to be developed.

The UK CVO, Dr Middlemiss indicated support for the new strategy, with its pro-active intention, its flexibility and agility for disease control, and the way it provides a mechanism to work on threats that are known about but upon which no action can be taken at national level currently. She supported the focus on synergistic areas such as animal movements as a priority.

This was further supported by Prof Stärk. The new Strategy was considered a good balance between consolidation and actions to address the new challenges, and supported retaining the three pillar approach. She appreciated the detail provided with the indicators, outputs, outcomes and would like to see indication of how review and evaluation are planned, as these matter in the project cycle.

Dr Sumption thanked all for the helpful and supportive comments. Priorities, expertise and flexibility are the areas the technical committees can support the Executive. The EC position on PPR seems well in line with the results of the GF-TADS evaluation, to achieve a greater working efficiency between the GF-TADS priority diseases of FMD and PPR where parallel progressive pathways exist. Many of the tools, such as e-learning, national assessment tools for FMD, even the expertise for national guidance might be given together, or synergies found, and the FMD-WG had already provided some thoughts on a paper on this to the other Secretariats. However, even the issues of vaccine availability and quality are similar, though more complex for FMD. The evaluation will be included as appropriate and according to budget availability, possibly at mid project.

Conclusions

1. The new strategic plan for the Commission was considered well balanced, appropriate and feasible, and provides for a cautious and measured extension of the focus of activities beyond FMD to address the risks of similar transboundary diseases.
2. Priorities among the similar diseases were seen as being those primarily transmitted through live animal movement, including PPR, with the risks and benefits of actions relating to primarily vector borne diseases kept under review.
3. At international level, the Strategy and work programme should synergise with the principle GF-TADS programmes, using the expertise and tools developed for the FMD progressive control pathway, such as e-learning.
4. An increased role of the expert committees to provide guidance to the Executive and support the Secretariat in the questions of risk assessment and prioritisation should be recognized, and provided with organisational support and other resources to undertake their role.

Item 9. Information session - Current FMD and other transboundary diseases situation

Turkey, Israel and Georgia

The presentations are available as **Appendices 15** (Turkey), **Appendix 16** (Israel) and **Appendix 17** (Georgia).

9a. Current FMD Situation in Turkey

The report was provided by Dr Abdunaci Bulut. The situation was reported as increasingly favourable with only one serotype currently responsible for outbreaks and a steady decline in cases which was attributed to the year-on-year increase in the vaccination delivered to the cattle population, and the increasing immunity achieved in target age categories through use of booster vaccination. A new national strategy has been developed to achieve OIE status of FMD free with vaccination by 2023, preceded by achieving PCP Stage 3 in 2019, Stage 4 in 2021; Anatolia is currently in PCP Stage 2, and Thrace region remains recognized free with vaccination.

New actions in the strategy are:

- Clinical surveillance programme in Provinces along the border;
- for the first time, application of stamping out in Anatolia;
- Use extra high potency (10PD50) vaccine in borderline provinces, in response to outbreak in surveillance zones, and on risk basis;
- increased efforts to reach targets for booster vaccination;
- Restriction of movement – obligation to use identified roads and check points, requirement vaccination two times within last six months, with automatic restriction through the I&R (Turkvat) system;
- Improvement of the infrastructure for managing movement and dealers.

Relating to LSD: increasingly favourable, with all outbreaks restricted to east of Anatolia in 2018 and only two confirmed outbreaks in 2019 at time of report. An over 97% vaccination rate had been achieved and the policy was to use vaccination (3x sheep/goat dose of SGP vaccine) before the transmission season. A new EC funded project will assist Turkey to achieve eradication with the use of vaccination and stamping-out.

For SGP, the situation is less favourable with outbreaks widely across Anatolia in 2019 but no cases in Thrace region since 2017. All small ruminants are vaccinated in Thrace region on yearly basis.

For PPR, the situation mirrors that of SGP. Cases have occurred across Anatolia; the vaccination figures provided are based on targeted populations not the full population. The intention remains to eradicate progressively the disease, and to achieve freedom in Thrace region after withdrawal of vaccination in 2020. Movement of unvaccinated animals across Turkey, is prohibited. Vaccination is used in response to outbreaks, with a policy of vaccinating new-borns and unvaccinated adults.

In response to the PPR outbreak in Bulgaria, two programs for clinical surveillance (90 and 56 villages respectively) were performed with over 8000 animals examined with negative results. Immunity was examined by sero-survey with a minimum of 88% sampled having sero-positives attributed to vaccination in each province of Thrace.

The President thanked Dr Bulut for the presentation and welcomed the new FMD strategy. He also thanked Turkey for including additional TADs in their presentation and mentioned this is a good example of inclusion of FAST diseases. Although the picture differs between the FAST diseases, the evidence of a good FAST disease health status in Thrace, and with the actions taken to maintain this, are to be congratulated.

Discussions followed on issues including the reception of the stamping-out policy by farmers; the response focussed on the financial preparation for this measure. The representative of Bulgaria welcomed the new strategy and found the reduction in incidence of FMD and LSD to be encouraging. There followed questions on the use of homologous versus SGP vaccine (three times dose). Following a study at the Pendik Institute, it was decided to maintain the use of SGP vaccine against LSD, and this will be used in Anatolia as the tender has already been finalised.

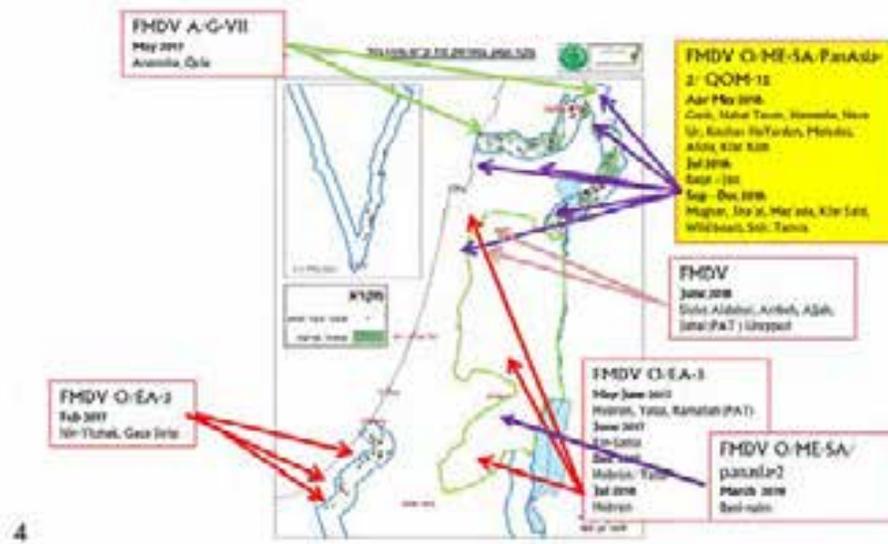
The use of a 10PD50 FMD vaccine potency was also discussed: the decision for this is based on vaccine matching results and the need to cover the diversity in risk from field strains; there is no question on lack of vaccine matching with current Turkish strains but there is risk associated with the genetic diversity in Iran and Pakistan and regular incursions from these regions to Turkey. Therefore, they used the 10 PD50 vaccine in the border areas.

Dr Bulut then raised the issue that Turkey had submitted documentation for progression from stage 2 to 3, in line with the required, more aggressive strategy for elimination of the FMD virus, and they were disappointed this had not been accepted. Turkey requested that an online meeting of the Regional Advisory Group (RAG) be organized, between the roadmap meetings, to ensure a reassessment of the stage of Turkey. The country has made huge investments in FMD control and controlling high risk to Europe. Turkey believes their FMD control status is now higher than other Stage 2 countries in the West Eurasia region such as Iran, Syria and Pakistan.

The Executive Secretary indicated that there is a process for review by GF-TADS of the documentation submitted between Roadmaps to support the RAGs. It is not a simple process to review against the criteria and cannot be achieved in complex cases if presented at a Roadmap meetings, where there are many other cases to consider as was the case in this situation. He assured this would be brought to attention, and that though EuFMD support, a document management system for expediting submission and clearances was under development and should assist in future submissions.

9b. FMD and other transboundary diseases: Situation in Israel

The report was provided by Dr Goshen, and covered FMD, bovine ephemeral fever (BEF) and simbu type viruses. The situation with FMD is complex given the risks for incursion of FMDV from all directions, with different genotypes of Africa and Asian origins, and coming without warning from the neighbours. Asia- had not been recorded since 1989 and the vaccination policy was to use multi-valent A and o vaccines with Asia-1 in the national vaccine bank. The risk of SAT-2 from Egypt remains under consideration. He reviewed how recent FMD spread involved both wildlife and domestic species. Control of recent outbreaks has been difficult with some concerns to be resolved in vaccine effectiveness. Regarding BEF, he highlighted the waves of BEF that had affected Israel and the lack of an effective vaccine, which must be considered a potential issue for other countries at risk. On simbu type viruses, they had evidence that virus circulation and outbreaks were now annual and this may relate to climate change. The monitoring system (sentinel calves) may be usefully extended to other countries for greater information on the regional situation.



Map above provided within the presentation of Dr Goshen - borders indicated do not imply any official recognition by the UN.

Discussion

The President thanked Dr Goshen for his presentation which highlighted the important contribution Israel can play as a member state that has a high expertise and experience in the management of FAST diseases which may become the next ones important for the whole region.

9c. Current FMD Situation in Georgia

Dr Zurab Rukhadze presented the progressive control programme of Georgia for FMD control, which aims to reduce the risk of FMD infection in large and small ruminant populations and ensure maintenance the export capacity of animal and animal products of the country. Georgia aims for the full operation of FMD Risk Based Strategic Plan by 2019, reaching PCP stage 4 by 2020 and obtaining FMD official free status with vaccination for candidate zone **(Racha-Lechkhum Kvemo Svaneti & Mestia)** by 2022. He presented the sero-surveillance results indicating the lower past exposure of animals in the candidate zones compared to other risk categories, and how the vaccination programme and internal movement controls aims to further reduce the risks for the candidate zones. In terms of PCP progress, the number of tactics (means to achieve objectives in the risk based plan) has increased from 2017 to over 50% in 2019, and in PVS self-assessment, the country meets most of the critical competences at level 3. The main activities in the immediate future are

- Finish clinical survey in Mestia(part of candidate zone);
- Strengthen movement control in candidate zone;
- Advocate compensation policy to Ministry of Finances;
- Finish contingency plan (General and for FMD);
- Strengthen National Animal Identification and Traceability.

Discussion

The Executive Secretary underlined that, in line with the constitution adopted in 2015, countries not free of FMD should have progressive control plans for FMD, and the reports by the three countries provide evidence that this is the case. Even if Israel is not formally part of a regional Roadmap, its position in the PCP could be assessed by GF-TADS in the adopted procedure. He added that the serious efforts taking place in Turkey and Georgia should be considered, as should the improvements. GF-TADS should be encouraged to consider the recognition of the changes, investments and significant efforts taking place. EuFMD member states should also appreciate Dr Lasha Avaliani's contribution to FMD control in the Transcaucasus region and his activity as an observer in the Executive Committee.

Item 10. Report on the status of FMD antigen and vaccine banks in the European neighbourhood

Document provided: Presentation Appendix 18

Dr Krstevski (EuFMD) presented the results of the survey of the member states and neighbourhood countries on antigens and vaccines held for emergency use against FMD and other transboundary diseases. He highlighted the use of the PRAGMATIST tool and how the use of the tool indicated that the holdings of some banks covered only part of the risks posed by the current FMDV lineages in circulation and therefore the tool provided evidence of gaps and vulnerabilities. However, since countries each have a different risk profile, managers were advised to use the tool at national level, based on most likely pathways for entry, and this may indicate greater or lesser vulnerabilities than when the overall European risk profile was used.

The President thanked Dr Krstevski for the presentation, and remarked upon the important potential role the banks play in addition to that provided by the EU vaccine bank. For the other FAST diseases, it is clear these need to be considered in the future, as part of the wider strategy, and the EuFMD should include these and issues affecting emergency vaccines in future surveys.

Dr King (Pirbright) offered to assist countries present to tailor the tool for their own banks/national situation.

Conclusions

1. Significant strategic vaccine reserves for FMD are held in Europe in addition to the EU-vaccine bank, but primarily by three countries.
2. Vaccine holdings for other transboundary diseases are very limited and the risks posed by the lack of immediate supply need to be kept under review under the new EuFMD programme.
3. The PRAGMATIST tool could be helpful to individual countries to assess the extent of the FMD risk coverage by their current or future holdings.

Item 11. Report of the Standing Technical Committee and its working groups

Dr Eoin Ryan, Chairman of the Standing Technical Committee (STC), presented his Report (**Appendix 19**).

The STC work included the oversight of the two subcommittees, for Applied Research and for Biorisk Management. The major event of the biennium was the Open Session, held in Puglia in October 2018 on the theme of “Global Vaccine Security”, chosen because the issues associated with the lack of vaccine availability and quality for FMD control in both emergency and endemic settings. A strong private sector presence from across the world had demonstrated the value of a public and private sector dialogue on the issues affecting investment in vaccine development and production that affect vaccine access at European and global scales. Similar issues affect investment in vaccines for other FAST diseases and the STC supports the proposal to include PPP for vaccine security in the upcoming work programme.

The important work of the two subcommittees was mentioned. The Special Committee for Biorisk management has met on two occasions and devoted over 300 hours of technical time to revise thoroughly the Minimum Standards for laboratory containment, meeting the satisfaction of the STC.

The members of the Special Committee for Research and Programme Development met in Puglia at the OS18 and assisted the Open Session, but were also active in proposing applied research topics, and supporting the review process for proposals received for FAR (Fund for Applied Research) funding. He summarized the significant research projects ongoing or completed in the biennium.

The STC position for the Executive Committee, that EuFMD could and should play a role in supporting activities in relation to non-FMD transboundary animal diseases.

They considered important points to resolve including

- how to choose which diseases,
- how to decide the extent to which EuFMD gets involved,
- how to balance the need for EuFMD to maintain a clear focus on its core work on FMD with a broadening scope,
- How to ensure coordination with other organizations.

They considered the future role should include developing opinions relating to the above points.

The President thanked Dr Ryan for his work over the past six years which been highly regarded and appreciated by the Executive. He also thanked Dr Borello and Italy for their support to the hosting of the Open Session.

Conclusions

1. The outputs and impact of the applied research funding programme was recognized and this part of the EuFMD programme was import to continue.
2. The role of the STC in providing advice and guidance to the Executive was recognized as important, and sufficient support must be given to STC members by their releasing agencies as well as the Commission to ensure they can sufficiently dedicate time to the work required.

Item 12. Report of the Special Committee

Biorisk Management; Minimum Standards for laboratory containment of foot-and-mouth disease virus and training planned

Proposed revision: **Appendix 20**

Presentation: **Appendix 21**

The Chair of the Special Committee for Biorisk Management (SCBRM), Kirsten Tjørnehøj (National Veterinary Institute, Lindholm, Denmark) summarized the main issues addressed to the Special Committee, and the background to the Minimum Biorisk Management Standard (MBRMS). The SCBRM (Special Committee on BioRisk Management) had met on two occasions organised by EuFMD and additional meetings organized by the Chair on the side of international biosafety working groups meetings. It had been an intense work with three rounds of consultation (Biorisk officers, CVOs of member states and a final round at the General Session in April). The initial consultation had directly involved almost all of the European laboratories handling FMDV, both at Tier D level (containment facilities including vaccine production) and Tier C (handling FMDV only under specific circumstances, usually emergency settings). The final of these was with the EuFMD MS.

The MBRMS:

- Defines the roles, duties and responsibilities of the management and of Biorisk officers,
- defines expected biorisk, risk assessment(RA) and hazard identification responsibilities,
- Has 70 specific points covering management, personnel, training, biosecurity, facility design, handling of live FMDV, air, waste, effluent and materials, biological materials across barriers and shipment, commissioning and decommissioning.

The SCBRM was formed in 2017 at the General Session to ensure there is a competent Committee for the regular reviewed and to manage any questions which could arise. The review process on this occasion probably exceeded 300 hours of technical input by the SCBRM members. The main consultation to yield detailed responses was that of initial draft circulated to the Biorisk officers of European Tier C and D facilities. Over 140 comments /proposals for revision had been received and considered by the SCBRM. The response rate to the consultation was high, with 26 of the 37 facilities providing feedback and all but 3 of the Tier D laboratories:

Response biosafety professionals Jan. 2019:

Laboratories	SENT for review	Replied		Accepts	Comments
Tier D	17	14	82,4%	5	9
Tier C	20	12	60,0%	10	2
TOTAL	37	26	70,3%	15	11

Altogether approx. 140 comments

The final consultation (to CVOs) had yielded only one proposal for change, which can be taken to indicate the revision process had dealt with the earlier comments to a sufficient degree.

The SCBRM considered the proposed updating to thorough and there are no significant changes posing any additional risks that need to be understood by the CVOs. The changes in the MBRMS do not impose significant additional burdens on BROs of the facilities.

She brought to attention issues to be addressed by the Committee in future,

- Continued development of the MBRMS, including Tiers A and B
- Training in Biorisk management
- Annex/database of accepted inactivation/disinfection methods

- Evaluate alternative procedures
- Opinions on Biorisk related matters for EuFMD

Relating to the Training needed, EuFMD had supported the development of a framework for training on the MBRMS, through a study tour of Dr Carmen Alexandra Sautter (IVI, CH) to The Pirbright Institute (TPI, UK) from January to April 2019. This framework provides a basis for the development of a range of training tools to assist BROs to provide training for the range of persons that need to develop competences at facility level, and also provides guidance to overall management of the Institutes housing the facilities. A short movie was shown illustrating the complexity and importance of the roles of BROs in the high containment facilities of Pirbright, Mittelhausen and Brescia.

Discussion

The President thanked Kirsten for her commitment to this difficult and arduous task, and the Committee members, for the extremely thorough work of the revision.

Keith Sumption indicated that the Session was asked to endorse the work of the Committee and approve the processes and competence of the revision process; but not to consider that the Standard was formally adopted at this point since the Observer from the EC had requested more time to complete the processes of reference in the relevant annexes to the Directive.

Dr Stone indicated that chapter 1.1.4 of OIE Terrestrial Manual was last reviewed by the OIE in 2015. He asked if Biorisk committee had come across any updates needed in this chapter, in which case the OIE would welcome hearing of this. Likewise, the WHO would also welcome such inputs.

Dr Füssel thanked the committee for the work done. He then apologized for the legalistic problem with adoption of revision of the standards. He added that this has not related to the quality of the work done and that in the new Animal Health Law, there is an article on this, not as detailed but it does include statements on Biorisk management.

Conclusions

1. The process and thoroughness of the review process and consultation undertaken to review and update the Minimum Standards (MBRMS) was considered exemplary.
2. The revised MBRMS, as proposed to the 43rd Session, should be considered as adopted by the Commission at the Executive Committee Session that follows confirmation by the EC of the legal position relating to application by EU member states.
3. The complexity of FMD biocontainment is unique in the sense that the primary concern is to protect the external environment from release of the agent. The specificity of the MBRMS has value in bring attention to the essential requirements to achieve this and training upon the principles and practises to achieve the requirements is strongly supported.

Item 13. Technical Committees and their functions in the upcoming biennium.

Proposal: **Appendix 22**

The Executive Secretary introduced this Item. Each Session of the Commission is able to decide upon the appropriate Committees needed to provide technical guidance to the Secretariat and the Standing Committee, and with the new "HOLD FAST" strategy, the range of expertise required would be significantly broader than in the past. The proposal for the selection of centres of expertise was made, and a list of centres of expertise in FAST diseases. On the latter, at the election of Officers and Committee members, the Technical Directors of the Institutes would be proposed, giving the opportunity for these centres to select the most appropriate expert within their team for the specific Committee meeting or issue under consideration.

The proposal indicated both a categorisation of FAST diseases for which decisions on activities will need to be made, and support provided, and competences expected:

- Category 1 : FMD, PPR, Capripoxviruses [criterion: all ruminant infections with similar risk factors to FMD and are currently present in multiple neighbourhood countries, and for which vaccination is an option].
- Category 2: Rift Valley Fever, Bovine Ephemeral Fever [criterion: ruminants are directly affected with major losses; schedule 1 surveillance for other FAST may provide a cost-efficient means to monitor risk or EW for these AND evidence for circulation /disease in neighbourhood countries AND vaccination is needed in response].
- Category 3: Not included in the above since a) these are already well covered by GF-TADS SGE or for which co-ordination is well established at EU level: ASF, CSF, BT and AHS. For these, there may be a value and need to co-ordinate with others e.g. training resources, modelling impact.
- *Competences needed in the Standing Committee*
 1. Expertise in the epidemiology and laboratory diagnosis of schedule 1 or 2 FAST diseases and strong working connections with EU-RL or competent laboratories to support activities.
 2. Expertise in potential vaccines for assessment of their potential use against FAST in Europe, and/or studies on the performance of vaccines against one or more FAST diseases.
 3. Expertise in specialised disciplines that are considered critical for planning or response to FAST diseases, such as surveillance and control in wildlife.

Working arrangements and Frequency of meetings: The extent of annual input is not likely to be more than five working days. One or two face to face (F2F) meetings will be held each year, as needed to ensure a good level of co-ordination and understanding between members and the Secretariat (and its staff managing field activities). Online (virtual conferencing) meetings may also be used.

The costs of the Committee meetings, and funding of applied research in support, will be budgeted within the framework of the support pledged by France (provided as Annex 1 to the proposal).

Conclusion

1. The President re-iterated the support pledged by France to the new Committee and the intention to establish a funding of applied actions and research.
2. There was no comments or objections on the proposal, which was therefore endorsed.

Item 14. Financial Report, Budget and membership contributions biennium 2020-2021

Proposal: **Appendix 23**

Financial Statements: **Appendix 24**

The Executive Secretary provided the Financial Report on the Trust Funds operated by the Commission, and the proposal for the Contributions from member states in 2020 and 2021. He thanked the Member States for the good response to the calls for the contributions over the past years which had allowed to reduce the outstanding arrears. Regarding the Administrative Fund (MTF/INT/MUL/011), the proposal had been circulated to member states in advance of the Session.

The Items for decision were presented as:

1. To index the biennial budget contributions of member states, for each category level of contributions to a standard measure of inflation (the consumer price index (CPI) as recorded by the Organisation for Economic Cooperation and Development (OECD)).
2. The index to be applied is proposed to be the *mid-point between the CPI for the Eurozone countries and that of the European countries. The index should use the OECD data for the CPI change in the 2 year period of the previous two full calendar years before each Session.*
3. To apply this index at every Session, with the following exceptions where there have been unforeseeable impacts of change in exchange rates between the USD and Euro, since budget contributions are set in USD and the major expenditure from the MUL/011 is effectively in euro.
4. To maintain a periodic review of the categories in which countries are placed for contribution, considering that changes in GDP and livestock populations will occur over time. As the last review was in 2015, a review period of every 6 years is proposed (therefore to occur next at the 44th Session in 2021).
5. The budget for Contributions for the biennium 2020-2021, as proposed in Table 1, on the basis of the mid-point CPI (Eurozone and EU28) of 4.5% for the 4 full calendar years from 2015-2018.
6. The proposed expenditure from the Administrative Fund based on the proposed total annual contributions of US\$ **643,725**.

Regarding the Emergency and Training Funds –MTF/INT/004/MUL:

Since 2012, contributions to cover the costs of additional training courses requested by member states and others have been received and disbursed through MTF/INT/004/MUL and the use of funds is reported at each session (*this is contained in the main Report of the Executive Committee*) together with a projection of the committed and predicted contributions in 2017-19 and the outgoing expenditure expected. On the basis of commitments to support the management of future training courses, for the Governments of Australia and New Zealand and others, and the benefits these courses provide in terms of cross-subsidising the training support for the Member States, and on the basis that the Fund is not predicted to be overspent as a result of the activities, the Secretariat proposes to extend the “not-to-exceed” (NTE) date of the EMERGENCY AND TRAINING FUND (004) to 31st December 2021.

Conclusion

The President thanked the Secretary and opened the item for discussion. Finding there were no comments, he considered that the proposals for budgets, contribution and system for indexing contributions to inflation rates, as contained within the circulated paper be considered to be approved by the Session.

Item 15. Election of the Executive Committee

For this Item, Dr Berhe Tekola, Director, Livestock Division (AGA)-FAO, took the Chair, assisted by the Executive Secretary. Dr Tekola called first called for nominations for the Officers of the Commission, these being the Chair and two Vice –Chairpersons.

For the Position of Chairman:

Dr Martin Blake (Ireland) was proposed by Sweden and seconded by the United Kingdom.

For the 1st Vice-Chair:

Dr Lajos Bognar (Hungary) was proposed by Austria, and seconded by Turkey.

For the 2nd Vice-Chair:

Dr Jean-Luc Angot (France) was proposed by Italy and seconded by Spain.

There being no other candidates proposed, the candidates were endorsed unanimously, and each indicated their willingness to serve as Officers of the Commission.

Election of members of the Executive Committee

Dr Tekola called for nominations for the six positions, each of which had to have a proposer and be seconded by at least one other.

For the six members of the Committee, the following were nominated:

		Proposed by	Seconded by
Z. Atanasov	N. Macedonia	Montenegro	Hungary
H. Roest	Netherlands	Belgium	Germany
O. Kalda	Estonia	Poland	Lithuania
C. Dile	Greece	Malta	Hungary
V. Almansa Lara	Spain	Italy	Hungary
N. Pakdil	Turkey	Austria	Poland

There being no other candidates proposed, the candidates were endorsed unanimously, and each indicated their willingness to serve as members of the Executive Committee.

Election of the Standing Technical Committee (STC)

The first three members of the STC were proposed by the outgoing Executive Committee to be the members of the STC; the second three were received as proposals from the member states, following a published, open call for proposals that had been sent to the member states in March 2019.

	Proposer	Position	Term
Dr Stephan Zientara (FR)	Executive Committee	Current STC	To April 2021 (completion of 4 years)
Dr Sten Mortensen (DK)	Executive Committee	Current	To April 2021 (completion of 4 years)
Prof. Katharina Staerk (CH)	Executive Committee	Current	To April 2021 (completion of 4 years)
Prof. James Wood (UK)	United Kingdom	New	Can be renewed 2 years in 2021
Dr German Caceres (ES)	Spain	New (former SCRPD)	Can be renewed 2 years in 2021
Dr Giancarlo Ferrari (IT)	Italy	New (former SCRPD)	Can be renewed 2 years in 2021

Dr Tekola asked the Session for indication of their support for the proposal and this was indicated; none were against.

Election of the Special Committee on Surveillance and Applied Research (SCSAR)

	Institution	Country	Official Contact
1	French Agency for Food, Environmental and Occupational Health & Safety ANSES	FR	Stephan Zientara
2	Bulgarian Food Safety Agency BFSA	BG	Tsviatko Alexandrov
3	Centre de coopération internationale en recherche agronomique pour le développement CIRAD	FR	Renaud Lancelot
4	Centro de investigación en sanidad animal CISA	ES	Miguel Angel Jimenez Clavero
5	Etlik Veterinary Control Central Research Institute	TK	Cevdet Yarali
6	Friedrich Loeffler Institute FLI	DE	Thomas Mettenleiter
7	IZS Abruzzo e Molise IZSAM	IT	Nicola D'Alterio
8	IZS Lombardia Emilia Romagna IZSLER	IT	Giorgio Varisco
9	Kimron Veterinary Institute	ISR	Michel Bellaiche
10	Laboratorio Central de Veterinaria LCV	ES	Montse Aguero
11	National reference lab network of Balkan countries/Faculty of Veterinary Medicine Skopje FVMS	MK ²	Kiril Krstevski
12	Pendik Veterinary Control and Research Institute	TK	Fahriye Sarac
13	Sap Institute	TK	Abdunaci Bulut

² North Macedonia

14	Sciensano		BE	Kris De Clercq
15	The Institute of Virology and Immunology IVI		CH	Christian Griot
17	The Pirbright institute		UK	Don King
18	National Wildlife Research Institute IREC, Univ. Castilla-La Mancha IREC		ES	Cristian Gortazar
19	Wageningen Bioveterinary Research – Lelystad WBVR		NL	Wilhelmus Loeffen

The Secretary drew attention to the endorsement under the previous Item, of the SCSAR. As part of the proposal, a list of institutions providing expertise on FAST disease surveillance, research and control options had been circulated.

The following was proposed as the official contact points for the SCSAR, representing the Institutions below.

The Chair opened the proposal for comments. There being none, the list was endorsed for the Special Committee.

Other centres of expertise proposed to be contacted for specific diseases		
CRESA (for LSD, RVF)	ES	Casals JORDI Jordi.Casal@uab.cat
Universidad de Zaragoza (for vectors)	ES	Miguel Ángel MIRANDA ma.miranda@uib.es

Election of the Special Committee on Biorisk Management (SCBRM)

The Secretary provided the list of the eight SCRPD members proposed by the Chair of the outgoing SCBRM.

There being no additional proposals, the list was endorsed.

	Name	Country	Position in SCBRM
1	Douwe Kuperus	NL	Current
2	Cesare Bernieri	IT	Current
3	Kirsten Tjornehoj	DK	Current
4	Gonzalo Pascual	ES	Current
5	Ulrika Allard	SE	Current
6	Michael Eschbaumer	DE	Contributing expert
7			
	Graeme Harkess	UK (TPI)	New
8	Stephan Karlen	Switzerland (IVI)	New (Replaces Katharine Summermatter on her move to new position)
9	Ronan O'Neill	Ireland	New

Statements by the incoming and outgoing Presidents

Dr Jean-Luc Angot, as outgoing President, thanked the member states of the EuFMD Commission, the members of the Executive, and recalled the support of the previous president (Ulrich Herzog) and the Vice-Chairs. It gave him pleasure to note the progress in some significant areas, especially in training, with its novel approaches to achieve a high involvement and the innovative e-learning courses; in the work supporting REMESA, and the support given to build networks including the francophone FMD network; in the Open Sessions, with their global significance; in funding for research, which was now recognized by member states. On the latter, he announced that France was prepared to provide €200,000 in support of the FAST applier research fund. He considered the partnerships between EuFMD and OIE and FAO had developed well in the past four years, supporting GFTADs. The Special Committee for Biorisk Management was an example of the technical expertise in the European member states, that is fundamental at international level. He considered that the new strategy (FAST) project is a great step in the life of the EuFMD and thanked the MS for supporting this development. He also mentioned that the two highlights of his time as president were networking and partnerships that the EuFMD has helped to consolidate, not only with the international organisations but also with the reference centres and research centres in France, United Kingdom, Belgium and Italy which on a daily basis assist to ensure that our region retains its technical capacity to respond to FMD risks. He then thanked everyone for their supports and wished good luck to the next chair.

Dr Blake gave a short speech, recalling the early days of the Commission – the pioneers who set up this organisation. They had to find their way, to establish a strategy, and find the means to support it. He stated that we are in a new phase now, and need to find the means to support the new strategy. He thanked all of the MS for their willingness to embrace the new strategy and to support with their contributions. He assured that the Commission will not lose its focus- that “we will HOLD FAST to FMD, while looking for leverage and synergies with other diseases”. He thanked Dr Angot for his important contribution, and the Commission, especially Alf Füessel, for his tireless inputs to Commission actions and support through the EC/FAO financial agreements. He acknowledged also the new members of the Executive, for their willingness to join in the work required. The new Chairman concluded with the Irish saying- “*is láidreacht aontacht*” “unity is strength”.

ITEM 16. Recognitions for service

The Executive Secretary presented awards in recognition of service to the following:

- Dr Eoin Ryan, in recognition of his chairmanship of the Standing Technical Committee (STC) of the EuFMD, since 2013.
- Dr Jean-Luc Angot, for his great contribution to international disease control and the growth in partnerships under his Presidency of the EuFMD from 2015 to 2019 and his prior service as Vice-President.
- Dr Alf-Eckbert Füessel, for his outstanding contribution to the control of FMD in Europe, with over 20 years of continuous, high level involvement in EuFMD Sessions, personally attending over 60 Sessions and meetings of the Commission, and participation in emergency response missions and provision of emergency vaccines to combat every risk to Europe, since his first joint mission (EC/EuFMD) in 1996. Moving testimonials to the impact of Alf’s contribution and character were read, from many of the most significant figures in FMD control in Europe and the world. His recognition was very warmly applauded by all present.

ITEM 17. Draft recommendations

The draft Conclusions and Recommendations were presented - and adopted, there being no additional comments.

Closing of the Session

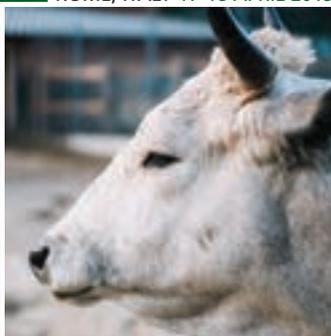
The Chairman was joined in applause for those who had worked tirelessly over several months to prepare the 43rd General Session, particularly Nadia Rumich, for her work in ensuring the highest standard of communications and documentation, Cecile Carraz, and her team of Erica Tomat, Maurizio Licastro, Filippo Pedullà, Francesca Renzetti and Silvia Epps who have worked tirelessly to deliver a very significant work programme at the same time as all arrangements for a successful Session.



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

ROME, ITALY 17-18 APRIL 2019



Draft agenda

43RD GENERAL SESSION OF THE EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE (EuFMD)

FAO Headquarters
Rome, Italy
Iran Room (B116)

Day 1

17th of April 2019

Time	Item	Presenter
09:00		Opening of the Session <i>FAO, OIE, DG SANTE</i>
09:20	1	Adoption of the Agenda <i>J. Angot, EuFMD</i>
09:25	2	Global and Regional surveillance reports <i>D. King, WRL/TPI</i>
09:50		Progress of the GF-TADS Global Strategy <i>FMD working Group</i>
10:20	3	Transboundary disease risks in the European region: situation report, co-ordination arrangements and priorities for future actions to reduce risk <i>F. Rosso, EuFMD</i>
10:40		Break
11:00	4	Technical Point 1. Modelling FMD and transboundary diseases at European scale: potential for optimizing control measures at regional and national scales <i>K. Mintiens, EuFMD</i>
11:30	5	Technical Point 2. Biosecurity classification of holdings in Europe: potential gains for the public and private sectors in disease emergencies <i>J. Dewulf, University of Ghent</i>
12:00		Technical Point 3. How prepared are we? Towards a framework for better planning and testing of emergency preparedness <i>S. Gaynor, EuFMD</i>
12:30		Lunch
14:00	6	Technical point 4. Early warning and better preparedness for FMD and similar TADS in the European neighbourhood: the case for an integrated approach <i>F. Rosso, EuFMD</i>
14:30	7	Report of the Executive Committee on the actions since the 42 nd Session <i>EuFMD team</i>
		Report of the Training evaluation <i>W. Wapenaar, University of Nottingham</i>
15:00		Break
15:30	8	Proposed updating to the four year Strategic Plan (2019-2022) – Introduction <i>K. Sumption, EuFMD</i>
15:45		a. Improved preparedness for management of FMD and similar TADS (“FAST diseases”) crises by Members and across Europe as a whole <i>M. de la Puente, EuFMD</i>
16:05		b. Reduced risk to Members from the FAST disease (FMD and similar TADS) situation in the European neighbourhood <i>F. Rosso, EuFMD</i>
16:25		c. Sustained progress of the GF-TADS Global Strategy against FMD and the improved security of supply of effective vaccines <i>N. Lyons, EuFMD</i>
16:45		Discussion
17:30		Side-events foyer: presentation of Get Prepared; EuFMDis; Training
19:00		Bus departs for Dinner
19:30		Dinner at Taverna Capranica

Day 2

18th of April 2019

Time	Item	Presenter
09:00	9 Information Session - Current FMD Situation in: Turkey	<i>A. Bulut</i>
09:20		<i>T. Gosher</i>
09:35		<i>Z.Rukhadze</i>
09:55	10 Report on the status of FMD antigen and vaccine banks in the European Neighbourhood	<i>K. Krstevski, EuFMD</i>
10:10	11 Report of the Standing Technical Committee (STC) and its working groups	<i>E. Ryan, Chair of the STC</i>
10:30	Break	
11:00	12 Minimum Standards for laboratory containment of foot-and-mouth disease virus: proposed updating Training planned on Biorisk management	<i>K. Tjørnehøj, National Veterinary Institute, Technical University, Denmark</i>
11:25		
11:30	13 Proposal for Technical Committees and their functions in the upcoming biennium	<i>K. Sumption, EuFMD</i>
11:50	14 Financial Report, Budget and membership contributions for the biennium 2018-2019	<i>K. Sumption, EuFMD</i>
	a. Administrative Fund	
	b. Emergency Fund and EC Trust Fund	
12:20	15 Election of the Executive Committee	<i>FAO</i>
13:00	16 Any other issues (recognitions for service)	
13:15	17 Draft Conclusions	<i>K. Sumption, EuFMD</i>
13:30	Closing	



A note on speakers

D. King: Head of the FAO World Reference Laboratory for FMD and an OIE expert for foot-and-mouth disease and swine vesicular disease. He works at The Pirbright Institute in the United Kingdom and coordinates international FMD surveillance activities undertaken by the global OIE/FAO FMD Laboratory Network for FMD.

F. Rosso: Manager for Pillar II - Risk reduction programme. He is involved in coordinating the activities aimed at reducing the risk to EuFMD Member countries through the progressive control of FMD in the European neighbourhood (North Africa, Middle East and South East Europe). He also works as senior veterinary officer in Malta.

K. Mintiens: FMD Quantitative Risk Assessor for EuFMD, managing contingency planning and enhancing preparedness for Member States. He has over 25 years of experience in helping farmers, industry and government with managing animal diseases and welfare in livestock in Low, Middle, and High income countries. He has key expertise in quantitative risk analysis, epidemiology, biostatistics and international project management.

J. Dewulf: Professor in Veterinary Epidemiology at Ghent University, Belgium. He has long standing experience in studying biosecurity as a tool to control endemic and epidemic animal diseases. He is the creator of the Biocheck.Ugent biosecurity scoring system.

S. Gaynor: Emergency Preparedness Officer for EuFMD, involved mainly in simulation exercises, training and guideline documents. In her previous experience as an official veterinarian in Ireland she was involved in exotic disease control and emergency preparedness for 20 years.

M. de la Puente: Coordinates Pillar I activities for EuFMD as FMD risk management specialist. She is involved in delivering training for Member States and the adaptation of the Australian Animal Disease Spread Model (AADIS) to Europe to develop a multi-country FMD spread model (EuFMDIS). She has been involved for the last 6 years in the BTSF initiative as tutor and training coordinator.

N. Lyons: Manages Pillar III for EuFMD and is a veterinary epidemiologist. In addition to his role at EuFMD, he is a research fellow at the Pirbright Institute where he works on field-based vaccine evaluation, novel surveillance tools and the socio-economic burden of livestock diseases. He works mainly in East Africa and the Middle East.

E. Ryan: Head of Ruminant Animal Health division in the Irish Department of Agriculture, Food and the Marine. He previously worked in EuFMD. He has been on the EuFMD Standing Technical Committee since 2014, acting as chair since 2015.

M. Stone: Deputy Director General, International Standards and Science, at the World Organisation for Animal Health, OIE. Before that, he worked as a veterinary epidemiologist in various roles for the New Zealand government.

W. Wapenaar: Clinical Associate Professor in Cattle Health and Epidemiology, Faculty of Medicine & Health Sciences, Nottingham University, UK. Within the School of Veterinary Medicine and Science she leads the development and implementation of digital learning and assessment during the 5-year veterinary degree course.

K. Krstevski: Short Term placement in the EuFMD where he coordinates the activities for support of the national FMD laboratories in the Balkan region. He is seconded by the Ss. Cyril and Methodius University-Faculty of Veterinary Medicine from North Macedonia, where he manages the work of the national animal health laboratory and gives lectures in infectious diseases.

K. Tjørnehøj: Chair of the EuFMD Special Committee for Biorisk Management (SCBRM). Senior Adviser and Biosafety Officer for the high-containment facilities of the National Veterinary Institute, Technical University of Denmark, at Lindholm Island. She has coordinated review process of the FMD Minimum Biorisk Management Standards during 2018-2019.





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GLOBAL Monthly Report

Foot-and-Mouth Disease

Foot-and-Mouth Disease Situation | 2019 | March



Foot-and-Mouth Disease Situation
Food and Agriculture Organization of the United Nations
Monthly Report

March 2019

#PRINCIPAL INFORMATION SOURCES USED:

Databases:

OIE WAHID World Animal Health Information Database
FAO World Reference Laboratory for FMD (WRLFMD)
FAO Global Animal Disease Information System (EMPRES-i)

Other sources:

FAO/EuFMD supported FMD networks
FAO/EuFMD projects and field officers

**The sources for information are referenced by using superscripts.
The key to the superscripts is on the last page.**

Please note that the use of information and boundaries of territories should not be considered to be the view of the U.N. Please, always refer to the OIE for official information on reported outbreaks and country status.

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Please note that the report contains hyperlinks

I. HIGHLIGHTS

Summary comments:

I am very pleased to write a few words to summarise the current FMD situation. From January to March 2019, the WRLFMD has been particularly busy with >300 sample submissions. We have reported test results for sample submitted from Algeria, Burkina Faso, Egypt, Ethiopia, Hong Kong SAR, Israel, Korea (Republic of South Korea), Laos, Mongolia, Palestinian Autonomous Territories, Saudi Arabia, Sierra Leone, South Sudan, Thailand, Uganda, Vietnam, and Zambia. New sequence data submitted from Ghana, Russia (from ARRIAH, Vladimir) and a number of West/North African countries (from ANSES, France and IZSLER, Italy) were also analysed. Reports for these samples can be retrieved from the WRLFMD website (<http://www.wrlfmd.org/country-reports>).

During this quarter, FMD outbreaks due to the O/EA-3 toptotype have continued to be recognised in North African (Maghreb) countries. In addition to the cases reported last year in Algeria and Mauritania, confirmed outbreaks due to this viral lineage have now been reported in Tunisia and Morocco. All sequences from North African countries (generated by VDRL, or provided by ANSES, France and IZSLER, Italy) show a close genetic relationship (~99% nt identity) to viruses recovered during 2018 from a number of West Africa countries, and are distinct to FMD viruses from the same O/EA-3 toptotype recently circulating in Egypt and the Eastern Mediterranean. These outbreaks raise questions about trans-Saharan connectivity between countries and the precise routes by which FMDV is being spread from West to North Africa (the trans-Saharan Highway runs from Lagos in Nigeria directly north to Algiers in Algeria). Samples have also been tested from Egypt; where in addition to serotypes O and A, a new introduction of SAT 2 (topotype VII) into the country has been detected which is most closely related to samples collected from Ethiopia (2018). Elsewhere in Africa, samples recently sent to WRLFMD have detected A/AFRICA/G-I and O/EA-2 in Uganda consistent with the FMDV lineages that are known to circulate in this part of East Africa, while serotype SAT 2 cases in the surveillance zone have led to the suspension of the OIE-free status in Limpopo, South Africa. In East Asia, new FMD cases have been detected in the Republic of (South) Korea and Zabaikalskiy in the eastern part of Russia due to the O/ME-SA/Ind-2001e lineage. The rapid spread of this lineage across many countries in the region has been widely discussed in previous reports and sequences from both of these cases are most closely related to viruses detected in China (2018). The complexity of FMD epidemiology in East Asia is further demonstrated by the detection of additional new cases in eastern Russia which are due to the O/SEA/Mya-98 (in Primorskiy) and O/ME-SA/PanAsia (in Zabaikalskiy) lineages and share a closer relationship to viruses from Vietnam and Mongolia, respectively.

The OIE/FAO FMD Laboratory Network (<https://www.foot-and-mouth.org>) encourages countries to submit appropriate clinical samples for laboratory analyses including sequencing and vaccine matching (testing is free-of-charge), for further information or assistance with shipments, please contact donald.king@pirbright.ac.uk

Don King (WRLFMD, Pirbright)
23rd April 2019

STOP PRESS: On 17th April 2019, FMD was reported for the first time in Comoros (Indian Ocean). Sequence data for representative cases on the Island of Mwali (provided by ANSES, France) characterises these FMD virus as belonging to the O/EA-2 toptotype most closely related to FMD viruses found recently in Tanzania (unpublished sequence data kindly provided by Prof. Christopher Kasanga, Sokoine University of Agriculture, Tanzania).

II. GENERAL OVERVIEW

Pools represent independently circulating and evolving foot-and-mouth disease virus (FMDV) genotypes; within the pools, cycles of emergence and spread occur that usually affect multiple countries in the region. In the absence of specific reports, it should be assumed that the serotypes indicated below are continuously circulating in parts of the pool area and would be detected if sufficient surveillance was in place (Table 1).

Table 1: List of countries representing each virus pool for the period 2014 – 2018 (source EuFMD)

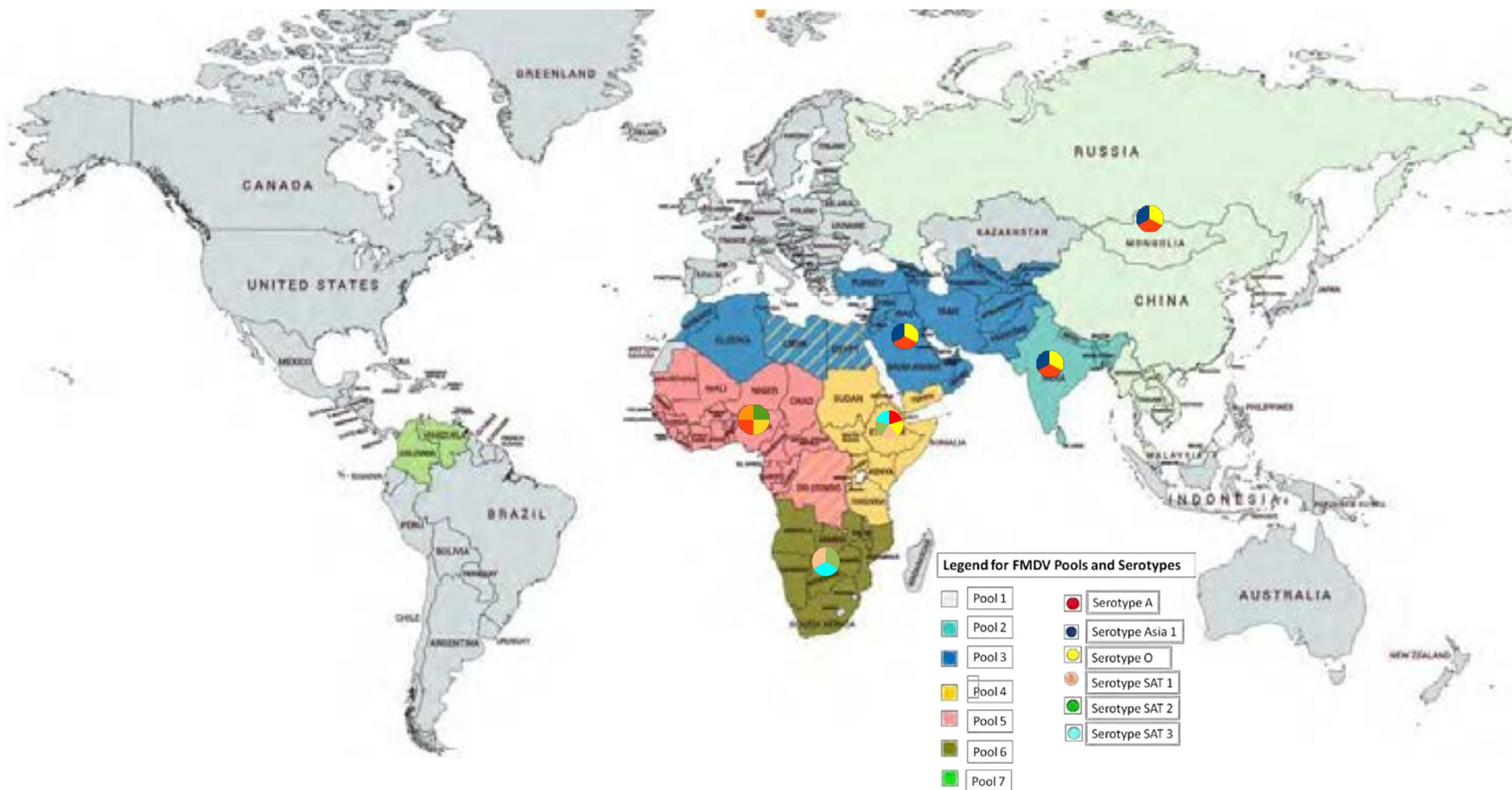
POOL	REGION/COUNTRIES – colour pools as in Map	SEROTYPES
1	SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA Cambodia, China, China (Hong Kong, SAR), Taiwan Province of China, Democratic People's Republic of Korea, Republic of Korea, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Russian Federation, Thailand, Viet Nam	A, Asia 1 and O
2	SOUTH ASIA Bangladesh, Bhutan, India, Mauritius, Nepal, Sri Lanka	A, Asia 1 and O
3	WEST EURASIA & MIDDLE EAST Afghanistan, Armenia, Azerbaijan, Bahrain, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan	A, Asia 1 and O (SAT 2)*
	NORTH AFRICA Algeria, Egypt, Libya, Morocco, Tunisia	A and O
4	EASTERN AFRICA Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, Sudan, South Sudan, United Republic of Tanzania, Uganda, Yemen	O, A, SAT 1, SAT 2 and SAT 3
5	WEST/CENTRAL AFRICA Benin, Burkina Faso, Cameroon, Cabo Verde, Central Afr. Rep., Chad, Democratic Republic of Congo, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea-Bissau, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome Principe, Senegal, Sierra Leone, Togo	O, A, SAT 1 and SAT 2
6	SOUTHERN AFRICA Angola, Botswana, Malawi, Mozambique, Namibia, South Africa, Zambia*, Zimbabwe	{O, A}**, SAT 1, SAT 2 and SAT 3
7	SOUTH AMERICA Colombia, Venezuela (Bolivarian Republic of)	O and A

*REPORTED ONLY IN OMAN IN 2017

** ONLY IN NORTH ZAMBIA AS SPILL-OVER FROM POOL 4

March 2019

MAP 1: Foot-and-mouth disease (FMD) virus pools: world distribution by serotype in 2014-2018 (source EuFMD, <https://mapchart.net/world.html>)



III. IN THIS REPORT***POOL 1 - SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA***

China¹ – A FMD outbreak due to serotype O was notified in cattle at Xinjiang on March 17th 2019.

Mongolia² – Field samples belonging to two of the three genetic lineages of FMDV serotype O detected in the bovine samples collected between February 2017 and 2018 were subjected to FMD Vaccine Matching Strain Differentiation (VMSD) tests obtaining good matching results with nearly all the vaccine strains employed.

Republic of Korea² – Two field isolates belonging to the O/ME-SA/Ind2001e lineage, detected in cattle samples collected during January 2019, obtained good matching results with the vaccine strains used in the VMSD tests.

Russian Federation^{2,3} – The All-Russian Research Institute for Animal Health (ARRIAH) reported the detection of FMDV serotype O in the outbreak that occurred on March 8th 2019, in cattle at Zabajkal`Skij Kray. The VP1 sequences, forwarded by ARRIAH to the WRLFMD, of viruses isolated during FMD episodes that respectively occurred in February 2018, January and March 2019 belong to three different lineages of FMDV serotype O.

Viet Nam² – Three lineages belonging to FMDV serotype O were detected in a batch of bovine and porcine samples collected between January 2018 and 2019.

POOL 2 - SOUTH ASIA

India⁴ - ICAR-Directorate of Foot and Mouth Disease (ICAR-DFMD), Mukteswar, India continues to report the detection of only FMDV serotype O.

POOL 3 - WEST EURASIA & MIDDLE EAST

Afghanistan⁵ – For the reporting month, the Central Veterinary Research and Development Laboratory (CVDRL), Afghanistan detected FMDV serotypes ASIA 1 and O among the samples analysed.

Israel² – Three field isolates, belonging to O/ME-SA/PanAsia2^{Qom15} lineage, detected in a set of samples collected from different species, between April and December 2018 obtained good matching results with the vaccine strains employed in the VMSD tests.

Pakistan⁶ – For the reporting month, 345 outbreaks due to FMDV serotypes A, ASIA 1 and O were reported in the provinces of Baluchistan, Khyber Pakhtunkhwa, Punjab and Sindh.

Palestine^{1,19} – A FMDV serotype O outbreak, occurred on a goat and sheep farm at Bani Naeem, West Bank on March 26th 2019.

Saudi Arabia² – FMDV O was detected in samples collected from Oryx, gazelle, cattle and sheep collected between January and December 2018.

POOL 3 – NORTH AFRICA

Egypt² – FMDV serotypes A, O and SAT 2 were detected among the 36 buffalo and bovine samples collected between January 2017 and November 2018.

Morocco^{1,2,12} – Another eight new outbreaks, already reported as resolved, due to FMDV serotype O were notified during February and March 2019 on multispecies ruminant farms.

The six VP1 sequences of FMDVs collected during January 2019 and forwarded by the European Union Reference Laboratory (EURL), FAO Reference Centre & OIE Reference Laboratory for Foot-and-Mouth Disease chez Agence nationale de sécurité sanitaire – ANSES, Maisons-Alfort, Île-de- France, France were genotyped as O/EA-3.

Tunisia² – FMD due to serotype O was reported during February 2019 on two small farms at Jendouba and Sidi Bouzid.

POOL 4 - EASTERN AFRICA

Ethiopia^{2, 14} – FMDV serotypes O and A were detected in the batch of 55 bovine samples collected in the country between August and December 2019.

Kenya⁷ – The FMD National Reference Laboratory (FMDNRL), Embakasi, Kenya, reported the detection of FMDV serotype A.

Uganda² – A FMD outbreak due to serotype A was notified on January 25th 2019 on a cattle farm at Nakaseke. A/AFRICA/G-I and O/EA-2 were the lineages detected in the outbreak samples collected in the country during January and February 2019.

POOL 5 - WEST/CENTRAL AFRICA

^{8, 9, 10, 11} No events FMD events and activities were notified in this Pool during the reporting month.

POOL 6 - SOUTHERN AFRICA

Malawi¹ – A FMD outbreak for which serotyping is pending was reported on February 21st 2019 in cattle at Mzimba.

Mozambique¹ – FMD events are continuing in Nampula and in an area located close to Gonorezoe National Park.

Zambia¹ – A FMD outbreak due to serotype O was reported in cattle on February 11th 2019 in cattle at Southern.

Zimbabwe¹ – The country reported eight FMD outbreaks¹ due to serotype SAT 2, in cattle at Mashonaland East during March 2019.

POOL 7 - SOUTH AMERICA^{1, 13}

No outbreaks are reported for this Pool. FMD in Latin America was last detected in Colombia in October 2018 with outbreaks due to FMDV serotype O, while PANAFTOSA reported historical outbreaks due to serotype A in Venezuela in 2013.

COUNTER

***** 176 MONTHS SINCE THE LAST SEROTYPE C OUTBREAK WAS REPORTED**

IV. DETAILED POOL ANALYSIS

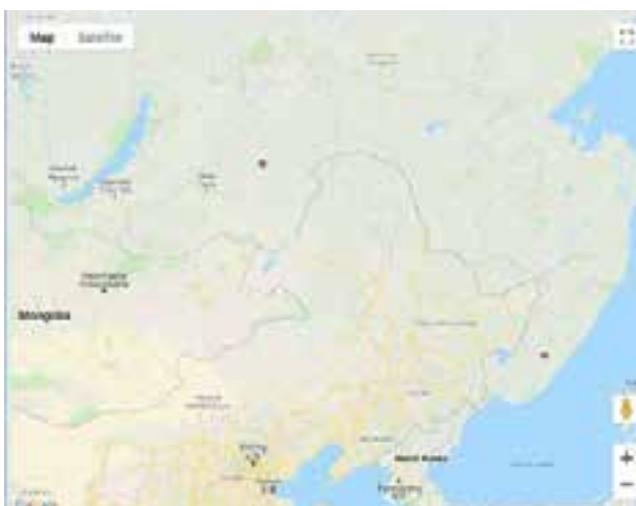
A. POOL 1 – SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA

OUTBREAKS	
Country	Description
Serotype O in China ¹	<p>FMD due to serotype O was notified at Xinjiang on March 17th 2019, on a cattle farm with a morbidity rate of 22.58% in the 31 animals present. The Lanzhou National Reference Laboratory for Foot and Mouth Disease (OIE Reference Laboratory) confirmed the diagnosis on March 22nd 2019 using reverse transcription - polymerase chain reaction (RT-PCR) and gene sequencing. The source of the outbreaks is unknown and general control measures were adopted including stamping out while no vaccination will be carried out. The current outbreak is a continuation of the series of events, which commenced in August 2018. Location of outbreak is represented in Map 3</p> <p>The latest lineages reported in the country for serotype O by the WRLFMD are O/SEA/Mya-98, O/CATHAY, O/ME-SA/PanAsia and O/ME-SA/Ind-2001, detected in samples collected in the country during 2018.</p> <p><i>Interpretation</i> FMD occurs sporadically in China. This is a continuation of the event that started in August 2018.</p>
Serotype O in Russian Federation ¹	<p>A FMD outbreak due to FMDV serotype O was reported on a backyard farm of cattle, sheep and goats on March 8th 2019, at Zabajkal`Skij Kray where all species were clinically affected. The location of the outbreak is represented in Map 3. Apparent morbidity rates were respectively 15.94% in cattle (33 animals out of 207) and 0.55% in the small ruminants (6 animals out of 1100)</p> <p>The Regional Reference Laboratory for FMD (ARRIAH, Russia) confirmed the diagnosis on March 11th 2019 using real-time reverse transcriptase/polymerase chain reaction (RRT-PCR). The source of the outbreaks is unknown and general control measures were adopted including, elimination of animals and vaccination of 4.522 cattle and 4.433 small ruminants. Details on the type of vaccine employed were not provided.</p> <p><i>Interpretation</i> FMD occurs sporadically in Russia. This is a continuation of an event that started reported in January 2019.</p>

SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
Mongolia ²	Vacc.	Field isolates detected during 2018 and belonging to O/ME-SA/Ind-2001e and O/SEA/Mya-98 lineages were submitted to VMSSD tests that provided good matching results with O 3039, O Manisa and O Tur 5/09, with exception of an isolate belonging to O/SEA/Mya-98 lineage with the O Manisa vaccine strain.
Republic of Korea ²	Vacc.	The two field isolates detected during January 2019 and belonging to the O/ME-SA/Ind-2001e lineage were submitted to VMSSD tests that provided good matching results with O 3039, O Manisa, O Skr 7/10 and O Tur 5/09.
Russian Federation ^{1, 2, 3}	Surv. and Vacc.	<p>For the reporting month, the ARRIAH, Russia identified the FMDV serotype O detected in the outbreaks that occurred at Zabaikalskiy Krai as O/ME-SA/Ind-2001 lineage that was submitted to VMSSD tests with good matching results with vaccine strains O/SEA/Mya-98, O/PanAsia and O/PanAsia 2.</p> <p>Serological analysis was conducted on 3,554 serum samples collected from non-vaccinated animals.</p> <p>A summary of the results of the VP1 sequences forwarded by the laboratory to the WRLFMD are reported in Table 2 and Map 3. Three different lineages of FMDV serotype O were detected.</p> <p>Table 2: summary of the genotyping results of the FMDV positive samples collected in Russia between February 2018 and March 2019 (source – WRLFMD).</p>

March 2019

Sample Identification	Location of origin of sample	Host species	Date of collection	Genotype	Most Closely Related Viruses not belonging to the country - Seq id %	Host species
Zabaikalskiy/1/RUS/2018	Chindantskoe, Borzinskiy raion, Zabaikalskiy krai	cattle	07/02/2018	O/ME-SA/PanAsia	MOG/8/2018 (>99.5)	cattle
Zabaikalskiy/2/RUS/2018	Novoborzinskoe, Borzinskiy raion, Zabaikalskiy krai		09/02/2018			
Zabaikalskiy/3/RUS/2018	Solovfevskoe, Borzinskiy raion, Zabaikalskiy krai					
Primorskiy/RUS/1/2019	RusAgro, Grigorfevka, Mihailovskiy raion, Primorskiy krai	porcine	09/01/2019	O/SEA/Mya-98	VN 18-27160 (>95.1%)	porcine
Primorskiy/RUS/2/2019	Merci-Treid, Prohory, Spasskiy raion, Primorskiy krai		16/01/2019			
Primorskiy/RUS/3/2019	Primorskiy Becon, Prohory, Spasskiy raion, Primorskiy krai		22/01/2019			
Zabaikalskiy/RUS/2019	Kailastuiskoe, Krasnokamenskiy raion, Zabaikalskiy kray	cattle	09/03/2019	O/ME-SA/Ind-2001e	GZZY/CHA/2018-B (99.2%)	cattle



Map 2: location of FMDV genotyped samples collected in Russia between February 2018 and March 2019 (source – WRLFMD, Google Fusion Maps).

The country also reported vaccination activities that are summarized in Table 3. Details on the type of vaccination were not provided.

Table 3: vaccination activities carried out in the Russian Federation for the reporting month.

Administrative division	Species	Total Vaccinated
Khabarovskiy Kray	Cattle	6,241
	Sheep / goats	3,075
	Swine	7,473
Primorskiy Kray	Cattle	31,054
	Sheep / goats	19,563
	Swine	58,813

Viet Nam 2

Surv.

Fifty-three of the 55 samples collected between January 2018 and 2019 from pigs (N° 43 samples), cattle (N° 7 samples), water buffaloes (N° 4 samples) and goats (N° 1 samples) were positive for only FMDV serotype O. The positive samples were genotyped with the following results:
O/ SEA/Mya-98 lineage was isolated in 28 pigs, with the isolates all closely related to those circulating in the country during 2018;

	<p>O/ME-SA/PanAsia lineage was isolated from two water buffaloes, seven cattle and one goat, with some of the field isolates not pertaining to the country, closely related to those isolated in Thailand during 2017 with a sequence identity (seq id) > 97.9% :</p> <p>O/CATHAY lineage was isolated from three pigs, that were closely related to field isolates not pertaining to the country, detected in China in 2013, 2016 and 2018 (seq id > 92.9%).</p>
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Map 3: Location of FMD events for Pool 1 during the reporting month. (Source - OIE WAHIS).

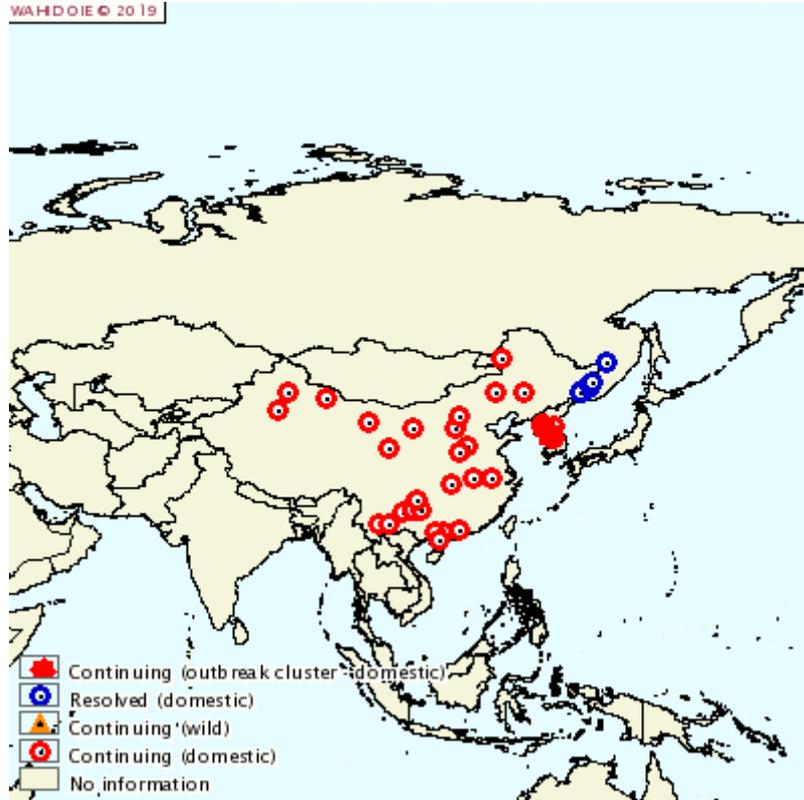
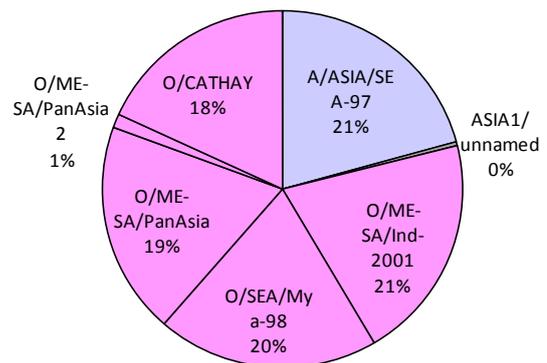
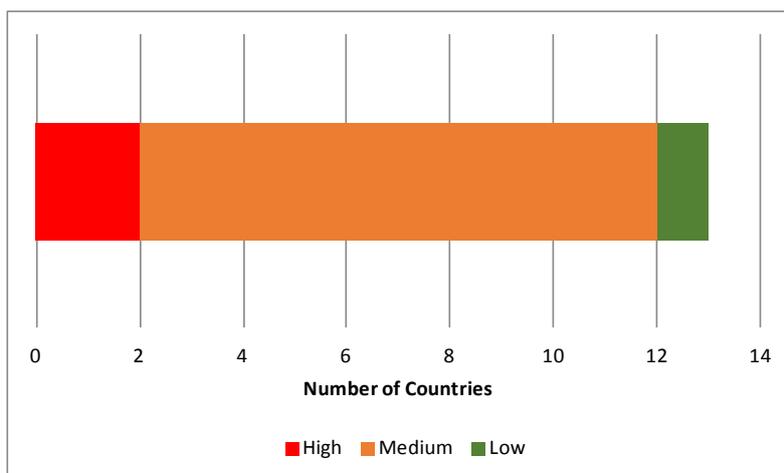


Table 4 and Graph 1: Conjectured circulating FMD viral lineages in Pool 1 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 13 countries of Pool 1
A	A/ASIA/SEA-97	8
ASIA 1	ASIA1/unnamed	1
O	O/ME-SA/Ind-2001	8
	O/SEA/Mya-98	6
	O/ME-SA/PanAsia	8
	O/ME-SA/PanAsia2	1
	O/CATHAY	4



Graph 2: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 1 – see Annex for explanation).



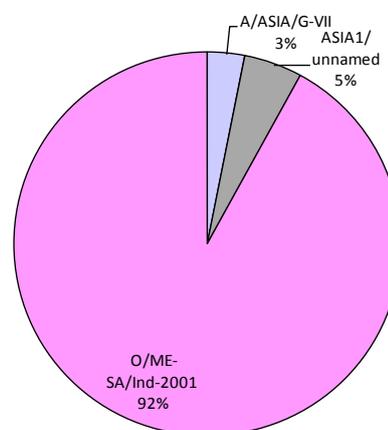
B. POOL 2 – South Asia

OUTBREAKS	
Country	Description
Serotype O in India ⁴	ICAR-DFMD, Mukteswar, India detected FMDV serotype O among six bovine samples examined using FMDV antigen and/or RNA detection methods. <i>Interpretation</i> The information provided is consistent with that of previous reports. The causative serotype is the only reported to circulate endemically in the country since 2016. Data on genotyping of the current circulating strains is required to confirm that the epidemiological situation is not changing.

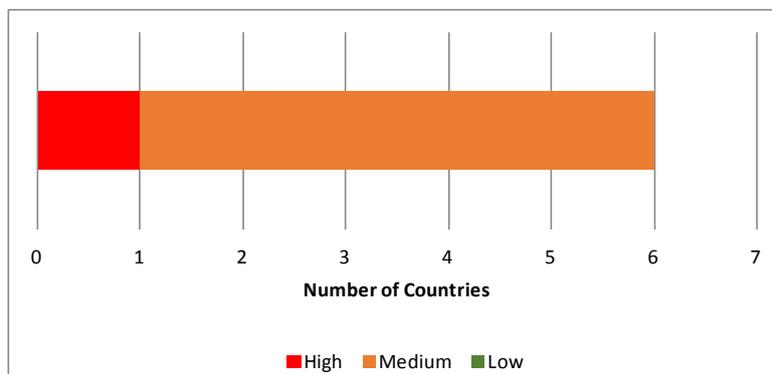
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
India ⁴	Surv. and PVM	The laboratory analysed 423 sera collected in the course of epidemiological studies for the detection of FMD antibodies. The FMD diagnostics kits employed are those developed at ICAR-PDFMD. The sublineages currently circulating in the country are represented by O/ME-SA/2001d and O/ME-SA/2001e as described in the latest issue of the ICAR-DFMD Annual Report of 2017-18 .

Table 5 and Graph 3: Conjectured circulating FMD viral lineages in Pool 2 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 5 countries of Pool 2
A	A/ASIA/G-VII	3
Asia 1	ASIA1/unnamed	3
O	O/ME-SA/Ind-2001	5



Graph 4: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 2 (see Annex for explanation).



C. POOL 3 – West Eurasia & Middle East

OUTBREAKS	
Country	Description
<p>Serotypes ASIA 1 and O in Afghanistan⁵</p>	<p>The CVDRL, Afghanistan detected FMDV serotypes ASIA 1, in eight samples, and O, in five samples, of the 13 serotyped samples. Another seven FMDV positive samples are undergoing serotyping while nine of the total 29 samples examined during the reporting month were negative.</p> <p>A/ASIA/Iran-05 and O/ME-SA/PanAsia-2 are the most recent lineages detected by the WRLFMD in samples collected in the country during 2018.</p> <p><i>Interpretation</i> This report is partially consistent with previous reports as ASIA 1 was last detected in July of 2018. The causative serotypes are believed to respectively circulate from sporadically to endemically in the country.</p>
<p>Serotypes A, ASIA 1 and O in Pakistan⁶</p>	<p>For the reporting country, 345 outbreaks were notified in the provinces of Balochistan, Khyber Pakhtunkhwa, Punjab and Sindh caused by FMDV serotypes A, ASIA 1 and O. A summary of the outbreaks is reported in Table 6 and their location in Map 4.</p> <p>The FMD control project is currently operated only Punjab and information relative to other areas of the country are provided on voluntarily basis.</p> <p>Last reported lineages in the country by the WRLFMD were A/ASIA/Iran-05, ASIA 1/Sindh-08/ and O/ME-SA/PanAsia2 detected in 2017.</p> <p><i>Interpretation</i> This report is consistent with previous reports; The causative serotypes are believed to circulate endemically in the country.</p>



Map 4: location of outbreaks reported in Pakistan during March 2019 (Source – Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator, Google Fusion Maps).

OUTBREAKS								
<p>Table 6: number of outbreaks reported per serotype and per district in Pakistan during March 2019 (Source –Progressive Control of Foot and Mouth Disease in Pakistan, <i>Dr. Muhammad Afzal</i>, Project Coordinator).</p>								
Province	District	Number Outbreaks	Number of Outbreaks due to FMD Virus Serotypes					
			O	A	Asia-1	Mixed	Not Typed	Negative
Punjab	Multan	12	5	1	-	-	1	5
	Khanewal	3	-	2	-	-	-	1
	Lodhran	4	3	-	1	-	-	-
	Vehari	1	1	-	-	-	-	-
	Rajanpur	1	-	-	-	-	1	-
	Layyah	9	-	-	-	-	9	-
	Muzaffar Grah	20	-	-	-	-	20	-
	DG Khan	7	-	-	-	-	7	-
	Sargodha	1	-	-	1	-	-	-
	Mandi Baha ud Din	2	-	-	2	-	-	-
	Khushab	2	-	-	1	-	-	1
	Bhakkar	7	-	-	7	-	-	-
	Attock	2	1	-	1	-	-	-
	Rawalpind i	12	-	-	10	-	-	2
	Chakwal	9	3	-	1	02 (O+A)	-	3
	Okara	2	1	-	-	-	1	-
	Rahimyar khan	1	1	-	-	-	-	--
	Lahore	27	6	-	1	-	11	9
	Jehlum	8	-	-	7	-	-	1
	Kasur	8	1	-	-	-	6	1
Gujranwal a	1	1	-	-	-	-	-	
Narowal	1	-	-	-	-	-	1	
Sahiwal	3	-	-	-	-	3	-	
Gujrat	3	-	-	-	-	-	3	
Nankana	2	-	-	-	-	-	2	
Sindh	Karachi	157	24	5	57	-	27(3 Rejected)	44
	Thatta	4	-	-	-	-	4	-
Baluchista n	Quetta	20	-	-	4	-	5	11
	Lasbella	1	-	-	1	-	-	-
KPK	Peshawar	2	1	-	1	-	-	-
	Mansehra	2	1	-	1	-	-	-
	Swat	9	2	-	4	-	-	3
	Charsadd a	1	-	-	1	-	-	-
	Mardan	1	-	-	1	-	-	-
Total		345	51 (14.8)	8 (2.3)	102 (29.6)	2 (0.6)	95 (27.5)	87 (25.2)

**Serotype O
in Palestine
1,19**

A FMD outbreak was notified on March 26th 2019 at Hebron, Bani Naeem, West Bank on a goat and sheep farm and diagnosed by the Central Veterinary Laboratory Al-Arubb (National laboratory) by RRT-PCR on April 1st 2019. Samples analysed the Kimron Veterinary institute using antigen ELISA and

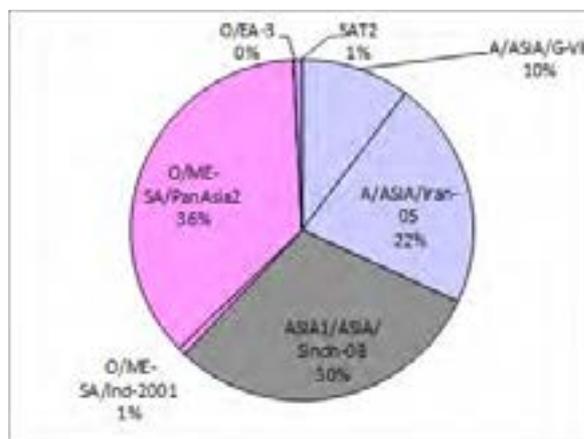
OUTBREAKS	
	<p>serotype specific PCR were positive for FMDv serotype O. Molecular typing is ongoing by the same Laboratory.</p> <p>Apparent morbidity and mortality were respectively 18.48% and 2.31% in the 433 animals present. The source of the outbreak is unknown with the farm vaccinated last in December 2017, as the country is experiencing a shortage of vaccines supplies. General control measures were applied, including control of wildlife reservoirs and the vaccination of the herd with a vaccine against FMDV serotypes A and O. Location of the outbreak is represented in Map 5.</p> <p><i>Interpretation</i> clinical FMD is detected sporadically in the country and further surveillance activities would better define the level of circulation of the infection. The latest lineage reported by the WRLFMD is in 2017 and 2018 is O/EA-3.</p>  <p>Map 5: Location of FMD outbreak at Hebron, Bani Naeem, West Bank. (Source - OIE WAHIS).</p>

SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)														
Country	Activity	Description												
Israel ²	Vacc.	Three field isolates, belonging to the O/ME-SA/PanAsia2 ^{Qom15} lineage detected in 70 of the 85 diagnostic specimens collected between April and December 2018, from different cattle, sheep, gazelle, deer and wild boar, that were subjected to VMSS tests obtained good matching results with the following vaccine strains: O 3039, O Manisa and O TUR 5/09.												
Pakistan ⁶	Vacc.	<table border="1"> <thead> <tr> <th>Province</th> <th>Ring Vaccination (Doses)</th> </tr> </thead> <tbody> <tr> <td>Punjab</td> <td>37,075</td> </tr> <tr> <td>Sindh</td> <td>25,000</td> </tr> <tr> <td>KP</td> <td>150</td> </tr> <tr> <td>ICT</td> <td>75</td> </tr> <tr> <td>Total</td> <td>62,300</td> </tr> </tbody> </table> <p>During the reporting month, a ring vaccination campaign was carried out in some of the Provinces of the country as reported in Table 7.</p> <p>Table 7: summary of the ring vaccination campaign carried out in some of the Provinces of the country during March 2019 (Source – Progressive Control of Foot and Mouth Disease in Pakistan, <i>Dr. Muhammad Afzal</i>, Project Coordinator).</p> <p>Veterinary capacity building training courses were conducted in the provinces of Khyber Pakhtunkhwa, Islamabad Capital Territory and Punjab with the attendance of 5 female and 28 male Veterinary Officers.</p>	Province	Ring Vaccination (Doses)	Punjab	37,075	Sindh	25,000	KP	150	ICT	75	Total	62,300
Province	Ring Vaccination (Doses)													
Punjab	37,075													
Sindh	25,000													
KP	150													
ICT	75													
Total	62,300													
Saudi Arabia ²	Surv.	FMDV O was detected among the eleven samples collected from Oryx (N° 1), gazelle (N° 1), cattle (N° 8) and sheep (N° 1) collected between January and December 2018 in Alhassa (where the sample from the Oryx was collected) and Riyadh. All the species analysed tested positive and the genotyping results identified all the six isolates as												

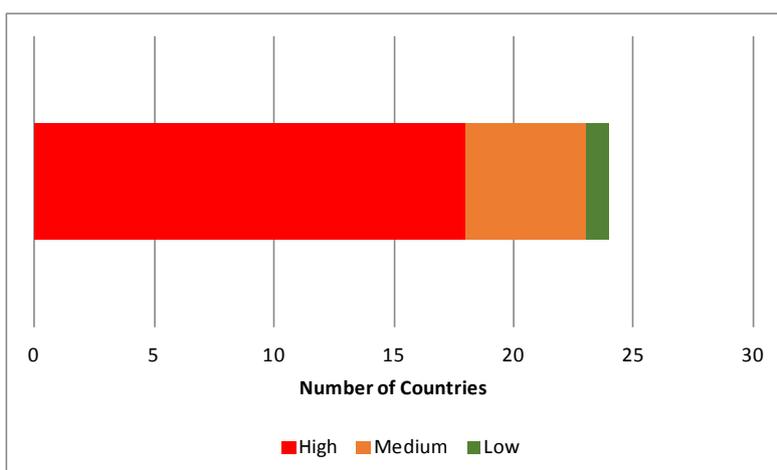
		O/ME-SA/Ind-2001e, most closely related to the field isolate not pertaining to the country, represented by UAE/1/2015 isolated in a gazelle with a seq id >98.1%.
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Table 8 and Graph 5: Conjectured circulating FMD viral lineages in Pool 3 - West Eurasia & Middle East (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 24 countries of Pool 3 - West Eurasia
A	A/ASIA/G-VII	18
	A/ASIA/Iran-05	10
ASIA 1	ASIA1/ASIA/Sindh-08	10
O	O/ME-SA/Ind-2001	6
	O/ME-SA/PanAsia2	22
	O/EA-3	2
SAT2	SAT2	1



Graph 6: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 3 – West Eurasia & Middle East (see Annex for explanation).



D. POOL 3 – North Africa

OUTBREAKS	
Country	Description
Serotype O in Morocco 1	<p>Another eight new outbreaks, already reported as resolved, due to FMDV serotype O were notified in the country during February and March 2019 on multispecies ruminant farms. The outbreaks occurred at Souss-Massa, Tanger-Tétouan-Al Hoceïma and Fès-Meknès.</p> <p>The source of the outbreaks was unknown and the general control measures that were adopted are movement control, quarantine vaccination as reported in Table 10, official destruction of animals and animal products. Screening and surveillance is being carried out within and outside the containment and/or protection zones.</p> <p>A summary of the animals involved and location of outbreaks are reported in Table 9 and Map 7.</p>

Table 9: summary of the animals involved in the eight outbreaks that occurred in Algeria between February and March 2019 (Source – WAHIS).

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate
Cattle	35	18	1	34	0	51.42%	2.86%
Goats	63	0	0	63	0	0%	0%
Sheep	116	0	0	116	0	0%	0%
Total	214	18	1	213	0	8.41%	0.47%

Administrative division	Species	Total Vaccinated	Total farms vaccinated
BÉNI MELLAL-KHÉNIFRA	Cattle	6,278	886
CASABLANCA-SETTAT	Cattle	41,447	8,758
FÈS-MEKNÈS	Cattle	1,616	395
MARRAKECH-SAFI	Cattle	644	129
RABAT-SALÉ-KÉNITRA	Cattle	597	62
SOUSS-MASSA	Cattle	4,227	477
TANGER-TÉTOUAN-AL HOCEÏMA	Cattle	691	211
Total Vaccinated		55,500	10,918

Table 10: details of the vaccination activities carried out in Morocco following the outbreaks that occurred between January and February 2019 (Source – WAHIS).

Interpretation This is a continuation of events that started in December 2018 caused by the same serotype, which is also reported in neighbouring countries of the same virus pool.

Serotype O in Tunisia¹

FMDV serotype O was responsible for two outbreaks that occurred during February 2019 on small farms at Jendouba and Sidi Bouzid as a continuation of the events that had started in December 2018. The events are already resolved.

A summary of the animals involved is reported in Table 11 and location of the events in Map 7.

The source of the outbreaks was unknown and the general control measures that were adopted are surveillance within and outside the containment and/or protection zones and vaccination will be adopted in response to outbreaks.

Table 11: summary of the animals involved in the two outbreaks that occurred in Tunisia between February 2019 (Source – WAHIS).

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	14	5	0	0	0	35.71%	0.00%	0.00%	0.00%
Sheep	40	0	0	0	0	0.00%	0.00%	-	0.00%

*Removed from the susceptible population through death, destruction and/or slaughter

Interpretation This is a continuation of events that started in December 2018 caused by the same serotype, which is also reported in neighbouring countries in the same virus pool.

SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING(PVM)

Country	Activity	Description
Egypt ²	Surv.	Among the 36 buffalo (N° 7) and cattle (N° 29) samples collected between January 2017 and November 2018, one sample was positive for serotype A, one for serotype O and six samples for serotype SAT 2. All positive samples were from cattle.
Morocco ^{2, 12}	Surv.	The six VP1 sequences of FMDVs collected during January 2019 the EUR), FAO Reference Centre & OIE Reference Laboratory for Foot-and-Mouth Disease ANSES, France were genotyped as O/EA-3 with the most closely related field virus, not

pertaining to the country, represented by different isolates detected in Algeria during 2018 with a seq id of >98.7%. Location of sample collection is represented in Map 6.



Map 6: Location of the genotyped samples collected in Morocco during January 2019 (Source – WRLFMD, Google Fusion Maps).

Map 7: Location of FMD events in Pool 3 – North Africa for the reporting month (Source - WAHIS, OIE).

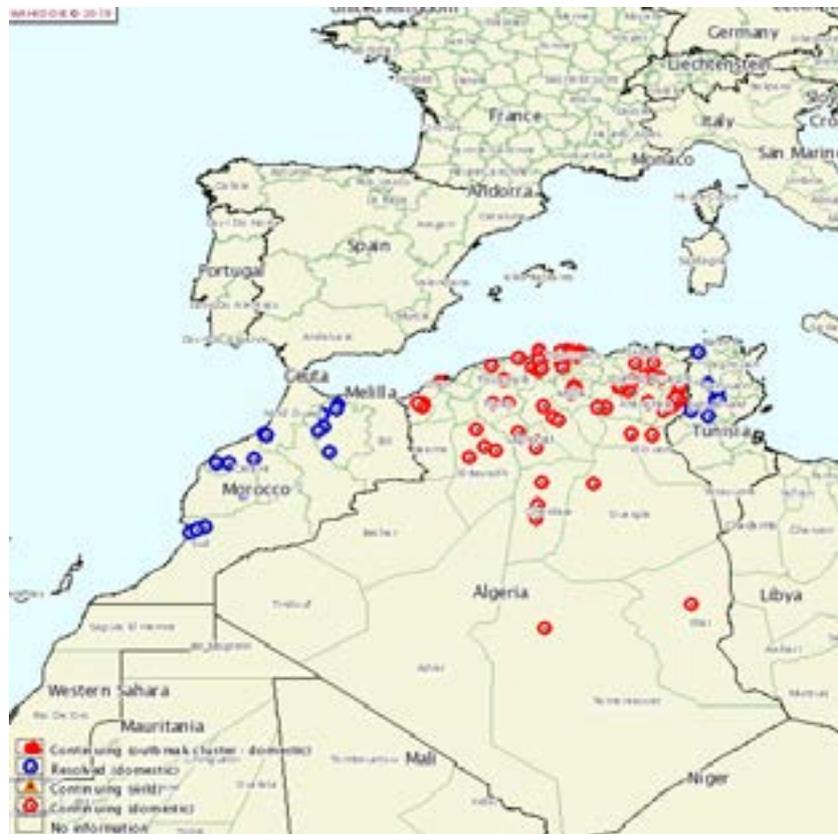
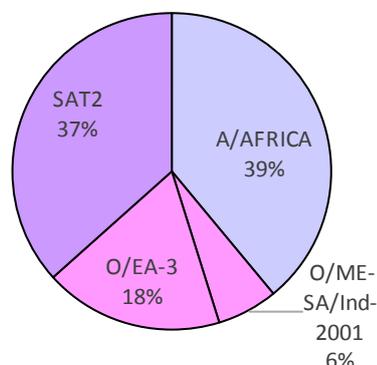
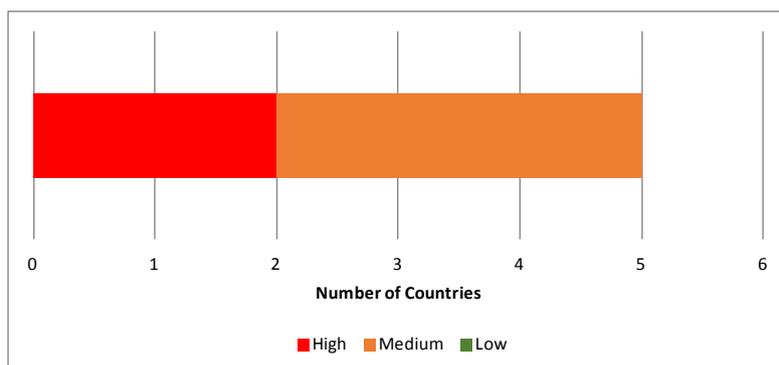


Table 12 and Graph 7: Conjectured circulating FMD viral lineages in Pool 3 - North Africa (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 5 countries of Pool 3 - North Africa
A	A/AFRICA	4
O	O/ME-SA/Ind-2001	1
	O/EA-3	5
SAT 2	SAT 3	1

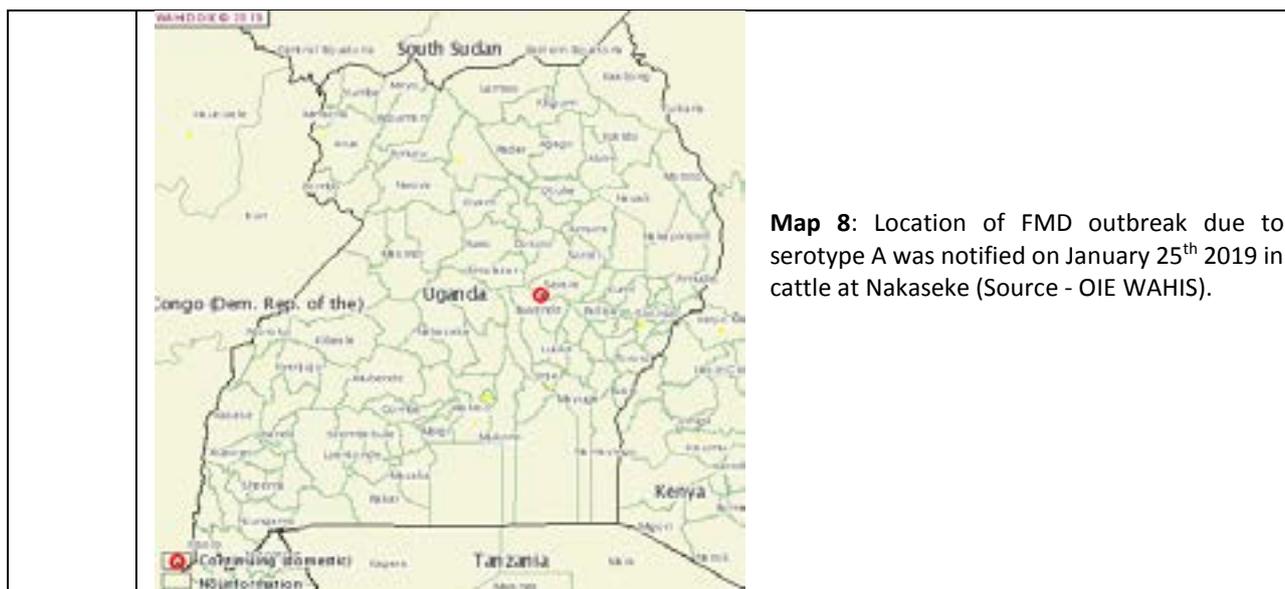


Graph 8: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 3 – North Africa (see Annex for explanation).



E. POOL 4 – Eastern Africa

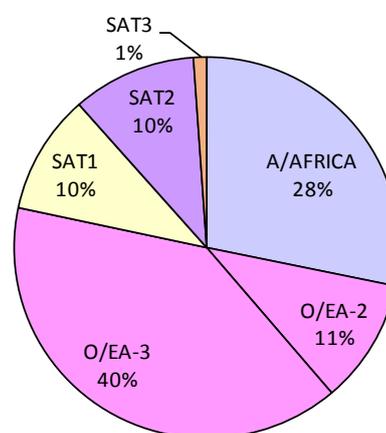
OUTBREAKS	
Country	Description
Serotype A in Uganda 1 2	<p>A FMD outbreak due to serotype A was notified on January 25th 2019 in cattle at Nakaseke. The diagnosis was confirmed by the WRLFMD on March 8th 2019, as described in more detail in the following section dedicated to surveillance. The affected animals are cattle belonging to local and cross breeds of different sex and age groups that are in a pastoral system. The affected farms are clustered in close contact during grazing and watering at River Kafu that separates three districts of Nakaseke, Masindi and Nakasongola. The area is characterised by numerous animal movements due to pastures, water points and cattle markets.</p> <p>The source of the outbreak was attributed to legal and illegal movement of animals. General control measures were adopted including surveillance within and outside the protection zone and vaccination of 20,000 cattle using a trivalent vaccine, but information on the serotypes included is not provided. Apparent morbidity rate was very low, 0.1% with no mortality in a susceptible population of 150,000. Location of outbreak is represented in Map 8.</p> <p><i>Interpretation</i> – This report is consistent with previous reports. The causative serotype is believed to be present in the country further surveillance activities would better define the level of circulation of the infection.</p>



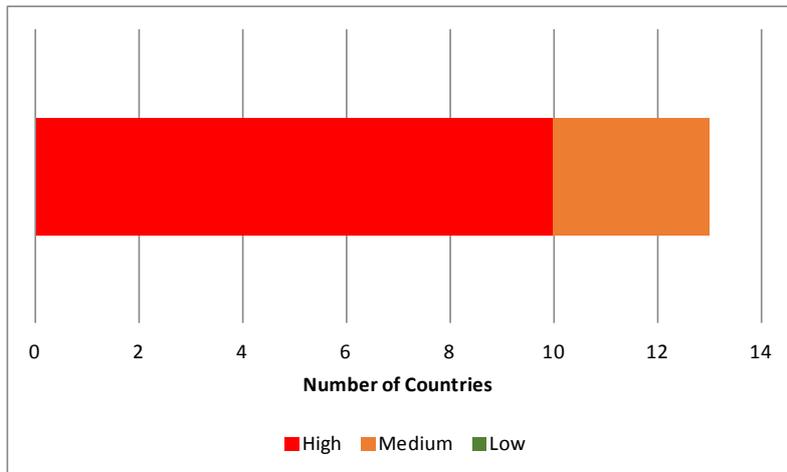
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
Ethiopia ^{2, 14}	Surv.	A/AFRICAG-IV (72.22%) and O/EA-3 (27.78%) were the lineages detected in 36 of the 54 cattle samples collected between August and December 2018. The samples positive for the first lineage were collected in the Amhara Region and the Oromia Region, while those positive for the second lineage were collected in the Tigray Region and the Oromia Region. All the samples were closely correlated to other strains circulating in the country.
Kenya ⁷	Surv. And Vacc.	The FMDNRL, Embakasi, Kenya, reported the detection of FMDV serotype A in one sample among the two bovine specimens analysed. The virus isolate was submitted to VMSD test with good matching results. Vaccine strains used are not reported. The most recent lineages detected in the country belonging to the above serotypes are A/AFRICA/G-I and SAT 2/IV/unnamed in samples collected in 2017.
Uganda ²	Surv.	Four and eight samples resulted respectively positive for A/AFRICA/G-1 and O/EA-2 out of a set of 52 samples collected from cattle during January and February 2019. Most closely related to field isolates not pertaining to the country for A/AFRICA/G-1 were those detected in Kenya in 2017 a with a seq id >94.9%, while for O/EA-2, the most closely related isolates are also field viruses not pertaining to the country were again those detected in Kenya in 2017 with a seq id > 96.5%.

Table 13 and Graph 9: Conjectured circulating FMD viral lineages in Pool 4 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 13 countries of Pool 4 - East Africa
A	A/AFRICA	11
O	O-EA2	3
	O EA-3	9
SAT1	SAT1	10
SAT2	SAT2	6
SAT3	SAT3	5



Graph 10: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 4 (see Annex for explanation).

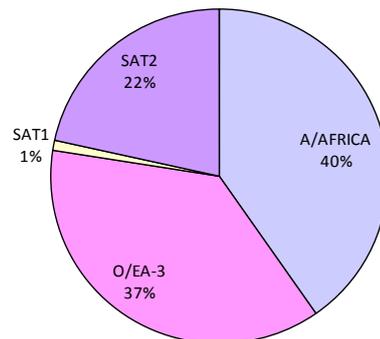


F. POOL 5 – West / Central Africa

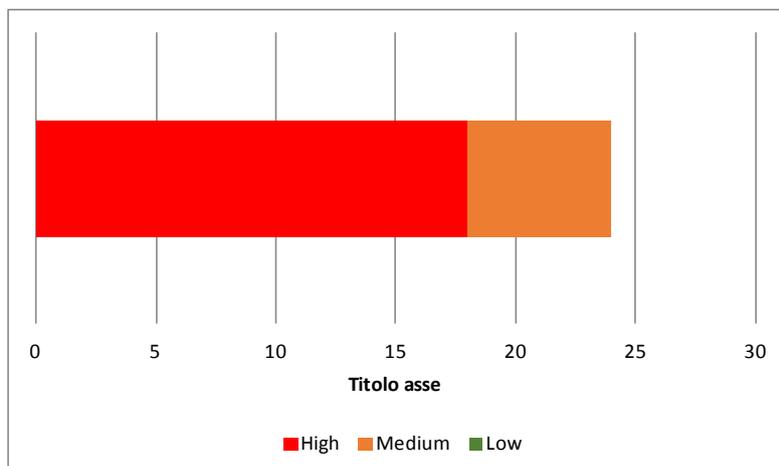
8, 9, 10, 11 No events FMD events and activities were notified in this Pool during the reporting month.

Table 14 and Graph 11: Conjectured circulating FMD viral lineages in Pool 5 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 24 countries of Pool 5 -West Africa
A	A/AFRICA	14
O	O/EA-3	22
SAT1	SAT1	2
SAT2	SAT2	14



Graph 12: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 5 (see Annex for explanation).



G. POOL 6 – Southern Africa

OUTBREAKS	
Country	Description
<p>Serotyping pending in Malawi¹</p>	<p>A FMD outbreak for which serotyping is pending was reported on February 21st 2019 in cattle at Mzimba. Laboratory diagnosis was based on the detection of antibodies to non-structural proteins of the FMDV.</p> <p>Outbreaks are occurring as the population at risk is in a communal grazing system. Illegal animal movement is the main source suspected for the introduction of infected animals in the area. Movement control, quarantine and surveillance are the measures adopted for containing the spread of infection. Vaccination will be adopted in response to the outbreaks if a suitable vaccine is available.</p> <p>No mortality was notified in the affected animals while apparent morbidity rate was 0.36% in the 80,000 susceptible cattle. Location of the outbreak is represented in Map 9.</p>  <p>Map 9: Location of FMD outbreak due to serotype A was notified on January 25th 2019 in cattle at Nakaseke (Source - OIE WAHIS).</p> <p><i>Interpretation</i> – Further information is required to assess if this represents a new incursion or if the serotype responsible of the outbreak has been circulating subclinically/unreported. Timely serotyping of the FMD viruses causing the outbreaks would aid the country in choosing the appropriate vaccine.</p>
<p>Serotyping pending Mozambique¹</p>	<p>Two separate FMD events are reported in the country as following:</p> <ul style="list-style-type: none"> - The first event refers to an outbreak, which occurred on May 17th 2018. Cattle of all ages and sexes were affected. Diagnosis was confirmed on serological basis by the Central Veterinary Laboratory, Directorate of Animal Science (DCA), Institute for Agrarian Research of Mozambique (IIAM) (National laboratory) on May 24th 2018, using a non-structural protein ELISA. <p>The outbreak involved cattle of a village of Nampula that registered only a low apparent morbidity of 3.27% in a population of 2,200 animals. The source of the outbreak is due to the illegal movement of animals and for this movement control was set up for the containment of the spread of infection. Other control measures were set up including the vaccination of 49,529 cattle using a trivalent vaccine containing SAT 1, SAT 2 and SAT 3.</p> <p>From the beginning of the event in May 2018, up to 30 of October 2018, 493 clinical cases of FMD were observed after which no other clinical cases of FMD were reported and for this considered as resolved. Location of the outbreak is reported in Map 10.</p>



Map 10: Location of FMD outbreak, which occurred on May 17th 2018 in cattle of a village of Nampula (Source - OIE WAHIS).

The second event affected the area that is located close to Gonorezoe National Park in Zimbabwe. The investigation conducted in the surrounding crush pens and the routine clinical inspection on site and vicinity areas indicate that no cases of FMD were detected and the disease affected cattle of one village. Even in this case, the source of the outbreak is due to the illegal movement of animals. The Veterinary Authority instituted as disease control measures, the ban of livestock movement, vaccination in the whole district and branding. Vaccination was administered to 116,150 cattle in Gaza using a trivalent aqueous vaccine containing FMDV serotypes SAT 1, SAT 2 and SAT. The clinical inspection of cattle in the affected area and neighbouring areas showed no new cases of FMD since April 2018 up to present.

Interpretation – Further information is required to assess if these events represent a new incursion or if the serotypes responsible of the outbreaks were circulating subclinically/unreported. Timely serotyping of the FMD viruses causing the outbreaks would aid the country in choosing the appropriate vaccine.

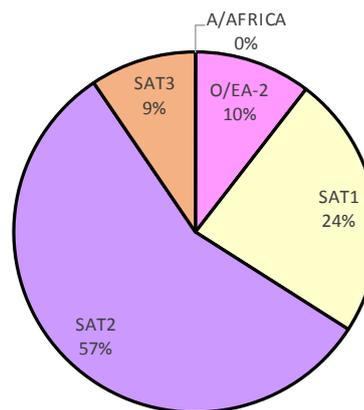
<p>Serotype O <u>Zambia</u>¹</p>	<p>The FMD outbreak due to serotype O that was reported on February 11th 2019 in cattle at Southern was diagnosed by Central Veterinary Research Institute and the Botswana Vaccine Institute (FMD Regional Reference Laboratory) on March 13th 2019, using antigen detection ELISA and NSP ELSIA. Only an apparent morbidity of 6.82% was observed in the 8,214 affected cattle. The outbreak is due to the illegal movement of animals and the affected cattle are mainly on commercial farms in Chisamba District of Central Province, while in Southern Province, the affected animals are on the traditional sector.</p> <p>General control measures set up include vaccination of 13,643 cattle (ring vaccination) in Central Province and 99,855 cattle in Southern province. Location of outbreak is represented in Map 11.</p> <p><u>Interpretation</u> - This serotype was not previously reported in this province although it has been previously reported in the north of country. This report suggests that there has been spread within the country.</p>
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		<p>Map 11: Location of FMD outbreak due to serotype O that was reported on February 11th 2019 in cattle at Southern Province (Source - OIE WAHIS).</p>
<p>Serotype SAT 2 in Zimbabwe 1</p>	<p>The country reported other eight FMD outbreaks (Map 12) of the episodes that started during June 2018 due to serotype SAT 2. The new outbreaks diagnosed on clinical basis are on different cattle farms at Mashonaland East during March 2019 with an apparent morbidity of 8.03% in the 2,652 affected cattle.</p> <p>As reported for the other countries of the same pool, the notified events are due illegal movement of animals, as well as, contact with infected animals at grazing/watering.</p> <p>A total of 5,796 cattle were vaccinated in the containment zone marked around the infected farms in Seke district. While in Mashonaland Central and East, 127,265 and 120,000 were respectively vaccinated. No details on the vaccine type were provided. Intensive surveillance and implementation of control measures remain in force in the affected districts. Veterinary checkpoints complimented by police are in place in strategic points in the infected areas and all illegally moved cattle are being destroyed.</p> <p><i>Interpretation</i> - This report is consistent with previous reports. The causative serotype is believed to circulate endemically in the country. Trivalent (SAT1, SAT2, SAT3) vaccine supplied by Botswana Vaccine Institute is in use.</p> 	<p>Map 12: Location of FMD outbreaks due to serotype SAT 2 on cattle farms at Mashonaland East during March 2019 (Source - OIE WAHIS).</p>

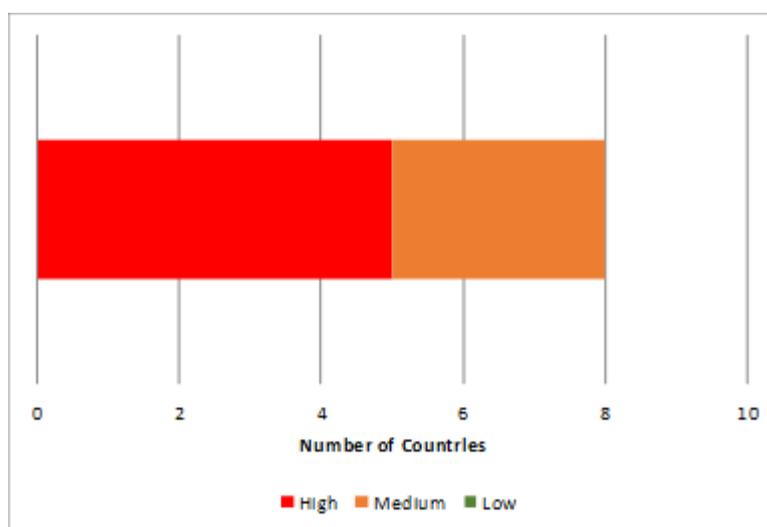
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
South Africa ¹⁵	Surv.	The ARC-Onderstepoort Veterinary Institute analysed 7,659 sera using liquid-phase blocking ELISA and 1,313 sera in solid phase competition ELISA for the detection of antibodies against SAT 1, SAT 2 and SAT while 61 serum samples were tested using a non-structural protein antibody ELISA.

Table 15 and Graph 13: Conjectured circulating FMD viral lineages in Pool 6 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 8 countries of Pool 6 -Southern Africa
A	A/AFRICA	1
O	O-EA-2	2
SAT1	SAT1	6
SAT2	SAT2	8
SAT3	SAT3	3



Graph 14: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 6 (see Annex for explanation).



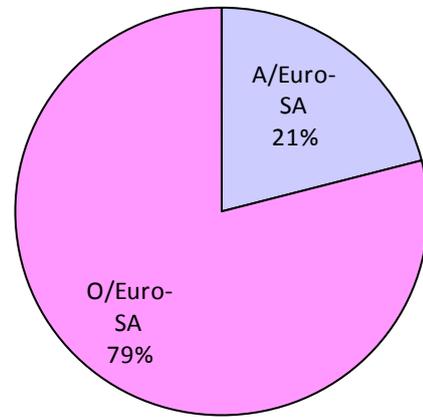
H. POOL 7 – South America

SURVEILLANCE (Surv), VACCINATION (Vacc) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
Colombia ¹	Surv	Following the outbreaks that occurred in the country due to FMDV serotype O, last notified in October 2018, the veterinary services have completed on February 18 th 2019 the verification of absence of the circulation of FMDV through the use of sentinels in the primary and secondary outbreaks. This was conducted through the clinical examination for absence of FMD signs and the serial serological control confirming the absence of viral activity because

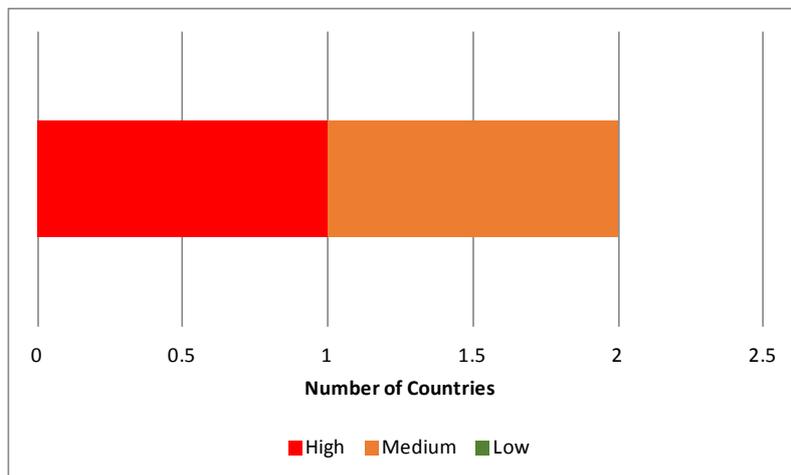
		negative for FMD antibodies. At the end of these controls the animals were removed by slaughter and burial.
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Table 16 and Graph 15: Conjectured circulating FMD viral lineages in Pool 7 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 2 countries of Pool 7 -South America
A	A/Euro SA	1
O	O/Euro SA	2



Graph 16: Categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country of Pool 7 (see Annex for explanation).



V. OTHER NEWS

²The 4th WRLFMD Quarterly Report for the period October – December 2018 contains a new format for recommendations of FMDV vaccines to be included in antigen banks for Europe. The discussion of Table 17 is contained within the report.

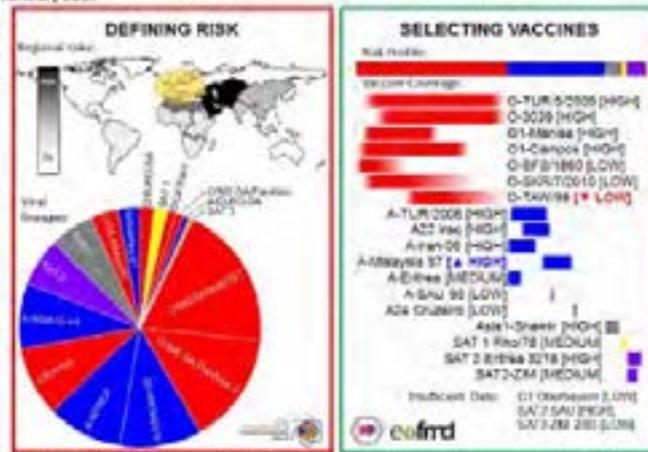
Table 17: Recommendations from WRLFMD[®] on FMD virus strains to be included in FMDV antigen banks (for Europe).

This report provides recommendations of FMDV vaccines to be included in antigen banks. These outputs are generated with a new tool (called PRAGMATIST) that has been developed in partnership between WRLFMD[®] and EuFMD. These analyses accommodate the latest epidemiological data collected by the OIE FAO FMD Laboratory Network regarding FMDV lineages that are present in different source regions (see Table below), as well as available *in vitro*, *in vivo* and field data to score the ability of vaccines to protect against these FMDV lineages.

Lineage	West Eurasia	East Asia	North Africa	India and Southern Asia	East Africa	West and Central Africa	Southern Africa	South America
O ME-SA P/WA2-2	35	-	-	-	-	-	-	-
O ME-SA Pa/Asia	-	10	-	-	-	-	-	-
O SEA Mya-98	-	33	-	-	-	-	-	-
O ME-SA IN/2001	6	20	25	80	-	-	-	-
O EA of O WA	3	-	20	-	45	37	-	-
O EURO-SA	-	-	-	-	-	-	-	74
O GATHAY	-	10.5	-	-	-	-	-	-
A ASIA 56a-97	-	20	-	-	-	-	-	-
A ASIA 19a-25	25.5	-	-	-	-	-	-	-
A ASIA O-VII	17.5	-	-	16	-	-	-	-
A AFRICA	-	-	35	-	24	25	-	-
A EURO-SA	-	-	-	-	-	-	-	25
Att-1	12.5	1.5	-	4	-	-	-	-
SAT 1	-	-	-	-	10	10	27	-
SAT 2	0.5	-	10	-	20	28	57	-
SAT 3	-	-	-	-	1	-	16	-
C	-	-	-	-	-	-	-	-

Vaccine Antigen Prioritisation: Europe

January 2019



The table defines the relative distribution of FMDV lineages in each of the eight source regions, while the figure highlights the importance of these source regions for Europe (using data collected at the EU-RL Workshop); please contact WRLFMD EuFMD for assistance to tailor these outputs to other geographical regions. NB: Vaccine-coverage data presented is based on available data and may under-represent the true performance of individual vaccines.

VI. REFERENCES – Superscripts

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2. World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD), www.wrlfmd.org.
3. Regional Reference Laboratory for FMD (ARRIAH, Russia) - *Dr. Svetlana. Fomina*.
4. ICAR-Directorate of Foot and Mouth Disease, Mukteswar, India - *Dr. S. Saravanan*.
5. Central Veterinary Research and Development Laboratory (CVDRL), Aghanistan - *Dr. Wahidullah* Head of Laboratory
6. Progressive Control of Foot and Mouth Disease in Pakistan - *Dr. Muhammad Afzal*, Project Coordinator.
7. National FMD Reference Laboratory, Embakasi, Kenya – *Dr. Kenneth Ketter*.
8. Laboratoire National Vétérinaire (LANAVET) - Garoua, Cameroon - *Dr. Simon Dickmu Jumbo*.
9. ghana
10. FMD Research Centre, Virology Research Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria - *Dr. Ularanu Hussaini*
11. *senegal*
12. The European Union Reference Laboratory (EURL), FAO Reference Centre & OIE Reference Laboratory for Foot-and-Mouth Disease chez Agence nationale de sécurité sanitaire – ANSES, Maisons-Alfort, Île-de- France
13. OIE/FAO FMD Reference Laboratory Network, Annual Report 2016
14. National Animal Health Diagnostic and Investigation Center (NAHDIC) – *Dr. Daniel Gizaw*.
15. ARC -Onderstepoort Veterinary Institute, Republic of South Africa - *Dr LE Heath/Ms E Kirkbride*
16. FMD Situation in SEACFMD Countries 2015-2016; presentation at the The 23rd SEACFMD Sub-Commission Meeting 9-10 March 2017, Siem Reap, Cambodia, http://www.rr-asia.oie.int/fileadmin/sub_regional_representation/sub_regional_programme/seacfmd/SEACFMD_Activities/sub_com/23nd_Meeting_2017_/presentations/1.3_Regional_FMD_situation.pdf<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283054/>
17. Islam, M. S., et al. "Distribution of foot and mouth disease virus serotypes in cattle of Bangladesh." SAARC Journal of Agriculture 15.1 (2017): 33-42. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283054/> and neighbouring countries (A lineage).
18. Ibrahim Eldaghayes et al. Exploiting serological data to understand the epidemiology of foot-and-mouth disease virus serotypes circulating in Libya Open Vet J. 2017; 7(1): 1–11 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283054/>
19. Acting Chief Veterinary Officer of the Israeli Veterinary Services and Animal Health - *Dr. Tamir Goshen*

VII. Annex

The estimates of the relative prevalence of serotypes and strains presented in the Tables below are based on the best data available to us and we are always trying to improve them. The accuracy of these estimates is only as good as the level of surveillance and reporting permits. Readers with relevant data or information are encouraged to contact EuFMD so that it can be included in the report.

In this report, the N. African countries of Morocco, Algeria, Tunisia and Libya considered together as a separate group, as the epidemiological situation is distinct and of interest to risk managers.

Description of methods

How to interpret the estimates of the relative prevalence of serotypes and strains:

If 100 animals that had been infected with FMD virus in the last 12 months were randomly selected from a country or virus pool:

1. How many animals would be infected with each serotype?
2. Within each serotype, how many would be infected with each virus strain?

Pool-level estimates and assumptions:

As the data required to calculate the relative prevalence of serotypes and strains are not directly available in most countries, they were estimated in 3 steps as follows:

1. First, each country in the pool is assigned a weight according to the number of animals infected with FMD each year:

$$weight_{country\ 1} = \frac{(FMD\ incidence * susceptible\ population)_{country\ 1}}{\sum_{country\ 1}^{country\ n} (FMD\ incidence * susceptible\ population)}$$

The expected FMD incidence was based on the paper by Sumption *et al* 2008 as follows: i) Low/Sporadic: 0.029 new infections per 1000 animals/year; ii) Medium: 0.458 new infections per 1000 animals/year; iii) High: 1.759 new infections per 1000 animals/year.

The susceptible livestock population is the sum of sheep, goat, cattle, buffalo and pig populations from FAOStat.

2. For each country, the relative prevalence (RP) of each FMD serotype and strains within serotype is specified for all countries where FMD is believed to circulate endemically. First, the relative prevalence of each serotype is specified by dividing 100 points according to the serotypes that would be represented if 100 animals infected with FMDV in the previous year were randomly selected from the country. Subsequently, the relative prevalence of each serotype is broken down to reflect the distribution of circulating strains within each serotype.

- If no information is available for a given country, then the circulating serotypes and strains are inferred from the neighbouring countries.
- If there is only information about presence of serotypes and/or strains, but no data on the relative prevalence, then it is assumed that the serotypes/strains are circulating in equal prevalence.
- When available, data from the last 24 months are considered, otherwise the most recent data available are used as well as the current situation in the region.
- In the absence of reporting, a country is considered infected until it (re)gains recognition of freedom from the OIE

3. Data from steps 1 and 2 are combined at pool level according to the following formula:

March 2019

$$relative\ prevalence_{serotype\ or\ strain} = \sum_{country\ 1}^{country\ n} (weight_{country} * RP_{serotype\ or\ strain})$$

Similarly to what is described above are the criteria adopted for the categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country:

High: There has been little or no reporting of laboratory results (serotype and/or molecular characteristics) from this country within the last 24 months. The serotype/strain distribution is based on inferences from the situation in neighbouring countries;

Medium: There is some information available about the circulating serotypes and/or strains, but from a low number of samples and/or not representative of entire country or different sectors and/or not from the past 24 months;

Low: There is reliable information available about the circulating serotypes and/or strains, obtained from analysis of a large number of samples that represent the country's livestock population.

Legend of icons in the following tables

	>=95%
	>=60%
	>=30%
	>=5%
	<5%
	no strain circulating

Global Foot-and-Mouth Disease Situation

March 2019

Table 18: Conjectured circulating FMD viral lineages in each country of Pool 1 (current to March 2019)

Country	Last Outbreak Reported/Serotype	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country							Uncertainty	Reference	
			A	Asia1	O	A/ASIA/SEA-97	ASIA1/unnamed	O/ME-SA/Ind-2001	O/SEA/Mya-98	O/ME-SA/PanAsia	O/ME-SA/PanAsia2	O/CATHAY			
CAMBODIA	Dec 2016/ A & O	high	■		■	■					■			medium	2
CHINA	March 2019/O, May 2017/A	high	■		■	■		■	■	■			■	medium	2
CHINA (HONG KONG, SAR)	Dec 2018/O	high			■			■					■	medium	2
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	May 2014/not confirmed, July 2014/O	high	■		■	■		■						high	as per REPUBLIC OF KOREA (SOUTH KOREA)
LAO PEOPLE'S DEMOCRATIC REPUBLIC (LAOS)	Jan 2018/O Mar 2015/A	high	■		■	■			■	■				medium	2
MALAYSIA	May 2018/O, August 2016/A	medium			■					■				medium	2
MONGOLIA	May 2018/O, Sept 2016/A	medium			■			■	■	■				medium	2
MYANMAR	May 2018/O, April 2017/Asia 1, July 2016/ not typed, Oct 2015/A	high	■	■	■	■	■	■	■	■		■		medium	2, 16
REPUBLIC OF KOREA (SOUTH KOREA)	Jan 2019/O, April 2018/A	low/sporadic	■		■	■		■						low	2
RUSSIAN FEDERATION	March 2019/O, Oct 2016/Asia 1, Jan 2016/ A	low/sporadic			■			■	■	■				medium	2
TAIWAN PROVINCE OF CHINA	Jun 2015/A	low/sporadic			■								■	high	as per HONG KONG
THAILAND	Oct 2018 /A & O	high	■		■	■		■	■	■				medium	2
VIETNAM	Jan 2019/O, November 2017/A and not typed	high	■		■	■		■	■	■			■	medium	2

March 2019

Table 19: Conjectured circulating FMD viral lineages in each country of Pool 2 (current to March 2019)

Country	Last Outbreak Reputed/Serotype	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country			Uncertainty	Reference
			A	Asia1	O	A/ASIA/G-VII	ASIA1/unnamed	O/ME-SA/Ind-2001		
BANGLADESH	Dec 2016/A, ASIA 1 and O	high	■	■	■	■	■	■	high	17
BHUTAN	Apr 2018/O, Sep 2017/A	high	■	■	■	■	■	■	medium	2
INDIA	Mar 2019/O, Apr 2015/A, ASIA 1	high	■	■	■	■	■	■	medium	2
NEPAL	Feb 2018/O, Mar 2018/Asia 1, April 2017/A	high	■	■	■	■	■	■	medium	2
SRI LANKA	May 2018/O	high	■	■	■	■	■	■	medium	2

March 2019

Table 20: Conjectured circulating FMD viral lineages in each country of Pool 3 –West Eurasia (current to March 2019)

Country	Last Outbreak Reputed/Serotype	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country								Uncertainty	reference
			A	Asia1	O	sat2	A/ASIA/G-VII	A/ASIA/Iran-05	ASIA1/ASIA/Sindh-08	O/ME-SA/Ind-2001	O/ME-SA/PanAsia2	O/EA-3	SAT2		
AFGHANISTAN	Mar 2019/O & Asia 1, Dec 2018/A	high	■	■	■			■	■					medium	4
ARMENIA	Dec 2015/A	low/sporadic	■		■		■				■			high	13
AZERBAIJAN	2007/O	low/sporadic	■	■	■		■	■	■		■			high	as per Iran
BAHRAIN	Mar 2015/O	low/sporadic	■		■		■			■	■			high	as per Saudi Arabia
GEORGIA	2001/ASIA 1	low/sporadic	■		■		■				■			high	as per Turkey
IRAN, ISLAMIC REPUBLIC OF	Feb 2018/A, Asia 1 & O,	high	■	■	■		■	■	■		■			medium	2
IRAQ	Dec 2013/A, ASIA 1	high	■	■	■		■	■	■		■			high	as per Iran
ISRAEL	Feb 2019/O, June2017/A	low/sporadic	■		■		■				■	■		low	2
JORDAN	Mar 2017/O	low/sporadic	■		■		■			■	■			high	2, as per Saudi Arabia
KAZAKHSTAN	Jun 2013/ A & Aug 2012/O	low/sporadic	■	■	■		■	■	■		■			high	as per Iran
KUWAIT	April 2016/O	high	■		■		■			■	■			high	2, as per Saudi Arabia
KYRGYZSTAN	Aug 2014/not typed & Apr 2013 /O, A,	low/sporadic	■	■	■		■	■	■		■			high	as per Pakistan
LEBANON	2010/not typed	low/sporadic	■		■		■				■			high	as per Turkey
OMAN	May 2015/SAT 2	high				■							■	high	2
PAKISTAN	Mar 2019/ A, O & Asia 1	high	■	■	■		■	■	■		■			medium	2
PALESTINE	Mar 2019/Untyped, Dec 2017/O, Mar 2013/Sat 2	low/sporadic			■								■	medium	2
QATAR	Dec 2013/O	low/sporadic	■		■		■			■	■			high	as per Saudi Arabia
SAUDI ARABIA	Dec 2018/O & Oct 2016/A	high	■		■		■			■	■			high	2
SYRIAN ARAB REPUBLIC (SYRIA)	2002/ A & O	high	■		■		■				■			high	as per Turkey
TAJIKISTAN	Nov 2012/ not typed & Nov 2011/Asia 1,	low/sporadic	■	■	■		■	■	■		■			high	as per Pakistan
TURKEY	Oct 2015/ A May, 2014- 2015/ Asia 1 and O	high	■		■		■				■			medium	2
TURKMENISTAN	Not available	low/sporadic	■	■	■		■	■	■		■			high	as per Iran
UNITED ARAB EMIRATES	Sep 2016/O	low/sporadic	■		■		■			■	■			high	as per Saudi Arabia
UZBEKISTAN	Not available	low/sporadic	■	■	■		■	■	■		■			high	as per Iran

March 2019

Table 21: Conjectured circulating FMD viral lineages in each country of Pool 3 - North Africa (current to March 2019)

Country	Last Outbreak Reported/Serotype	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country				Uncertainty	Reference
			A	O	SAT 2	A/AFRICA	O/ME-SA/Ind-2001	O/EA-3	SAT 2		
ALGERIA	Dec 2018/O, Nov 2016/A May-Jun 2016/Sat 2, Aug 2016/typing pending	medium	■	■		■		■		medium	2
EGYPT	Nov 2018/Sat 2, Feb 2018/A & April 2017/O	high	■	■	■	■		■	■	medium	2
LIBYA	Oct 2013/O	high	■	■		■	■	■		high	18
MOROCCO	Mar 2019/O	low/sporadic		■				■		high	2
TUNISIA	Feb 2019/O, April 2017/A	medium	■	■		■		■		medium	2

March 2019

Table 22: Conjectured circulating FMD viral lineages in each country of Pool 4 (current to March 2019)

Country	Last Outbreak Reputed/Serotype	FMD incidence rate	Presumed serotype distribution within country					Presumed viral lineage distribution within country						Uncertainty	Reference
			A	O	sat1	sat2	sat3	A/AFRICA	O/EA-2	O/EA-3	SAT1	SAT2	SAT3		
BURUNDI	Aug 2013 / not available	high	■	■	■	■	■	■		■	■	■		high	as per Tanzania
COMOROS	2010	high	■	■	■	■	■	■		■	■	■		high	no data available
DJIBOUTI	Not available	high	■	■	■	■	■	■		■	■	■	■	high	as per Ethiopia
ERITREA	Nov 2016/not reported, Jan 2012/O	high	■	■	■	■	○	■		■	■	■	○	high	as per Ethiopia
ETHIOPIA	Feb 2019/A& O, April 2018/ SAT 2, Feb 2018/SAT 1	high	■	■	■	■	○	■		■	■	■	○	medium	2
KENYA	Mar 2019/A & SAT 2, Nov 2018/O, May 2018/ SAT 1	high	■	■	■	■	■	■	■	■	■	■	■	medium	2
RWANDA	Nov 2012/not typed	high	■	■	■	■	■	■	■		■	■	■	high	as per Kenya
SOMALIA	June 2016/not reported	high	■	■	■	■	○	■		■	■	■	○	high	as per Ethiopia
SOUTH SUDAN	June 2017/O & SAT 2, Mar 2018/A Dec 2016/ not sampled	high	■	■	■	■	■	■		■	■	■	■	high	2
SUDAN	May 2017/O	high	■	■	■	■	■	■		■	■	■	■	medium	2
TANZANIA, UNITED REPUBLIC OF	Oct 2016/SAT 1, Aug 2016/O & SAT 2, Jun 2016/A	high	■	■	■	■	■	■		■	■	■	■	high	2
UGANDA	Feb 2019/A & O, Nov 2014/SAT1, Jan 2015/SAT 3, July 2015/ SAT 2 and untyped	high	■	■	■	■	■	■	■	■	■	■	■	high	2, as per Kenya
YEMEN	2009/O	high	■	■	■	■	○	■		■	■	■	○	high	as per Ethiopia

Global Foot-and-Mouth Disease Situation

March 2019

Table 23: Conjectured circulating FMD viral lineages in each country of Pool 5 (current to March 2019)

Country	Last Outbreak Reported/Serotype	FMD incidence rate	Presumed serotype distribution within country				Presumed viral lineage distribution within country				Uncertainty	Reference
			A	O	sat1	sat2	A/AFRICA	O/EA-3	SAT1	SAT2		
BENIN	Jun 2014/O, A, SAT 1, SAT 2	high	■	■	■	■	■	■	■	■	high	1
BURKINA FASO	Aug 2018/O	high	■	■	■	■	■	■	■	■	medium	1, as per Mali
CAMEROON	Dec 2019/untyped, Nov 2014/O, SAT 2, May 2014/SAT 1, Apr 2014/ A	high	■	■	■	■	■	■	■	■	high	as per Nigeria
CAPE VERDE	Not available	low/sporadic	■	■	■	■	■	■	■	■	high	as per Senegal
CENTRAL AFRICAN REPUBLIC	Not available	high	■	■	■	■	■	■	■	■	high	as per Nigeria
CHAD	Aug 2016/Not reported	high	■	■	■	■	■	■	■	■	high	as per Nigeria
CONGO	Jun 2013/not typed	high	■	■	■	■	■	■	■	■	high	as per Nigeria
CONGO, DEMOCRATIC REPUBLIC OF	Mar 2018/untyped	high	■	■	■	■	■	■	■	■	high	1
COTE D'IVOIRE	Jun 2018/O	high	■	■	■	■	■	■	■	■	high	1, as per Guinea
EQUATORIAL GUINEA	Not available	high	■	■	■	■	■	■	■	■	high	as per Nigeria
GABON	Not available	high	■	■	■	■	■	■	■	■	high	as per Nigeria
GAMBIA	July 2018/O	high	■	■	■	■	■	■	■	■	medium	1
GHANA	July 2018/untyped, June 2017/O, Dec 2016/ SAT 2, 2014/not available	high	■	■	■	■	■	■	■	■	high	as per Nigeria
GUINEA	Sep 2018/O	high	■	■	■	■	■	■	■	■	medium	1
GUINEA-BISSAU	Aug 2018/O	high	■	■	■	■	■	■	■	■	high	as per Guinea
LIBERIA	Not available	high	■	■	■	■	■	■	■	■	high	as per Guinea
MALI	Oct 2016/not reported	high	■	■	■	■	■	■	■	■	high	1
MAURITANIA	July 2018/O, Dec 2014/SAT 2	high	■	■	■	■	■	■	■	■	medium	2
NIGER	2014/not sampled, May 2015/O	high	■	■	■	■	■	■	■	■	high	as per Nigeria
NIGERIA	Sep 2018/O & Sat 2, Sept 2016/ SAT 1, Nov 2015/A	high	■	■	■	■	■	■	■	■	high	2
SAO TOME AND PRINCIPE	Not available	0	■	■	■	■	■	■	■	■	high	no data available
SENEGAL	Sep 2018/O, Feb 2015/ A, 2014/ SAT 2	high	■	■	■	■	■	■	■	■	medium	2
SIERRA LEONE	Aug 2018/O	high	■	■	■	■	■	■	■	■	medium	as per Senegal
TOGO	2012/O	high	■	■	■	■	■	■	■	■	high	1, as per Nigeria

March 2019

Table 24: Conjectured circulating FMD viral lineages in each country of Pool 6 (current to March 2019)

Country	Last Outbreak Reported/Serotype	FMD incidence rate	Presumed serotype distribution within country					Presumed viral lineage distribution within country					Uncertainty	Reference
			A	O	SAT1	SAT2	SAT3	A/AFRICA	O/EA-2	SAT1	SAT2	SAT3		
ANGOLA	April 2016/SAT 2	high		■	■	○	■		■	■	○	■	high	as per Zambia
BOTSWANA	July 2018/SAT 2, June 2015/SAT 1	medium		■		■			■		■		medium	2
MALAWI	Feb 2019/untyped, Jan 2019/SAT 2, June 2016/SAT 1	medium		■	■	■			■	■			high	2
MOZAMBIQUE	June 2018/ Typing pending, Oct 2017/SAT 2, May 2015/ SAT 1	high		■		■			■	■	○		high	2
NAMIBIA	Sep 2017/SAT 2, Aug 2017/typing pending, May 2015/SAT 1	medium		■	■	■			■	■			high	2
SOUTH AFRICA	Jan 2019/SAT 2, Oct 2017/SAT 1, Dec 2015/SAT 3	medium		■	○	■			○	■			high	2
ZAMBIA	Feb 2019/ A & O, May 2017/SAT 3, Mar 2017/SAT 2, Jan 2013/SAT 1	low/sporadic	○	■	○	○	■	○	■	○	○	■	medium	2
ZIMBABWE	Jan 2019/SAT 1 & SAT 2, Sep2018/typing pending, Jun 2013/SAT 3	high		■	■	■			■	■			medium	1, 2

March 2019

Table 25: Conjectured circulating FMD viral lineages in each country of Pool 7 (current to March 2019)

Country	Last Outbreak Reported/Serotype	FMD incidence rate	Presumed serotype distribution within country		Presumed viral lineage distribution within country		Uncertainty	Reference
			A	O	A/Euro SA	O/Euro-SA		
VENEZUELA	Oct 2018/O	medium	■	■	■	■	high	11
COLUMBIA	2011/O, 2013/A	medium		■		■	medium	1



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FAO-OIE GLOBAL FMD CONTROL STRATEGY

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GF-TADs FMD Working Group



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WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

Neo Joel Mapitse
Gregorio Torres
Djahne Montabord

Contents

- **FMD WG vision and workplan**
- **Resource documents**
- **Progress on the implementation of the global Strategy**
- **FAO and OIE activities contributing to the global strategy**
- **Challenges and priorities**

35th GF-TADs FMD WG meeting

(29-30 Jan, 2019 Rome, Italy)

Conclusions of the meeting were to:

- Leverage on synergies with PPR and Rinderpest Secretariats
- Strengthen collaboration with partners on implementation of the FMD Global Strategy
 - SWOT analysis of regional dynamics and identify areas of high impact
 - Regional Economic Communities, AU-IBAR, FAO and OIE regional and national offices, Ref centres

Per GF-TADs gsc10 recommendation:

- Develop socioeconomic guidelines for impact assessment
- Develop a strategic plan for resource mobilisation and advocacy with partners
- Increase awareness at national level and visibility

Vision and Action Plan 2019-2020

Mitigating the challenges

- At least one roadmap meeting for all sub-regions
- Socio-economic guidelines
- Support from Reference Laboratories
- Strengthening of the existing lab and epi networks
- Coordination of regional efforts
- Engagement of key stakeholders, donors and decision makers
- PCP support officer system
- Resource mobilization

Strategy	Activity	1st Term/ 2nd term
1.	Selection of Point of Contacts (POC) (epi, lab), conduct at least one meeting (addressing above issues)	
1.1.	PCP leads the business (VCA/AM) efforts (POC engaged)	
1.1.1.	Developing OADR tool for rapid assessment	
1.1.1.1.1.1	Identify tools for use of field-level workforce to support development and implementation of OADR tool address the identified gaps (e.g. safety)	
1.1.1.1.1.2	Identify workforce to conduct assessment and implementation of OADR tool across the available at (national, sub-national)	
1.1.2.	Develop training materials to each POC (epi/lab) by quarterly in the network with meetings are conducted	
1.1.2.1	Completion of training material (e.g. POC) (e.g. workshop for 2 regions)	
1.1.2.1.1	Standardization of POC guidelines	
1.1.2.1.2	Finalize OADR guidelines (e.g. POC)	
1.1.2.1.3	Develop national control plan	
1.1.2.1.4	Develop tool for rapid assessment	
1.1.3.	Timeline for Member Countries reach End of PCP Phase II	
1.1.3.1	Timeline for training report	
1.1.3.2	Identify and strengthen existing laboratory and create lab network in the remaining 10 countries under surveillance	
1.1.3.3	Use col/epi/proc meeting of the network (OADR and OADR, MDR) to coordinate	1st
1.1.3.4	Specific training through all networks, both approved & non-approved	1st



Working Group workplan 2019-2020

Seven strategic objectives and activities



Promote the adoption & implementation of the PCP



Increase vaccine effectiveness



Ensure sufficient and sustainable laboratory competencies in all regions



Vet services and their infrastructure are improved following the PVS pathway



Improve epidemiology competencies



Synergies with other TAD control programmes



Ensure sustainability and safeguarding of the implementation of the global strategy

Resource documents



- PCP guidelines updated and published; RAG, fast track, roadmap platform (2nd Edition)
- Risk Assessment Plan template prepared
 - PCP stage 0 to 1 (English and to French) and training is ongoing
- Official control plan template is in review (for moving to stage 3)
- Electronic questionnaires for PCP stage self-assessment assessment

FAO-OIE FMD Vaccination & Post-vaccination Monitoring Guidelines



Arabic Translation
 French Russian

Communication and awareness: GF-TADs website



GF-TADS AND FMD

- PROGRESS ON FMD CONTROL STRATEGIES
- WORKSHOPS
- EVENTS**



8th West Eurasia Roadmap Meeting for the Foot-and-Mouth Disease Progressive Control Pathway (FMD-PCP)

Sheik, Iran

04 Mar 2018 - 08 Mar 2018

Keywords: Foot-and-Mouth (FMD) , Asia, Europe

1st Central Africa Roadmap Meeting on the Foot-and-Mouth Disease Progressive Control Pathway (FMD-PCP)

Douala, Cameroon

27 Sep 2018 - 27 Sep 2018

Keywords: Foot-and-Mouth (FMD) , Africa

3rd East African Roadmap Meeting on the Foot-and-Mouth Disease Progressive Control Pathway (FMD-PCP)

Entebbe, Uganda

02 Jul 2018 - 02 Jul 2018

Keywords: Foot-and-Mouth (FMD) , Africa

4th Middle East Roadmap Meeting for the Foot and Mouth Disease Progressive Control Pathway (FMD-PCP)

Ainman, Jordan

17 Oct 2017 - 19 Oct 2017

Keywords: Foot-and-Mouth (FMD) , Middle East

2nd SADC Roadmap Meeting on the Foot and Mouth Disease Progressive Control Pathway (FMD-PCP)

Harare, Zimbabwe

11 Sep 2017 - 12 Sep 2017

Keywords: Foot-and-Mouth (FMD) , Africa

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GF-TADS FOR



GLOBAL



AFRICA



AMERICAS



ASIA



EUROPE

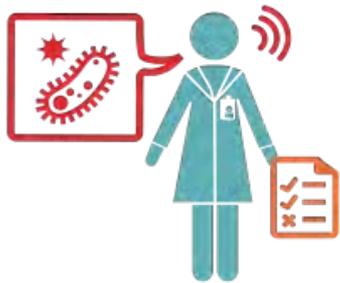


MIDDLE EAST



Global FMD Control Strategy

Three components



1. Disease control to freedom status



2. Veterinary Services reinforcement

PCP

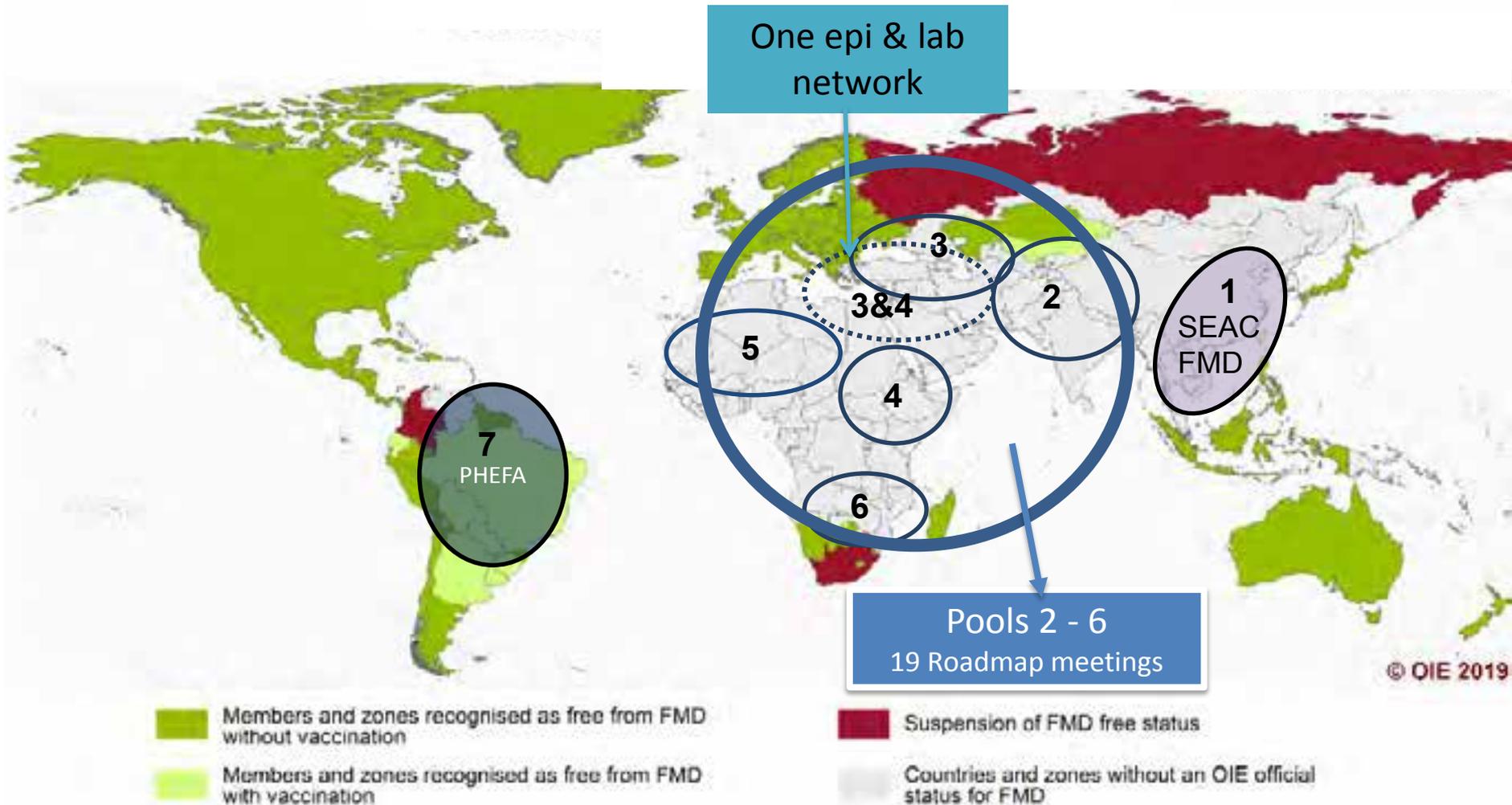


3. Reducing the impact of other major infectious diseases

PVS Pathway



Regional Roadmap and Network Meetings (2012 – 2019)





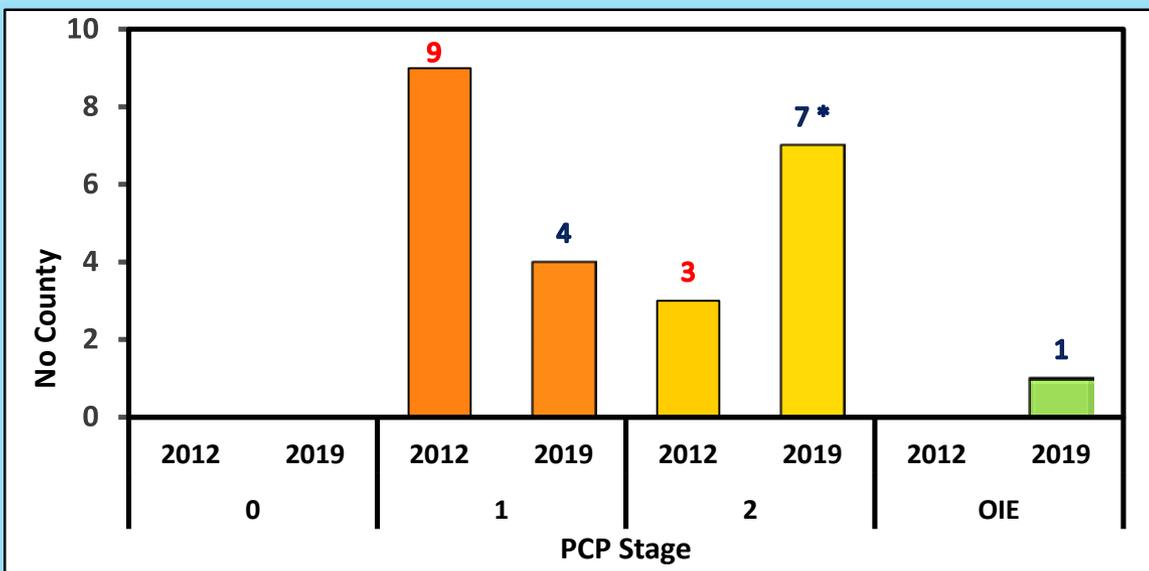
REGIONAL ROADMAPS 2017- 2019

West Eurasia

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)	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Armenia	2	2	2	2	2	2	2*	2*	2	2	2	2	2	2	2	2	2	2
Azerbaijan																		
Abkhazian part (not assessed)	FwV	FwV	FwV	FwV	FwV	FwV	2*	2*	FwV	FwV	FwV	FwV	3	2	2	2	2	2
Southwest (not assessed)	FwV	FwV	FwV	FwV	FwV	FwV	2*	2*	FwV	FwV	FwV	FwV	3	2	2	2	2	2
Georgia	3	1	1	1	1	1	2*	2*	2	2	2	2	3	4	FwV	FwV	FwV	
Iran	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Kazakhstan																		
9 northern regions	1	1	1	1	1	1	2*	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV	FwV
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	3	3	3
Pakistan	0	1	1	1	1	1	2*	2	2	2	2	2	2	2	2	2	2	2
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								
Anatolia																		
Turkmenistan	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Uzbekistan	0	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Assessed by RAG Middle-East																		
Iraq							2*	2*	2*	2*	2*	2*	2	2	2	2	2	2
Syria							2*	2*	2*	2*	2*	2*	2	2	2	2	2	2



* Pending control plan

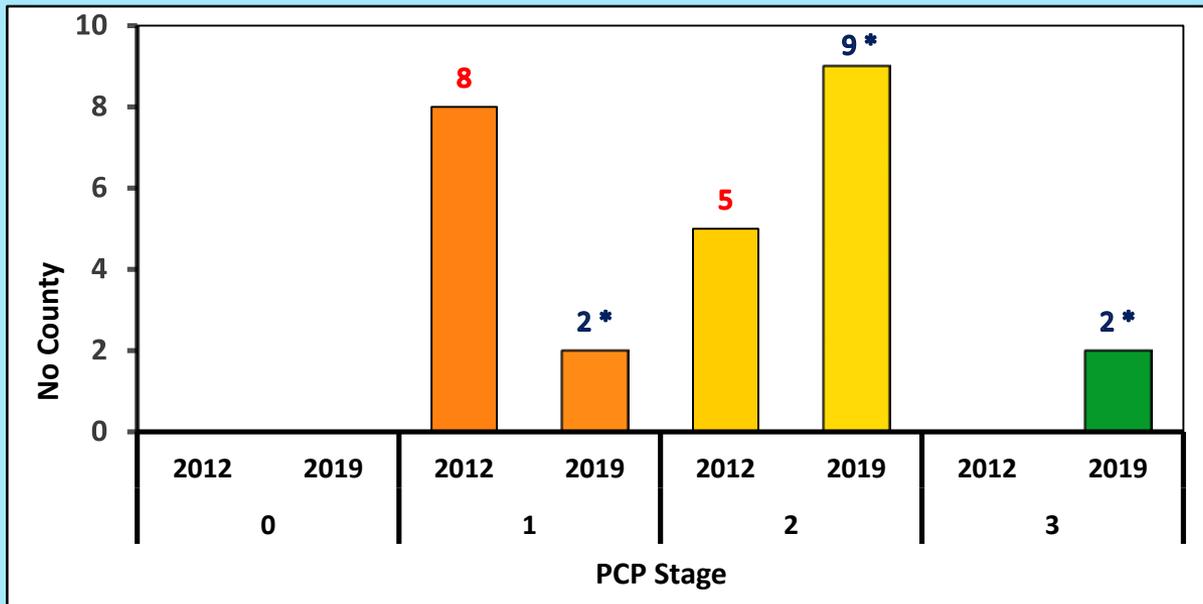
Middle East

4th Roadmap in 2017

13 Countries



* Pending control plan

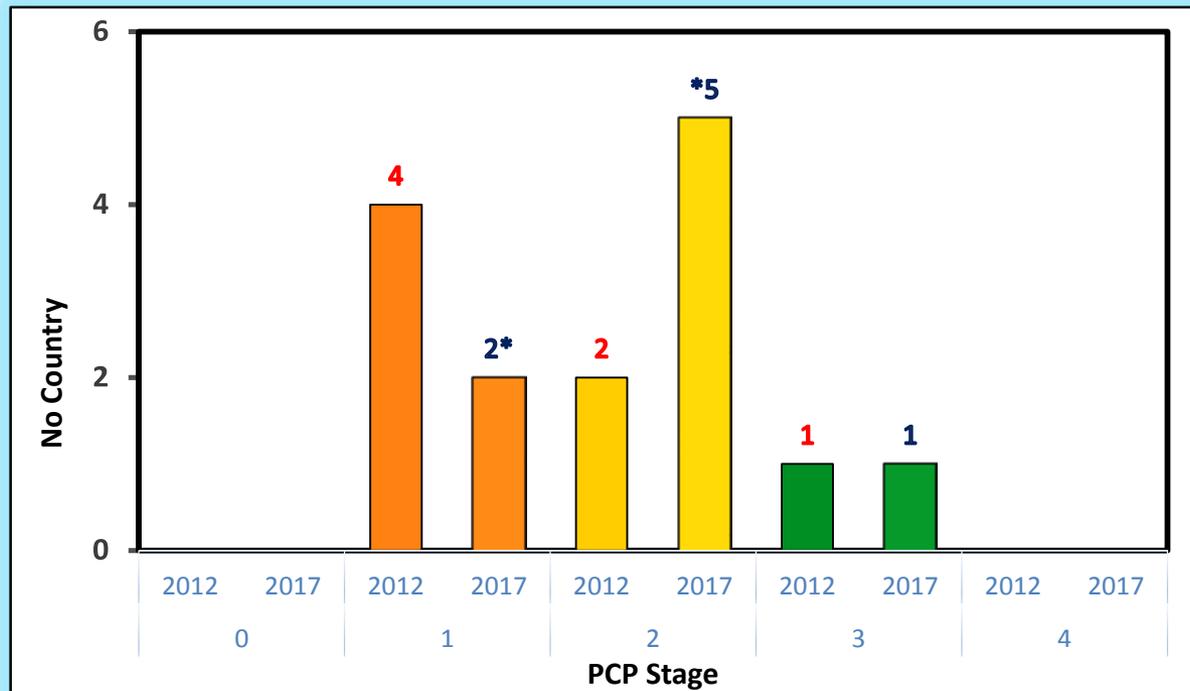


Southern Africa (SADC)

15 Countries



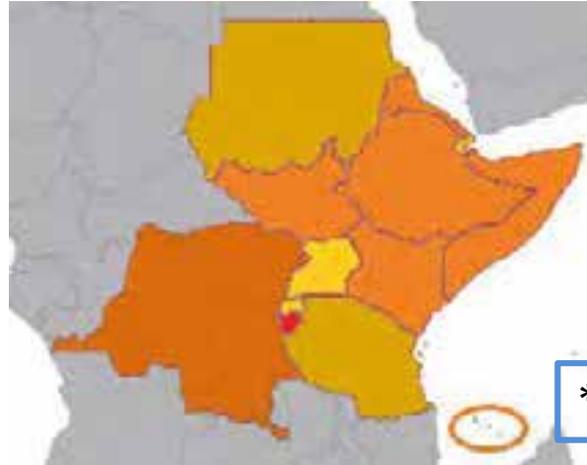
* Pending control plan



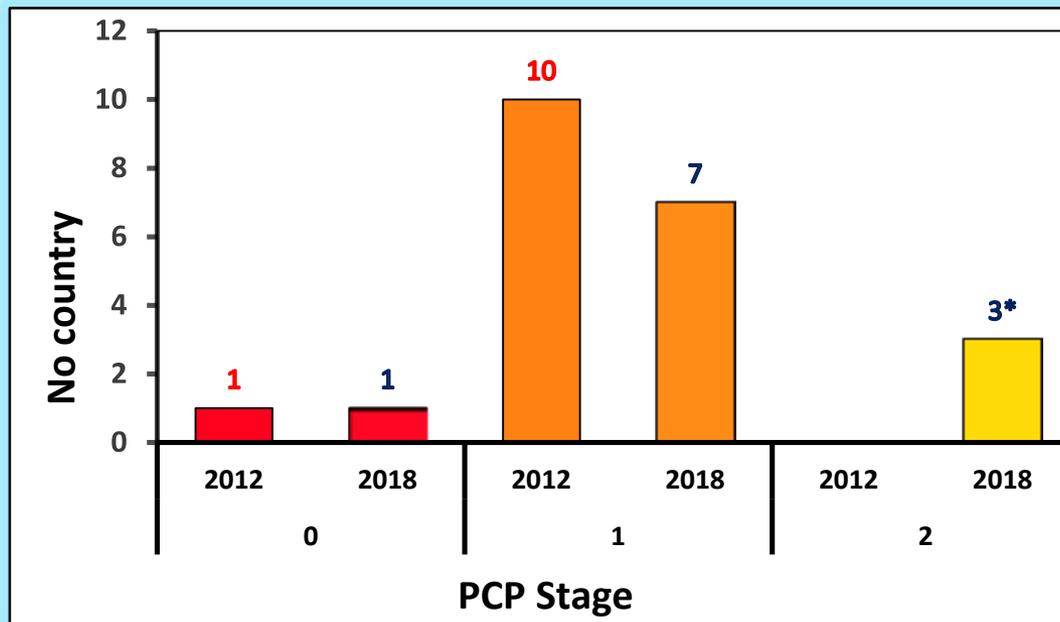
East Africa

3rd Roadmap in 2018

11 Countries



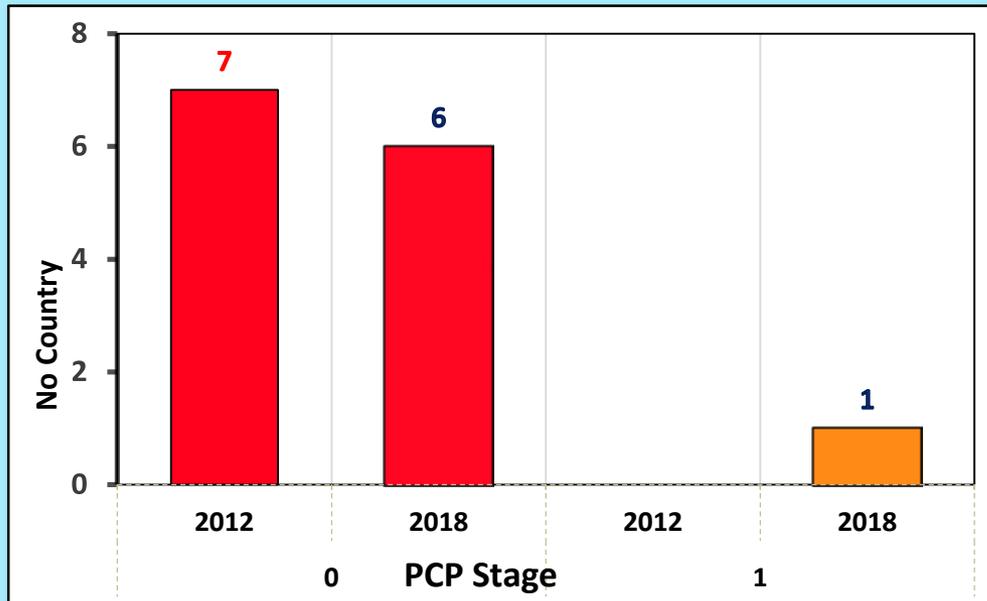
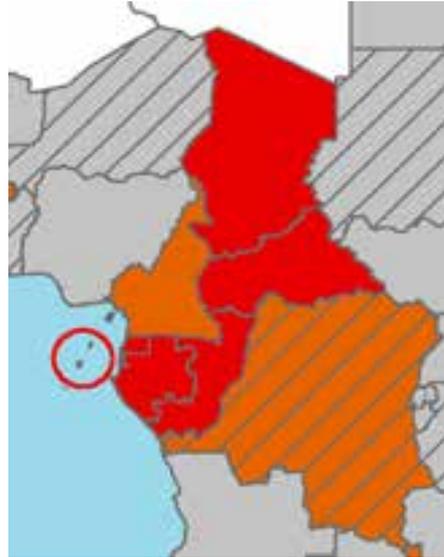
* Pending control plan



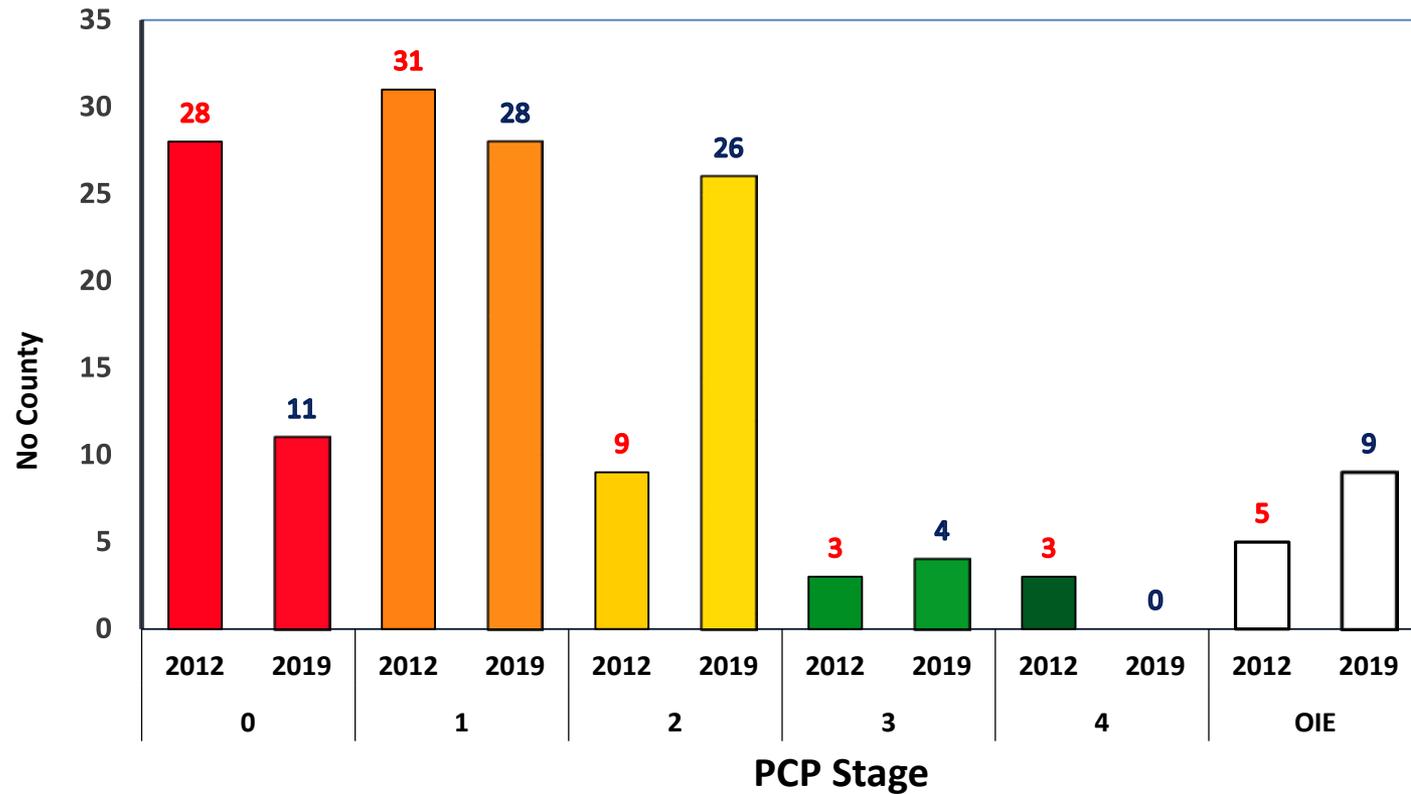
Central Africa

1st Roadmap in 2018

7 countries



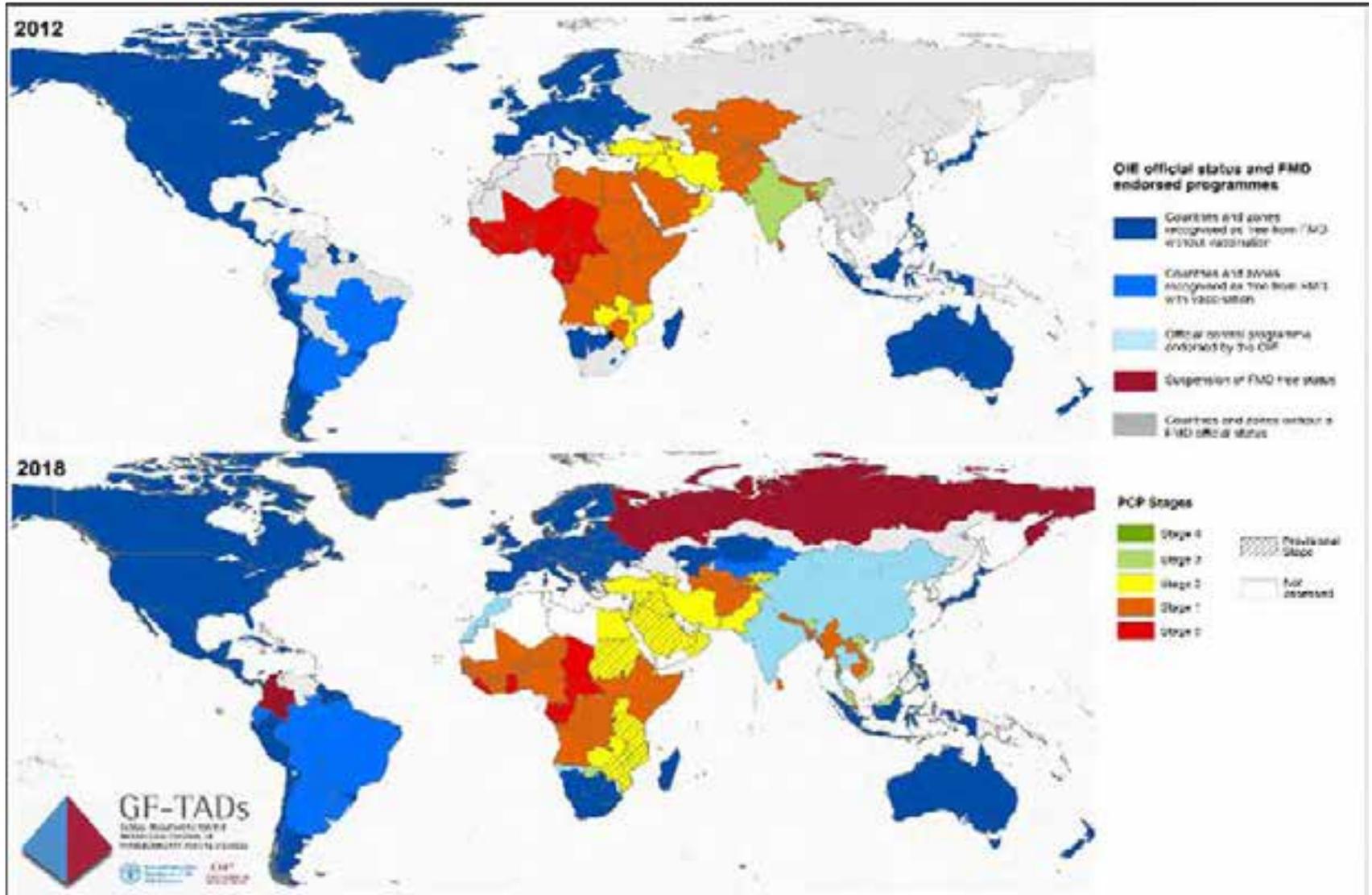
No. Country in Each PCP Stage (79 total)



The global situation of FMD in 2012 and 2018

OIE Official FMD free status and official control program

GF-TADs FMD PCP stages



EuFMD Support to the Global Strategy

Pillar III

- Roadmap meetings;
- PCP Support officers (PSO);
- Global access to PCP-FMD training resources;
- E-Learning;
- Guidelines on socioeconomic impact analysis;
- Support in translation of documents and PCP tools.

OIE activities contributing to the Strategy



OFFICIAL RECOGNITION OF FMD FREE STATUS & ENDORSED PROGRAMS

31% of official statuses and programs were on FMD in 2018.

Conduct FMD or FMD/PPR missions

OIE Workshops on status recognition and endorsement of programmes

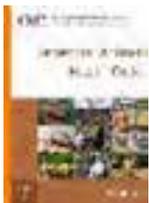
OIE/EuFMD Pilot workshops

-Safe Trade and FMD Control, *Istanbul April 2018*

-FMD and Containment Zone, *Belgrade Oct 2018*

REVISION OF THE TERRESTRIAL CODE'S FMD CHAPTER

Surveillance methods for shorter recovery period



VACCINES

Vaccination chapter 4.17 (**new**), adopted in 2018

OIE Policy Paper on Vaccine Banks (Oct. 2018)

Pirbright - AU-PANVAC Twinning: FMD vaccine quality control in Africa launched April 2019

OIE FMD Vaccine bank for South-East Asia FMD vaccines: *delivered 6.7 million doses to eligible countries in Asia (Jan 2019)*



OIE activities contributing to the Strategy

OIE/FAO FMD LABORATORY NETWORK



Global surveillance and changing patterns in risk
Harmonised and improved lab capacity
MoU signed by 15/15 of the “core members”
Support to Members on
 FMD diagnostics
 Vaccines (selection and PVM)

PVS EVALUATIONS FMD RELATED CRITICAL COMPETENCES



Link PCP-FMD with 27 recommended Critical Competencies of the OIE PVS tool.

PVS missions, Twinning of Laboratories, Veterinary legislation support programme as tools for the implementation of the Global Strategy

PUBLIC-PRIVATE PARTNERSHIP (PPP)



Assist Members in developing sustainable PPPs to strengthen Veterinary Services
collaboration with CIRAD and supported by the B&MGF.

FAO activities contributing to the Strategy



E-LEARNING MODULES

Disease recognition
Field investigation
Field biosecurity



CREATING AWARENESS

Increasing awareness about FMD, PPR
and rinderpest to livestock keepers and
veterinarians (Africa and Asia)



IMPROVEMENTS TO FMD CONTROL

Building resilience and self-reliance
of livestock keepers by improving
control of FMD and other TADs”
USD 16,754,787



NATIONAL

Enhancement of FMD Control in
Pakistan” – USD 2,648,276

North Africa

FAO and EuFMD

- Support North African countries in the surveillance and control of FMD
- Providing FMD diagnostic kits to North African countries
- PVM Workshop (Algeria – Morocco – Tunisia)
18-20 march 2019
- Technical meeting to support FMD risk-based strategy plan in Libya - 21-22 March 2019



Surveillance Evaluation Tool (SET)

➤ SET methodology

- Comprehensive assessment of animal health surveillance capacities
- Input from stakeholders centrally & *in field*
- 90 indicators of surveillance scored → results automatically generated

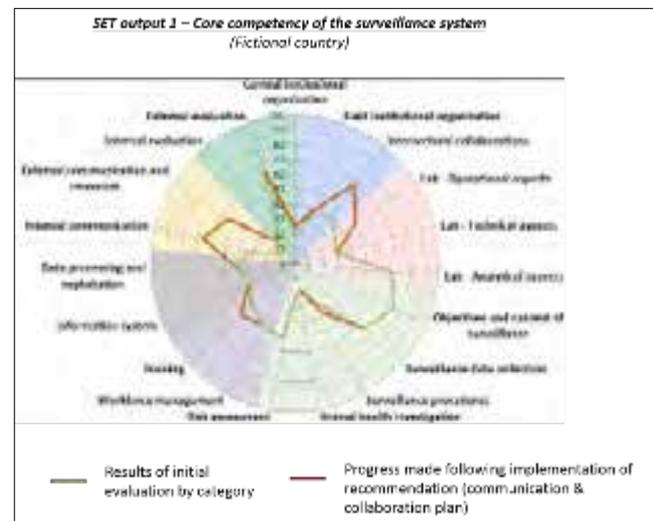
➤ Results

- Strengths/weaknesses of AH surveillance
- Country-specific action plans for improvements developed with veterinary services (VS)

➤ Status of evaluations

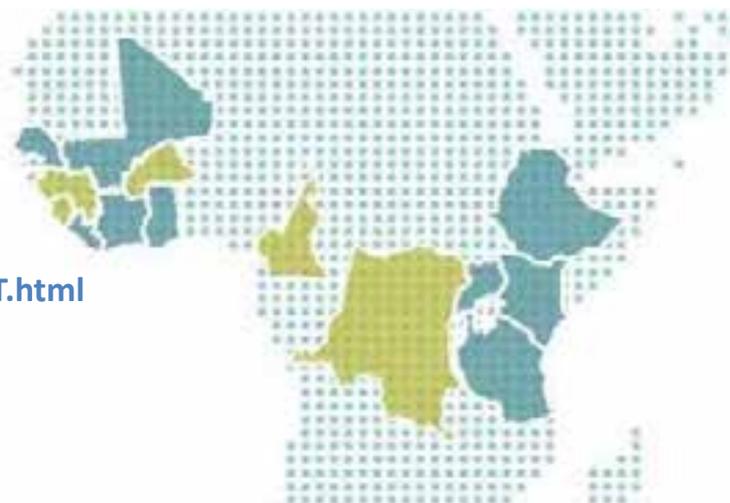
- 14 countries evaluated
- Reports posted online when validated by Vet Services

http://www.fao.org/ag/againfo/programmes/en/empres/tools_SET.html



External evaluation
(led by FAO HQs or regional office)

Self-evaluation
(led by FAO country office)



Food and Agriculture
Organization of the
United Nations

In-service Applied Veterinary Epidemiology Training (ISAVET)

- Tailored to the Ministry of Agriculture
- Four months training: 4 wk of hands-on training and 3 months of mentored field project
- Beneficiaries: 14 African counties – 180 vets
- Senegal and Ethiopia- FMD surveillance data analysis and outbreaks



ISAVET Training Options:

- 1.* **Frontline (4 months)**
2. **Intermediate (9 Months)**
3. **Advanced (2 years)**

CAHWS Training*

* **Current FAO focus: 2017 - 2021**

Laboratory Capacity Building

GHSA & Emerging Pandemic Threats (EPT)

Animal health capacity increased in 35 countries

- Bangladesh
- Benin
- Bhutan
- Burkina Faso
- Cambodia
- Cameroon
- Chad
- China
- Côte d'Ivoire
- Democratic Republic of the Congo
- Egypt
- Ethiopia
- Ghana
- Guinea
- India
- Indonesia
- Jordan
- Kenya
- Lao People's Democratic Republic
- Liberia
- Mali
- Mongolia
- Myanmar
- Nepal
- Niger
- Nigeria
- Philippines
- Senegal
- Sierra Leone
- Thailand
- Togo
- United Republic of Tanzania
- Uganda
- Viet Nam
- Zimbabwe

GLOBAL

- Veterinary Laboratory Policy
- Global Laboratory Leadership Pro.
- LIMS/ IT developments
- Bioinformatics

NATIONAL & REGIONAL

- Quality assurance
- Biosafety and biosecurity
- Procurement of equipment/reagents/consumables
- Bench training on serology and molecular techniques
- Lab assessment and gap analyses



Food and Agriculture
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United Nations

EMERGENCY RESPONSE MISSIONS on FMD

Emergency Management Centre

- **FMD mission to Zambia (16 – 25 April 2018)**
 - Outcome / Active surveillance at dip tanks contributed to improving the vaccination programme and planning



- **FMD mission to Malawi (9 – 13 July 2018)**
 - Advise on additional mitigation measures (markets, movements, biosecurity, awareness, vaccination)
 - Outcome / Development of an action plan

- **FMD mission to Mauritania (03 – 09 October 2018)**
 - Assessment of the national epidemiological situation / Development of a control program

FAO Regional workshop Regional Workshop on FMD and other TADs

Vladimir, Russia, 29-30 November 2017

- Nine countries of Central Asia, Caucasus and Russian Federation
- **The objectives:**
 - increase networking between the countries and FAO/OIE collaboration/ref centers
 - risk Based approach and how to apply them for domestic and wildlife, outbreak investigations and control
 - gain better knowledge of FMD, LSD and ASF
 - collaboration and share information among countries



Food and Agriculture
Organization of the
United Nations

Training on FMD in response to incursion of serotype O for West and Central Africa

February 25-28, 2019

- May- September 2018, wide spread of FMD outbreak
- 137 outbreaks report in 11 countries. Topotype O EA-3
- Affecting cattle, sheep, goats, pigs with high mortality in young animals

Training objectives:

- update on the FMD situation in the region;
- assist countries in the design of national surveillance plans and prepare risk assessment plan (RAP);
- training on how to conduct a field investigation, collect and preserve dx samples;
- bench training on FMD diagnosis and sample shipping to the reference centers.





Follow-up & Recommendations

- **Countries to:**

- prepare national FMD risk assessment plan (RAP) by 1 June 2019
- develop their national surveillance plan using the template provided
- collect available retrospective data on cross-border animal mobility over the past two years
- forbid the use of antibiotics for treatment of FMD infection

- **Organizations to:**

- support and reinforce the regional epidemiological and laboratory networks
- provide technical support on FMD risk assessment & national RAPs
- assist countries in sample shipments and dx reagents and kits
- organize a follow-up hands-on train the trainer workshop in 2020
- bench training especially on rtPCR, and technical advice on laboratory waste management
- assist countries to conduct FMD socio-economic impact studies
- eLearning modules on field investigation and farm biosecurity

Challenges

national, regional and global levels

Political will

National priorities may not be the control of FMD

Inadequate stakeholders engagement



Resources & skills

Shortage of resources at national, regional and international levels

Socio-economic, Risk assessment and risk management skills



Movement control and transparency

Cross-border movement control

Livestock migration

Timely information exchange



Diagnostic capacity & supplies

Shipment of samples to Ref Labs

Virus sequencing

Vaccine matching and procurement



Working Group priorities: 2019-2020

Regional roadmaps and networks

To assess progress and provide guidance to countries
Strengthen regional Epi/Lab networks

ME, WA:2019
EA,CA, WEA: 2020



Improvement of PCP tools

Develop and translate guidelines
Promote socio-economic studies
Transition to more online support and management tools.
Advocate for Component 3



Technical support

Support Regional Advisory Group, assign technical PCP support officers (PSO) to countries to maintain momentum between roadmap meetings

Strengthen collaborations

Continue to collaborations with EuFMD for global access to learning and support tools
Collaborations within the GF-TADs, REC, Ref Lab and other partners to support implementation of the strategy



Review national plans

Establish timeframes and deadlines for submission and review of national plans.
Develop a document management system



Progress

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 advanced to OIE status**

Acknowledgments

- AGAH staff, decentralized offices and ECTAD teams
 - VonDobschuetz S., De Battisti C., Lockhart C., Bengoumi M., Rozstalnyy, Bonbon, E.
- OIE HQs and regional and sub regional offices
- EuFMD Secretariat
- Continental-Regional organizations: AU-IBAR, IGAD, EU
- Development partners (DTRA-USA; Italian government)
- Former Members of the FMD WG: Jemi Domenech, Giancarlo Ferrari, Julio Pinto, Peter DeLeeuw, Nadège Leboucq

Thank you for your attention





Global Status Report for FMD: Tracking the emergence and spread of new viral lineages

Donald King

Acknowledgements: Valerie Mioulet, Nick Knowles, Anna Ludi, Ginette Wilsden, Andrew Shaw, Nick Lyons, Mehreen Azhar, Hannah Baker, Antonello Di Nardo, Bob Statham, Lissie Henry, Jemma Wadsworth, Clare Browning, Britta Wood, Alison Morris, Abid Bin-Tarif, Ashley Gray, Beth Johns, Mark Henstock, David Paton, Dexter Wiseman, Julie Maryan, Sarah Belgrave



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Oie
FMD Reference Laboratory



Setting the scene for FMD....



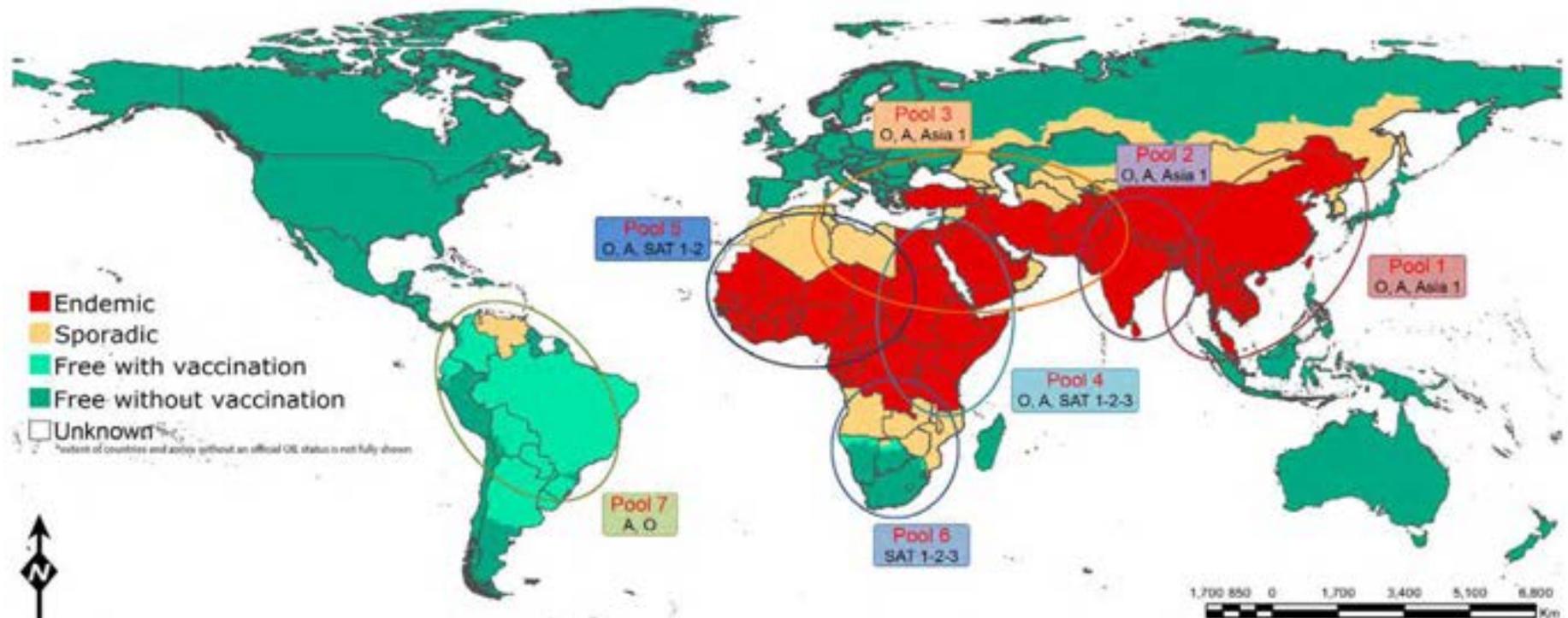
Core reference laboratory activities:

- Seven virus serotypes and multiple viral topotypes/strains
- Monitoring global patterns of virus distribution
 - Tracing sources of outbreaks (who-infected-who?)
 - Early recognition of the emergence of new lineages
- Vaccine matching and antigenic prediction

Conjectured global status

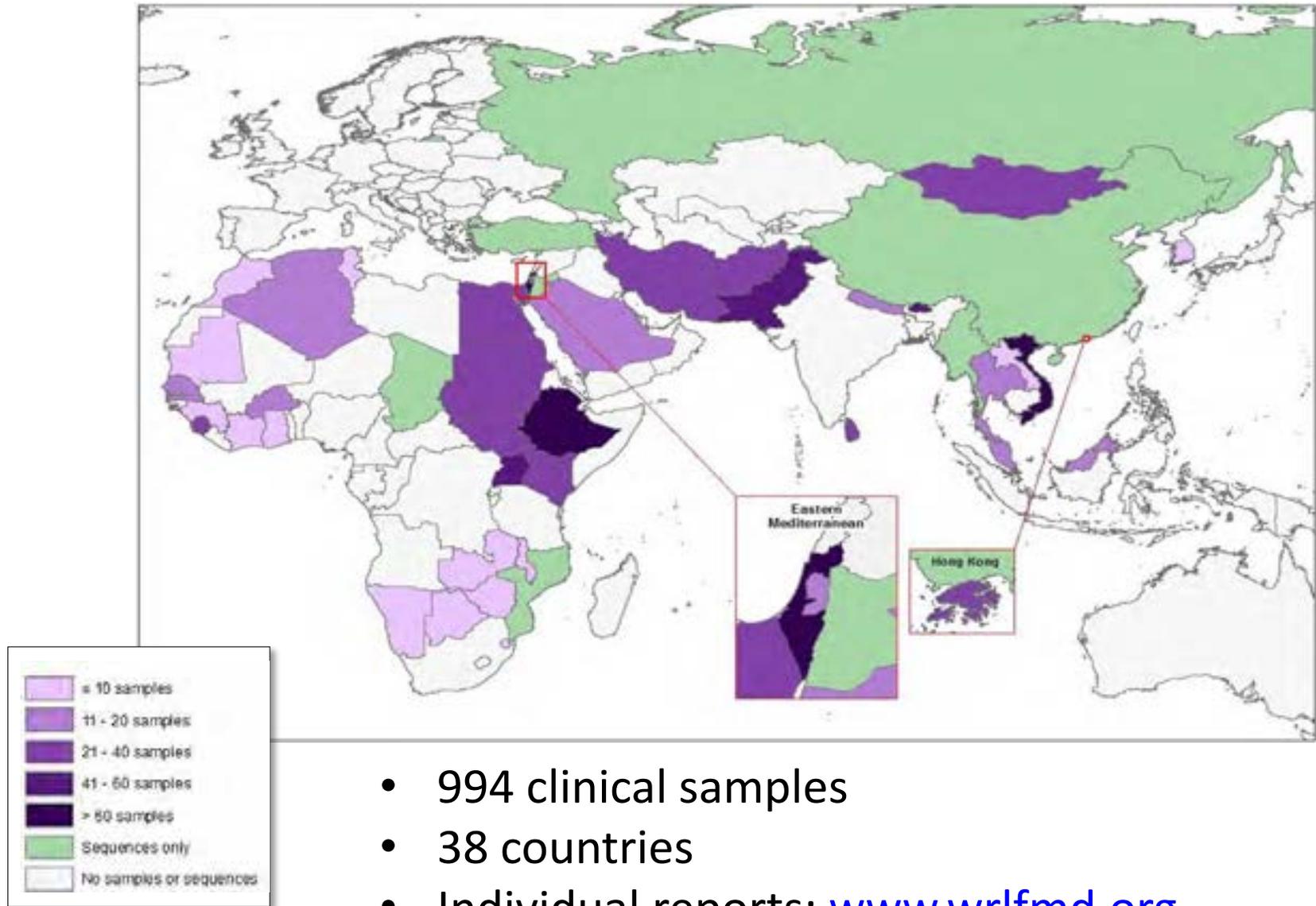
Endemic pools

- Maintain specific FMD virus strains
- Distribution of FMDV serotypes in the endemic pools is not equal
- Control via (tailored) vaccination and supporting diagnostics



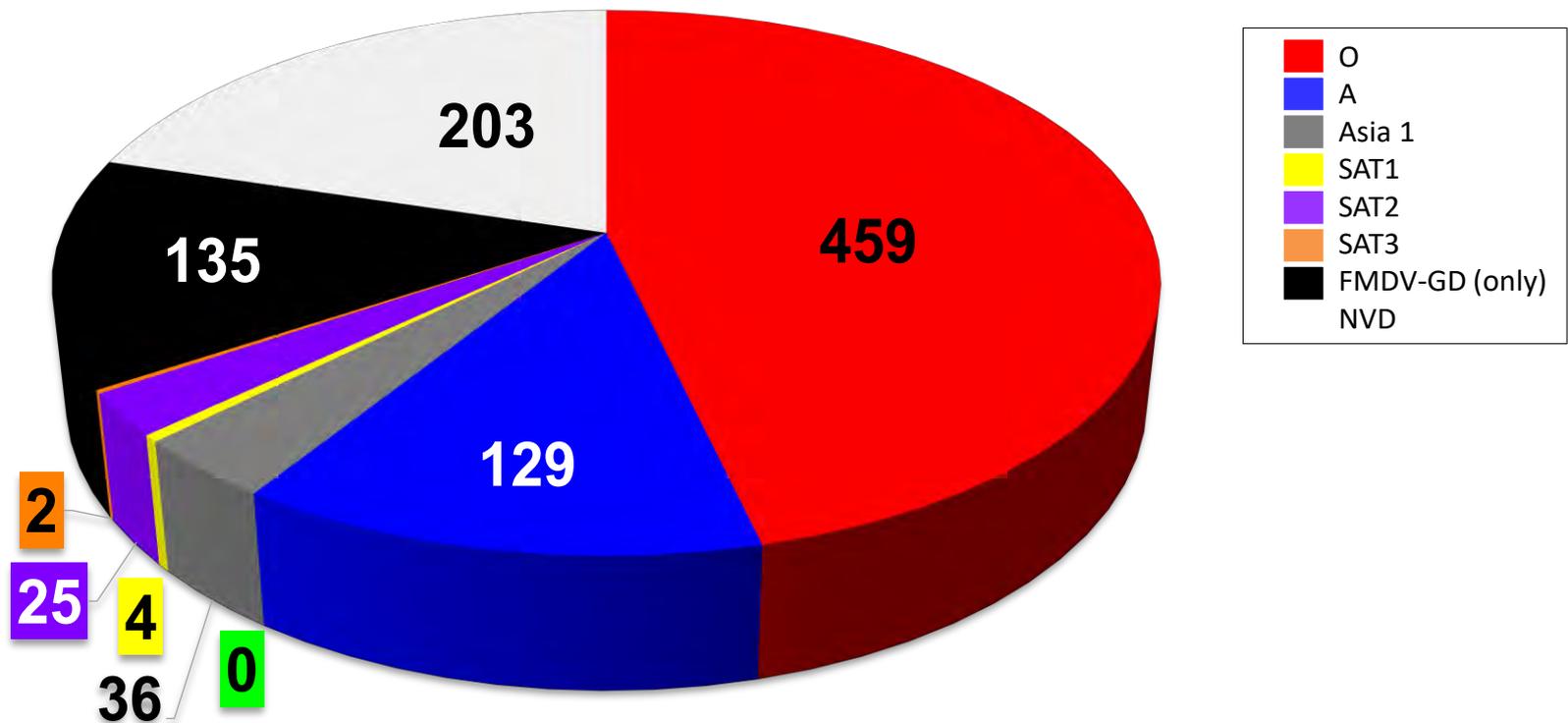
- In addition to circulation of local strains, long-distance “trans-pool” movements of FMDV are frequently observed

Submissions to WRLFMD (Q4 2017 - Q1 2019)



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

WRLFMD samples (Q4 2017 - Q1 2019): FMD virus serotypes



- No reported **serotype C** outbreaks since 2004 (Kenya and Brazil)
- Continue to be a large proportion of samples where FMD virus cannot be recovered (FMDV-GD or NVD)

Enhanced surveillance via the OIE/FAO FMD Laboratory Network



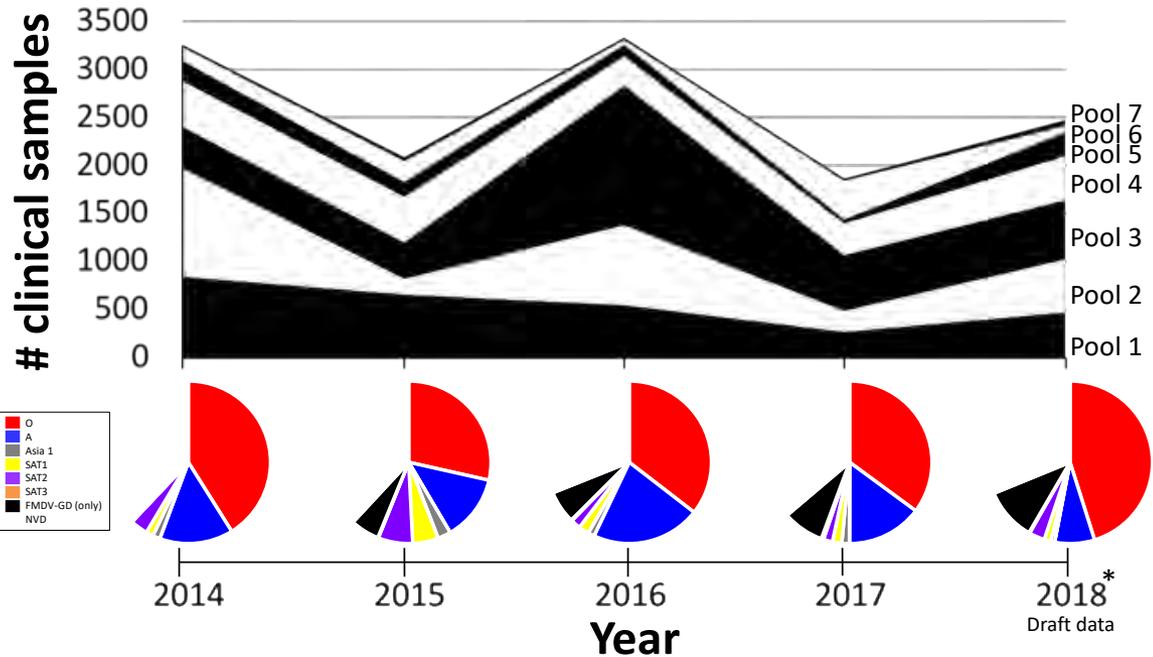
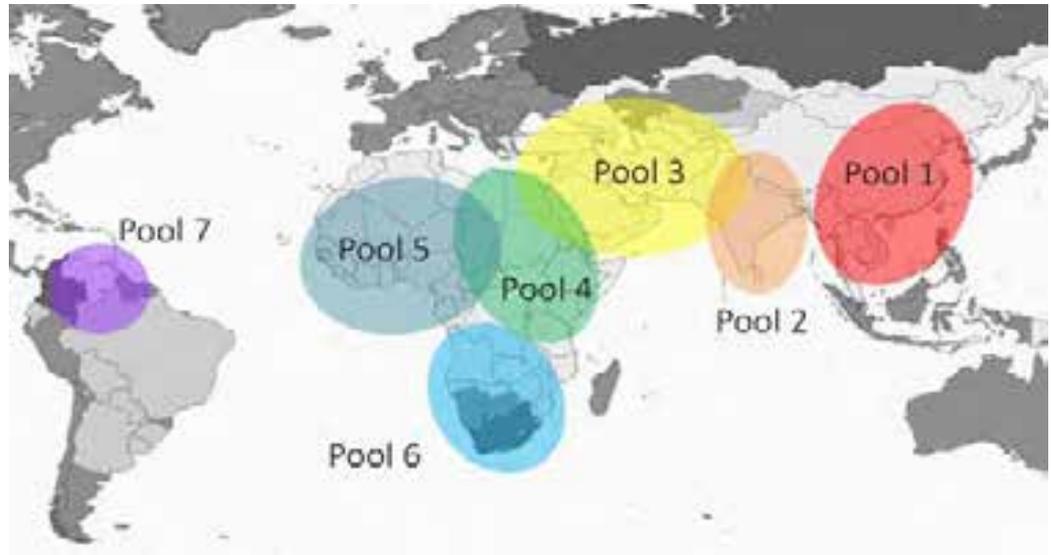
- Able to rapidly respond to changing events
- **Global surveillance and changing patterns in risk**
- **Harmonised and improved lab capacity**
- Established in 2004
- 15 Core OIE and FAO FMD Reference Laboratories
- 4 European Laboratories:  Instituto Zooprofilattico Sperimentale con Contributo e in Collabor. con l'Università di Perugia  sciensano  anses 

Core Network Members and affiliates:



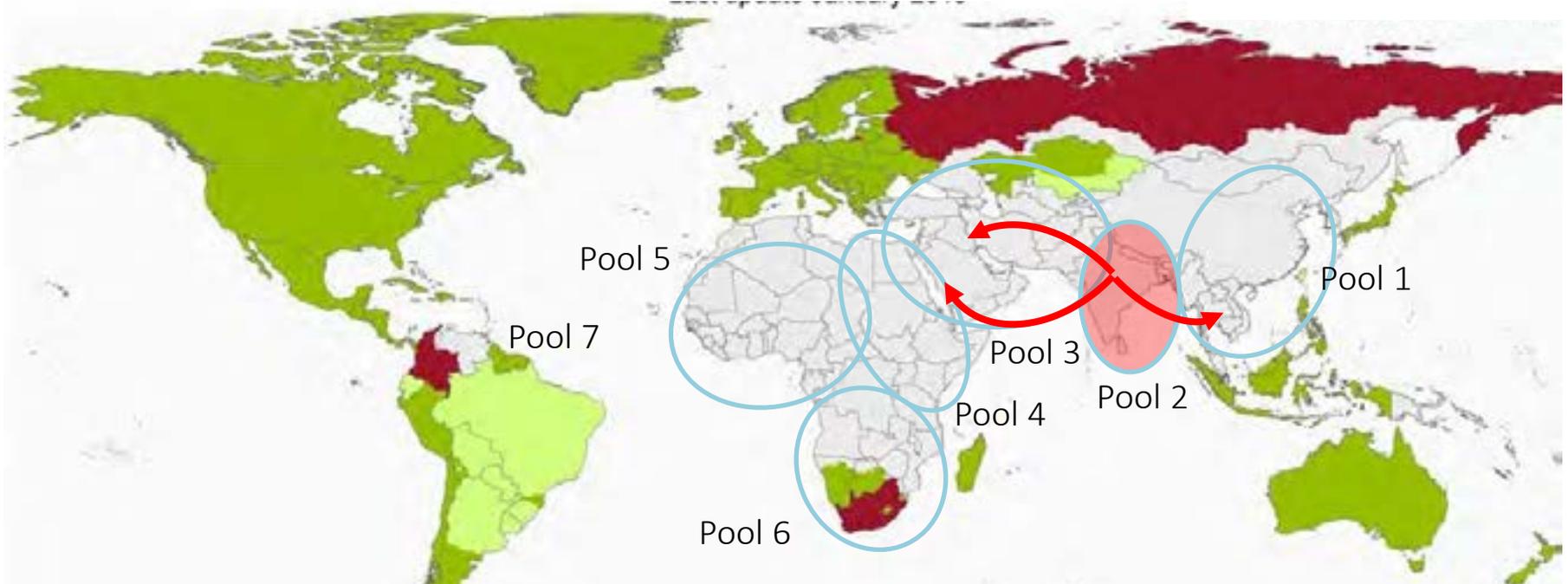
Samples tested by the OIE/FAO FMD Laboratory Network

- 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/>



FMD – Global status

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

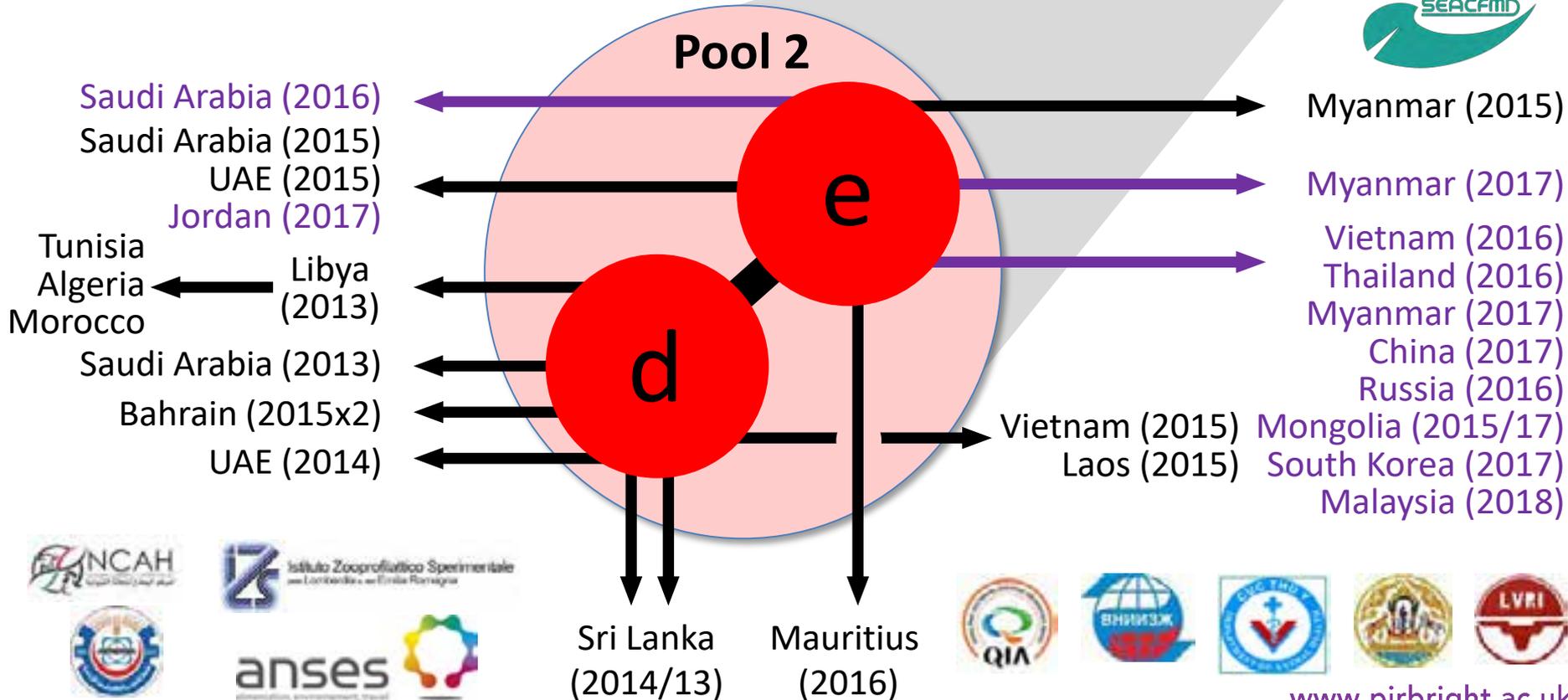


- Spread of FMD viruses endemic from Pool 2 (India, Bangladesh, Nepal, Bhutan)
- 2015: **A/ASIA/G-VII** into West Eurasia (Iran, Turkey, Saudi Arabia, Armenia and Israel)
- 2017: **serotype Asia 1** into Myanmar

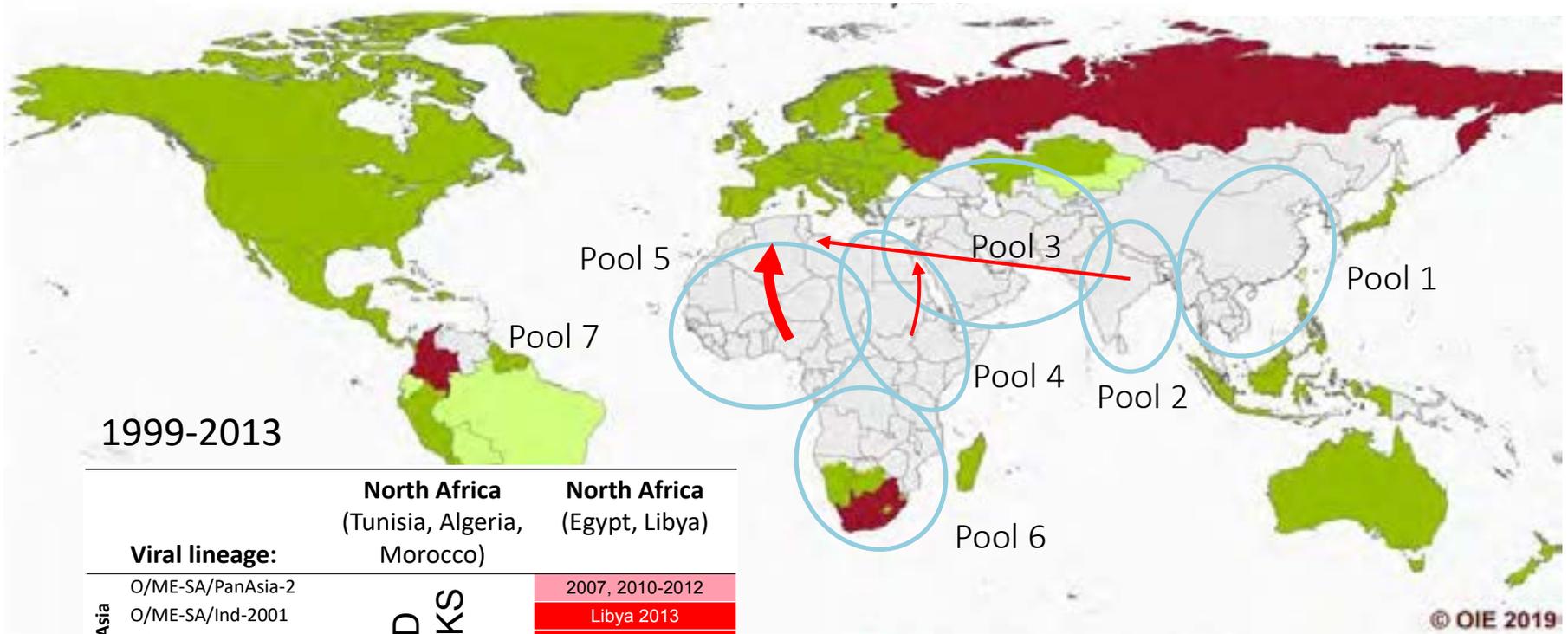
O/ME-SA/Ind-2001: a new pandemic lineage?

- 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?



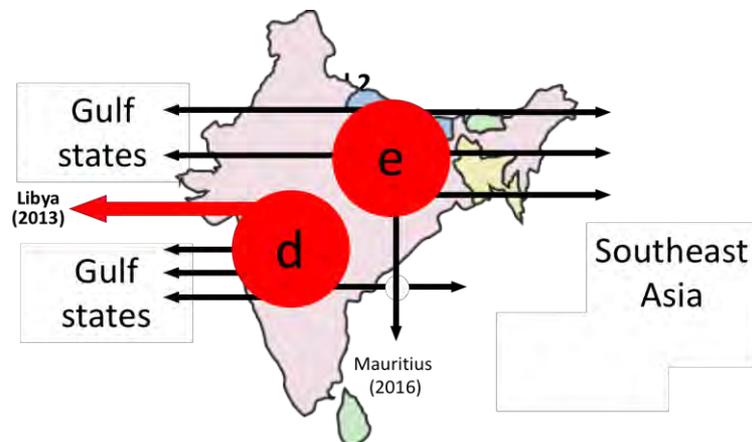
	North Africa (Tunisia, Algeria, Morocco)	North Africa (Egypt, Libya)
Viral lineage:		
From Asia	O/ME-SA/PanAsia-2	2007, 2010-2012
	O/ME-SA/Ind-2001	Libya 2013
	A/ASIA/Iran-05	2009-2011, 2013
	A/ASIA/G-VII	
Asia-1		
From Africa	O/EA-3	2012-2013
	O/ME-SA/Sharqia-72	2006, 2008, 2011
	A/AFRICA/G-IV	2012-2013
	A/AFRICA/G-VII	2006, 2009, 2012
	SAT 2 toptotype VII	2012-2013

NO REPORTED FMD OUTBREAKS

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

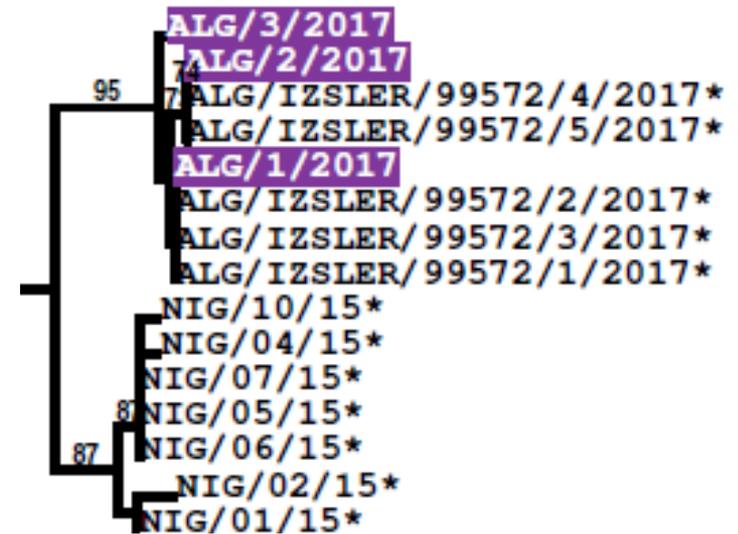
2013-2015: Emergence of O/ME-SA/Ind-2001

- FMD virus lineage emerged from Pool 2 (India, Nepal, Bangladesh)
- Separate “escapes” of this lineage have caused outbreaks in the Gulf States of the Middle East and Southeast Asia
- Spread in an east-to-west direction in North Africa
 - Libya: first detected 1/09/2013
 - Tunisia: reported 29/04/2014 (>100 outbreaks)
 - Algeria: reported 27/07/2014 (>400 outbreaks)
 - Morocco: reported 2/11/2015 (6 outbreaks)



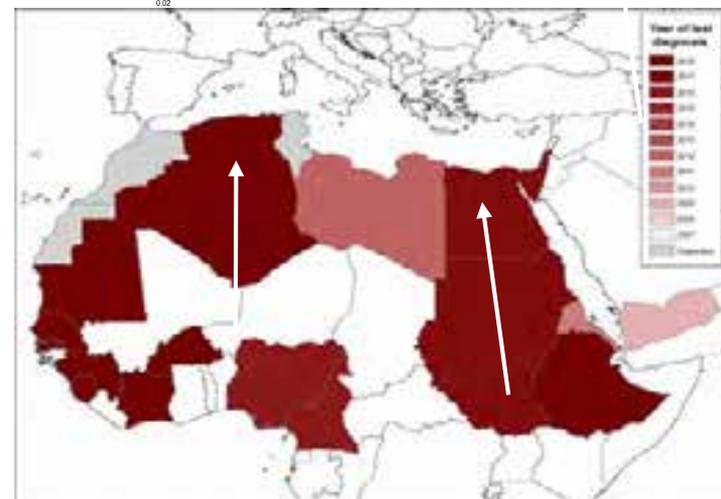
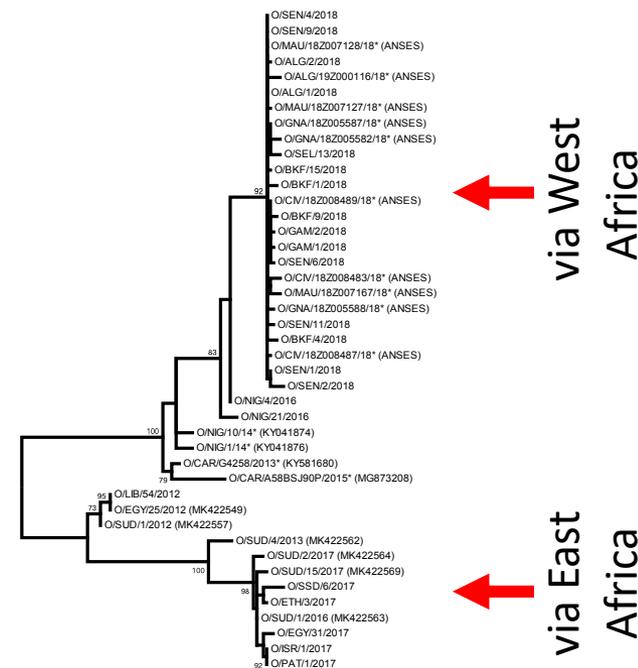
March – April 2017: FMD cases in Algeria and Tunisia

- >100 outbreaks in cattle
- First cases of Serotype A in the Maghreb > 30 years
 - Algeria 1977
 - Tunisia 1984
- Due to a new FMD virus strain for the region (A/AFRICA/G-IV)
- Sequences from Algeria (March) and Tunisia (April) >99% identity
- Most closely related to FMD viruses from Nigeria



Since June 2018: new serotype O cases in Algeria, Tunisia and Morocco

- Due to the O/EA-3 topotype
- Cases in Algeria (>100 outbreaks), Tunisia (14 outbreaks) and Morocco (34 outbreaks)
- July 2018 -January 2019: Samples tested for FMD outbreaks in Burkino Faso, Gambia, Guinea, Ivory Coast, Mauritania, Senegal, Sierra Leone
- **Close epidemiological connections between W. Africa and Maghreb (~99% nt identity between FMD viruses from these regions)**



New samples from West and East Africa

Use of transfection methods to rescue problematic FMD viruses

- Previous samples from South Sudan and Sierra Leone were FMDV-GD only (no live FMDV in the entire batch)
- Samples tested by new lineage-specific rRT-PCR and tentatively characterized as O/EA-3 (developed with NAHDIC, Ethiopia)
- “live” FMDV subsequently recovered from the RNA samples following transfection methods in LFBKs (using Lipofectamine 2000 and/or RiboJuice)
- Sequence data was obtained for these viruses (and reported) and vaccine matching is now underway
- Although optimization required, represents a useful approach for virus recovery from difficult samples (additional recent success with FMDV-GD samples from Laos)

Summary and headline events (2017-2019)

North Africa

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

Pakistan

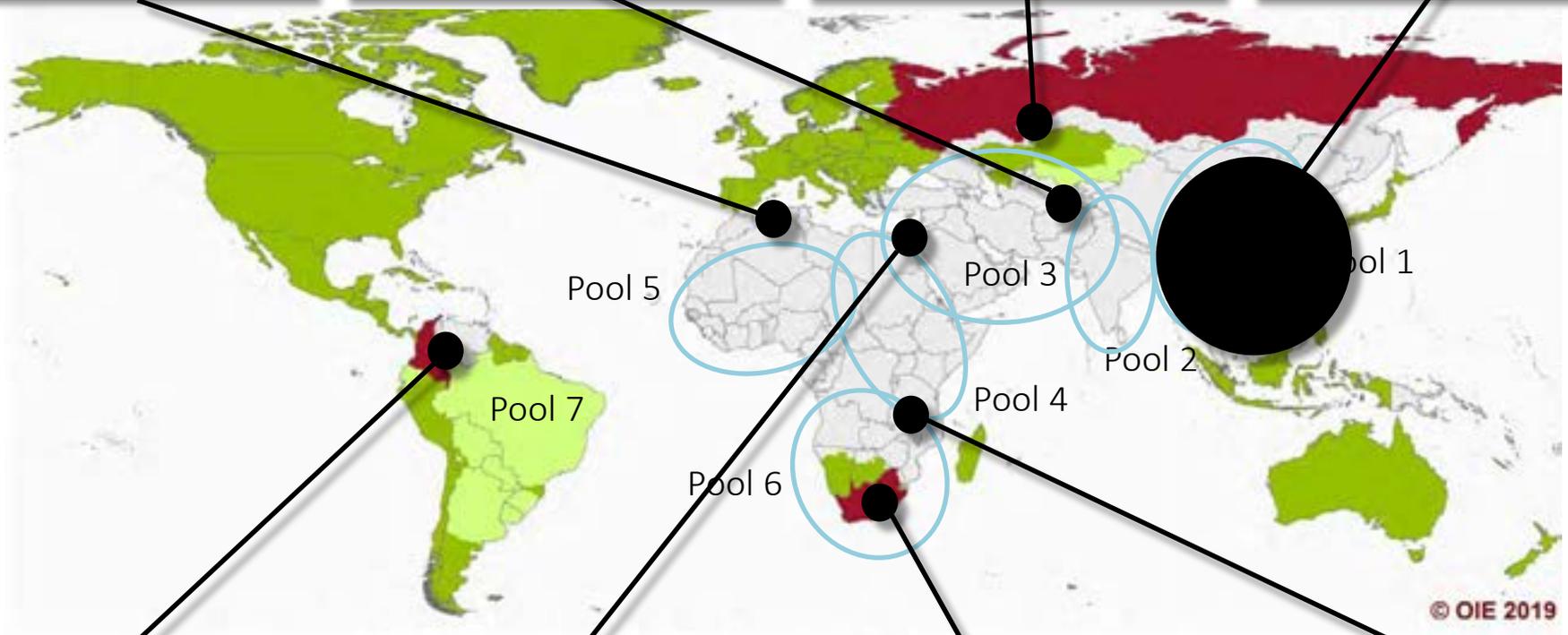
Serotype O
Poor vaccine matching

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)

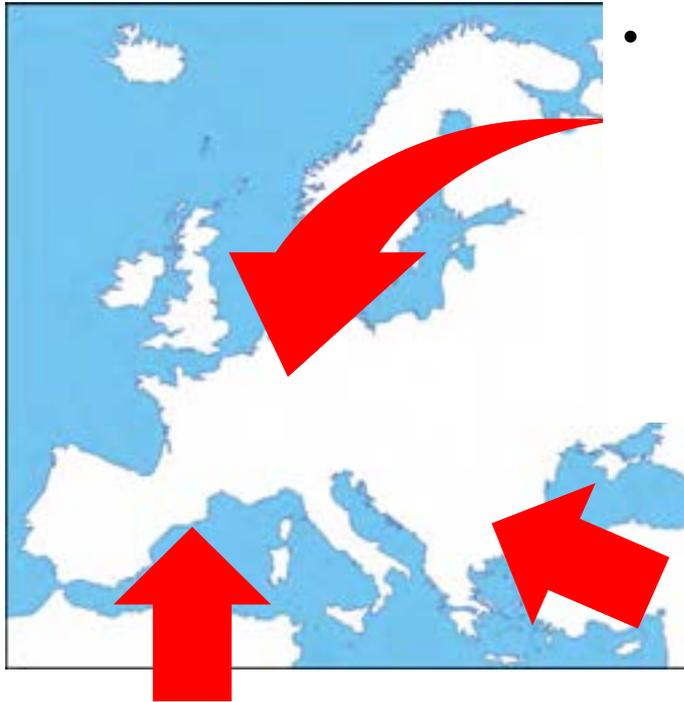
Serotype SAT 2
Initially within the protection zone
Jan 2019: spill-over into surv. zone
leading to suspended status

Central Zambia

O/EA-2

Estimating risks

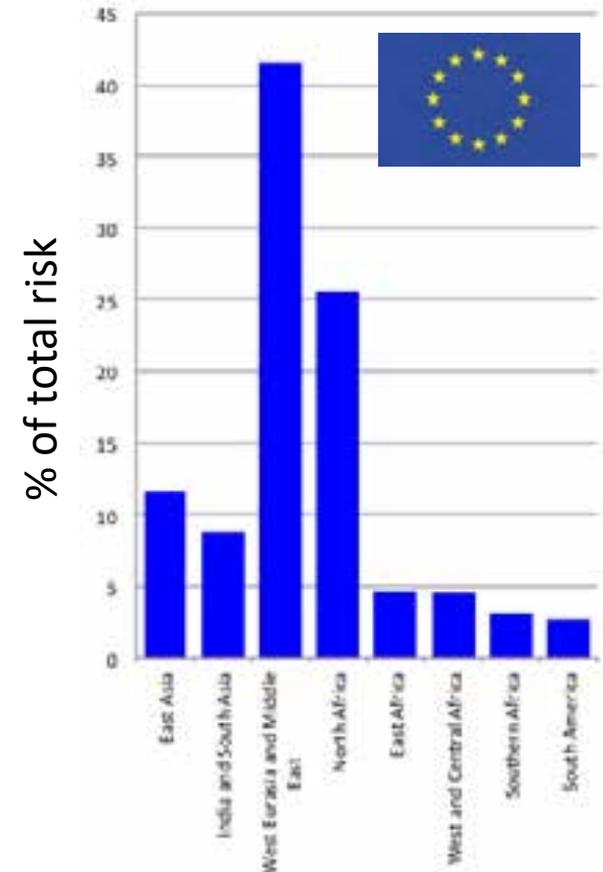
European Perspective



- 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

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



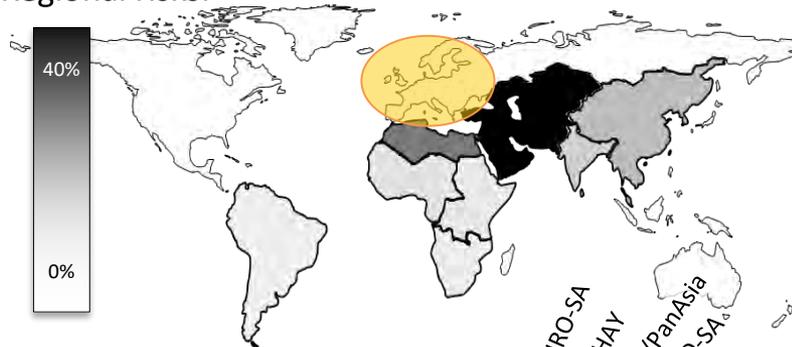
- New FMD lineages in North Africa (previously FMD-free countries)
 - O/ME-SA/Ind-2001
 - A/AFRICA/G-IV
 - O/EA-3

Vaccine Antigen Prioritisation: Europe

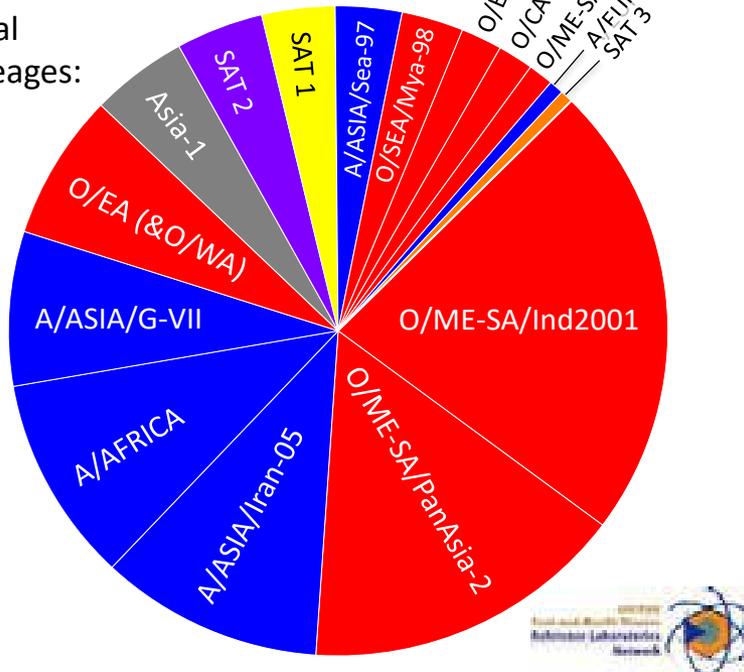
January 2019

DEFINING RISK

Regional risks:



Viral lineages:

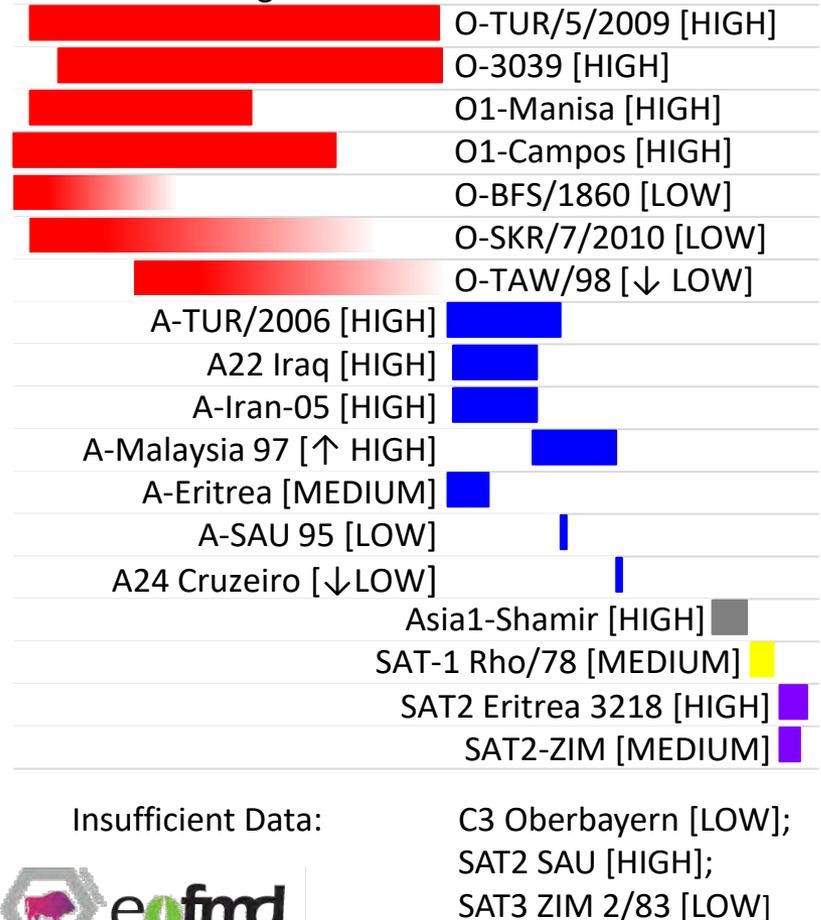


SELECTING VACCINES

Risk Profile:



Vaccine Coverage:



Reports and information

- New website (wrlfmd.org) launched in November 2018
- In addition to *Genotyping reports*, now contains *Vaccine matching* and *Serotyping reports*
- Other data sources:
 - EuFMD Monthly report
 - Quarterly WRLFMD report

Tools for FMDV sequences

- Priority for the FMD community
- FMDVTools:
<https://mallorn.pirbright.ac.uk>



Proficiency Testing Scheme (PTS)

- To assist National FMD Laboratories to develop/improve accurate and reproducible FMD diagnostic tests
- QA requirements to support ISO/IEC 17025

Phase XXXI update (covered by current WRLFMD contract and old EURL responsibilities):

	Phase XXXI
Total invited laboratories	102
Participants from European Union (funded by EURL for FMD)	26 (EU member states)
Participants from Global Network	Argentina, Brazil, Canada, Russia, Senegal, Thailand Pending: Botswana, China, Ethiopia, India, Kenya, Nepal, Nigeria, Republic of Korea, South Africa, USA
Participants from EuFMD Member states (non-EU)	Bosnia & Herzegovina, Georgia, Kosovo, FYRO Macedonia, Norway, Serbia, Switzerland, Turkey Pending: Albania,
Participants from neighbourhood countries	Algeria, Armenia, Montenegro, Morocco Pending: Belarus, Iran, Iraq, Jordan, Lebanon, Moldova, Tunisia, Ukraine
Other participating countries	Australia, Namibia, New Zealand, Singapore, Chinese Taipei,

- Proposal for Phase XXXII:
 - Global PTS to complement PTS organised by EURL
 - Focus on endemic diagnostic challenges
 - Scenarios tailored PCP expectations for the participating labs

E-learning

- WRLFMD has developed an e-learning course for FMD diagnostic methods
- Delivered with EuFMD
 - November 2017
 - February 2019
- >200 scientists from across the world have completed this course



**FMD
Laboratory
Investigation
Training
Course**

This course is aimed at those working in national or regional foot-and-mouth disease laboratories and involved in carrying out or managing laboratory testing activities.

eofmd
European Commission for the control of foot and mouth disease

The EuFMD and the World Reference Laboratory for FMD, based at the Pirbright Institute, have partnered to produce the online FMD Laboratory Investigation Training Course - FLITC.

Acknowledgements

- Support for the WRLFMD and research projects
- Collaborating FMD Reference Laboratories and field teams
- Partners within the OIE/FAO FMD Lab Network



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Transboundary disease risks in the European Region

**Situation report, co-ordination arrangements and
priorities for future actions to reduce risk**





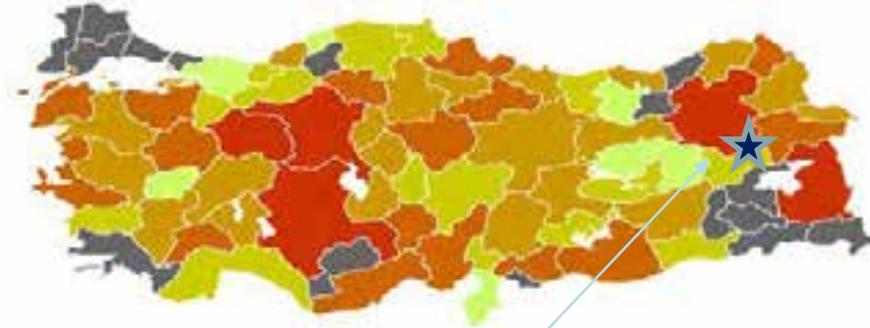
Foot and Mouth Disease

South East Europe



FMD distribution '13-'17 for ME and WE (A-O)

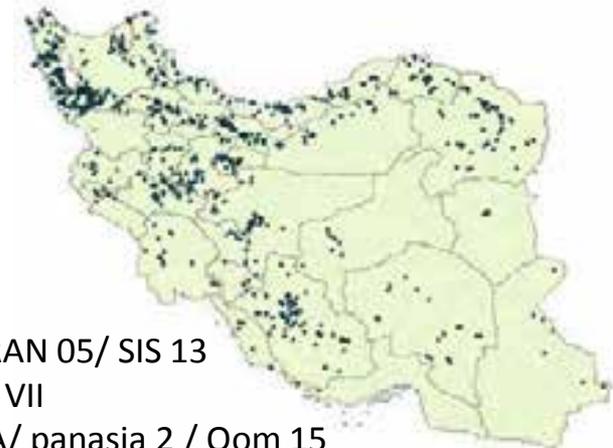
Year 2018



Serotype O :306; Serotype A :1; PCR (+) :75

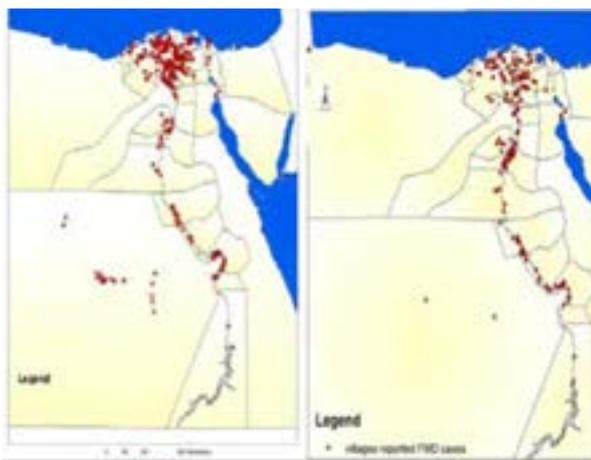
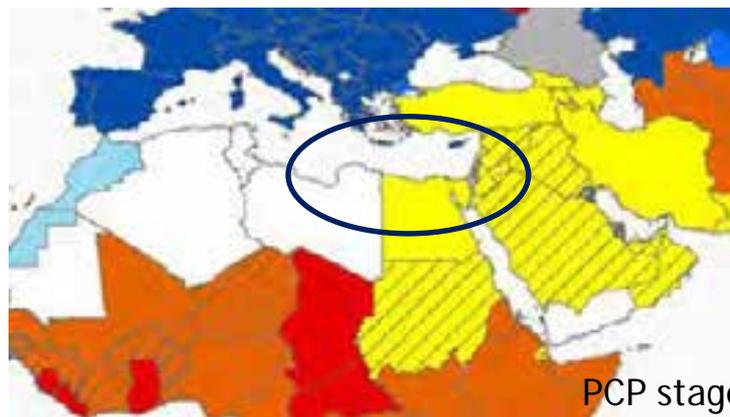


No outbreaks since 2016 (Arm). **Candidate** zone for PCP 3 and reduced virus circulation



FMD/type A/Asia/IRAN 05/ SIS 13
FMD/type A/Asia/G VII
FMD/type O/ ME-SA/ panasia 2 / Qom 15
FMD/type Asia 1/ Asia/ Sindh 08

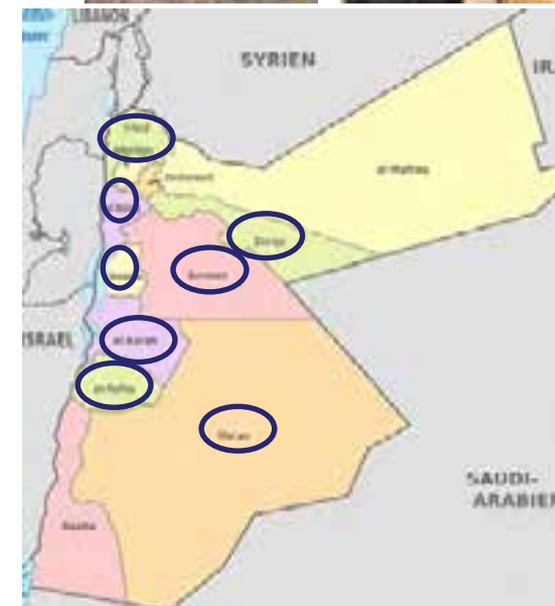
East Mediterranean



FMD sero – type	2016	2017
O	44	89
A	5	0
SAT2	5	5
Pan FMD	10	30
Total	64	124



Outbreaks 2018-2019
Israel: O/PanAsia -2 (two substrains)
Palestine: O/EA-3



54 outbreaks (Feb-March 2017)
 O/ME-SA/Ind-2001

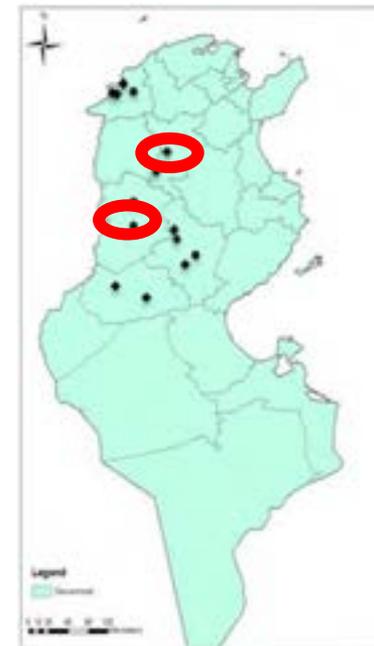
North Africa



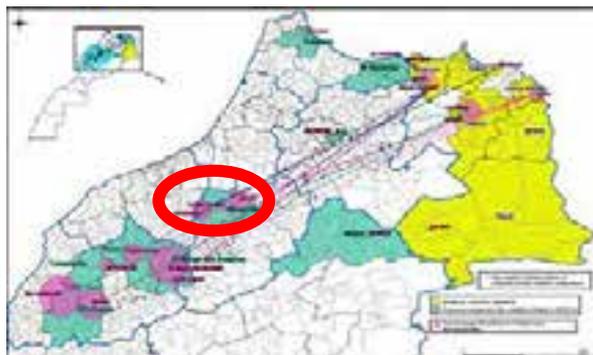
32 outbreaks (82 LR) from 05/01/2019 to 09/03/2019

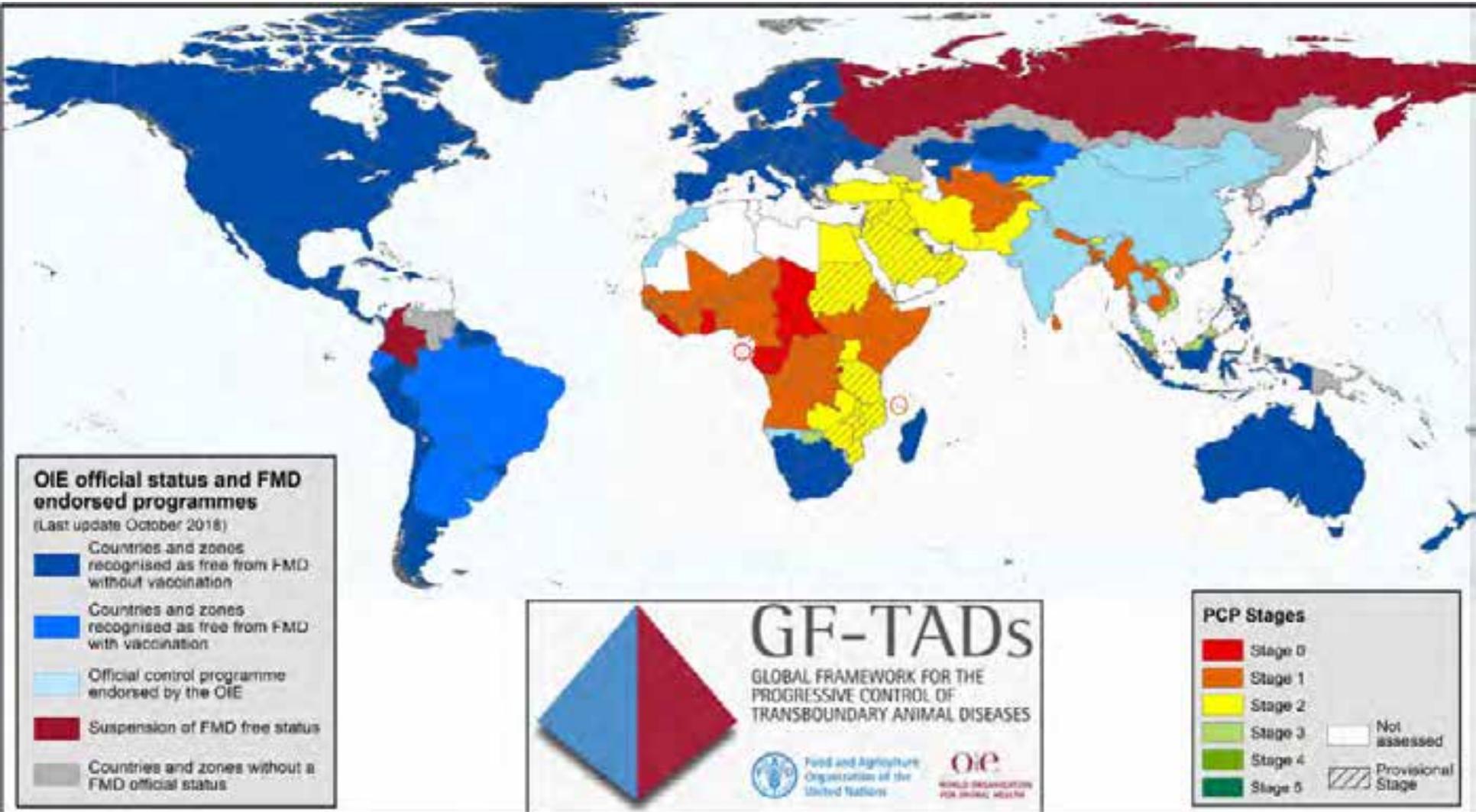


FMD outbreaks 119 in 28 wilayas (1226 LR) from 20 June 2018. From Sept 2018 cocirculation of FMD-PPR in 36 wilayas affected and 477 municipalities (3310 SR dead, slaughtered, destroyed.)



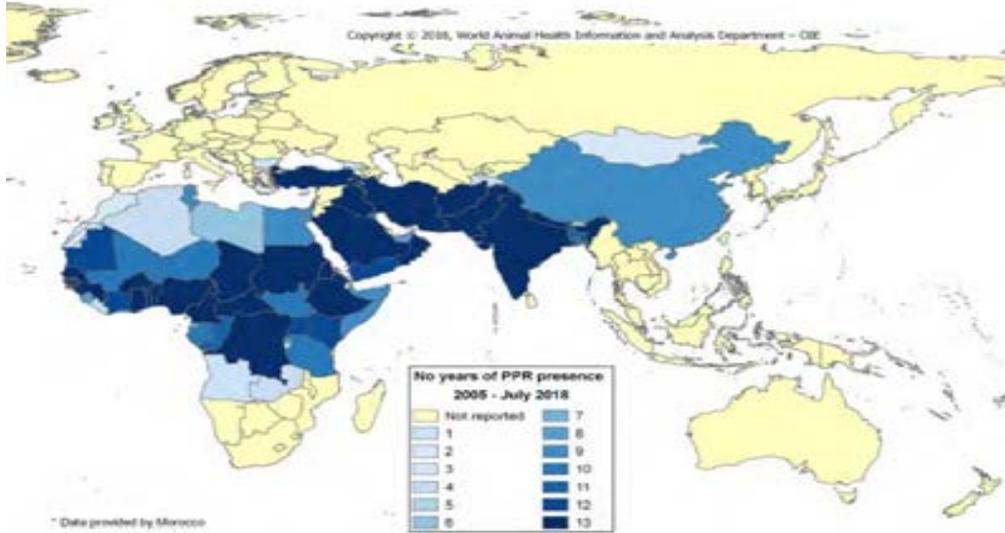
14 outbreaks (40 LR and 75 SR) from 15/12/2018 to 07/03/2019





How to ensure that GF-TADs process is applied in North Africa ?
(Importance of provide indicators of progress and addressed gaps)

Peste des Petits Ruminants



Number of years of PPR presence 2005 – 2018 (OIE)

Lumpy Skin Disease



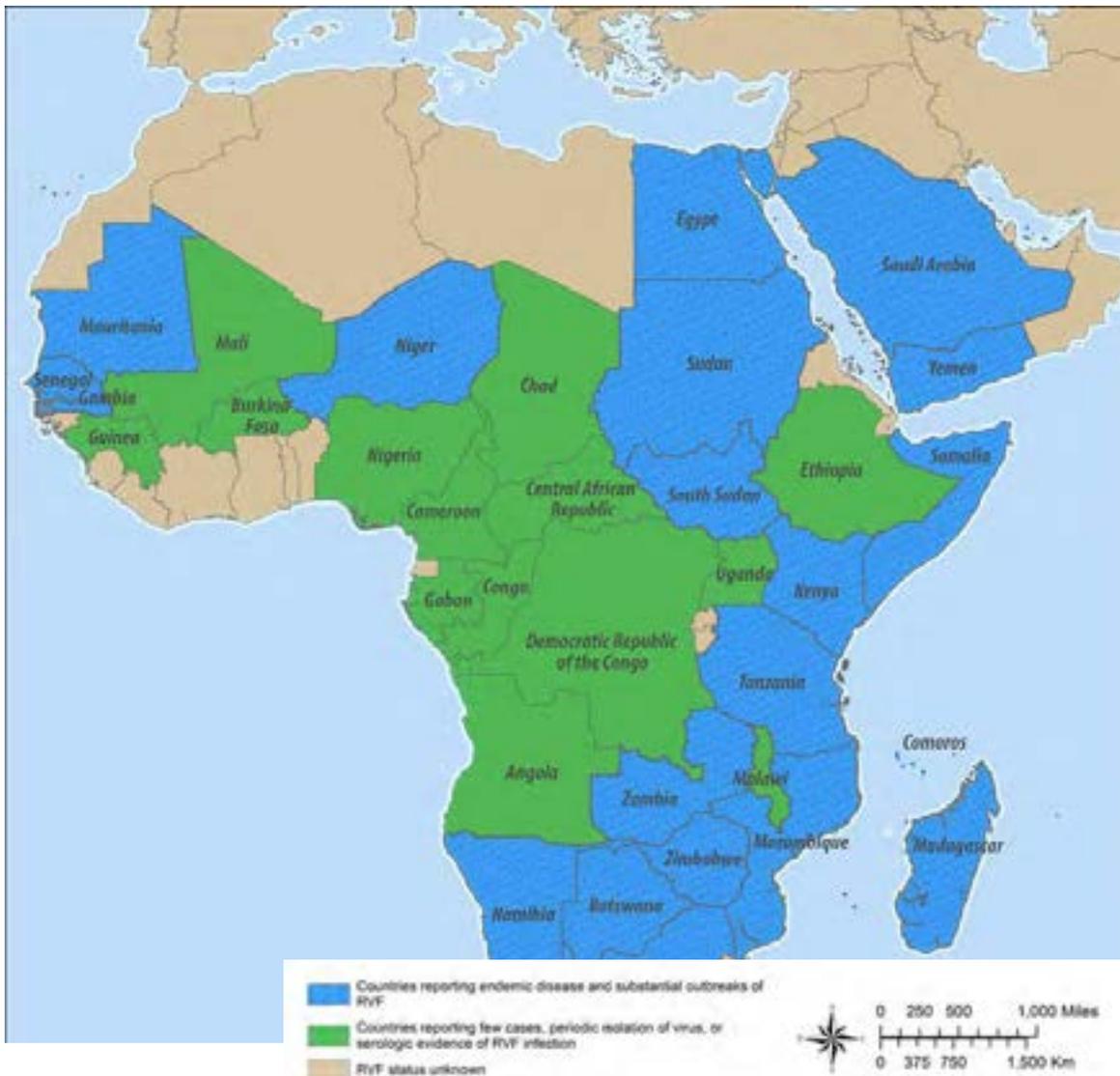
EFSA, LSD in South East Europe

Sheep and Goat Pox



Six monthly report (Jan-Jun 2018, WAHIS)

Rift Valley Fever



Aedes and Culex

ANIMALS

Abortions
 Death (100% young)

HUMANS

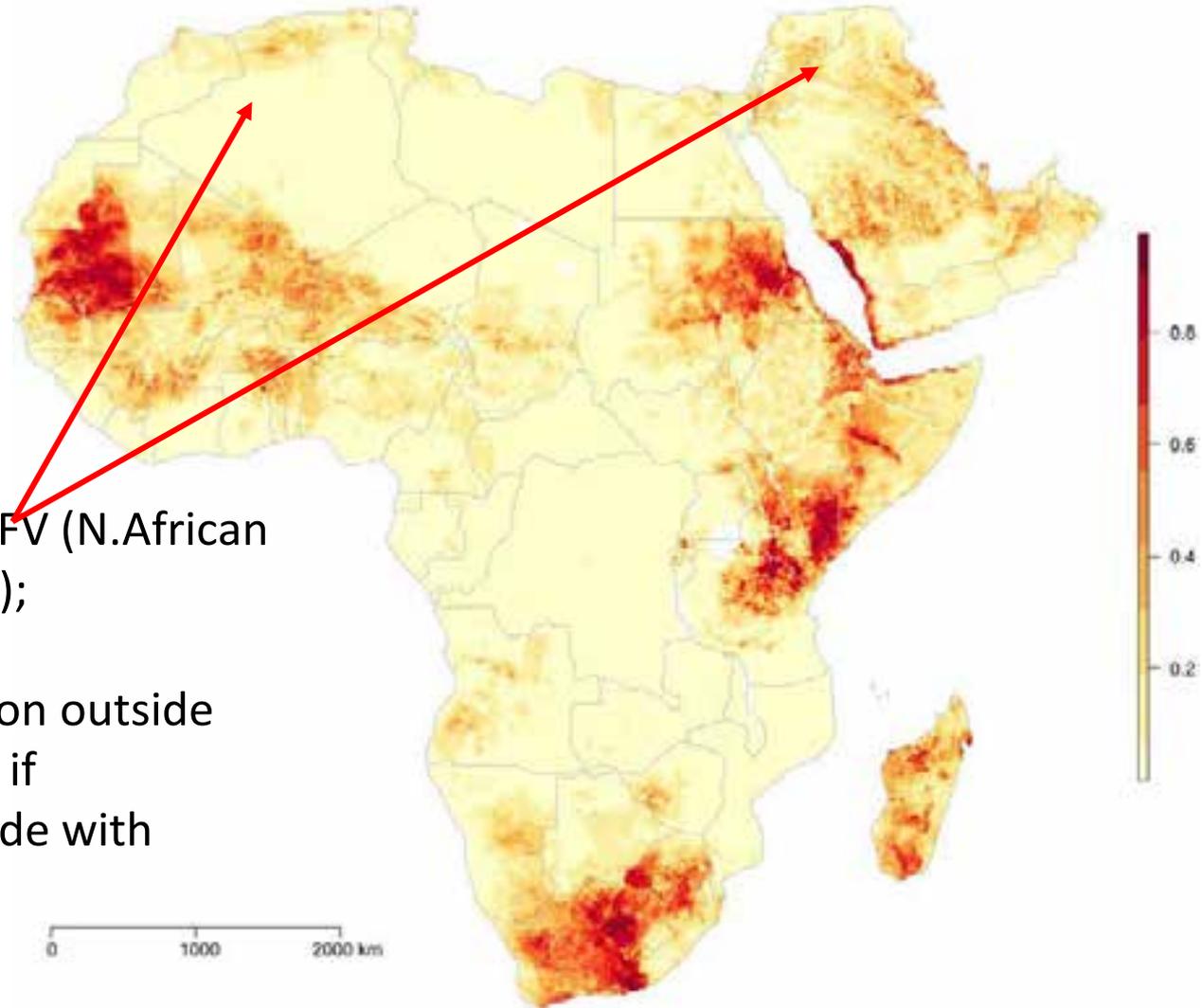
Febrile illness
 Haemorrhagic fever



More recent events
'17 Nigeria – Niger - Mali

Results from recent study on Landscape suitability to RVF epidemics

*The risk is derived from the ecological niche of RVF outbreaks
(Walsh et al, 2017)*



- Landscapes suitable to RVFV (N.African and Middle East countries);
- Sustained virus transmission outside the endemic region is real if introduction events coincide with optimal conditions

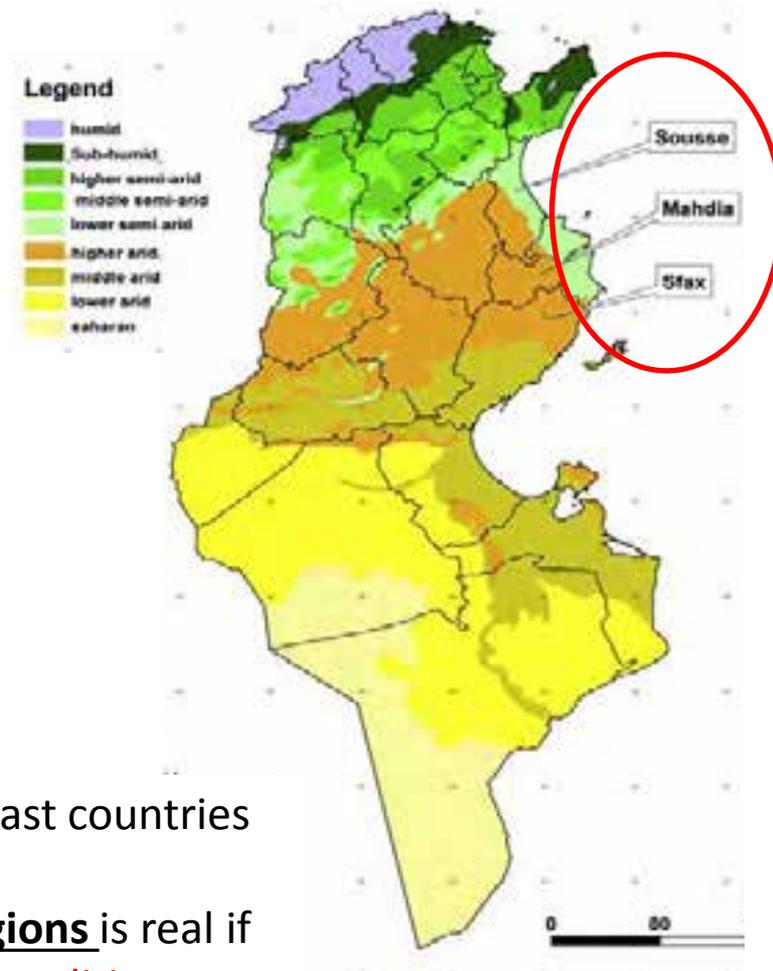
Virus circulation

- ❑ In southern Morocco, a serological survey conducted in 2009 showed a 15% prevalence in camels nearby regions of Mauritania, with regular illegal transboundary movements of this countries to Morocco (El-Harrak et al., 2011)
- ❑ Samples taken from the Sahara in 2008 showed a seroprevalence ranging from 1 to 10% in goats, sheep and camels (Di Nardo et al., 2014)
- ❑ A serological survey (A. Bosworth et al., 2015) in humans conducted during the summer of 2014 in regions in Tunisia showing that:
 - ✓ 8.3% of unexplained febrile patients had IgM (indicating recent infection)
 - ✓ 7.8% of sera collected from slaughterhouse workers (healthy status) had IgG against this virus

Serologic evidence of exposure to Rift Valley fever virus detected in Tunisia

A. Bosworth^{1,2}, Y. Ghannouj¹, S. David¹, A. Vargha¹, W. Khatib¹, A. Hassen^{1,2}, E. Zribi¹, M. Chahrouh¹, H. Yousfi¹, M. Bou Jaber¹, A. Ezzou¹ and A. Lavezzi¹

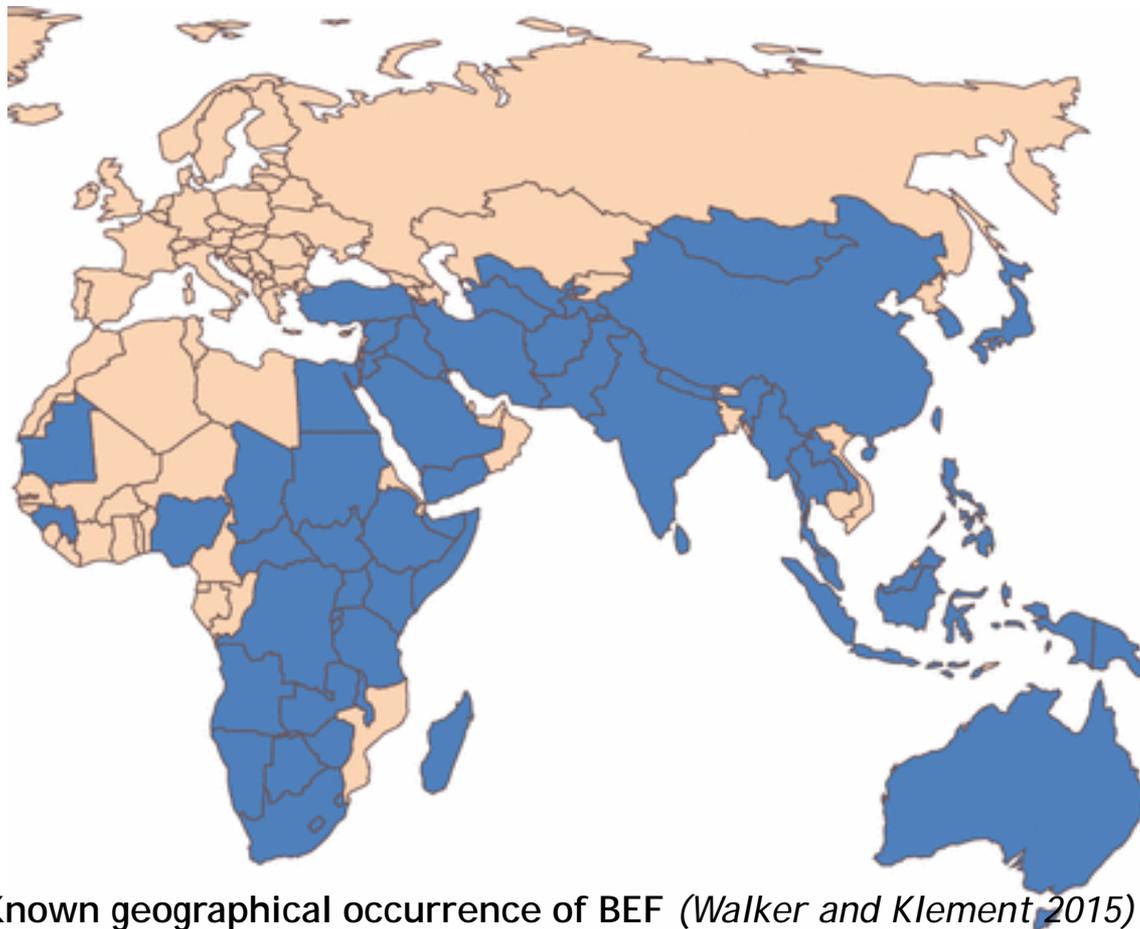
¹ Public Health England, Porton Down, Salisbury, UK; ² Institute of Virology, University of Liverpool, Leahurst, Neston, Merseyside, UK



Risk for RVFV introductions in N.African and Middle East countries remains **high and continuous**,

Sustained virus transmission outside the endemic regions is real if these **introduction event(s) coincide with optimal conditions**

Bovine Ephemeral Fever



Culicoides

Fever, abortion, lameness. drooling, lethargy, milk drop (high morbidity)



Nasal discharge, drooling



Unable to rise

Known geographical occurrence of BEF (*Walker and Klement 2015*)

The extent of BEFV distribution is not necessarily country-wide (as shown) and may include neighbouring countries from which there are no known formal reports of disease (not shown). The distribution may also vary seasonally and from year to year.

Likely general directions of seasonal spread of BEFV for S.Africa and Middle East

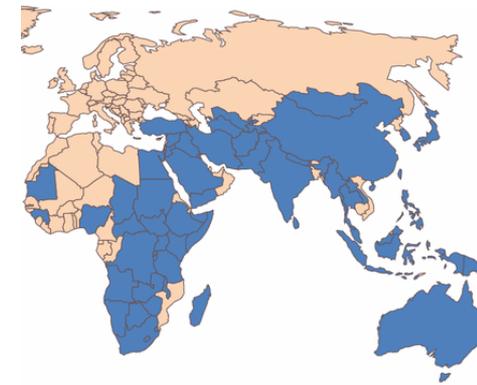


Pathways in the **Middle East** are less clear and may be complex with potential for epizootics to originate in either East Africa or West Asia. Dashed arrows indicate possible pathways in this region.



THE BEF THREAT TO EUROPE IS REALISTIC

- Big epidemic recorded in Turkey 2012, with outbreaks in many regions (unlike previous Turkey epidemics).
- Frequency of new epidemics increased over the year

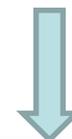


Importance of rapid detection/confirmation if introduced in Europe, as for the RVF

Climate change



Recent accelerated climate change has exacerbated existing environmental problems in the Mediterranean Basin that are caused by the combination of changes in land use, increasing pollution and declining biodiversity.



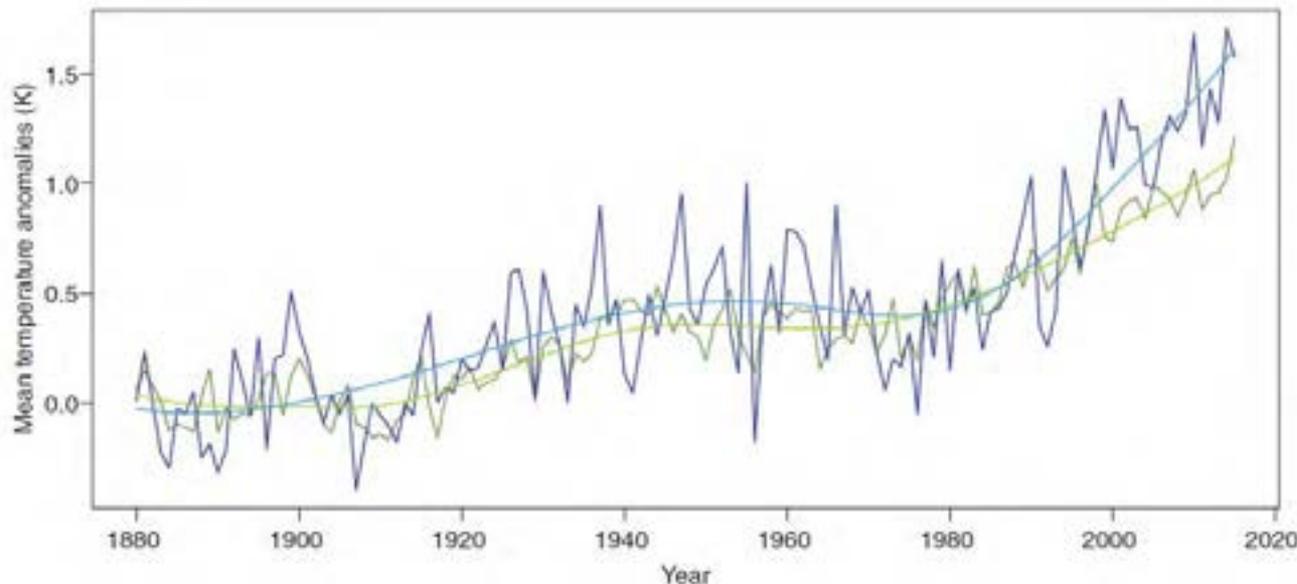
nature
climate change

REVIEW ARTICLE
<https://doi.org/10.1038/n-climate.2019.2>

Climate change and interconnected risks to sustainable development in the Mediterranean

Wolfgang Cramer^{1*}, Joël Guiot², Marianela Fader³, Joaquim Garrabou^{4,5}, Jean-Pierre Gattuso^{6,7}, Ana Iglesias⁸, Manfred A. Lange⁹, Piero Lionello^{10,11}, Maria Carmen Llasat¹², Shlomit Paz¹³, Josep Peñuelas^{14,15}, Maria Snoussi¹⁶, Andrea Toreti¹⁷, Michael N. Tsimplis¹⁸ and Elena Xoplaki¹⁹

Climate change



Basin-wide, annual mean temperatures are **now 1.4 °C above late-nineteenth-century** levels, particularly during the summer months. Heat waves now occur more frequently, and the frequency and intensity of droughts have increased since 1950. For each of the most recent decades, **the surface of the Mediterranean Sea has warmed by around 0.4 °C**



Priorities to reduce the risk

- ➔ Early Warning Systems for major threats
- ➔ Regular collection and sharing of relevant risk information including submission of isolates
- ➔ Improved networking between centres of expertise and Ref Laboratories
- ➔ Training programme for national staff (epi-lab-PVM-etc.)
- ➔ Assist definition of integrated control and surveillance
- ➔ Emergency arrangements for vaccine supply



EUFMD

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE



eofmd
e-Learning



Thank you



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EuFMDiS
European Foot and Mouth Disease
Spread model

Modelling FMD and transboundary diseases at European scale: potential for optimizing control measures at regional and national scales

Koen Mintiens

The European Commission for the Control of Foot-and-Mouth Disease

Marko Potocnik

Administration of the Republic of Slovenia for Food safety, Veterinary sector and Plant protection



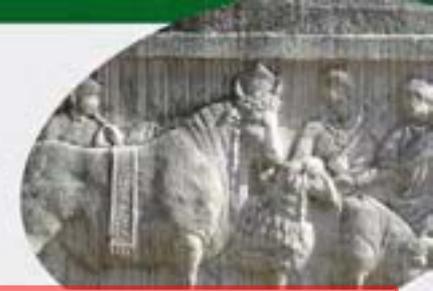
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EU remains vulnerable for TAD incursions

MAP 1: Foot-and-mouth disease (FMD) virus pools: world distribution by serotype in 2013-2017 (source EuFMD, <https://mapchart.net/world.html>)



- Continuous global threats for TADs
- FMD remains high on list
- High impact in EU open market
- Need for well-developed contingency planning
- Plans and preparedness need to be tested



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- Conceptual hybrid modelling approach of the Australian Animal Disease (AADIS) model.
- Stochastic simulation model that considers variability and uncertainty
- Simulation of within and between country spread
- Easy click-on configuration of numerous control and scenario options
- Realtime display of outbreak attributes
- Direct reporting of outbreak data consequences
- Valuable training tool
- Powerful and easy-to-use



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EuFMDiS
European Foot and Mouth Disease
Spread model

Case Study for Slovenia

Marko Potocnik

Administration of the Republic of Slovenia for Food safety,
Veterinary sector and Plant protection



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EuFMDiS Advisory Group



Strategy and Operational Plan 2019-2023 for EuFMDiS:

- Extend EuFMDiS to a pan-European setting and make it available in additional countries
- Additional developments within the FMD context
- Adding new diseases



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EuFMDiS Objective

Contribute to Europe-wide systematic support delivered to risk assessment, contingency planning and targeting of interventions through modelling of national and regional control measures for FAST diseases.



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Extend EuFMDiS to a pan-European setting and make it available in additional countries

- Increase awareness
 - Publication in scientific journals
 - Presentation at conferences and meetings
 - Publish on website
- Validation and independent review
 - Peer review
 - External assessment
 - Extensive testing
- Engage the user community
 - Webinars and discussion forum
 - Users support
 - Proficiency testing
- Pan-European data collection
- User agreement and data sharing license



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Additional developments within the FMD context

Priority

- Additional spread pathways:
 - Common grazing on pastures
 - Markets
- Include locations of rendering plants and slaughterhouses

Very nice to have

- Include animal welfare consequences
- Include enhanced biosecurity as control option

Nice to have

- Include wildlife component



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Adding new diseases

- Priority to pan-European extension for FMD
- Vector-borne diseases have higher priority
- Non-vector borne diseases controllable by vaccination
- Identification of diseases is to the General Session



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Endorsement of the Advisory Group

- Technical experts can be added to provide technical guidance
- Representation of the user group
- Geographical representation, e.g. Eastern Europe, Mediterranean region
- Include experts from industry organisations
- Representation can alter according to the agenda
- Meetings to be planned when necessary



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Conclusions

- EuFMDiS is a powerful and easy-to-use tool that simulates FMD spread within and between countries.
- EuFMDiS provides high value for EU-wide contingency planning as it models spread, impact, success of control measures, availability of resources at a multi-country level.
- It would be an opportunity to further develop EuFMDiS to model FMD and transboundary diseases at European scale.



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Thank you

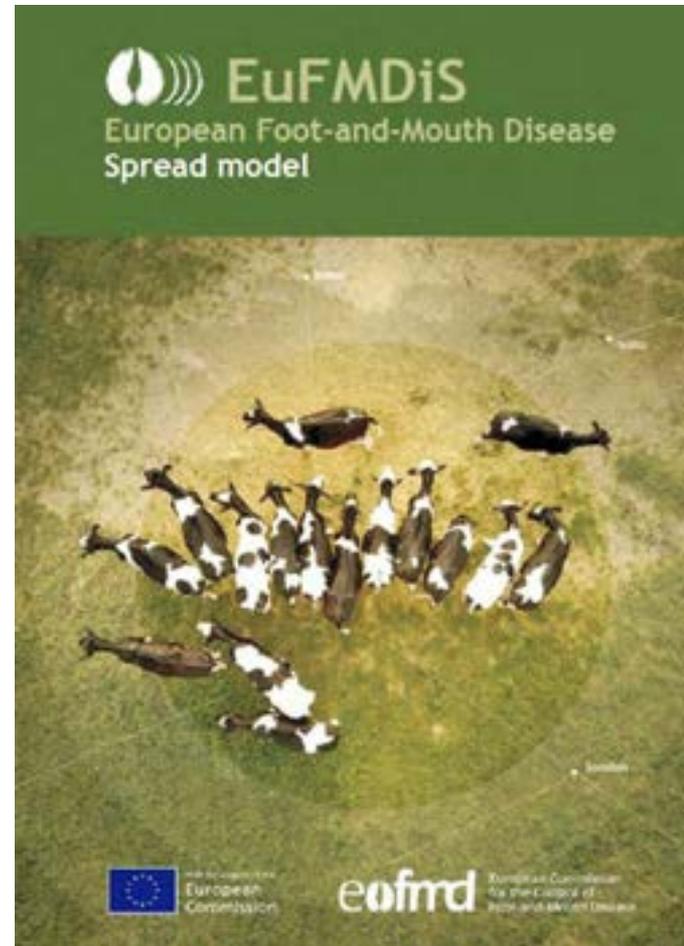
Meet the EuFMDiS team at the demo
stand in the atrium:

Tiziano Federici

Enrico Mezzacapo

Maria de la Puente

Koen Mintiens



Spread model

European Foot and Mouth Disease



Food and Agriculture Organization of the United Nations

Vienna



European Commission for the control of foot-and-mouth disease

Rome

Zagreb

Budapest

Bucharest



Madrid

Sofia

Ljubljana

EuFMDiS

+ eufmd@fao.org



The EuFMDiS model is a sophisticated decision support tool.

It simulates spread and control of FMD in Europe and can estimate the cost of an FMD outbreak.

EuFMDiS will help countries to evaluate control policies, improve contingency plans and design simulation exercises.

The pilot project was funded by EuFMD FAR (Funds for Applied Research) and involved seven pilot countries (Austria, Bulgaria, Croatia, Hungary, Italy, Romania, Slovenia).



EuFMDiS
European Foot and Mouth Disease
Spread model

Biosecurity classification of holdings in Europe: potential gains for the public and private sectors in disease emergencies

Prof. Dr. Jeroen Dewulf

Jeroen.Dewulf@UGent.be

In Collaboration with Dr. Koen Mintiens

What is biosecurity



BIOSECURITY

=

The combination of all measures taken to reduce the risk of introduction and spread of diseases on herd, region, country,... level

What is biosecurity

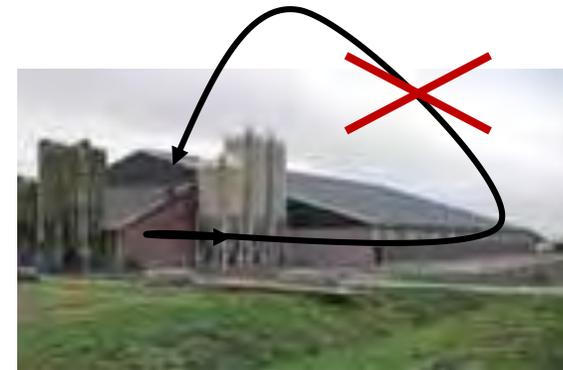
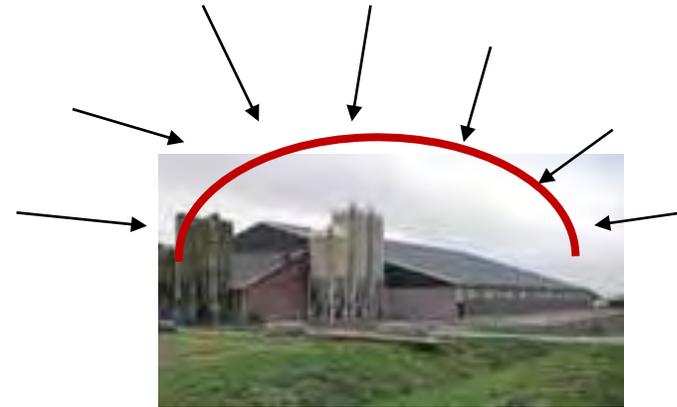
EXTERNAL BIOSECURITY

= Reduce introduction

- endemic diseases
- "exotic" diseases

INTERNAL BIOSECURITY

= reduce spread



Why biosecurity

BIOSECURITY is (should be) the basis of any disease control program



Biosecurity = complex

- No protocol suitable for every herd
- Balance biosecurity – management
- Tool?

→ **Scoring System**





Biosecurity scoring system and website for pigs, poultry and cattle

Biocheck, prevention is better than cure!



www.biocheck.ugent.be

Risk Based Biosecurity Scoring System

Quantification of biosecurity status

Comparing of scores between different herds

Comparing of scores in time

Taking different risks into account

FREE FOR USE



Risk Based Biosecurity Scoring System

Weighted scores

Based on scientific research

Risk for transmission: direct vs. indirect contact

Weight factor for each subcategory and each question

FREE FOR USE

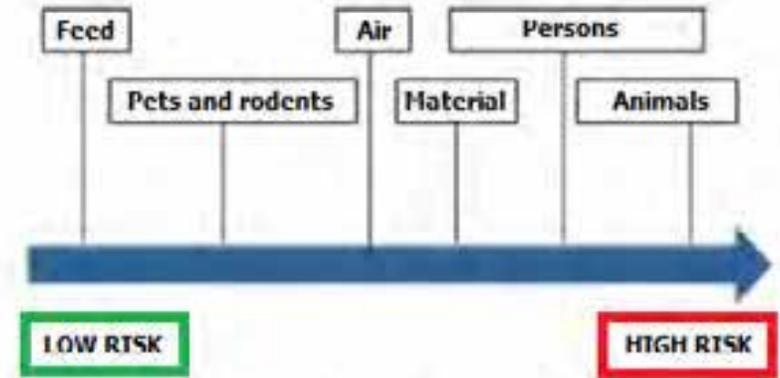
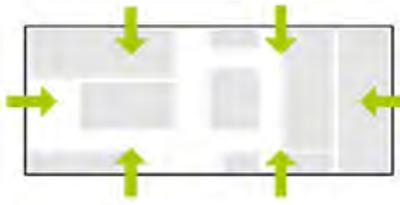


Figure 1: General arrangement of the transmission routes between farms according to their relative importance (adjusted from Boklund, 2008)

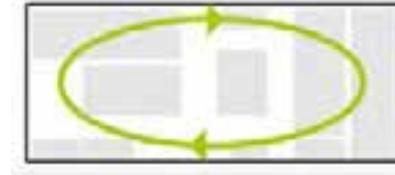
External Biosecurity (50)



Subcategory	Weight factor
Purchase of animals and semen	24
Transport of animals, removal of manure and dead animals	23
Feed, water and equipment supply	15
Personnel and visitors	17
Vermin and bird control	11
Environment and region	10



Internal Biosecurity (50)



Subcategory	Weight factor
Disease management	10
Farrowing and suckling period	14
Nursery unit	14
Fattening unit	14
Measures between compartments and the use of equipment	28
Cleaning and disinfection	20



BIOCHECK.UGent, prevention is better than cure!

Welkom!

Biocheck.UGent is a risk-based scoring system to evaluate the quality of your on-farm biosecurity in a scientific and independent way.

Fill in the online questionnaire for free and receive valuable feedback about the biosecurity level of your farm. You get a summarizing and personal report with detailed results. These findings can help you to choose your own suitable biosecurity pathway.

Don't hesitate and get started to lift your farm to a higher biosecurity level!

Start the Biocheck.UGent!

How to use Biocheck.UGent!



Ever growing
database



The Biocheck.UGent was filled in 11340 times around the world to evaluate the on-farm biosecurity level!



8213



2681



446

07-02-2018

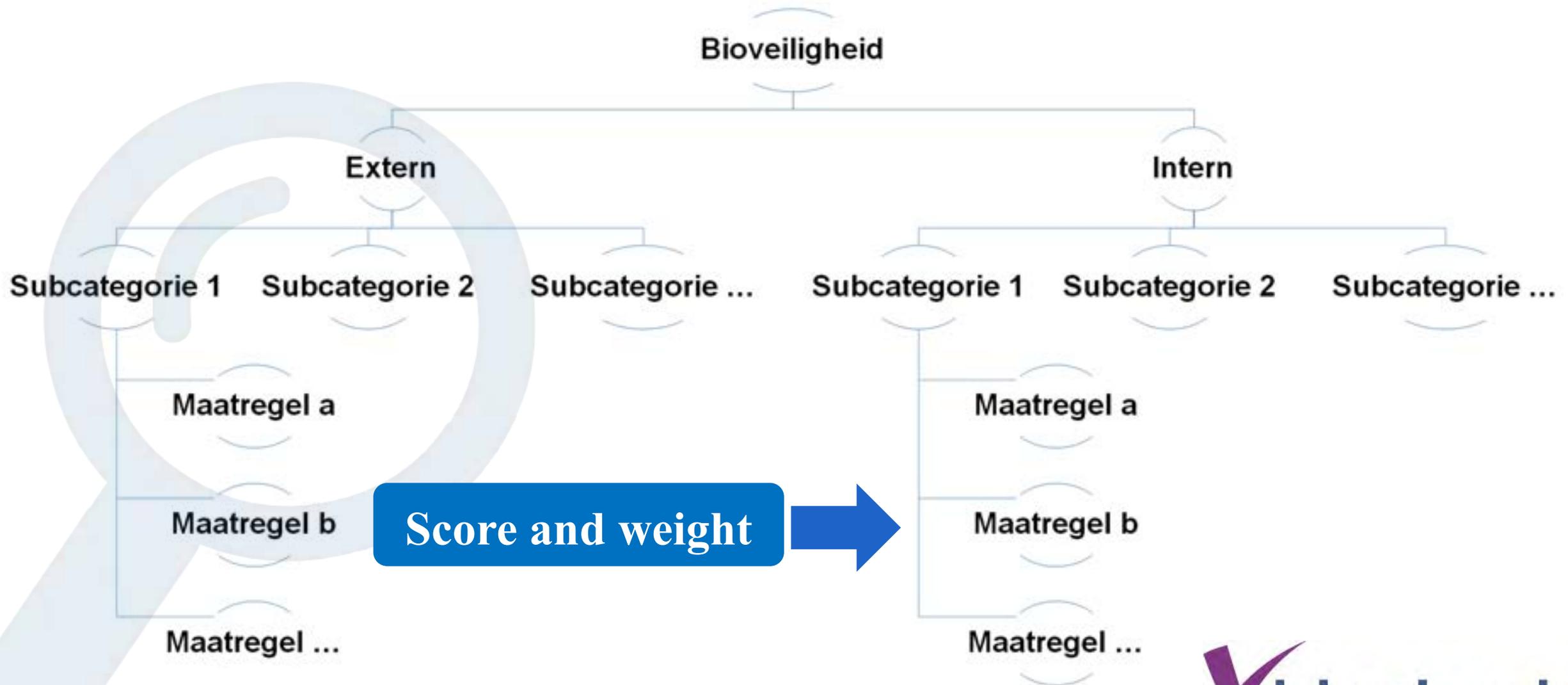
"Biosecurity in animal production and veterinary medicine (from principles to practice)" now available for purchase!

20-11-2018

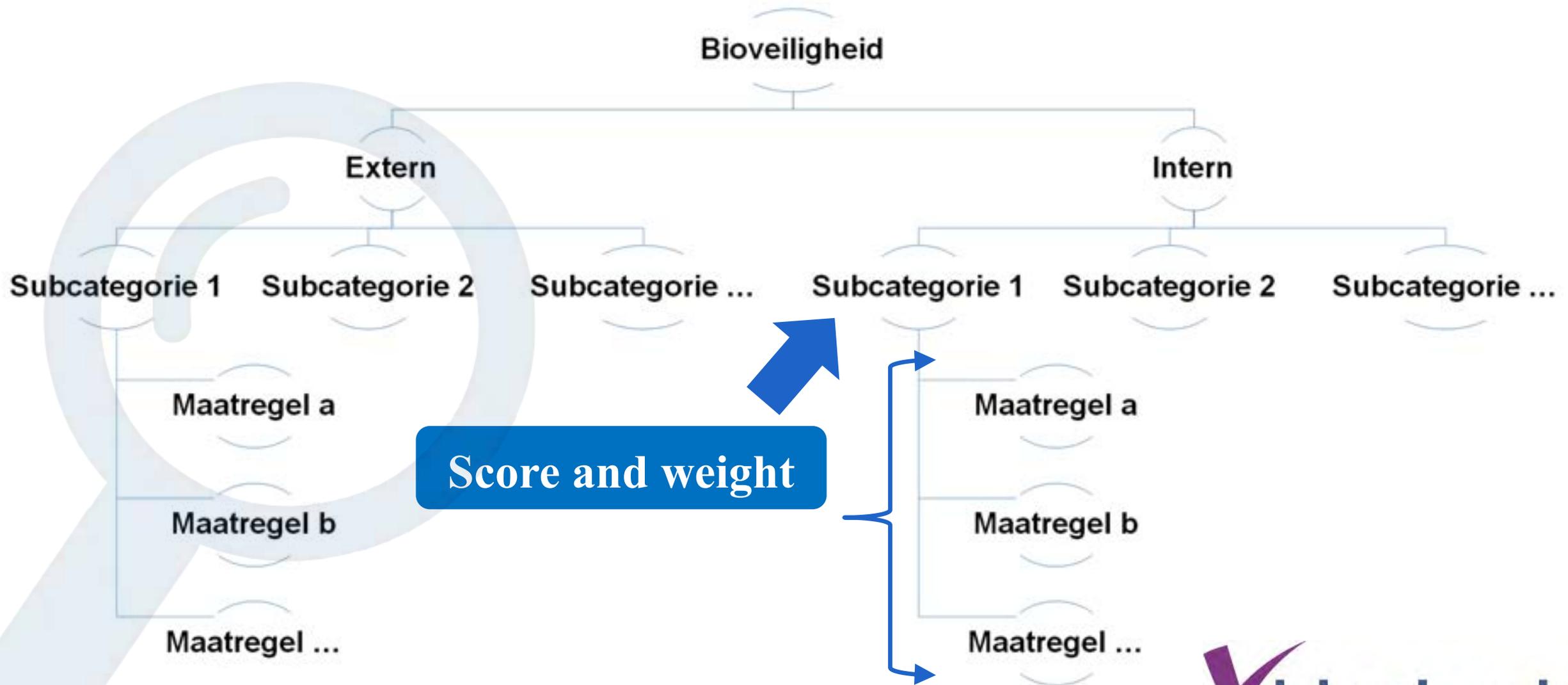
New presentation available about the Biocheck.UGent tool!

Agenda

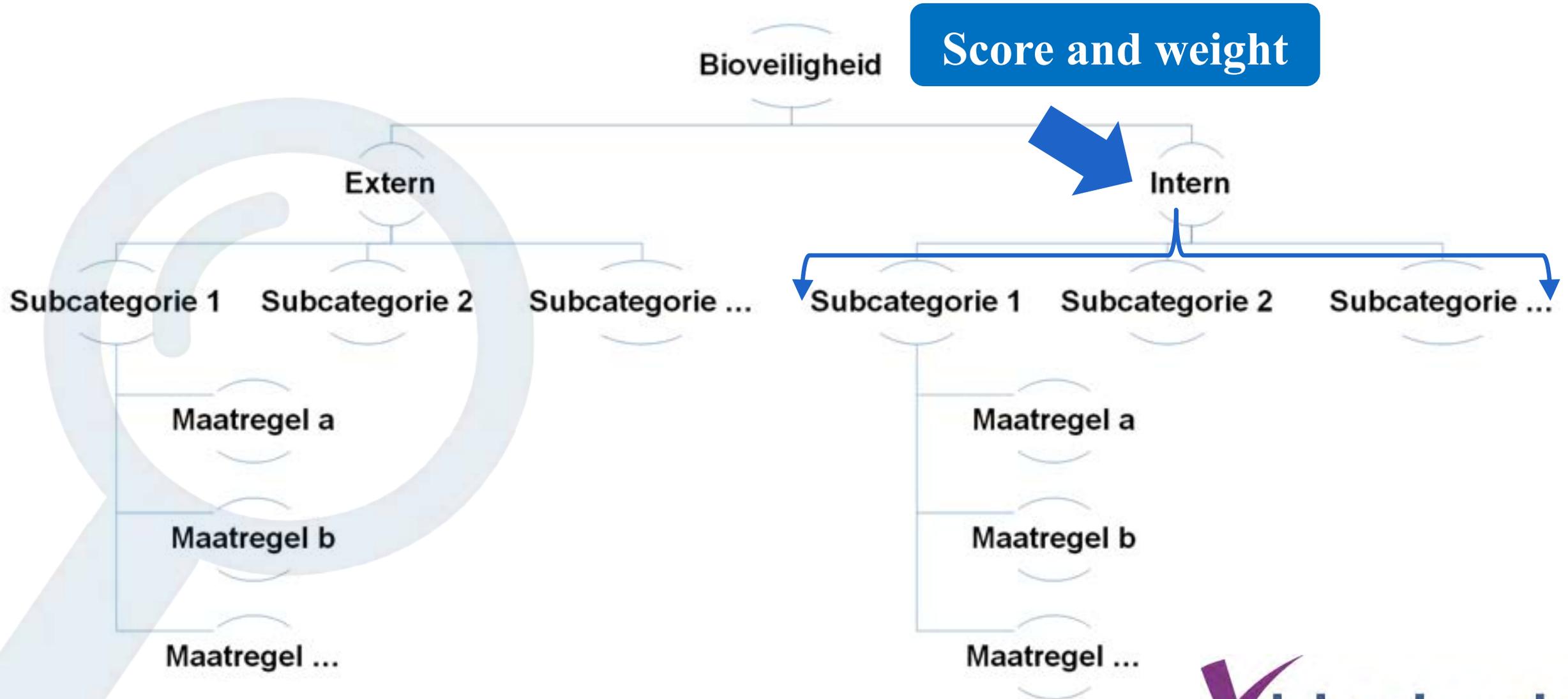
Design scoring system



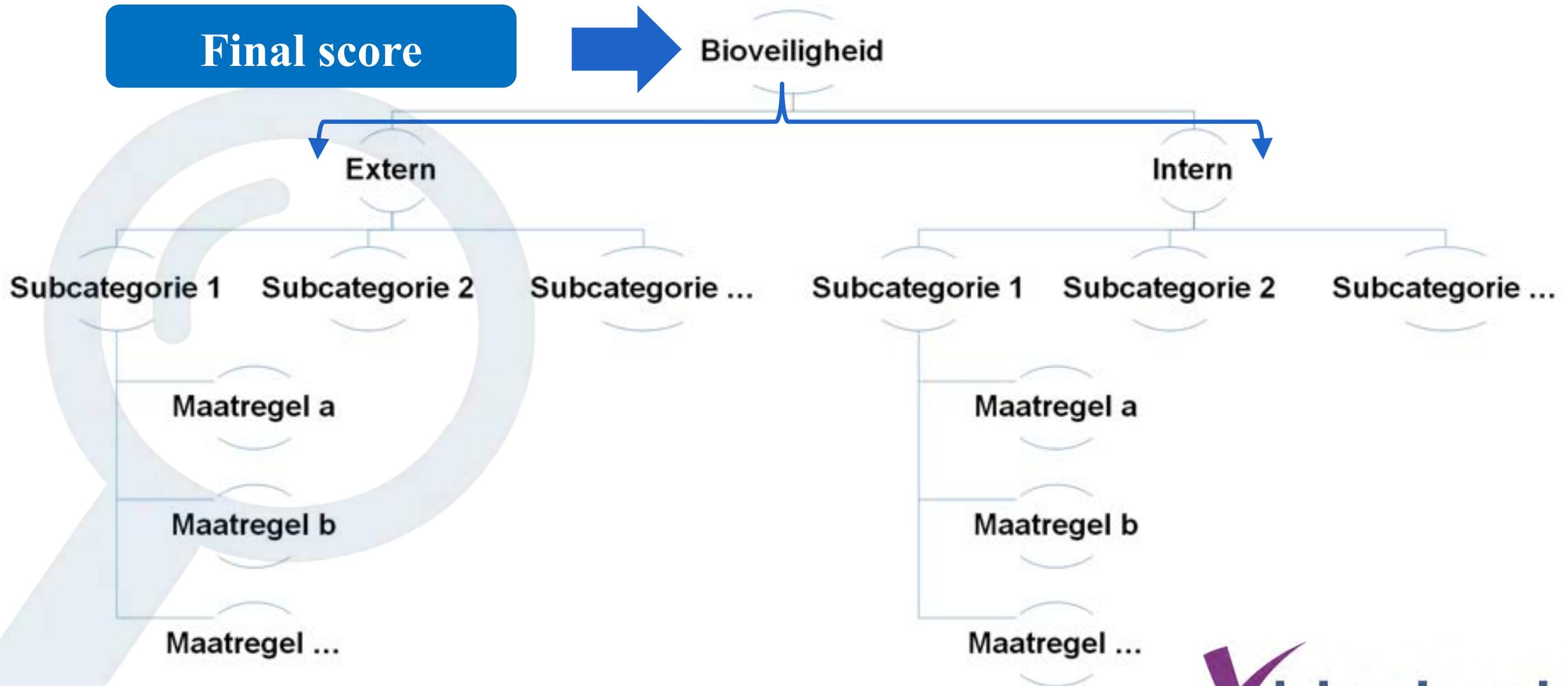
Design scoring system



Design scoring system

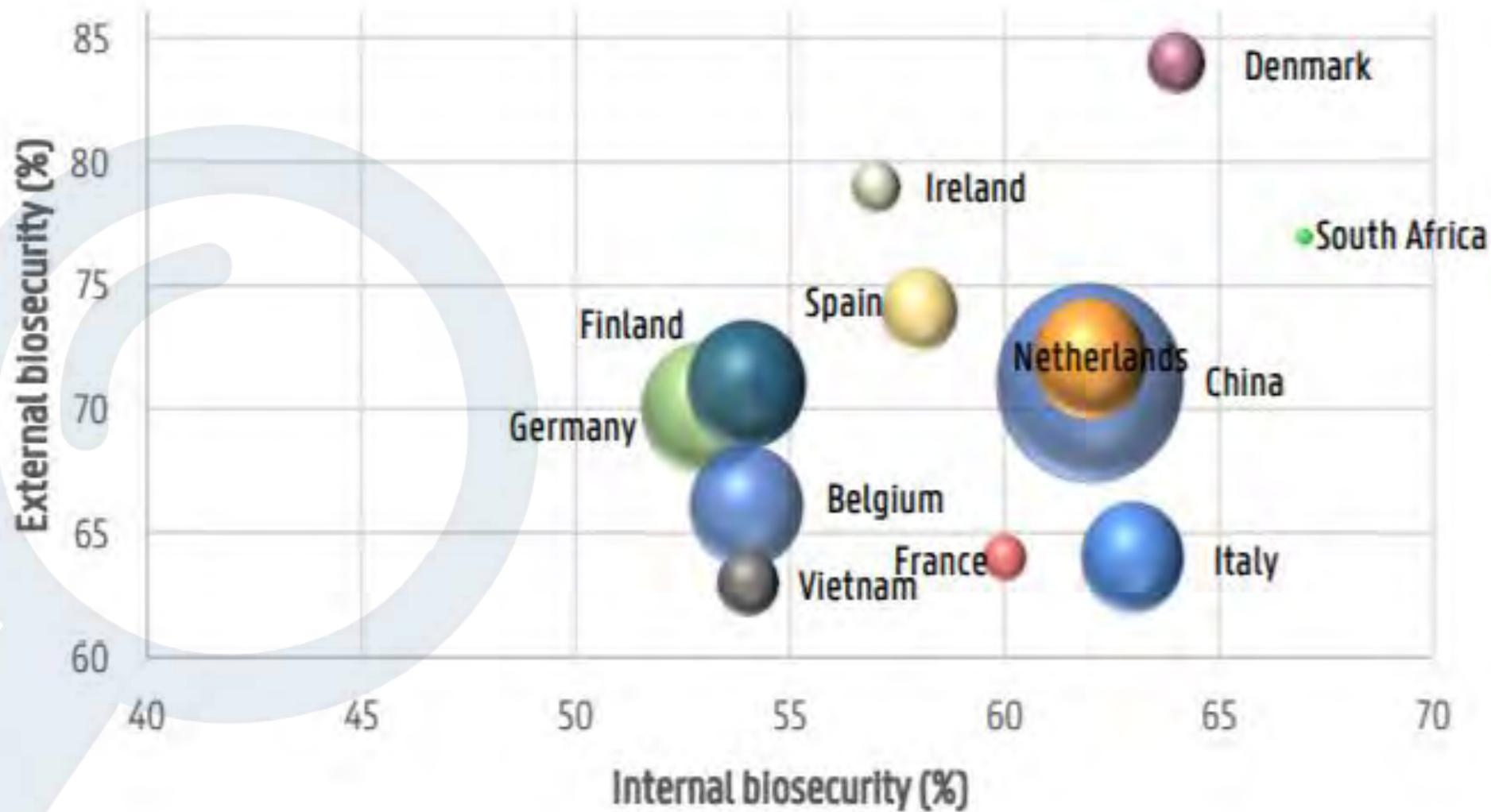


Design scoring system

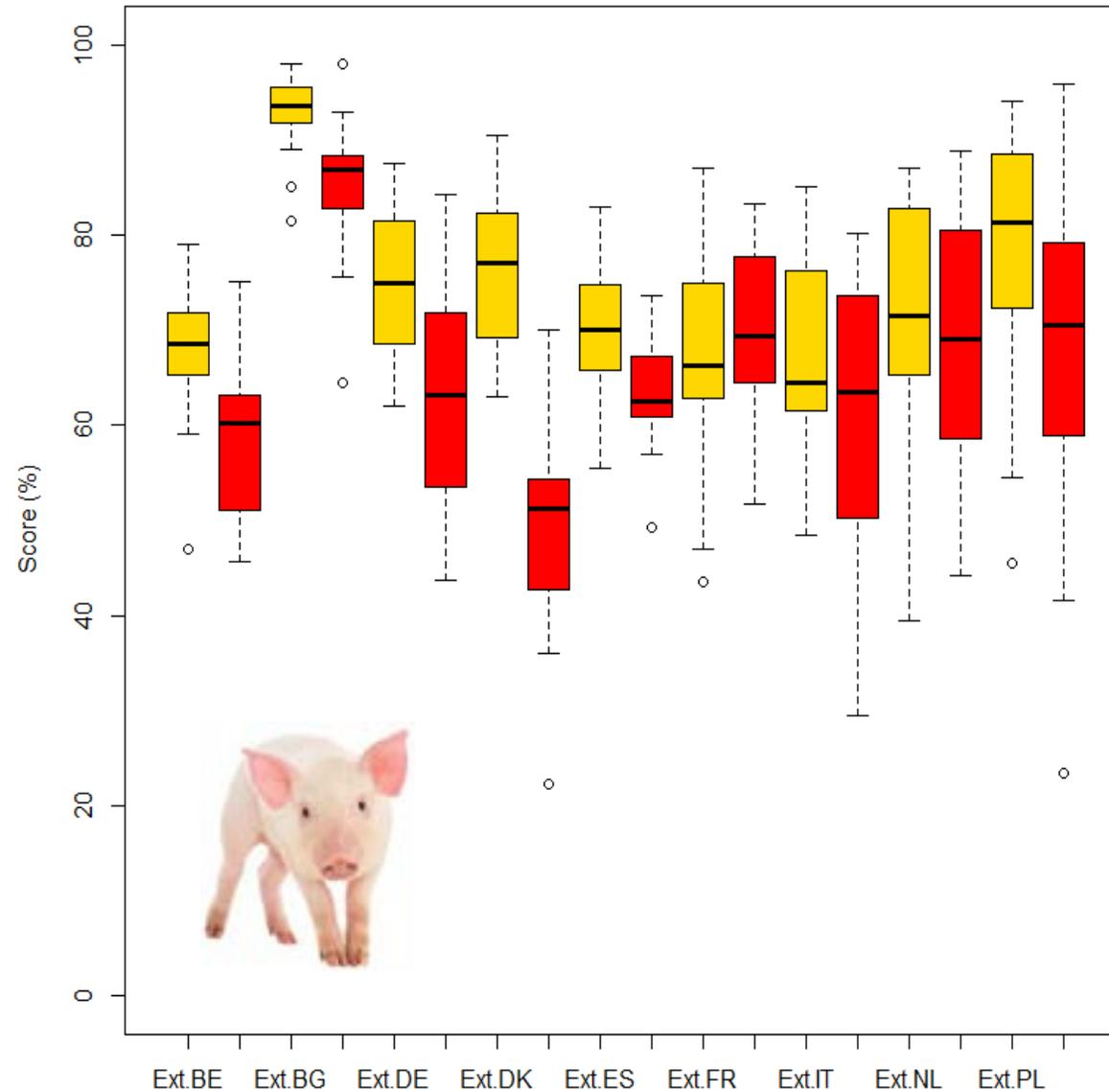


Nr	Description	Score	Country average
<i>External biosecurity</i>			
A	<u>Purchase of animals and semen</u>	58 %	89 %
B	<u>Transport of animals, removal of manure and dead animals</u>	57 %	70 %
C	<u>Feed, water and equipment supply</u>	87 %	39 %
D	<u>Personnel and visitors</u>	76 %	64 %
E	<u>Vermin and bird control</u>	60 %	63 %
F	<u>Environment and region</u>	30 %	52 %
Subtotal External biosecurity:		62 %	66 %
<i>Internal biosecurity</i>			
A	<u>Disease management</u>	60 %	58 %
B	<u>Farrowing and suckling period</u>	79 %	60 %
C	<u>Nursery unit</u>	86 %	65 %
D	<u>Fattening unit</u>	43 %	72 %
E	<u>Measures between compartments and the use of equipment</u>	68 %	44 %
F	<u>Cleaning and disinfection</u>	95 %	48 %
Subtotal Internal biosecurity:		73 %	55 %
Total:		68 %	61 %

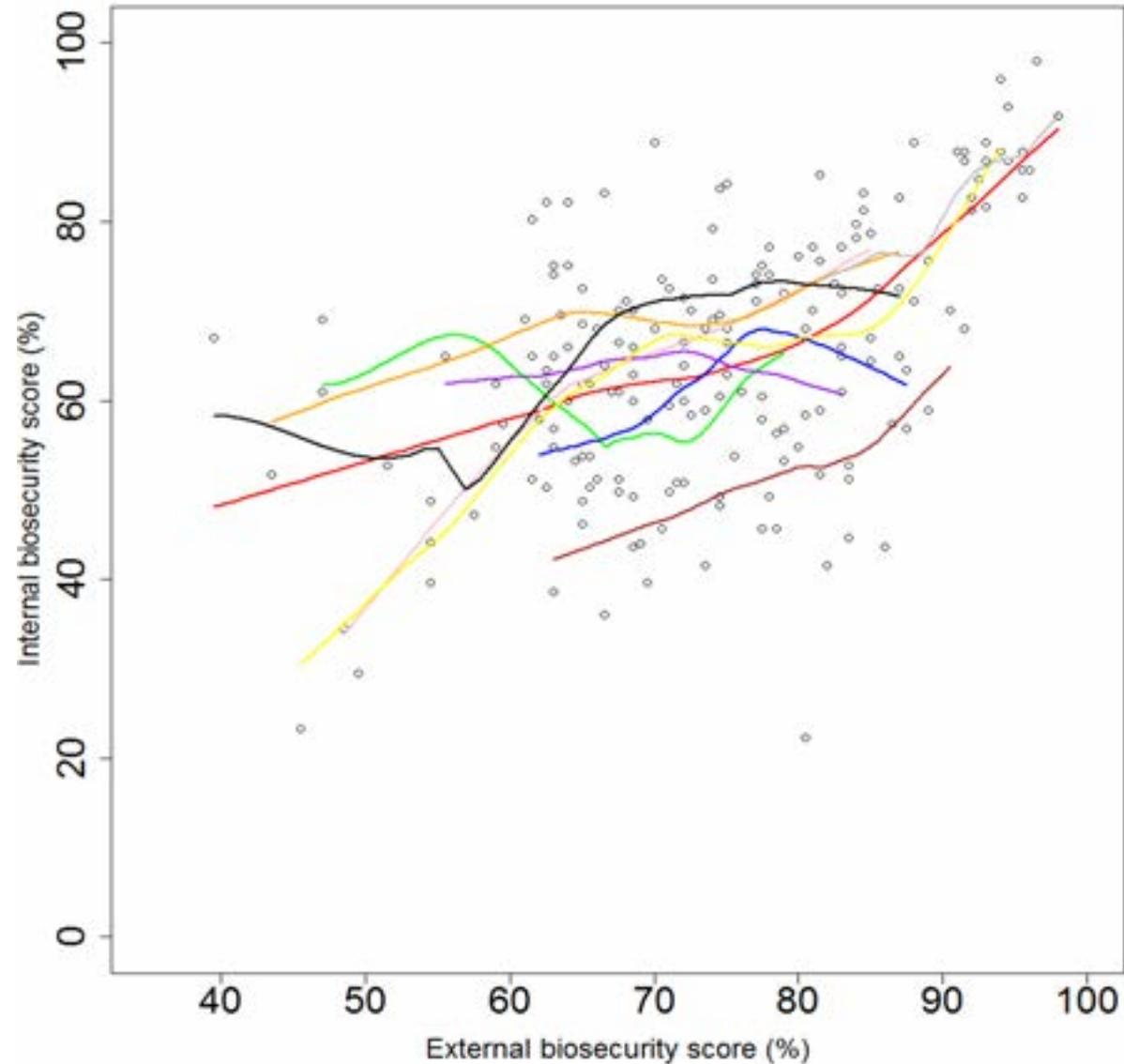
N/A = Not applicable



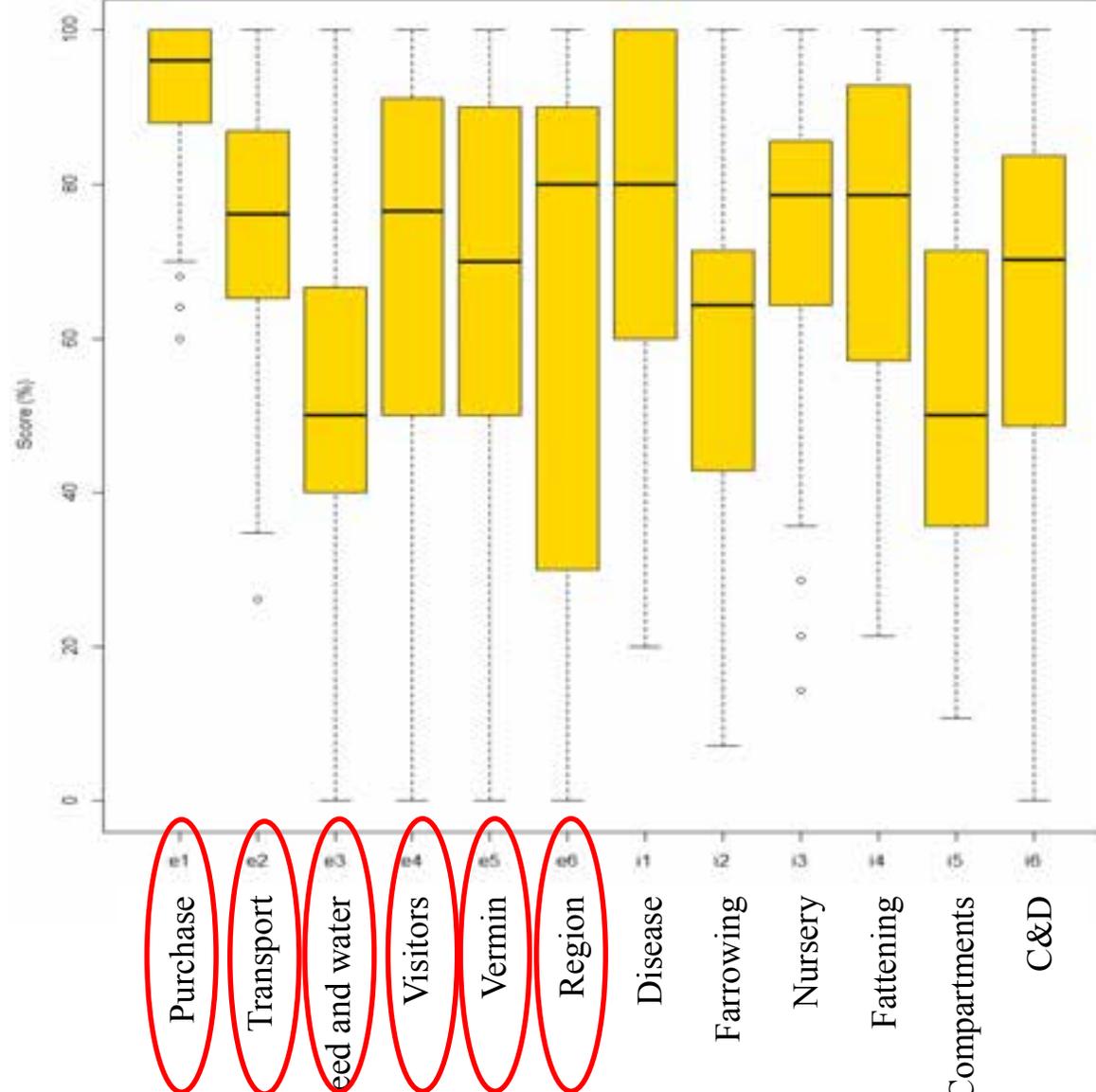
Country-level comparison of external and internal biosecurity



Country-level comparison of external and internal biosecurity

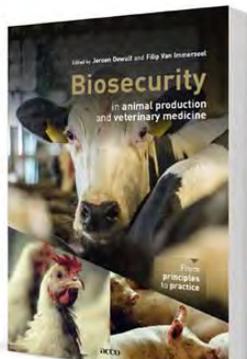


Overview per subcategory

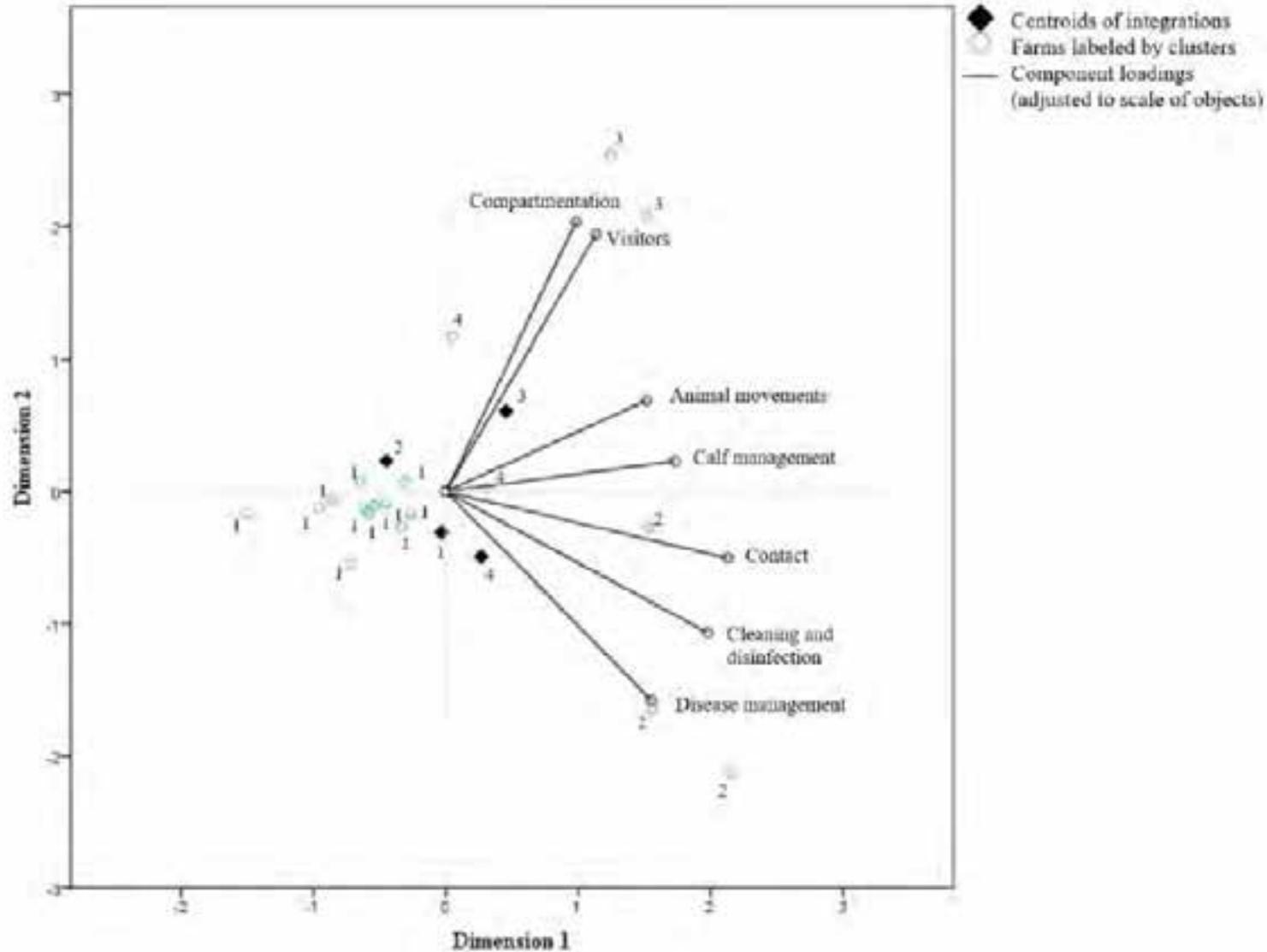


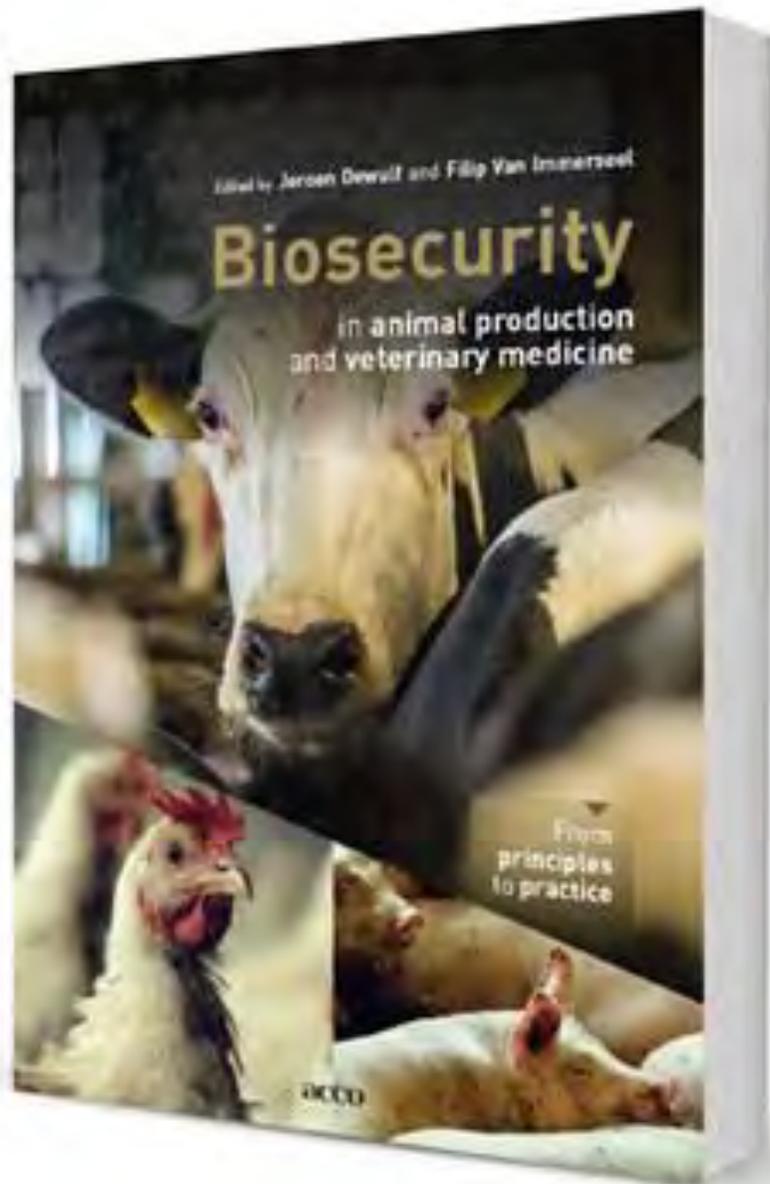
FMD specific scoring system

Disease	Species affected and asymptomatic carriers				Direct contact			Indirect contact										References			
	Zoonotic	Other reservoirs	Asymptomatic carriers	Wild life reservoir	Animal to animal	Transplacental	Veneral disease	General	People	Animals	Rodents	Fomites	Syringes/needles	Ingestion		Inhalation			Manure	Vector	
														Feed	Water	General	Droplet				Aerosol
Enterotoxemia (<i>Clostridium</i> spp.)		Humans	X	X	X			X	X	X	X	X		X	X				X		[215-225]
Foot and Mouth Disease		Cloven-hooved livestock, wildlife	X	X	X			X	X	X	X	X	X	X		X					[4, 226-232]
Giardiasis	X	Mammals	X	X	X			X	X	X	X	X		X	X				X		[168, 173, 233]
Infectious Bovine Keratoconjunctivitis			X		X			X	X	X		X								X	[234-244]
Infectious Bovine Rhinotracheitis (IBR)			X		X	X	X	X	X			X				X		X			[48, 65, 68, 120, 245-268]
(Inter)digital infections		All			X			X					X								[2]
Intestinal parasites	X	Ruminants	X	X				X	X	X		X		X	X				X	X	[2]
Leptospirosis	X	Mammals			X		X	X				X		X	X	X			X		[4]
Lice and ectoparasites	X				X		X	X	X	X	X										[2]
Listeriosis	X	Mammals, birds	X	X	X	X		X	X	X	X	X		X							[3]

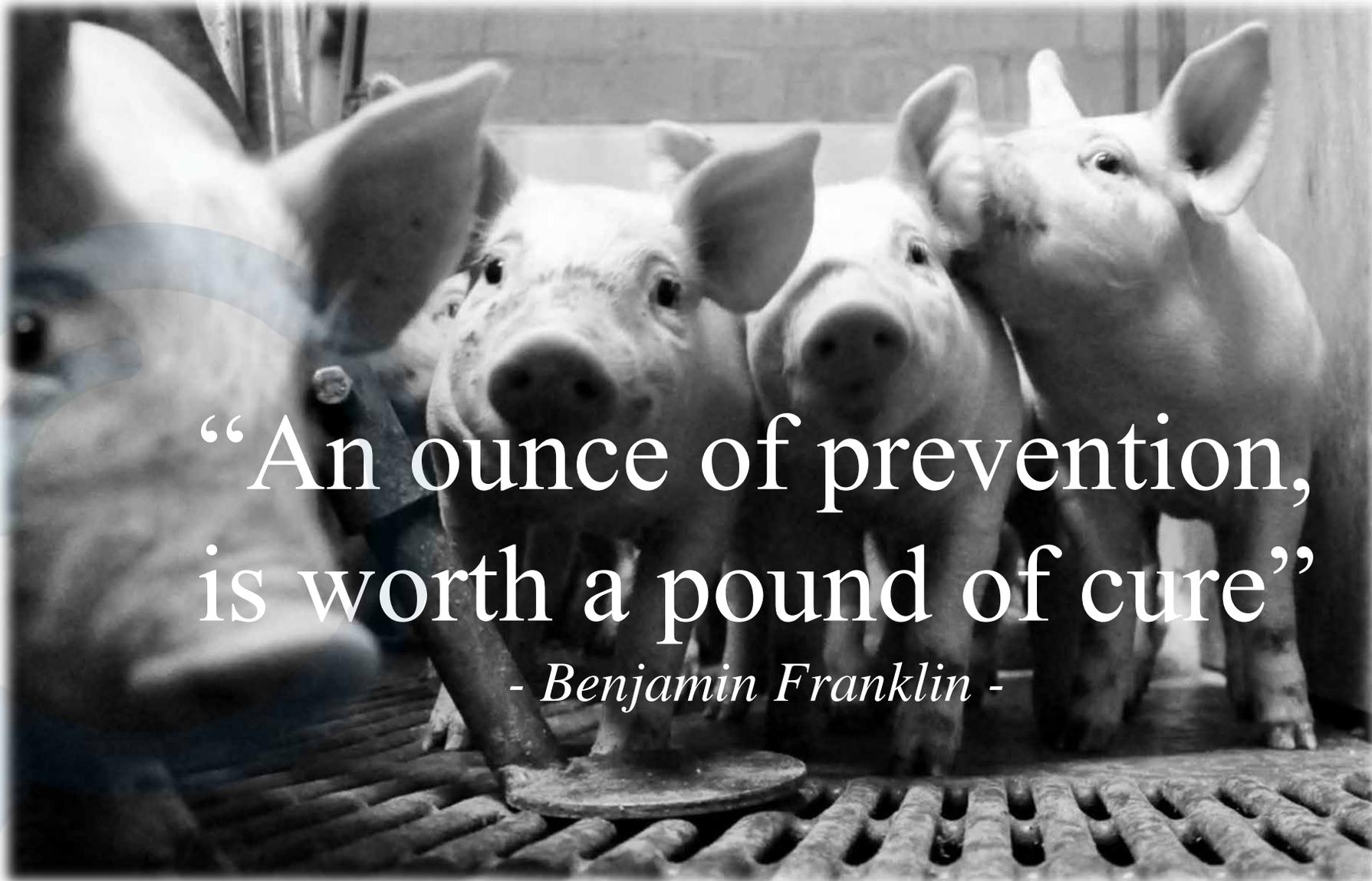


Categorical Principal component analysis





- Benelux: www.acco.be/biosecurity
- Worldwide: www.bol.com
- Worldwide: www.amazon.com
- Or contact us at contact us veterinary@acco.be



“An ounce of prevention,
is worth a pound of cure”

- Benjamin Franklin -



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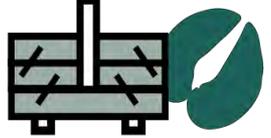
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Technical Item 3

How prepared are we? Towards a framework for better planning and testing of emergency preparedness

Sally Gaynor

Emergency Preparedness Officer, EuFMD

GET 
PREPARED



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- Review of GET Prepared concept
- Previous Concept Document
 - Pathway to improve preparedness
 - Multi year preparedness cycle
 - Testing contingency plans using simulation exercises
 - Identifying lessons (gaps)
 - Action plan to improve
 - Tracking improvements
 - Exercises in 3 pilot countries in the Balkans



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- How can we help member countries to improve?
 - FMD specific tools developed by EuFMD e.g. training, e-learning, videos, guidelines, EuFMDis
 - Wealth of experience in member countries - in particular those that have experienced outbreaks of various diseases in recent years
 - How do we access this?



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- DG SANTE Directorate F - SANTE.F2 identifies gaps in preparedness and good practices during audits on contingency planning and disease control
- Limited opportunities to share these e.g.
 - Reports on study visits, BTSF, contingency planning workshops 2013-2015
- Not remit of Directorate F or G
- No single platform for sharing materials



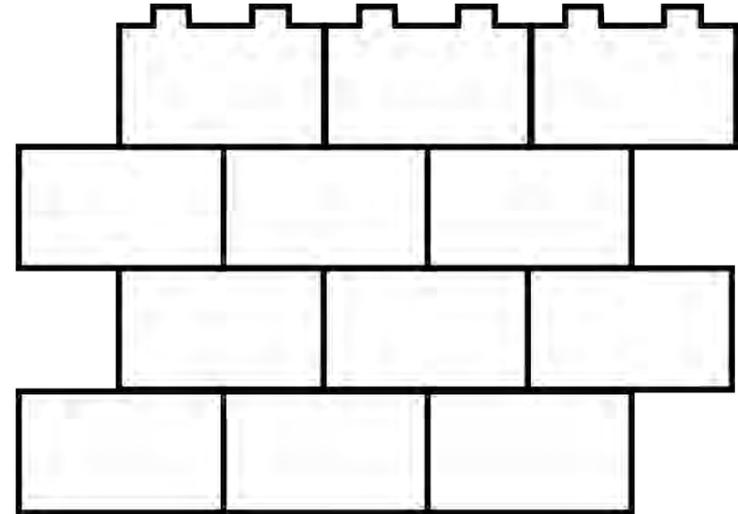
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- Discussions with SANTE.F2 have been positive towards a collaboration with EuFMD to:
 - contribute to webinars on gaps in preparedness
 - develop criteria for good practice
- EuFMD will follow up on examples of good practices identified by SANTE.F2, through the member country focal points



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- Visualisation of the concept
 - Each component of emergency preparedness is a brick in a wall
 - The wall is to give the idea of building preparedness
 - Bricks are lego-style - indicating that the building process is continuous





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- The layers





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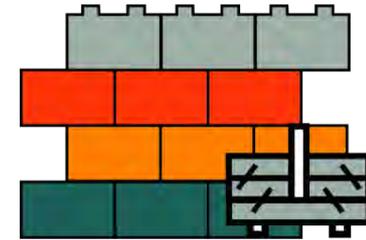
- The foundations
- The 3 epidemiological phases – alert, emergency, restoration
 - In line with the ongoing review of the FAO Good Emergency Management Practices
- Different colours for the phases - green, orange, red and grey





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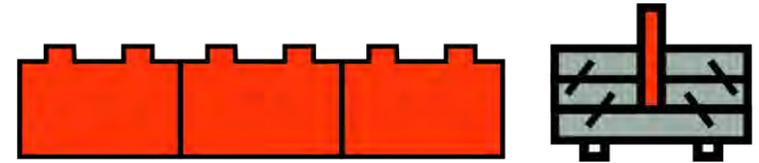
- Each phase could have multiple layers
- Each layer can include complementary components e.g.
 - Alert phase:
 - **Suspect investigation** (personal biosecurity, epidemiological investigation, clinical examination and sampling)
 - Emergency phase:
 - **Infected premises** (valuation, killing, disposal, cleaning and disinfection, and restocking)
 - **Outbreak management** (Central Decision Making Unit, NDCC, LDCC, Expert Groups)
 - **The 3 Cs** (Cooperation, Coordination, Communication)





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- What is/will be in the toolbox?



- For each component there will be 3 categories:
 - self-assessment (e.g. questionnaire, checklist)
 - assessment of resource requirements (e.g. resource calculator, EuFMDis)
 - examples of good practice (e.g. videos, guidelines, templates, SOPs)
- Tools will be mixture of those developed/approved by EuFMD and by EU Member States

Restoration		Vaccination exit strategy	Recovery of free status	Psychological support		
The 3 Cs			Coordination with operational partners	Cooperation with stakeholders	Communication	
Support functions		Legal	Financial	Purchases, tenders, contracts		
Resources			Personnel	Equipment	Facilities	
Emergency management		Central Decision-Making Unit	NDCC	LDCC	Expert groups	
Additional measures			Vaccination	Preventive culling	Welfare slaughter	
Zones		Control zones	Checkpoints	Zone Surveillance	Movement controls	
Infected premises	Valuation		Killing	Disposal	Cleaning & disinfection	Re-stocking
Suspect investigation		Personal biosecurity	Clinical examination	Sampling	Epidemiological investigation	
Early detection	Risk assessment		Surveillance	Awareness	Farm biosecurity	
Foundations		Training	Simulation exercises	EuFMDis		
Foundations	Outline contingency plan		Outline operations manual	Format for SOPs	Self-assessment tool	
Foundations		Identification & registration	Value chain analysis	Laboratory	Prevention	

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Exercises are still a fundamental component



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- Dynamic process



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- Initial focus
 - Components with no tools currently and which have greatest impact on effectiveness of disease control (killing, disposal and scaling up of resources)



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- What are the benefits?
 - Tools can be used not only by EU Member States, but also other member countries, in particular those following EU rules
 - Many tools could be used for, or adapted for, other Transboundary Animal Diseases
 - Benefits to EuFMD - linking and improved use of EuFMD tools e.g. Knowledge Bank, Self-Assessment Tool and EuFMDis



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- What are the next steps?
 - Between now and the commencement of the new work plan
 - Communication and consultation with the Contingency Planning Network



Food and Agriculture
Organization of the
United Nations



European
Commission



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Emergency Preparedness

GET PREPARED TOOL BOX

A set of existing tools and new tools for assessing gaps in preparedness and resource requirements

A collaboration to share good practices

A tool box to assist country contingency planners

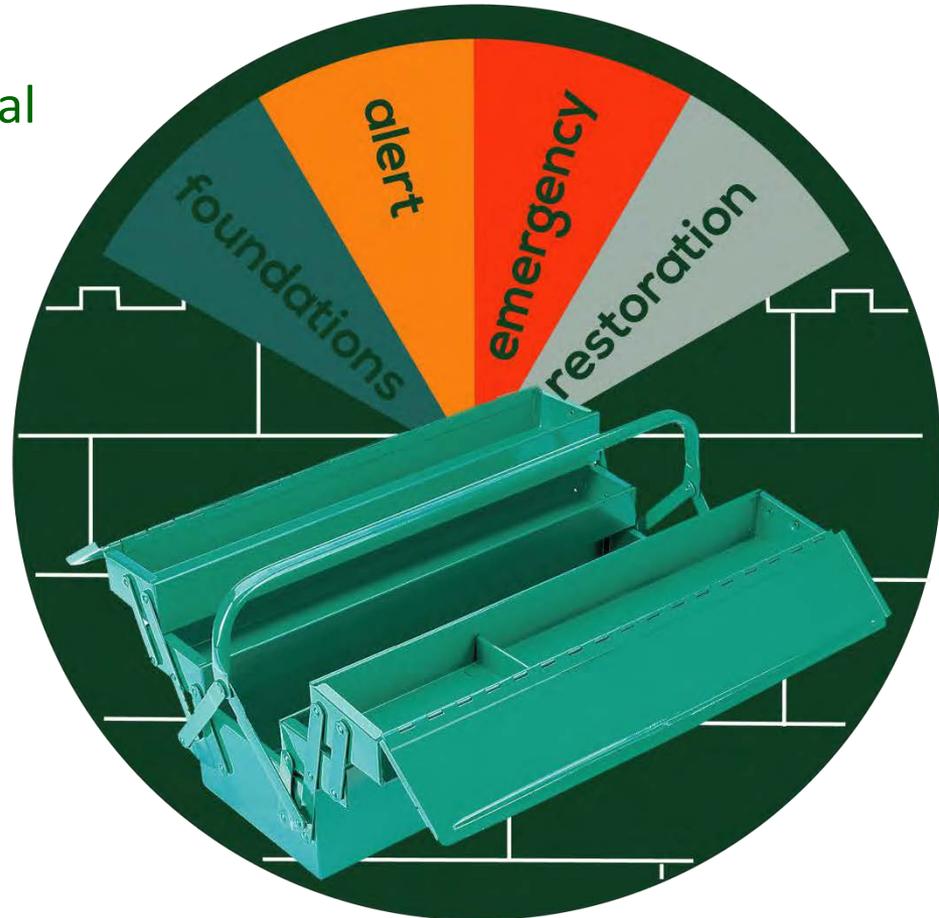
Learn more

eufmd.info



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- Your collaboration is essential





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Please visit us in the atrium

Sally Gaynor
Maria de la Puente
Frank Busch



Emergency Preparedness

ed | fab | eufmd

**GET PREPARED
TOOLBOX**

A set of existing tools and new ones for assessing gaps in preparedness and resource requirements.

A collaboration to share good practices.

A toolbox for the contingency planner.

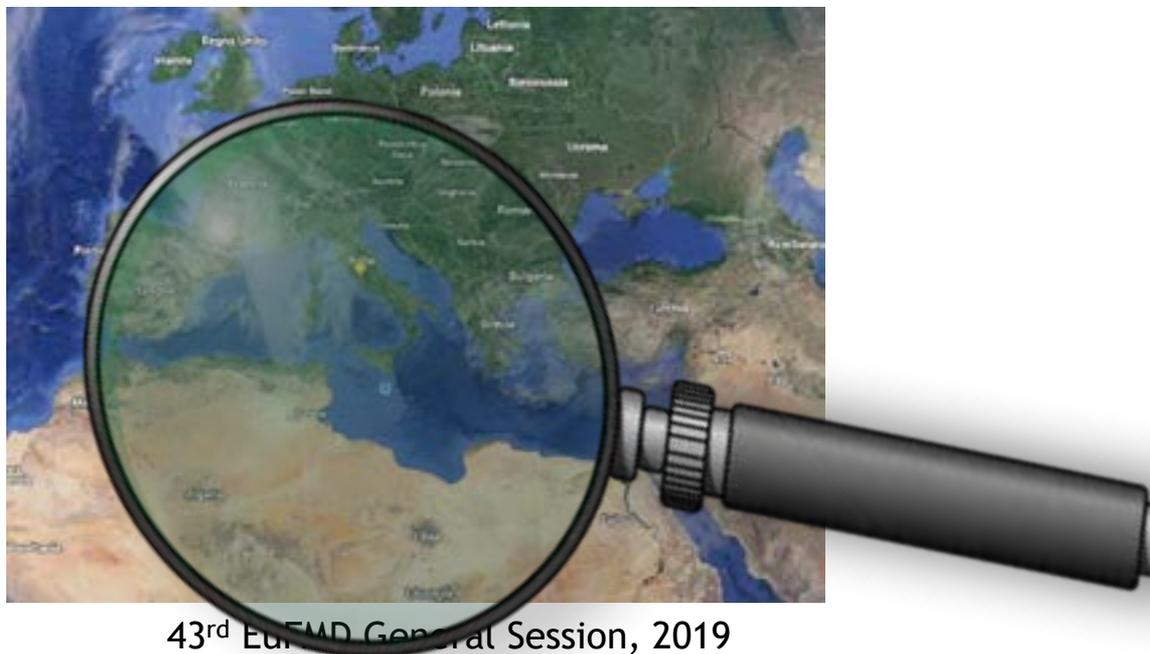
Learn more
eufmd.info

info eufmd@fab.org

Weatmd f i y t in #toolbox

Early warning and better preparedness for FAST diseases in the European neighbourhood

The case for an integrated approach





Early warning can be defined as a **system** of data collection and **analysis** to **monitor** the occurrence of a specific event in order to provide **timely notice** when an emergency threatens and trigger early and appropriate response

→ Systematic collection and analysis of information

→ Regular monitoring

→ Timely information sharing

Partnerships for integrated approach



Improving country capacity to **design and implement** Risk Based Strategic Plan for FMD control and **monitor and evaluate** the implementation of control activities under stages 2 and 3 of the Progressive Control Pathway (PCP);



Improving the capacity of veterinary services of Algeria, Chad, Mauritania, Morocco, Senegal, and Tunisia (+ Libya, Egypt, Sudan) on **development of risk information and mapping tools** and **update surveillance protocols**



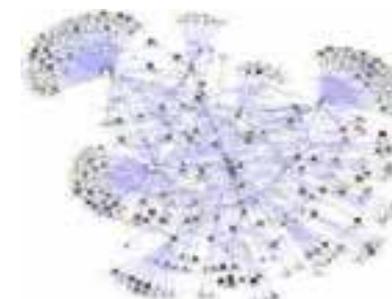
Cécile Squarzoni Diaw, Caroline Coste,
Elena Arsevska, Gabriel Poujol,
Raphaëlle Métras, Pachka Hammami, Andrea Apolloni



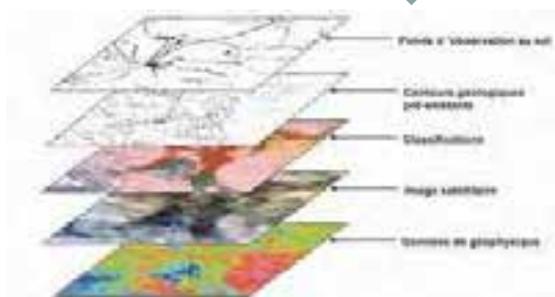
An integrated method : from field data to risk based surveillance



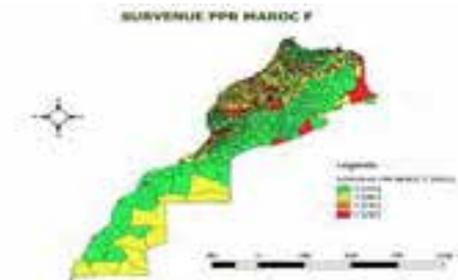
Animal mobility



Network analysis

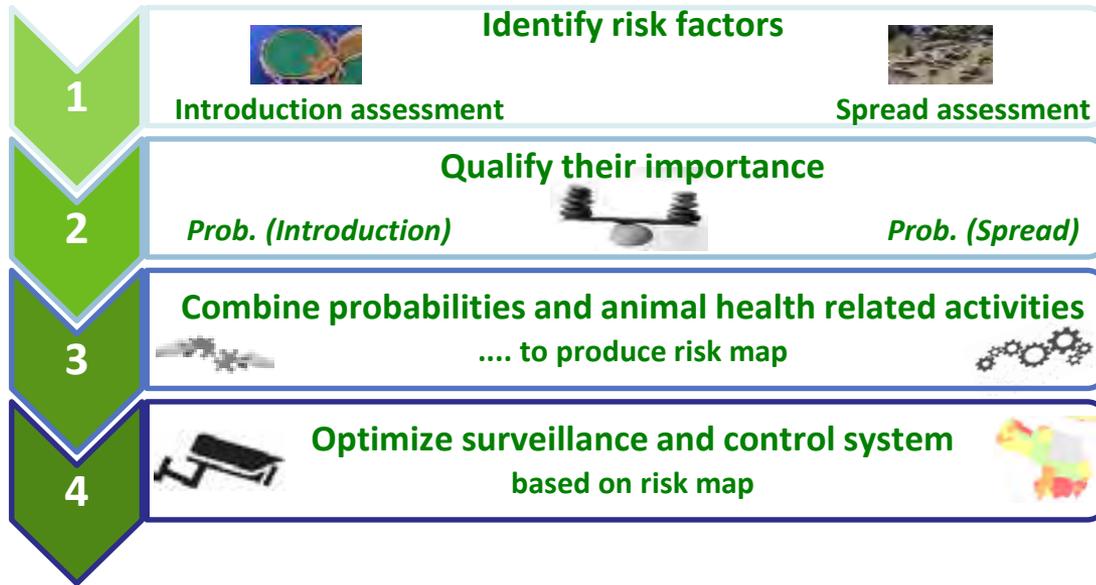


Spatial analysis based on multiple data sources & risk factor weighting

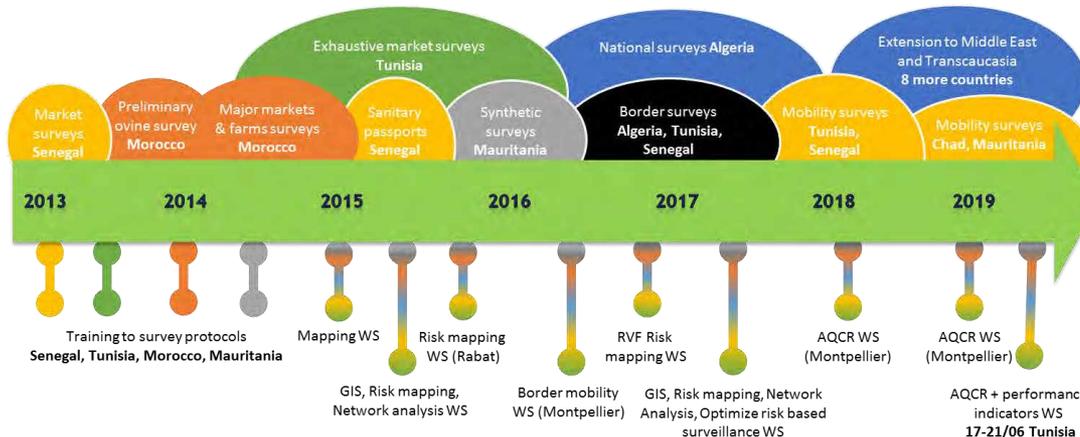


Risk mapping, risk based surveillance optimization

Integrated iterative framework



**FIELD
WORK**



**REGIONAL
TRAINING
WORKSHOPS**

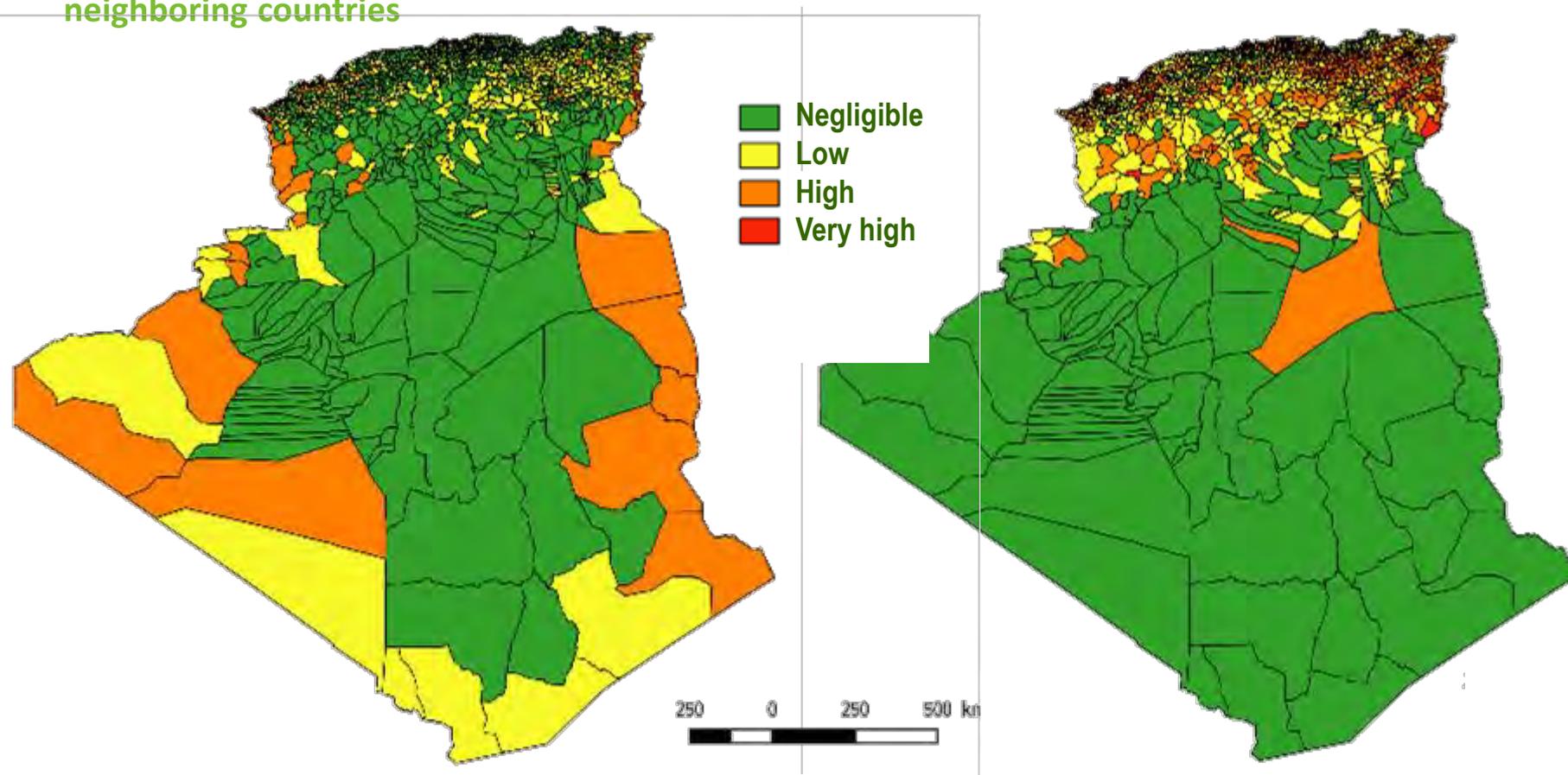
FMD risk mapping in Algeria

Risk of introduction (2018)

- Crossborder mobility, border accessibility
- Surveillance & epidemiologic status in neighboring countries

Risk of spread and endemicity (2018)

- Animal movements, accessibility
- Animal density, animal markets



FMD risk mapping in Tunisia

First mapping in 2015 with 20 % of mobility surveyed → 100 % in 2016

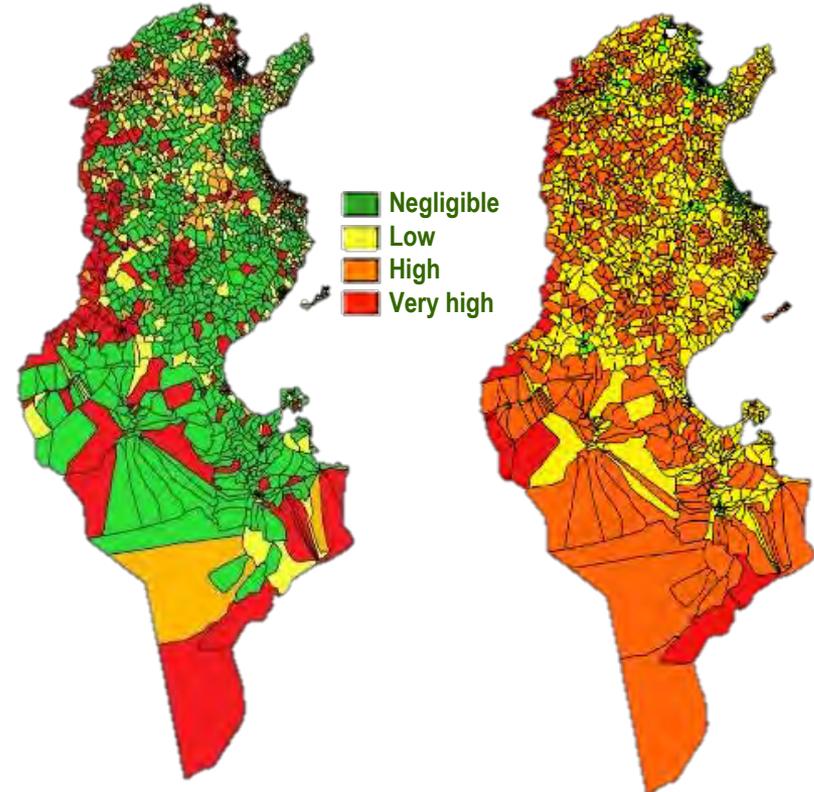
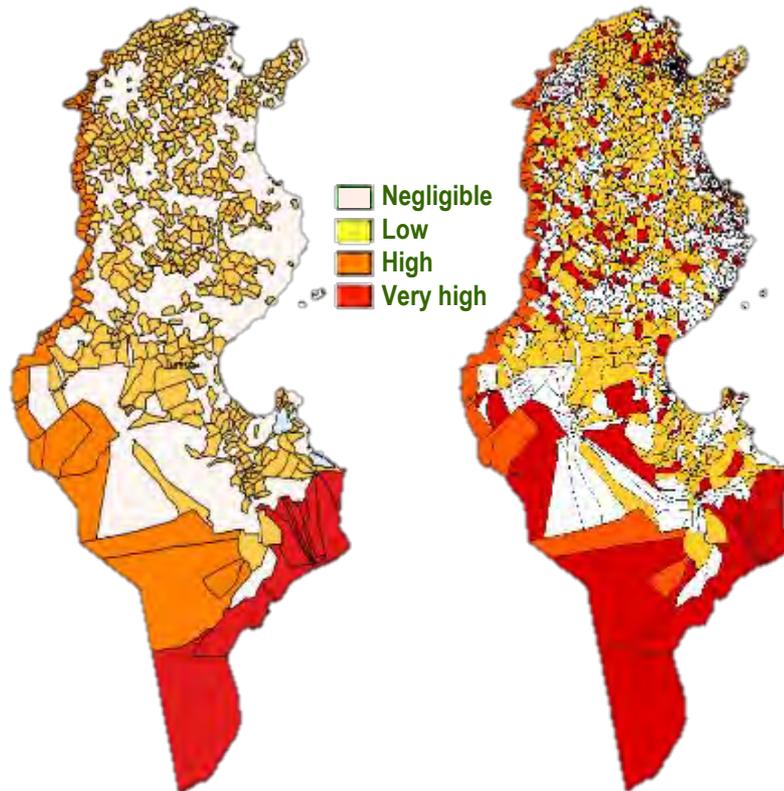
2017 → consolidated market data
2018 → consolidated animal densities

2015

2016

2017

2018



Validation of the results

Algeria : 2018 epizootic

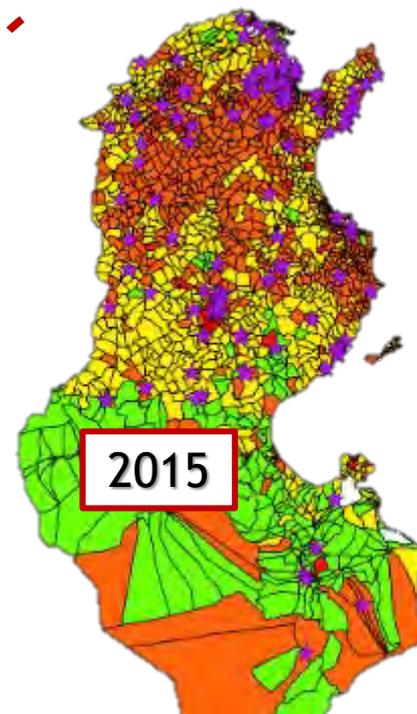
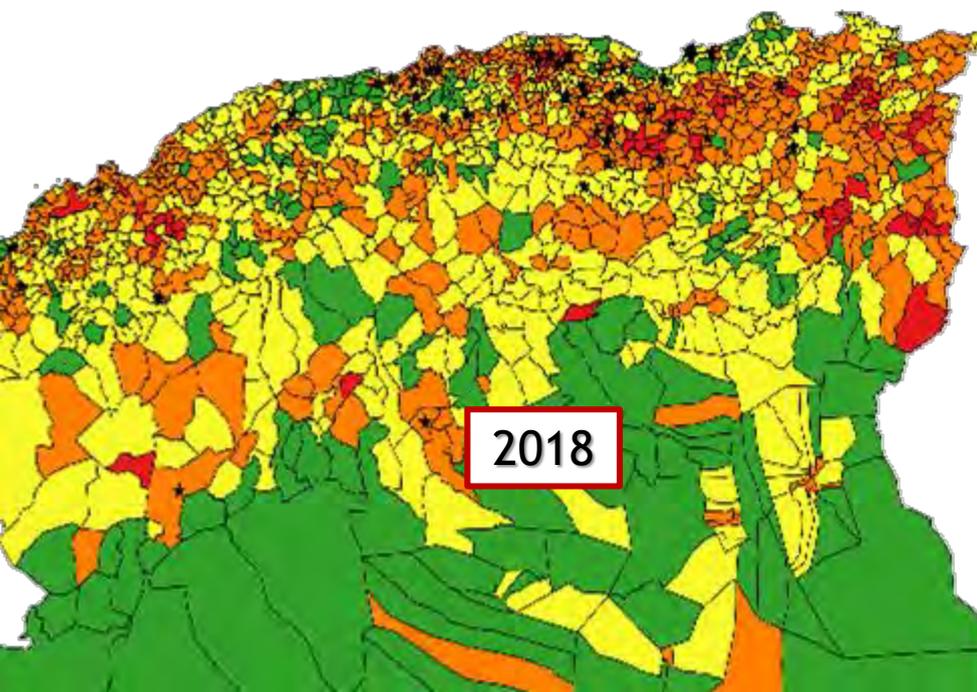
★ 2018 FMD outbreaks

- Units at different level of risk
- 70% outbreaks at H and VH risk areas

Tunisia : Serologic survey 2015

★ 2015 FMD seropositiveness

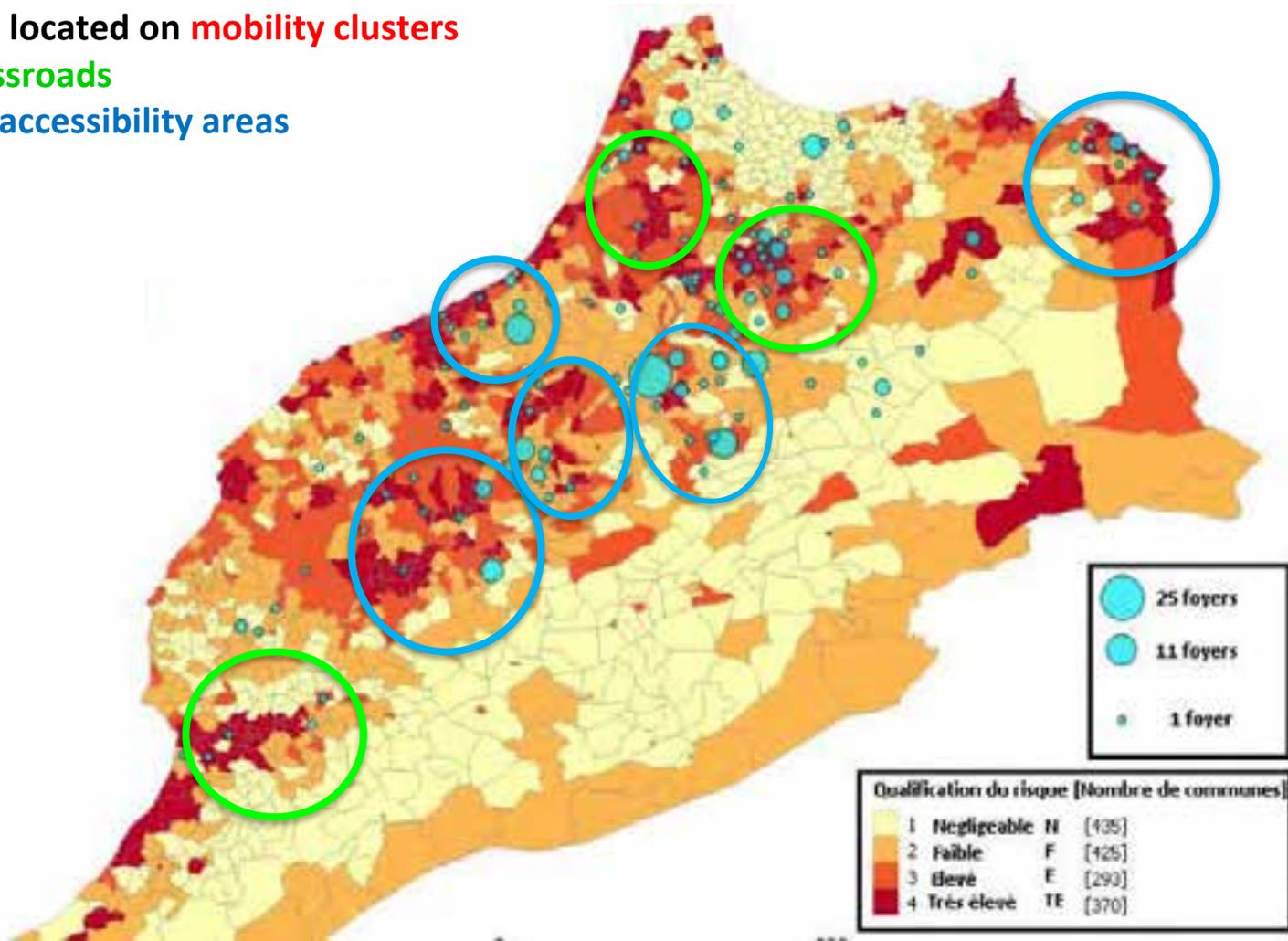
- 75% in areas at high / very high risk
- Positive correlation $r = 0,87$ ($p=0$)



Validation and role of **animal mobility**

Morocco – 2008 PPR outbreaks

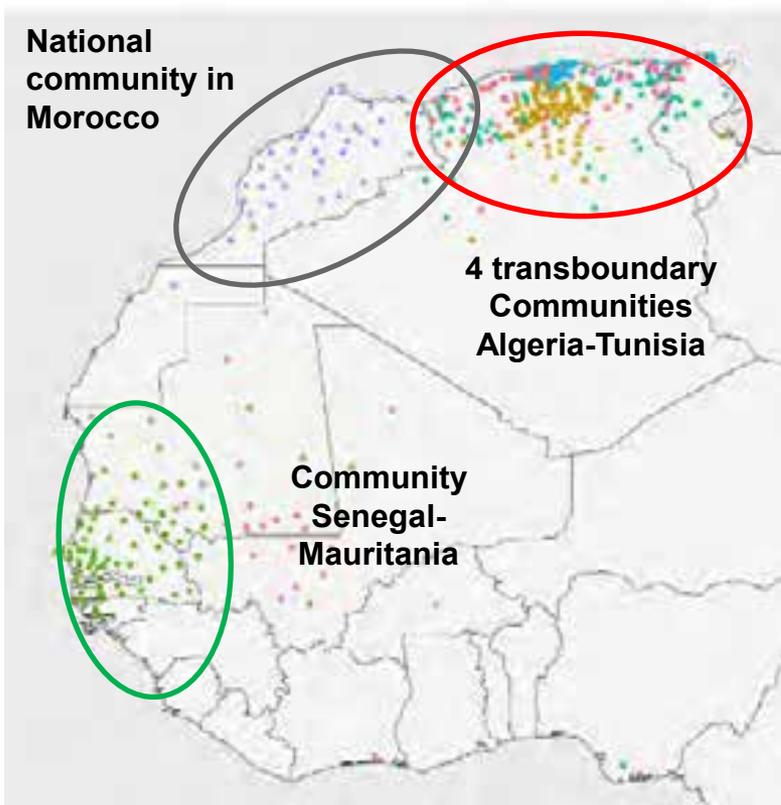
- Outbreaks located on **mobility clusters**
- **Major crossroads**
- **High road accessibility areas**



Mobility is more than movements : **communities and networks**

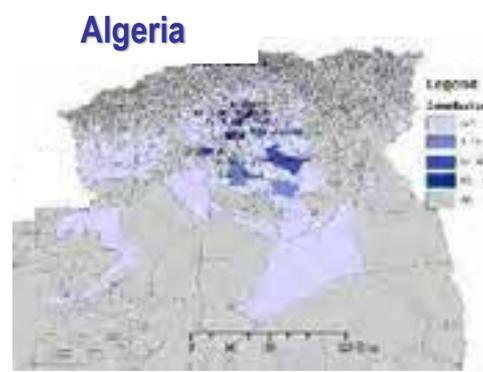
Community structure (West Africa)

- Links in networks reveals 6 densely knitted regional communities



Network contribution (West Africa)

- Connection gives a role in TADs transmission
- Network analysis





Considerations

**Collegial (net)work within a panel of experts
(national, regional, international)**

**Capacity building (toolkits) and national expertise
consolidated**

Multiple operational applications

**Unpublished data on animal mobility and
diseases**

**Optimization of targeted and cost-benefit
surveillance and control protocols**

**Essential regional approach and regional risk
assessment**

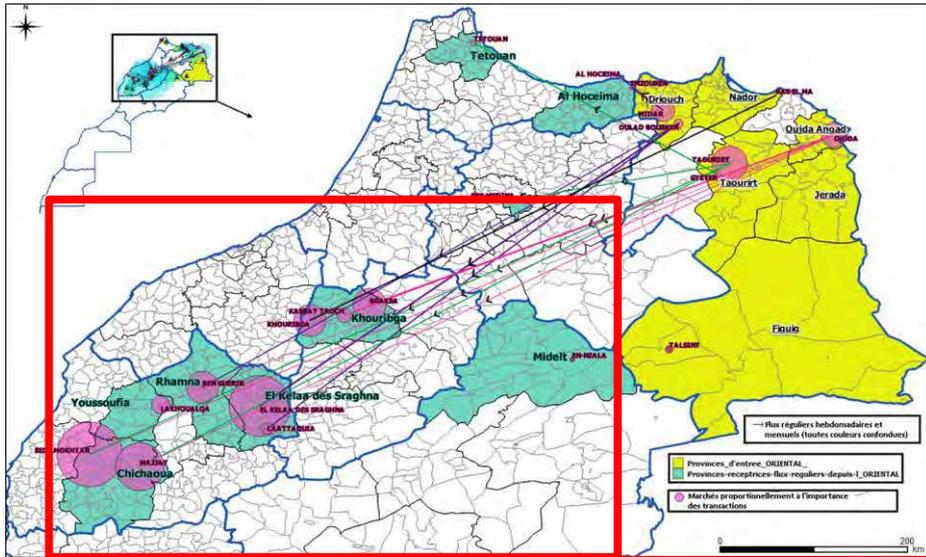
**Geographic enlargement from 3 countries in 2013
to 14 in 2019**

One health, general approach (methods & tools)

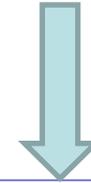
Perspectives

- **Regional participatory sessions to extend to new countries**
- **New tools are developed (toolkit, portal, logbook, ...)**
- **Transposable methodology (other diseases and territories)**

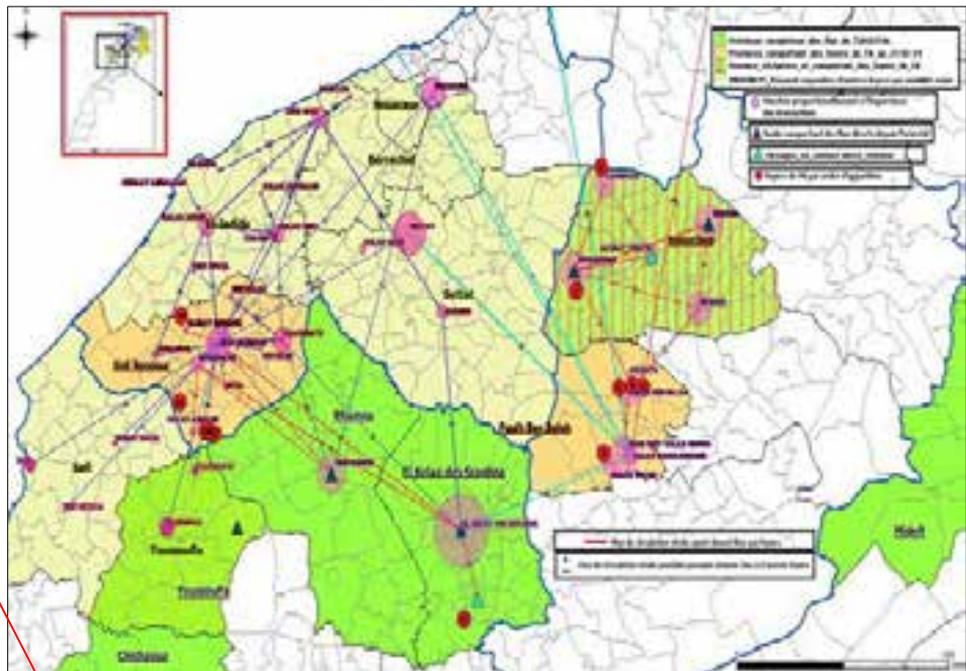




Evidence of risk areas



Capacity to adapt surveillance and control



Regular monitoring

Active surveillance

Advantages :

Targeted to sample of population
Higher sensitivity (especially in vaccinated population)

Disadvantages:

More difficult and expensive
Need to optimize resources (priority areas)
Need use reliable tests (high Se and Sp)

Primary surveillance (farmer reporting)

Advantages:

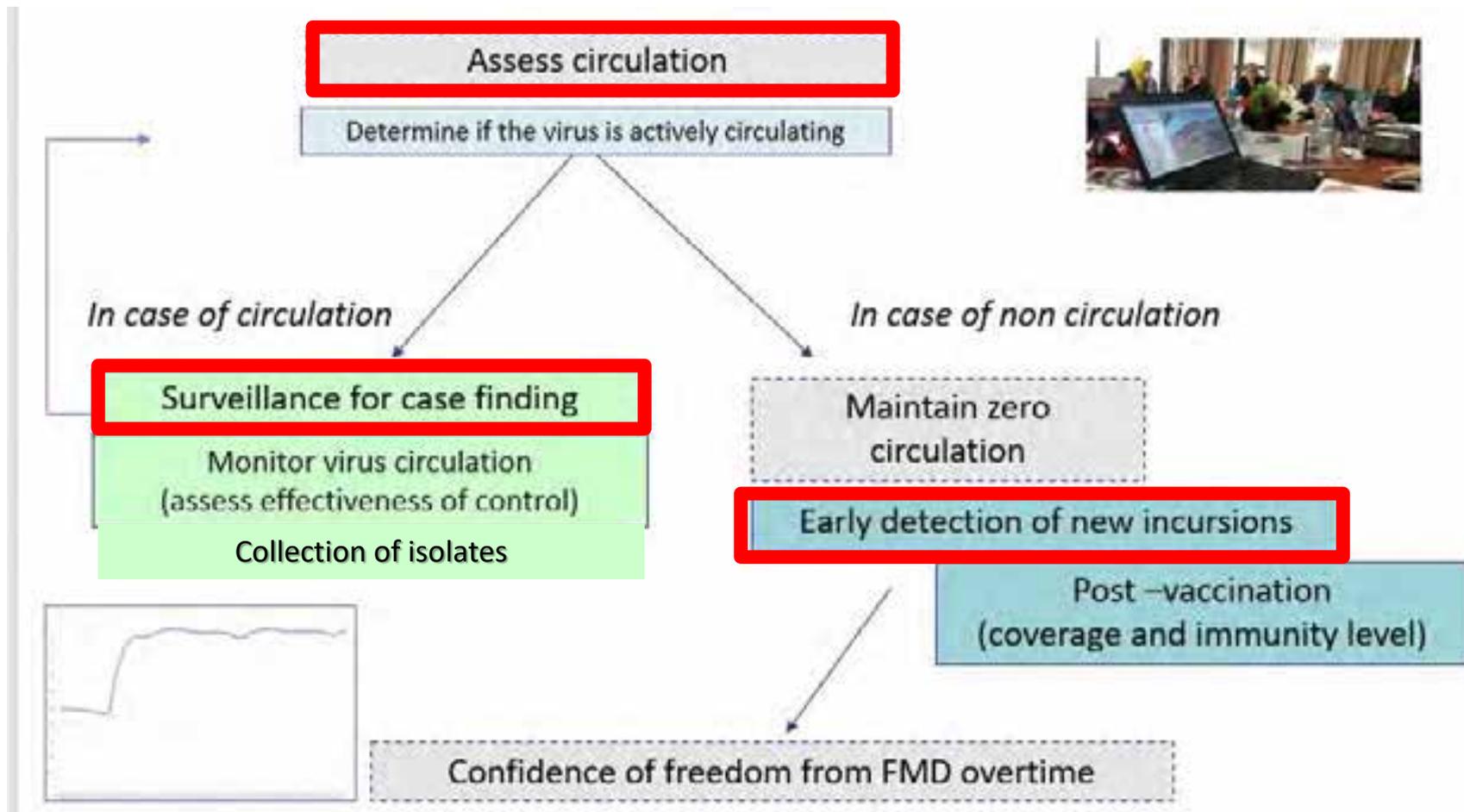
Complete coverage of population
Continuous

Disadvantages:

Difficult to make farmers report diseases

Requirements for early detection and case finding

Surveillance in European neighbourhood North Africa



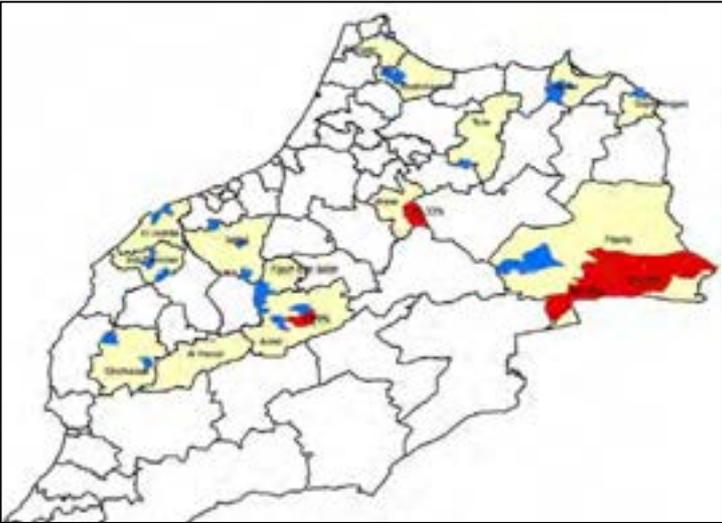
**RISK BASED SURVEILLANCE
in HOT SPOT LOCATION** to
optimize resources deployed in
the field

**Risk based surveillance to evaluate presence
of FMDV circulation in North Africa**

Target: small ruminants (6-12 months)

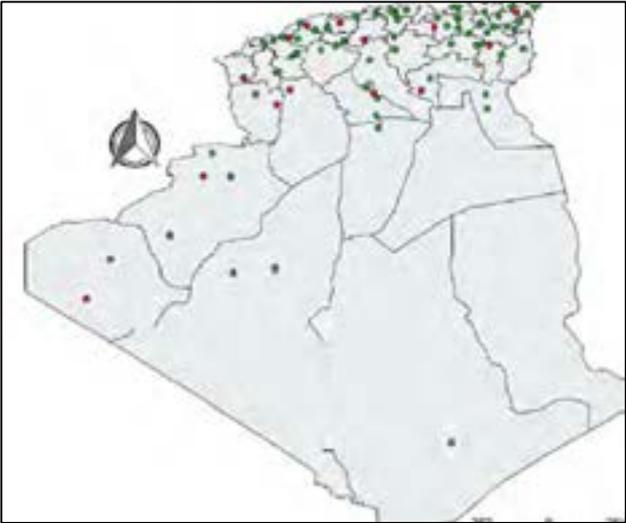
Risk factors considered:

- areas with previous outbreaks
- animal density
- animal movement
- markets



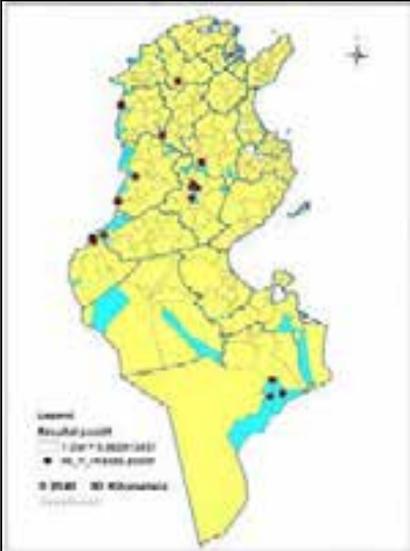
(April-May 2017)

Sample n.739 SR from 78 herds
prevalence 4,47% (0 - 23.33%)
In some cases intra-herd positivity of 80%



(October 2017)

1537 SR tested in 111 herds and 43 wilayas:
n.15 herds pos in 14 wilayas (13%)



(January 2018)

Samples 1061
Prevalence 1.66% (in some
district 3.33%and 12%)

Participation of stakeholders in the assessment of primary surveillance



1. An infected animal shows clinical signs of disease
2. The farmer (keeper/herder) notices the signs as abnormal
3. The farmer (keeper/herder) contacts the veterinary services (public or private)
4. The veterinarian visits to examine the animal
5. The attending veterinarian suspects FAST
6. The attending veterinarian sends samples to the laboratory analysis
7. The samples are tested for FAST
8. The laboratory test correctly provides a positive result

Animals shows clear signs of disease	Min	Most likely	Max
Cattle	0.8	0.85	0.9
Small ruminants	0.02	0.05	0.1
Farmer notices disease	0.4	0.5	0.7
Farmer calls veterinarian	0.6	0.8	0.9
High awareness (high risk zone)	High aware	0.6	0.8
	Low aware	0.2	0.4
Vet visits to examine animals	0.9	0.95	0.99
Vet suspects FMD	Cattle	0.5	0.7
	Small ruminants	0.3	0.5
Samples taken for lab and tested for FMD	0.8	0.9	0.999
Test Sensitivity	0.97	0.98	0.99



Tunisie: Campagne de surveillance du trafic des vaches vers l'Algérie



Understanding of the social and cultural contexts that affect the distribution and dynamics of diseases

Integrated approach allows for more synergies through connecting and integrating different aspects and activities to be the most effective.

**Primary surveillance
for FAST**



Similar signs and symptoms
Same actors/stakeholders



FMD	RVF	BEF	LSD	SGP	PPR
Fever	Fever	Fever	Fever	Fever	Fever
Depression	Depression	Depression	Depression	Depression	Depression
Vescicles			Vescicles/ulcers		Erosive lesions
Drooling	Drooling	Drooling	Drooling		Drooling
	Nasal discharge	Nasal discharge		Nasal discharge	Nasal discharge
Lameness		Lameness			
Death young	Death young			Death (possible)	Death
Abortion	Abortion	Abortion	Abortion		Abortion
Milk drop	Milk drop	Milk drop			
	Bloody diarrhea		Cutaneous nodules	Papules	Diarrhea

Integrated approach

Active surveillance for FAST

Serological and clinical -
continuous

Risk based (for same risk factors)

Negative reporting (possible)

Sentinel herds (possible)

Laboratory capacity

Confirmation of suspicions

Submission samples

Laboratory networks

Timely information sharing

Different providers (national and international)

Different users with different interests and different risks

The goal is: to provide risk information in **time**, to **different providers** and to **interested users**





Priorities for EWS in European neighbourhood

- ✓ Facilitating the collection of risk information
- ✓ Identification of risk hot spot location
- ✓ Designing continuous surveillance in risk areas
- ✓ Enhance investigation and collection of good samples
- ✓ Supporting laboratory networking and training
- ✓ Facilitation cooperation (lab-epi) between countries
- ✓ Providing regular risk information to risk managers

Key messages



Collection of risk information



Identification of risk hot spot locations



Surveillance in risk areas



Regular training



Timely info on risk change



Early warning



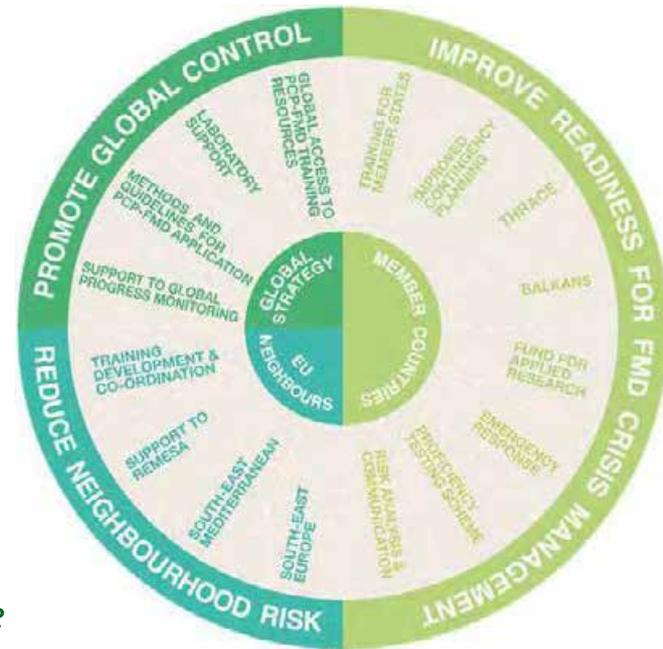
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Report of the Executive Committee of the 43rd General Session

2017-2019

K.Sumption, JL.Angot

The European Commission for the Control of Foot-and-Mouth Disease





Three Pillars: What we have done since the 42nd GS

1,353,859

Clicks on the
EuFMD
e-learning
website



+4000

Trainees meet
face to face
during our
events

16 PARTNER
INSTITUTIONS



4148

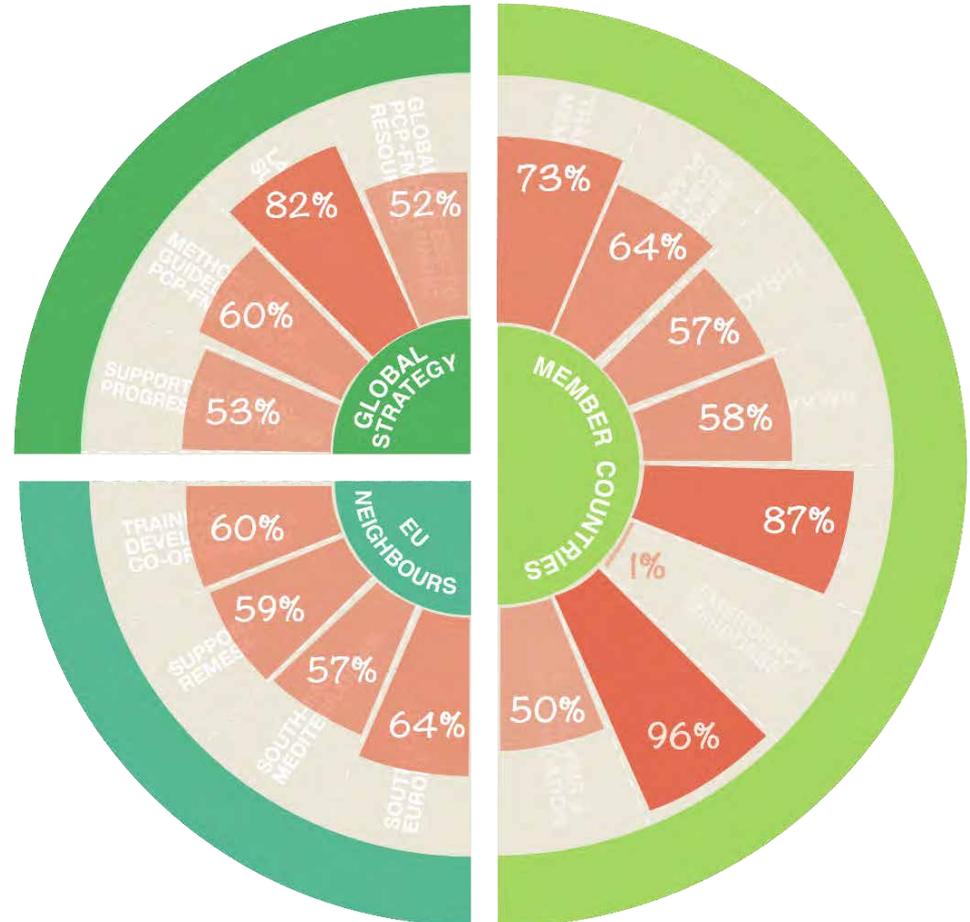
Participants accessed
the e-learning
website since
October 2017



122 EXPERTS
ENGAGED



12 STPs
RECRUITED





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Pillar III • **our vision**

Promoting the global strategy for FMD control through:

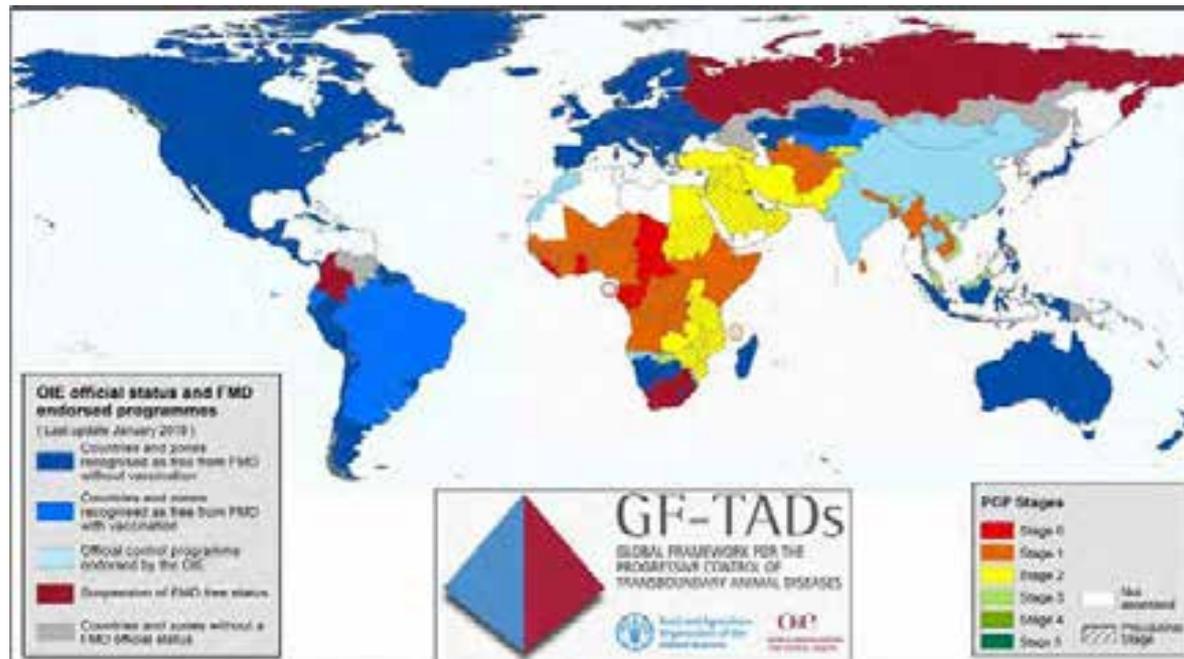
1. Supporting the activities of the GF-TADs FMD Working Group
2. Promoting the use of the Progressive Control Pathway (PCP-FMD)
3. Enhancing global FMD surveillance
4. Improved capacity in endemic areas by providing relevant trainings



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Pillar III • 2017-19 Activities

- Development of a new system of **PCP Support Officers (PSOs)** who provide individual country support in PCP advancement

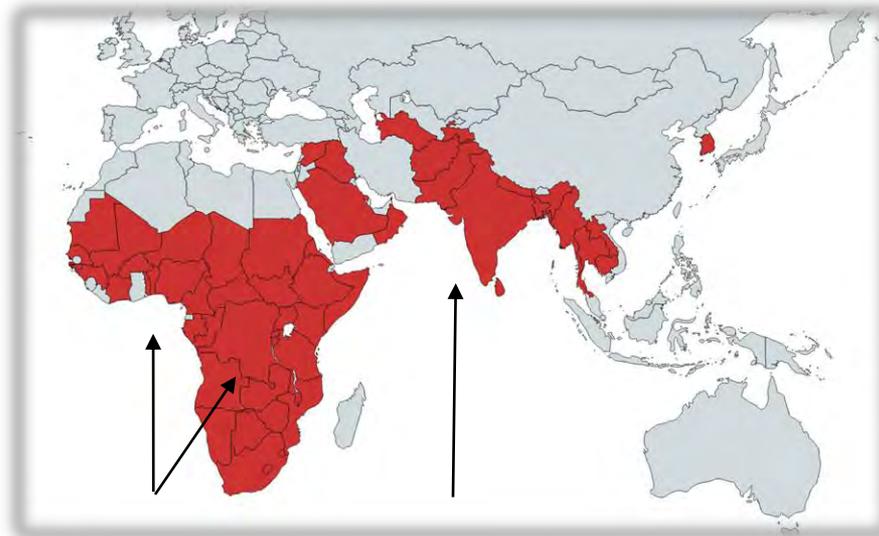




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Pillar III • 2017-19 Activities

- **Enhanced training outreach in FMD outbreak investigation and control** through expanding our network in Africa and Asia and utilizing new approaches to improve access in areas of poor connectivity, such as through establishing networks on WhatsApp.



Pillar III e-learning outreach



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Pillar III • 2017-19 Activities

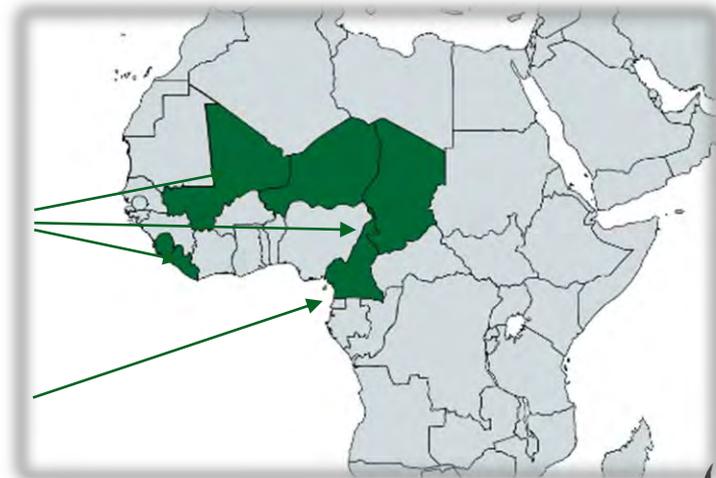
- **Advancing FMD surveillance in challenging endemic scenarios** through supporting the global laboratory network and promoting the use of lateral flow devices and environmental sampling



Lateral flow device
deployment



Environmental
sampling project





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Pillar III • 2017-19 Expenditures and Outcomes

30 Experts trained in PCP-FMD

2 Road-Map Meetings

2

FAO/OIE Laboratory Network meetings

76

FMD endemic countries participating in e-learning

4 Letters of Agreement

Funded under the Pillar III Global Strategy

+1000

Participants from Pillar III regions enrolled in e-learning courses in the last 3 months

150

PARTICIPANTS FUNDED to attend the Pillar III events





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Pillar III & Pillar II

The work done under Pillar III and Pillar II is integrated

- Tools and methodology to assist countries in PCP progression (PSO, Roadmap, workshops, guidelines)
- Laboratory networks and laboratory capacity (PTSs, support)
- Vaccine security and quality
- Trainings and e-learning (e.g. socio-economics, value chain, PVM, safe trade)



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Pillar II



Fabrizio Rosso

*EuFMD Pillar II Supervisor
FMD Risk Management Specialist*



Carsten Pötzsch, Shahin Baiomy, Abdenacer Bakkouri, Jenny Maud, Bouda Ahmadi



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Pillar II • our vision

Reducing neighborhood risk by:

1. Progressing along **the PCP** for FMD control
2. Improving **risk assessment** for better identification of risk of FMD introduction and spread within countries and across borders
3. Enhancing capacity to design and implement **risk based surveillance and control** strategies
4. Improving national and regional capacity for the **management of FMD**





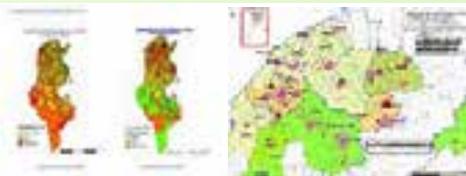
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Pillar II • 2017-19 Activities

1. Regular support provided to countries through **workshops, training, diagnostic material and backstop support** to assist their progression along the PCP for FMD control



2. Implementation of **animal mobility and qualitative FMD risk mapping** for North Africa and Sahel, Libya- Egypt- Sudan and Trans-Caucasus





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Pillar II • 2017-19 Activities

3. Assistance provided to **design and implement risk based surveillance** in high-risk areas and in country missions organized to **revise control strategies** according to risk



4. Improving **national and regional capacity for the management of FMD** through the development and delivery of training programme for national staff
(online courses in **French, Russian, Arabic, Turkish** and **face to face training courses**)





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E-learning induction course on FMD Post Vaccination Monitoring (PVM) March/April 2018 – All EU neighboring countries



**FMD PVM
sub-regional meeting**
6-11 May 2018, Amman (Jordan)



**FMD Surveillance and PVM
sub-regional meeting**
14-17 May 2018, Ankara (Turkey)



**FMD Vaccination and PVM
sub-regional meeting**
March 2019, Tunis (Tunisia)



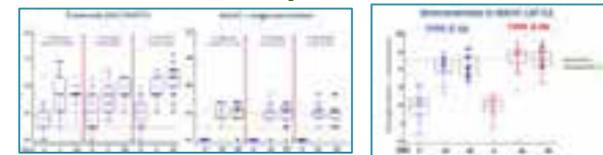
In country missions



Immunogenicity studies



In country missions and SSIS





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Pillar II • 2017-19 Expenditures and Outcomes


2 Training workshops with CIRAD


2 Road-Map Meetings


2 Network supported REMESA - TCC

26 EXPERTS RECRUITED
 From North Africa, Middle-East and Trans-Caucasus regions

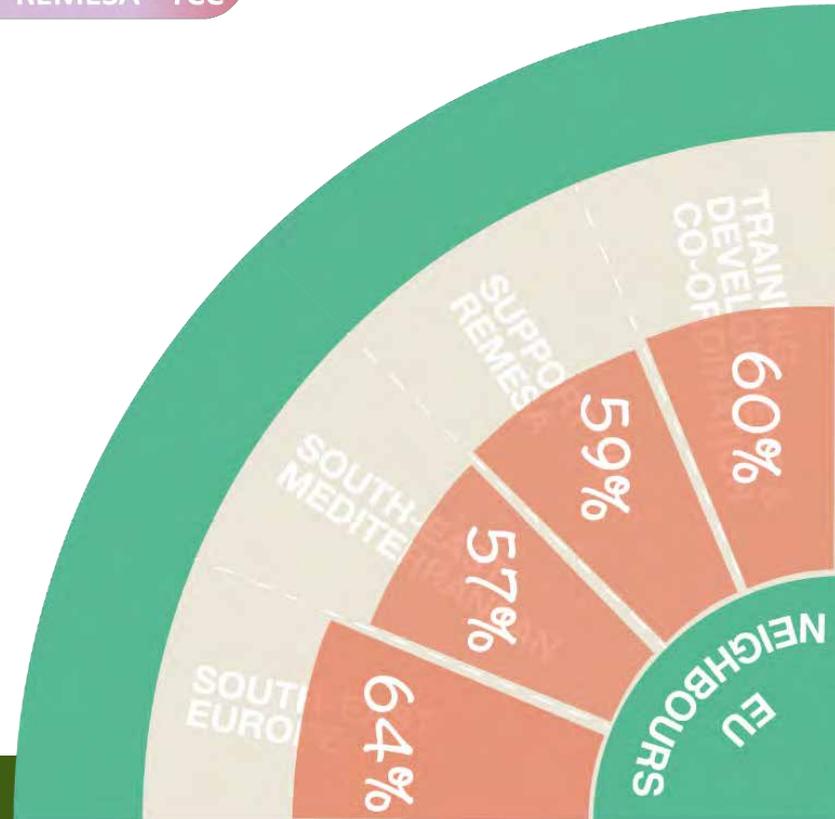
MORE THAN 800
 Participants attending our events in Pillar II countries

7 Risk Based Strategic Plans
 7 European neighbouring countries endorsed the RBSP

3 Letters of Agreement
 CIRAD
 IZSLT
 VSF-SUISSE

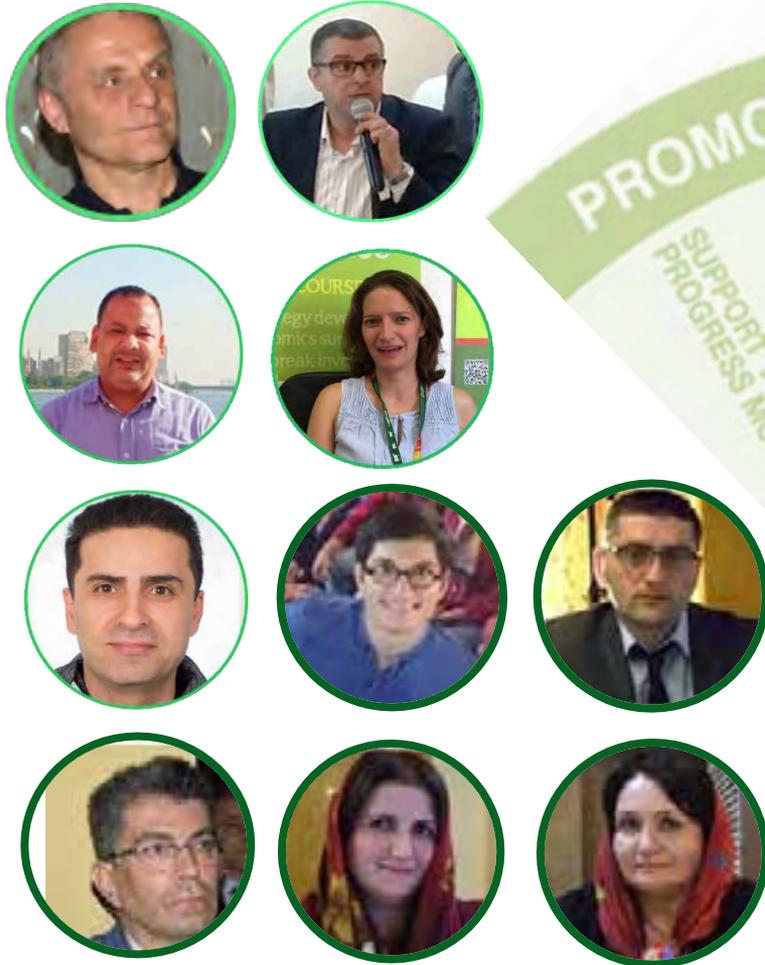
20 000€
 Invested in laboratory procurement

38
 Workshops and Meetings in Neighboring countries





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Pillar II <> Pillar I

The work done under Pillar II and Pillar I is closely connected

- Improved early warning systems - risk information availability
- Surveillance design (e.g. Thrace)
- Emergency preparedness and contingency planning
- Training and e-learning (e.g. FMD recognition, investigation and control)



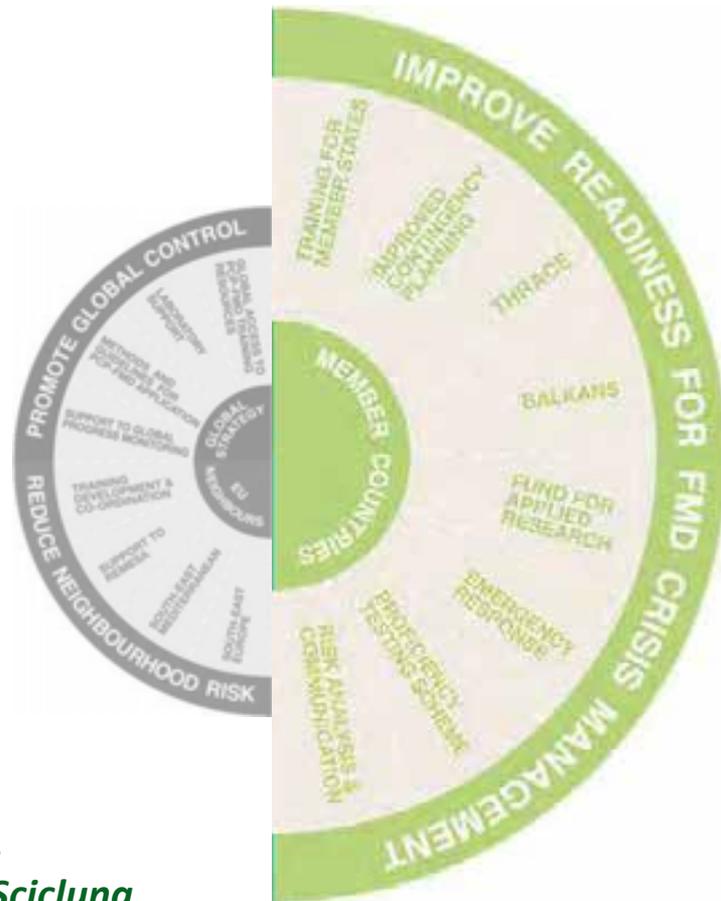
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Pillar I



Maria De La Puente Arevalo

*EuFMD Pillar I Coordinator
FMD Risk Management Specialist*



Koen Mintiens, Kiril Krstevski, Frank Busch, Etienne Chevanne, Bouda Ahmadi, Sally Gaynor, Melissa McLaws, Maria Teresa Scicluna, Mark Hovari, Rodrigo Nova, Ruth Oliva, Graeme Garner, Dan Donachie, Paolo Motta



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Pillar I • **our vision**

Improve Member States preparedness by:

- Providing high quality training, tailored to countries needs
- Providing different tools to countries (training, decision support and assessment)
- Collaborating with other partners to have the best available knowledge



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Pillar I • 2017-19 Activities

- A **complete training programme** offered to EuFMD Members, with new approaches included: *regional initiatives* and *in-country missions*,
- **GET Prepared** concept ready to be developed, a *toolbox* whose main objective is to improve preparedness for animal disease emergencies by assisting countries to identify and prioritize gaps in preparedness, and to address these using various tools,
- **EuFMDiS** is one of the main tools that can contribute to a Europe-wide systematic support to risk assessment, contingency planning and targeting of interventions through modelling of national and regional control measures for FAST diseases,
- Active surveillance activities implemented in **Thrace** have proved to be a good example of collaboration between Turkey, Bulgaria and Greece, at the same time demonstrating *confidence in FMD-freedom in the region above 90%*.



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Pillar I • 2017-19 Activities

- SimEx in the **Balkans** used as a tool to improve national emergency preparedness, testing the relevant contingency plans and operations manuals of the countries in the region,
- **13 countries** have been supported to participate in the lab PTS organized by the EU-RL, to assess and prove their testing competencies. Concept for immediate regional support in diagnostic reagents for an FMD crisis has been drafted





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Pillar I • 2017-19 Expenditures and Outcomes

3 EuFMD
FAR

Funds for Applied Research endorsed



7

Number of online courses delivered for Member State countries



30 000€

Invested in laboratory procurement in THRACE and Balkans



5 STPs
RECRUITED

From EuFMD Member State countries



MORE THAN 90%

Level of confidence in FMD disease freedom in THRACE region

+50 Experts engaged

From EuFMD Member State Countries



5 SimEx held since October 2017

North Macedonia
Bulgaria
Joint Spain & Portugal
Serbia
THRACE region

MORE THAN 80%

Training credits used by Member State countries

12 Fact-finding missions in the Balkan region

10 

Years of Real Time Training courses

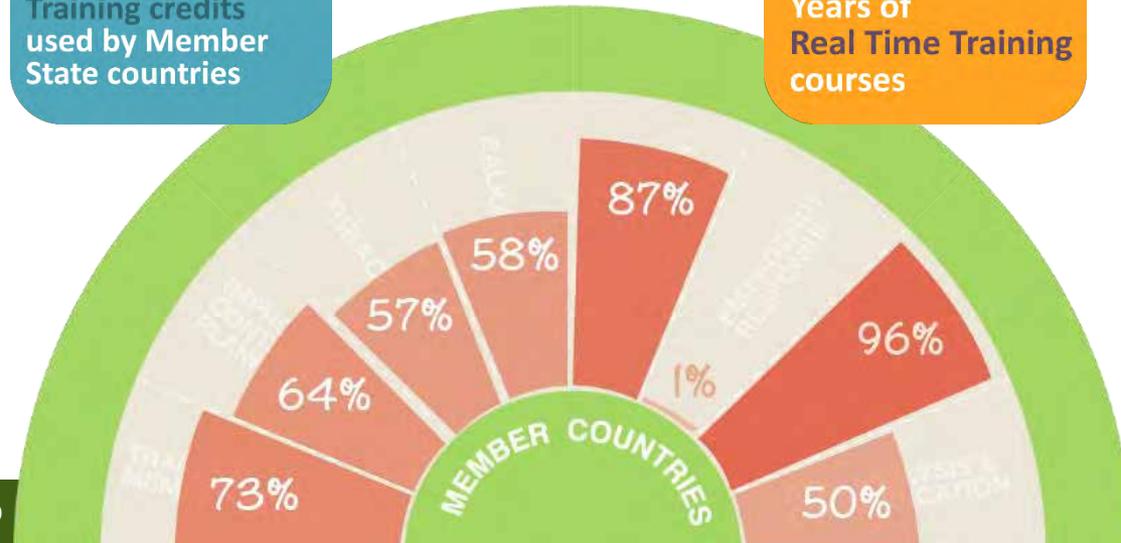
+50

Workshops and Meetings in Member State Countries



EuFMDiS

7 countries involved in the EuFMDiS project

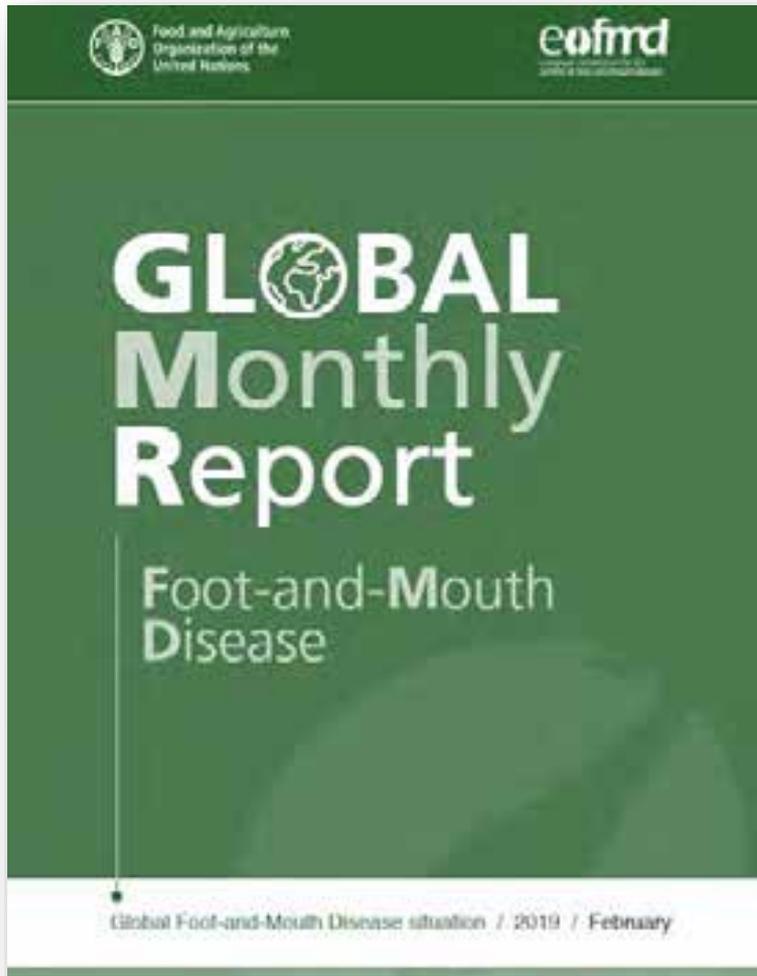


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EuFMD Global Monthly Report



Collaborative work,
Results of the three pillar efforts over the years

A **new format** since 2019
Building bridges with the PRAGMATIST Tool

Sources: **Official databases** and **Networks**



> **300 subscribers**

Now enriched by monthly contributions from
3 FMD intelligence focal points =
3 FMD virus pool regions: Asia, East and South Africa



43rd General Session of the EuFMD – Operation & Communication

Workshops

Procurement

MoU/ LoA

Project cycle

Field missions

E-Learning Webinars

Logistics

Social Media

HR

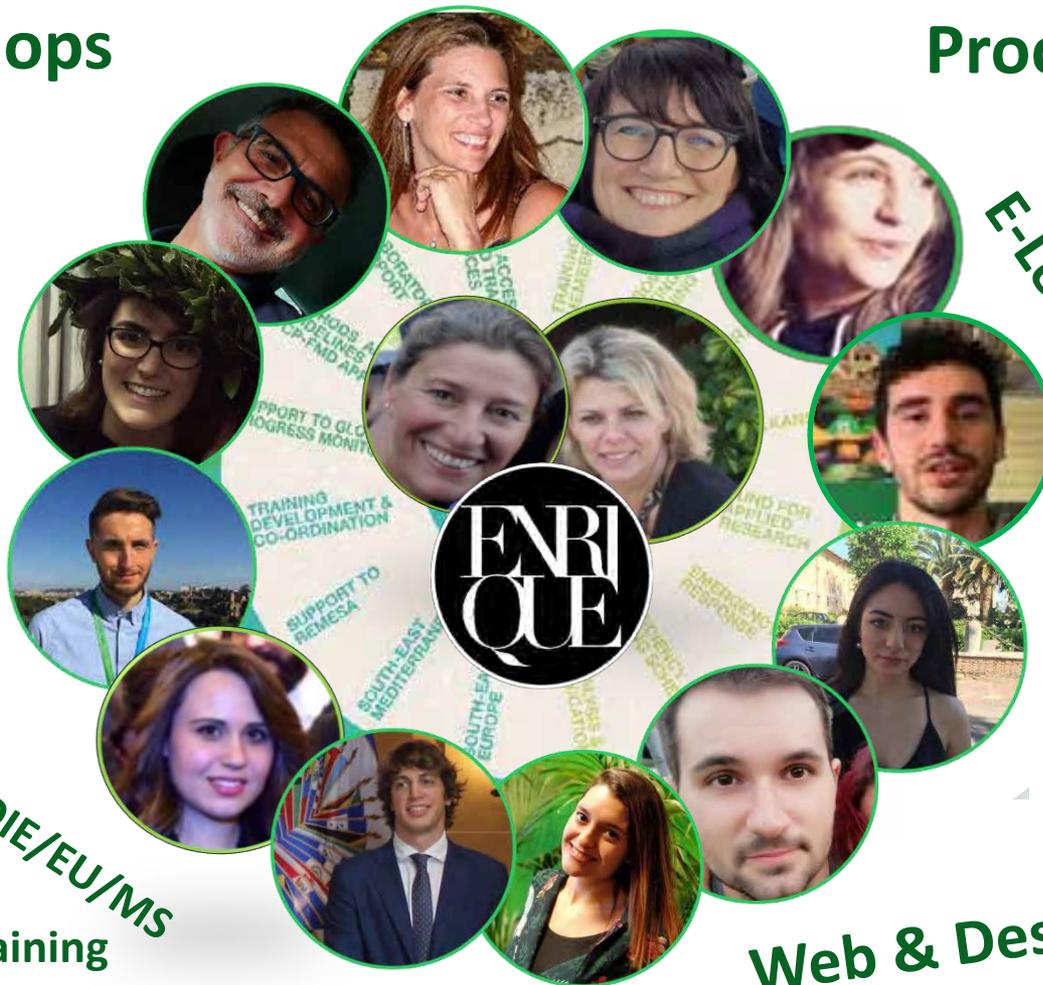
Liaison FAO/OIE/EU/MS

Real Time Training

Web & Design

Partners Agreement

Finance





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Achievements

Achievements





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General conclusions for the EuFMD team work between on 2017-2019

- Value of **three pillars**
- Constant **monitoring** of the achievements
- Importance of regular **coordination** (internal and external) and **guidance** (ExCom)
- Contribution of **partnerships**
- Value of high quality **trainings** and progressive **capacity building** (e.g. RTT)
- Importance of systems for **continuous support** (e.g. PSO, vaccine security, GET Prepared, EuFMDiS)
- Relevance of **constant presence** in risk areas
- **Raising awareness** of all stakeholders and **appropriation** by them
- Importance of **networks** support
- Value of **flexibility** and **innovation**



Food and Agriculture
Organization of the
United Nations



Erica Tomat
Design :
Enrique Dobarro

European
Commission



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What next?

Follow our **upcoming activities** on



#eufmd #eufmdteam #generalsession #fao #animalhealth #rome #italy #veterinarian #vetlife
#team #officialmeeting #livestock #zerohunger #animalphotography #eufmdmission

The documents are printed on recycled paper. **All the meeting documents**, including the Open Session report, the 97th Executive Committee, the Lab Minimum Standards proposal, are available for download on our Events App and are on the USB key provided.

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Report of the Training Evaluation Group

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Chairperson summary

It was a pleasure to visit the EuFMD team and meet many of the team members, in person or virtually. The knowledge present in the team and the various training programmes are invaluable and unique. The training provided could be extended to a considerably wider audience and has the opportunity to develop into an accredited course within a higher education institution. **The weaknesses observed during our evaluation visit were quality assurance of the offered training and impact assessment.** The strengths of the programme are the team of people involved, their expertise and their attitude. We hope that you will find our evaluation report useful to help further develop a future strategy, and we would like to thank you for your concerted efforts in helping to control FMD worldwide to the benefit of animals and people.

EuFMD Secretariat –Response to findings (April 2019)

As a result of the evaluation, we propose the following to:

1. **Commit** funds to assess the impact of selected training courses delivered under Phase IV, such as the Real-Time Training programme, and from this, better understand how to build impact assessment into the course development and delivery.
2. **Develop** a new system for quality assurance of course development, delivery and impact assessment, with guidance from establishments in the Evaluation Team.
3. **Identify**, following point 1 and 3, core positions and responsibilities within the training team, to ensure the daily management follows the principles and practices agreed, with implementation starting from September 2019.
4. **Further explore** the possibilities of certification of courses on the basis of quality and relevance, including the potential that EuFMD training courses (on emergency preparedness for FMD and similar TADS) become in the near future part of a career development path for veterinary officers, under a wider “competency based training framework” such as being considered by the Association of European State Veterinary Officers chapter of the FVE.



EuFMD training programme

The EuFMD training programme uses multiple learning approaches as a successful strategy to approach a wide and specific target audience. Mass education (tutored courses, open access courses) and specific training (resulting in “ambassadors” and “impact deliverers”) are both required to achieve the programme aims and objectives.

Real time training

The real time training programme is a unique training module giving attendants the possibility to encounter FMD in its clinical presentation in endemic countries. The data shared by the team during our visit demonstrated that the cascade training (that attendants are requested to deliver in their home region) is not carried out to its full potential. An emphasis on this part of the training could help to demonstrate the impact of this training programme. In this case, future certification of the EuFMD training programme could be a motivator for attendants; delivering knowledge exchange (KE) events and measuring the impact of those could be a compulsory element of their training. Adequate support would be required for this part of the training, which could, in addition to skills provided to the trainees, provide structured evidence of impact the EuFMD training programme.

Networks

Role of networks is to share knowledge between FMD researchers and other stakeholders. Many participants are listed on the different networks, which show varying levels of activity. In the available time it was difficult to assess how much activity from participants there was versus posts from the EuFMD team; a structured evaluation of these networks would be helpful to assess how they contribute to the overall aim and strategy. From the conversations had, it appeared there was an opportunity to engage attendants of other EuFMD courses (i.e. real time training) and use the networks to motivate and engage attendants after courses are completed. Currently, this part of the training programme came across to us as the least focused, and a future strategic plan with measurable outcomes would help to focus the work.

Workshops

The workshops were well structured and relevant. Further course development across the three pillars needs to include socioeconomics and risk analysis along the value chain as it is relevant for all countries involved. There are steps taken (with i.e. CIRAD) for collaboration with partners with relevant knowledge and experience in these areas to add value, and we would encourage these, and additional, collaborations to further widen the network and share expertise.

E-learning

The innovative nature of course development (i.e. using WhatsApp) and the motivation to deliver training in a way relevant to the intended participant is highly commendable. The opportunity for feedback is well developed. The quality assurance (QA) and impact of the different online modules needs further development to maintain focus with regards to delivery and time spent. As the quantity of the work is growing due to its own success, it is crucial to keep focus on QA and impact.

Operations team

The operations team was well organized and showed a great team spirit, which we encountered throughout the whole EuFMD team. The open-mindedness, approachability and flexibility of staff was inspirational and makes this organization fast and responsive. The opportunity to work within the FAO but with quite significant freedom to make decisions, and the team of people involved, have made this unit a great success. With growing outside interest and more external work requests, EuFMD needs to be careful in planning a strategy that can maintain the current ethos. Due to the short-term contract requirements set by FAO, there are frequent change-overs of staff. It is imperative that planning and organization is well documented, which the operations team does well with appropriate and comprehensive SOP's for various procedures.

Short Term Placements (STP)

Although not the easiest from a management point of view, this is a commendable strategy that creates an ideal combination of local experts' knowledge combined with FMD expertise, and it is used to develop in country or region initiatives. The long term impact of these placements is challenging to measure but there are opportunities to explore to further demonstrate the value of these placements, for example as 'EuFMD ambassadors' collaborating with the focal point in their country.



Summary of recommendations

Procedures for course development

1. When further developing courses it is **essential to focus on impact**; currently feedback is used to improve the course(s), however this is insufficient considering the aims and objectives of the overall programme.
2. Many stakeholders are involved in FMD control; therefore, there are good reasons to **include training focusing also on non-vet stakeholders** in the training programme, as their support and buy-in is essential when aiming for a shared control strategy.
3. The current training programme is successful and receives positive feedback, and it is not unexpected that several requests have been made to develop similar programmes for **other diseases**. We would encourage this development, however not before there is the establishment of a clear QA process and strategy in place to measure impact of courses.
4. Developing courses focusing on different diseases will provide even more opportunities to **collaborate with other stakeholders**, i.e. universities, research organizations, charity, NGOs, industry, farmer associations etc.; the EuFMD team currently has strengths (i.e. with regards to responsiveness and flexibility) and involvement with other parties may make this more challenging and needs consideration.
5. Strategic steps moving in a more collaborative direction can help to achieve impact, which we wholly support.
6. Clear time points of evaluation will help to decide what the best future direction will be for the EuFMD team.
7. Involving STPs to identify suitable partnerships in their region may be useful as they will understand cultural peculiarities and differences.
8. When considering course development, the strategy needs to be clear for each offering; the **target audience needs to be clear**; describe what you want to achieve, make it measurable and work towards that. For example, 'everyone' is not a realistic audience for the networks as they currently are, and this lack of focus makes it difficult to assess impact and value. If its function is to distribute information, who is it aiming for, what is the best way to deliver that information, and is it important to engage with the target audience or measure their participation?

Certification

9. The EuFMD training programme currently has no certification standard. Although only a brief review could be performed in the time available, we deem the training programme of such quality that further development towards official certification would be **highly recommended**.
10. Currently, the main challenge of a formal accreditation process is the **lack of a structured QA process** (further detail below).
11. There is limited evidence that the current course elements meet their objectives; courses are carried out and the feedback is usually positive, but the evidence of achieving learning outcomes is missing.
12. Course development would need to include transparency of the different course elements towards credits of a course.
13. We would recommend developing the course in **collaboration with a university** with the aim to register the existing course as continuing professional education (CPD) initially.
14. We would envisage a great opportunity to develop a year's Postgraduate certificate/MSc programme, considering the opportunities within the cascade training and other elements of the training programme to create a win-win situation of measuring impact and further developing research and KE skills in participants. Within this framework one could consider a **'state vet' training module** that could apply to all EU member states.
15. The opportunities to formalize the training are worth exploring and need to be part of the future strategy discussion; is it depth on disease (FMD only) and breadth of audience, or is it breadth on disease to a more specific audience? Once a strategy is decided upon, the action plan can be mapped out for the following years.

Quality Assurance (QA)

16. The course appears successful based on anecdotal evidence. We have no concerns of a lack of quality, however, we do have concerns that (beyond questionnaires) there is **no structural evaluation** or QA policy in place. This leaves opportunity for time and resources to be spent in areas of interest (or ease) which are not the main focus of the programme. A process needs to be in place to evaluate the quality and objectives of the programme.
17. **Quality assurance also includes the pedagogy** used in the training and its development. What are the qualifications of staff involved on training development, what evidence is provided to assure quality of delivery? Higher education (HE) institutions have different methods to evaluate this; a team of external reviewers/examiners allocated to each of the courses, but not actively involved with them, would provide a sounding board to critically evaluate pedagogy and QA. Most reviewers would review the course for 3 or 4 years before handing over the task to a new examiner. Having a structure in place which includes



these reviewers can provide guidance on educational aspects of the course and help confirm the course is adequate to meet its objectives.

18. **Structured involvement of your target audience** is recommended in HE institutions; a team of participants is asked to share their experiences and expectations. This helps to deliver the best 'student experience'. The quality assurance of the content of the training material does not concern us as a peer review process within the EuFMD team appeared to be in place. This process however needs to be **formalized and be part of a structured QA policy**.

Existing procedures for feedback and monitoring of the outcomes of training

Feedback

19. There is abundant evidence of interest and positive feedback on many of the courses offered; it was great to hear how adjustments were made whenever possible, based on the feedback. The opportunity to provide feedback is provided and many respondents are very positive about the course attended. To further learn and improve we would recommend to **reduce the effort on feedback and use the time gained to collect information on impact**.
20. It seems that a more **consistent, automated and less labor-intensive feedback** could be adopted; it would be worthwhile to evaluate if all the information gathered in the different feedback surveys are efficiently and adequately used and if they actually contribute to achieve the aim of the programme.
21. A more consistent brief (what to stop and what to keep doing more off) survey for all training elements would enable comparison between the different training elements. Impact assessment can help streamline some of the feedback surveys to a more manageable process which does impact objectives and aims by providing key information to improve and develop courses. We do not want to underestimate the positive experience which participants will have had on the course, however a potential client considering to pay for participants on one of the courses might be more interested to read about the impact the course will have.
22. When aiming the focus on impact; it is advisable to move away from detailed attendant feedback to explore **reasons of non-attendance and/or limited participation**. Are there ways to improve the programme to engage stakeholders that are currently not or only participate in a limited way?
23. **Learner analytics** available on VLE platforms such as Moodle provide various data to provide feedback with regards to engagement, assessment performance and various other elements. This automated feedback can be valuable to collect information from a large range of participants, as opposed to a likely biased group of participants responding to a survey.
24. How the feedback gets used might also be a good bit of information to share with attendants, CVO's and focal points to create engagement and demonstrate how their feedback contributed to further development. A "champion" amongst the attendants could play the role of "EuFMD ambassador".

Monitoring

25. Current monitoring of outcomes appears minimal; cascade training in the real-time training is an opportunity, but overall it appears there is a great opportunity to **intensify member state contact**.
26. This intensification of current contact can include, i.e. follow-up refresher training, increased contact with trained people and focal point, established in collaboration with the focal point, encouraging the nomination of a previous training attendee as a EuFMD ambassador/champion who can help identify suitable new participants. By sharing information from feedback or other KE activities done by other participants between trainers and attendees.
27. With regards to for example the real-time training, a more structured follow-up could be developed to encourage cascade training and follow-up of impact; a contact point 1 month after the training, bi-monthly reminders to share cascade training experiences, and, a year after programme, a meeting to share experiences of cascade training.
28. This could provide the EuFMD team with measurable impact parameters and would encourage participants to implement by feeling the sense of belonging of being part of a team, which is what they did experience when on the real time training.

Current methods for assessing the impact of the training programme

29. There is currently **limited evidence of impact** or 'value for money' evaluation, there appeared to be surprisingly little demand or reward from the EC to do this. However with external parties ('clients') now paying for training, the evidence of impact ('value added') becomes more pressing, and quantification of impact using key indicators would support investment in training.
30. In addition impact is important for the team internally to show the effect of all the efforts they put in. **Impact assessment should therefore be** part of the future strategy and evaluated as part of a structured process. Impact evaluation should drive course development together with needs assessment.
31. There was reference made to anecdotal evidence relating to improved job prospects of trained staff, **keeping records/tracks** of trained staff and evidencing career paths would additionally help demonstrate impact. External parties asking for training



- and personalized advice demonstrates a demand, however, this is not actual impact of the training programme.
32. An example to measure impact would be to **assess emergency preparedness of a country** before and after training (including cascade training) or to ask CVO's or focal points for a brief report describing the implementation of knowledge via the trainees.
 33. A better understanding of in-country challenges may reveal that within-country training may have bigger impact at country level compared to sending staff abroad for training, currently the programme has limited methods to assess these aspects.
 34. Short term impact of online courses can be measured by online assessment, and this is currently done; however it is unclear if the knowledge presented at the online assessment is due to the training. A pre and post assessment will help consolidate this and provide evidence for **short term impact**. A structured review of this performance needs to be part of the impact assessment on a regular basis. However, the actual use and impact of this trainee knowledge in their work environment is more relevant considering the aim and objectives of the programme, so efforts need to focus on those elements as well.
 35. **Intensifying contact with previous course participants**, as discussed above, can help to identify some of these impacts.
 36. **Learner analytics** can be used to evidence short term impact and assist in decision-making; for example, webinars may seem cumbersome and not have many immediate attendants, but how many people watch the webinar in the year following publication? Can you think of ways to approach attendants to measure long term impact? Using the learner analytics available online can help automate this process and help make evidence based decisions.
 37. Once the impact of each training element has been established, the next step should be to consider the effort (time and resource) allocated to that element. This aspect is currently unclear, however without knowing the impact of the course, there is little point in detailing the time and resource spend. **Regular evaluation of the strategy, including impact assessment** needs to be ongoing throughout the programme at set time points so direction can be adjusted where needed.



EuFMD RESPONSE to the recommendations

The Secretariat is very grateful to the evaluation team for their time and dedication to the evaluation of the various components that make up the overall EuFMD training programme, from e-learning, to face to face (F2F) to the system for “building depth” through the short term placements (STPs) system for staff of veterinary authorities to work within the EuFMD programme. We note the overall positive response and also the areas for improvement in the Chairpersons summary *“The knowledge present in the team and the various training programmes are invaluable and unique. The training provided could be extended to a considerably wider audience and has the opportunity to develop into an accredited course within a higher education institution. The weaknesses observed during our evaluation visit were quality assurance of the offered training and impact assessment. The strengths of the programme are the team of people involved, their expertise and their attitude”*.

The EuFMD training programme has expanded rapidly over the past six years, bringing a significant challenge to maintain quality across the training when provided to diverse settings. The development and delivery side each face issues of ensuring new trainers and new courses meet the current standards expected, and utilize the feedback received.

The evaluation report makes clear we must focus on processes for quality assurance, impact assessment and how to ensure the monitoring of outcomes and impacts feeds back into better design and delivery of training.

It also suggests that, given the scale of the training, it could contribute well as a component of an overall training of European state/public health veterinary officers, in line with the current working group established under the FVE (Federation of Veterinarians of Europe).

As a result of the evaluation, we propose the following:

1. To commit funds to assess the impact of selected training courses delivered under Phase IV, such as the Real-Time Training programme, and from this better understand how to build impact assessment into the course development and delivery;
2. To develop a new system for quality assurance of course development, delivery and impact assessment, with guidance from establishments in the Evaluation Team;
3. Following this, to identify core positions and responsibilities within the training team, to ensure the daily management follows the principles and practices agreed, with implementation starting from September 2019;
4. To further explore the possibilities of certification of courses on the basis of quality and relevance, including the potential that EuFMD training courses (on emergency preparedness for FMD and similar TADS) become in the near future part of a career development path for veterinary officers, under a wider “competency based training framework” such as being considered by the Association of European State Veterinary Officers chapter of the FVE.



The table below provides the summary of the response to recommendation domains.

	Recommendation domain	Response to recommendations	Proposed Actions
1	Procedures for Course Development	Recommendations accepted regarding: <ul style="list-style-type: none"> - Need to revise the QA processes to respond to several recommendations including the need to focus on IMPACT - Need to design in the evaluation and its time points - To consider the needs of other categories of animal health. 	Invite external expert team to develop the QA procedures and design of the system, before July 2019, with support of a training grant.
2	Certification	Recommendations on the whole are accepted. #9 “to proceed towards official certification is highly recommended” is noteworthy and could become a principle in the work-programme –Phase V. #14: “consider a state vet training module that could apply to all EU MS” is significant as it foresees that training provided could be an part of a wider initiative on competency based training for staff of veterinary authorities.	<ol style="list-style-type: none"> 1. CPD points system for courses (online and F2F) depending on demand. 2. Continue Work with FVE /VETCEE working group on identifying competency framework for staff of veterinary authorities 3. Following #2, explore with OIE –HQ how a competency framework for vet authorities might add value to current common training.
3	Quality Assurance (QA)	Accepted. QA policy and procedures will be revised and introduced that include the pedagogy QA.	
4	Procedures for monitoring and feedback	Recommendations to standardize and automate, and give more focus to what doesn’t work well (understand better limited participation for example) Rec #24: on “training champions” to be considered.	<ol style="list-style-type: none"> 1. More automated feedback system has been introduced from September 2018. 2. We need to work more on sharing the feedback and using the feedback constructively.
5	Monitoring	Monitoring of outcomes is weak and more structured approach to post-course follow-up is needed.	This will need to be built into the plans for each course, to also have planned follow-up agreed in advance. To be addressed in the design of Phase V training.
6	Assessment of impact	The nine recommendations are challenging to implement and we will need expert assistance to design impact assessment into the training course development and delivery.	To invite the University of Nottingham to undertake an impact assessment of several Phase IV courses and provide guidance on the systematic use of impact assessment we should apply in future.





EUFMD

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE



eofmd
e-Learning



III
3 PILLARS OF
3 OF FMD



HOLD-FAST

STAYING TRUE TO FMD.

HOLDING OFF THE STORM OF SIMILAR TADS



Hold - FAST

A Europe secure from the daily threat of FMD And Similar Transboundary (FAST) animal diseases



Vision of the Strategic Plan

A Europe secure from the daily threat of Foot-and-mouth disease And Similar Transboundary (FAST) animal diseases.



The proposed 4 year EuFMD Strategic Plan (April 2019-2023)

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





Rationale for the Strategy

- FMD remains the #1 disease risk – in the European neighbourhood
- Over 250 million cases annually across the world – daily risk of FMD entry into EU : must maintain effort
- Capacity, Training and Preparedness tools already developed for FMD are relevant to similar TADS
- EuFMD already active in areas where PPR, poxviruses, ASF are present
- Adapting spread models (EuFMDis) to similar TADS is straightforward
- **Europe (+GF-TADS) needs implementing partners able to work effectively at national level in the neighbourhood**



The Strategic Plan in 10 points

1. PRINCIPLES

*Non-negotiable values, commitments and behaviours that you can **HOLD** us to*

- **Continuous co-ordination**
- **Regular review** - of the risk situation
- **Seek synergy** - with the relevant EU institutions
- **Sharing of expertise** in emergency preparedness and epidemic management
- **Continuous engagement** with veterinary services
- Effective use of European and neighbourhood reference laboratories and expertise
- **Commitment** - to provide world-leading training quality and tools
- **Continuous improvement**- in delivery and impact
- An attitude of always seeking to leverage efforts



2. SCOPE – FOCUSED but **fast** to adjust

Focus on FMD:

- Every part of the programme to support FMD control
- Many parts of the programme relevant to improved control of Similar Transboundary Animal Diseases
- *Within the Scope*

Category 1: FMD, and currently PPR, capripoxviruses

- Similar risk factors to FMD/in directly bordering neighbourhood/vaccination is an option

Category 2: Rift Valley Fever, Bovine Ephemeral Fever

- In one or more neighbourhood countries/vaccination needed/Ruminants are directly affected with major losses

Category 3: Not included in the above but kept under review

- Currently cause outbreaks in EU-MS (e.g. ASF) / co-ordination is well established at EU level
- Other TADS, according to risk



3. OUR THREE GOALS (“Pillars”)

I IMPROVE PREPAREDNESS	II REDUCE RISK	III SUSTAINED PROGRESS
<p>Improve preparedness for management of FMD and similar TADS (“FAST diseases”) crises by Members and across Europe as a whole.</p>	<p>Reduce risk to Members from the FAST disease (FMD and similar TADS) situation in the European neighbourhood.</p>	<p>Sustained progress of the GF-TADS Global Strategy against FMD and the improved security of supply of effective vaccines.</p>



4. OBJECTIVES and KPIs (Fourteen)

Feasible, costed, and achievable

Goal	Objectives	Key Performance Indicators (KPI)
Improved preparedness	1. National capacity development	1. Knowledge Achieved With Training
	2. Regional and national capacity in emergency preparedness	2. MS satisfaction with CP tools
	3. Preparedness for use of emergency vaccination	3. MS satisfaction with EV assessments
	4. South-Eastern Europe	4. % countries having tested CP plans for FAST diseases
	5. Applied research program	5. Satisfaction of Technical Committee with completed studies
	6. Proficiency test services (extended EU scheme)	6. Number of eligible non-EU countries participating
	7. FAST disease information gathering and analysis	7. MS satisfaction with FAST risk reports
Reduced risk	1. Co-ordinated activities (under GF-TADS/REMESA)	1. PCP-FMD indicators for progress (14 countries)
	2. FAST disease: Improved Early Warning	2. Regular surveys of satisfaction levels with EW system outputs
	3. Integrated capacity development	3. Knowledge Achieved with Training (tested) and numbers trained
Sustained global progress	1. Sustained and effective PCP-FMD implementation	1. Process indicators, completion of Roadmaps and #countries utilising PSO expertise
	2. Improved global laboratory support	2. Surveillance targets met in three of the five Roadmaps; system for regional vaccine recommendations being used
	3. Better training for progressive control	3. Knowledge Achieved With Training (tested) and numbers trained
	4. Improved vaccine security	4. PPP: satisfaction of stakeholders in rate of progress



5. SIGNIFICANT NEW ELEMENTS to the programme

Europe-wide TADS modelling capacity serving MS and the region as a whole (EuFMDis+)

Laboratory proficiency and capacity for FAST diseases established across the Balkan countries supported by a **diagnostic bank**

Integrated FAST disease early warning system in the REMESA/neighbourhood region be in place by end of 2020.

Vaccine security platform: Addresses a gap affecting contingency planning



6. CORE ELEMENTS of the programme continued from Phase IV

World –leading Training Programme

GET Prepared

Expertise and support to guide MS on stress-testing of their preparedness resources

Regionally co-ordinated targeted, national assistance to apply the Progressive Control Pathway (PCP-FMD)

Fund for Applied Research (FAR Fund)

Studies with generic (multi-TADS) applicability will be favoured

Global Intelligence

Regular risk reports: but with added FORECASTING



7. GOVERNANCE and CO-ORDINATION with partners

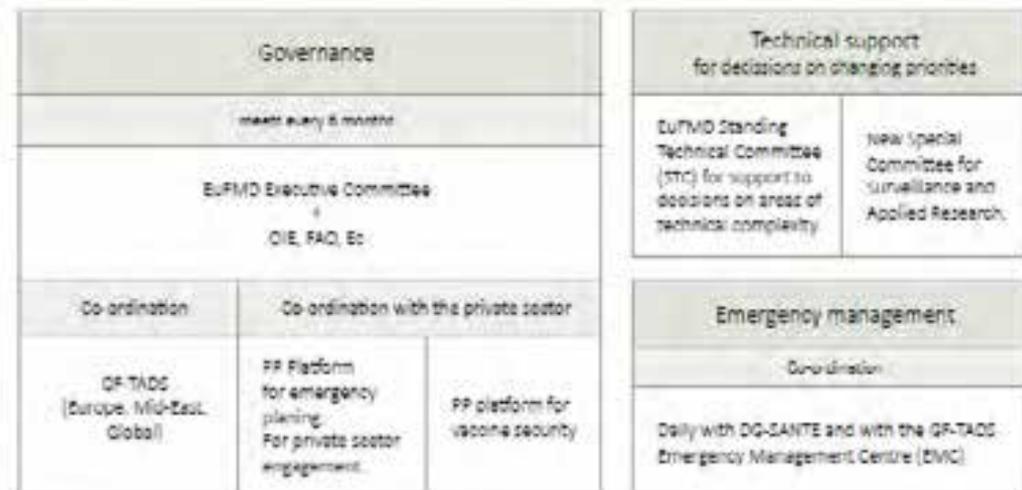
Member States govern – through the elected Officers

Co-ordination, in a changing disease risk environment

- DAILY
- Periodic review (@6 month intervals)
- With the priorities of GF-TADS Europe

Technical support for decisions on changing priorities

- Greater role of the Standing Technical Committee (STC) on decisions upon changes in priorities or intensities of efforts on specific TADS

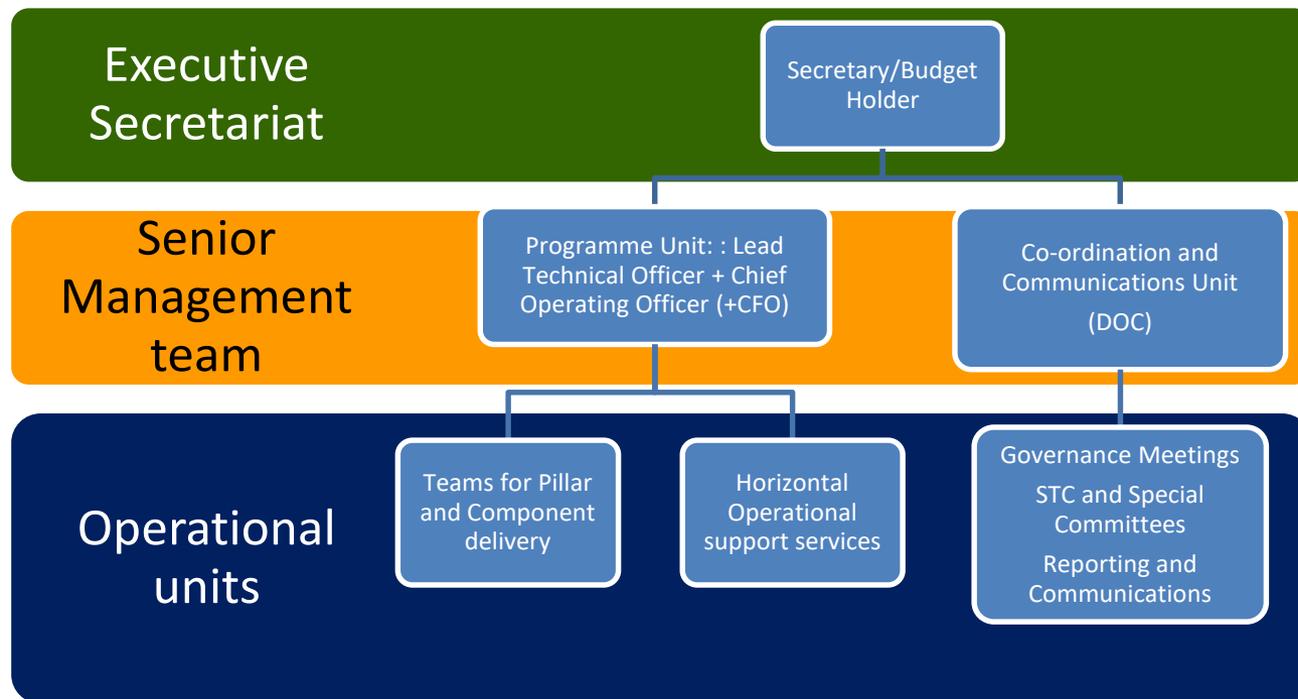




8. OPERATIONAL MANAGEMENT

The programme will be delivered as per Phase IV:

Through a dedicated, technically and operationally autonomous Secretariat fully applying the FAO administrative procedures





9. FINANCING: Administrative & Programme Funding

EuFMD : circa 1m€ p.a

Programme Funds (EC request): 3 m€ p.a

Circa Eur. 4,000,000 per annum	
Eur. 3,000,000 EC Programme	Eur. 1,000,000 Raised by the EuFMD

Component	Amount	Source identified
Programme Budget (Table 2)	3.0 m€ per annum	EC: DG-SANTE (request)
Programme <u>Management</u> & Secretariat	0.6 m€ per annum	Member States annual contributions
Scientific Support: FAST-Network and Fund for Applied Research (Special Committee)	0.2 m€ per annum	Additional voluntary contributions of MS/others
Ad –hoc funding of programme elements	0.2 m€ per annum	Additional contributions of donors or resource partners
Total	4.0 m€ per annum	



9. Programme budget estimates

Programme Funds (EC request): 3 m€ p.a

Goal (Pillar)	Phase V per annum
1. Improved preparedness	1,559,550
2. Reduced risk	760,450
3. Sustained global progress	680, 000
	3,000,000



Thinking of the
environmental
footprint

10. Environmental sustainability objectives

Programme objectives contribute to reduced global impact (GHG+) of ruminants and operational procedures apply the 3 R's



43rd General Session of the EuFMD

10. Thinking of the environmental footprint by

- **Promoting FMD control** which can benefit the global environment by reducing GHG emissions from livestock through globally increased productivity:



Large ruminants are one of the most important sources of GHG and over 60% live in countries which have endemic FMD



Thinking of the
environmental
footprint

- **Applying the 3Rs** in our activities *through*

 **Reducing:** air travel through increasing e-work (webinars, e-learning, skype)
and offsetting the carbon footprint from unavoidable travel

 **Re-using:** promoting BYOB (Bring Your Own *(water)* Bottle)

 **Re-cycling:** as much as possible in FAO HQ *(and at home)*





Strategic Plan 2019-2022

Pillar I

Improved preparedness for management of FMD and similar TADS (“FAST diseases”) crises by Members and across Europe as a whole

Proposed updating





OBJECTIVE 1: NATIONAL CAPACITY DEVELOPMENT

EXPECTED OUTPUT

Improved level of training in FAST diseases crisis management at national level

HOW TO DO IT?

Training menu supported by the training credits system

- **Design of the training menu based on MS needs**
 - What the MS see as their needs
 - Collaboration with other organizations to identify priorities
 - Risk based: Collaboration with Pillar II
- **More country-tailored programs**
- **Incentives to choose the option “assistance with the national training system”**



OBJECTIVE 1: NATIONAL CAPACITY DEVELOPMENT

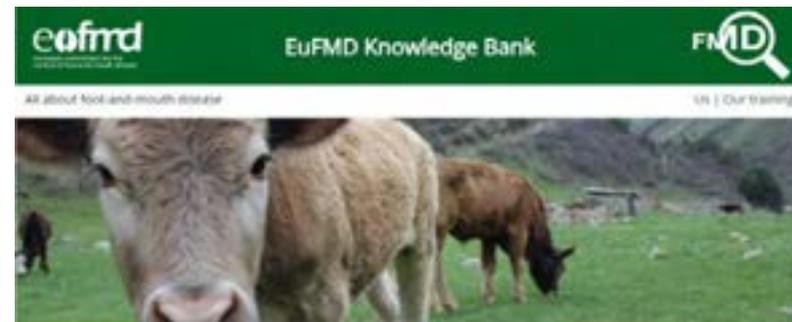
HOW TO DO IT?

We have a lot of high quality training material that is useful for all FAST diseases. To develop new training material,...

- **We will focus on the practical problems countries face**
 - Exit strategy after an outbreak
 - What reagents would be needed in the first weeks of an outbreak
- **We will prioritize a regional approach**

Higher number of open resources (Knowledge Bank /YOUTUBE)

- **Link to national education organisations**
- **To be used within the FAST national training strategy**

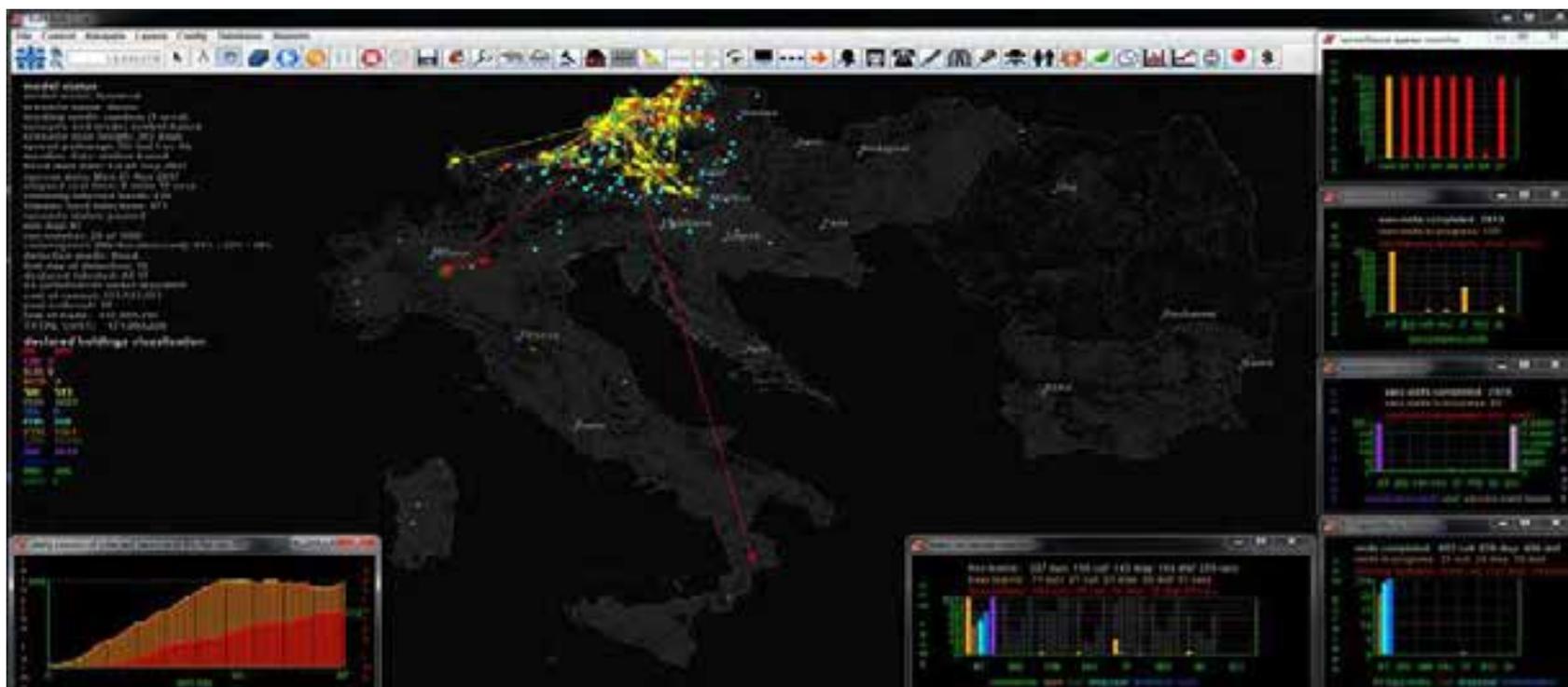




OBJECTIVE 2: REGIONAL CAPACITY IN EMERGENCY PREPAREDNESS (EP)

EXPECTED OUTPUT

STATE OF THE ART tools for EP available to MS to assess and improve preparedness for FAST diseases across Europe





OBJECTIVE 2: REGIONAL CAPACITY IN PLANNING

HOW TO DO IT?

Through the collaborative work with other institutions:

EFSA, DG SANTE Dir F, others

- **GET Prepared:** Comprehensive toolbox to assist MS in the assessment and improvement of their contingency plans
- **EuFMDis+:** Pan- European model covering FMD and other FAST diseases, and with new features included such as the wildlife component and biosecurity considerations



OBJECTIVE 3: PREPAREDNESS FOR USE OF EMERGENCY VACCINATION

EXPECTED OUTPUTS

- **Improved CP considering vaccination as an option against FAST diseases**
- **Progress to address barriers to the access to effective vaccines against FAST diseases**

HOW TO DO IT?

1. Establishment of a Vaccine security platform

- **Public-private platform (PPP): private sector, RL and R&D experts, vaccine registration and contingency planners to meet on a regular basis**
- **To discuss about and promote progress to the access to effective vaccines against FAST diseases**

2. Assured Emergency Supply Options (AESOP)



OBJECTIVE 4: IMPROVED EP in 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





OBJECTIVE 4: SOUTH-EASTERN EUROPE THRACE and BALKANS

HOW TO DO IT?





OBJECTIVE 4: **SOUTH-EASTERN EUROPE THRACE and BALKANS**

HOW TO DO IT?

- **Thrace +:** Possibility to extend the current coordinated regional surveillance approach
- **Simulation exercises, workshops and continuous support to improve emergency preparedness for FAST diseases**
- **Improve laboratory proficiency and capacity for FAST diseases across the region**
- **Diagnostic bank for FAST diseases** (initially: Balkans, but may serve wider need)



OBJECTIVE 5: **APPLIED RESEARCH PROGRAMME**

EXPECTED OUTPUT

Tools and new knowledge to improve emergency preparedness against FAST diseases

HOW TO DO IT?

- **Competitive selection of studies to support through the Fund for Applied Research (FAR)**
- **Identification of Europe-wide priorities in emergency preparedness and gaps of tools and knowledge**
- **Expert Committee (SCSAR) - prioritization, guidance on impact of potential studies**





OBJECTIVE 6: PROFICIENCY of the NRLs (non-EU MS) for FMD (extension of the PTS operated under the EU-RL)

OBJECTIVE 7: FAST disease intelligence provided for risk assessment

HOW TO DO IT?

- Continuity of current system (GMR) for information gathering and analysis
- Addition of epidemic fore-casting based on intelligence focal points system
- Greater integration of informatics and analysis (with OIE/FAO networks)

RELEVANT TO ALL THE PILLARS





Goal (Pillar)	Component Objectives	Subcomponents € Per annum	Phase V per annum	Per annum Phase IV (2017-18)	Phase V Increase %
1. Improved preparedness	1. National capacity development	39 MS @8000 (312,000)	312,000	261,488	19
	2. Regional capacity in emergency planning		160,000	71,077	125
	3. Preparedness for use of emergency vaccination incl emergency reserves		300,000	161,890	85
	4. South-Eastern Europe incl Diagnostic Bank		369,550	289,555	28
	<i>FAST Diagnostic Bank</i>	80,000			
	<i>THRACE surveillance</i>	188,500			
	<i>Emergency Preparedness and exercises</i>	101,050			
	5. Applied research program		250,000	186,194	34
	6. PTS		30,000	23,150	30
	7. Global informatics for Risk assessment		138,000	42,100	228
	TOTAL		1,559,550		

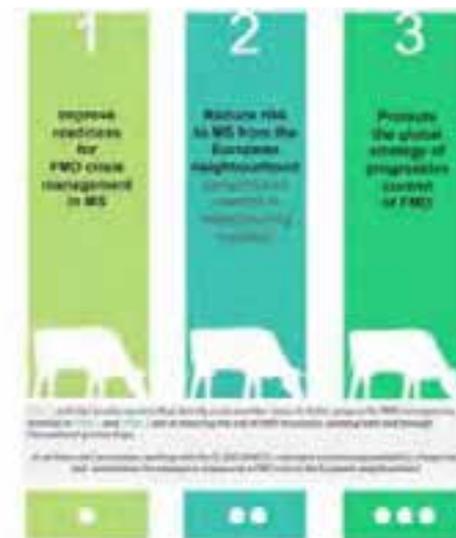
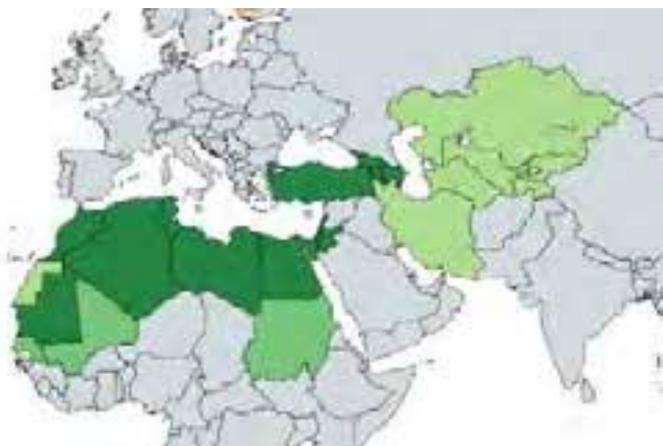


Strategic Plan 2019-2022

Pillar II

Reduced FMD risk to EUFMD Members from European neighbourhood

Proposed updating





Priorities and opportunities in the future programme for integration of efforts for risk reduction of FAST diseases



Priority: **early warning** and **better preparedness** for FMD and Similar TADs in the EU neighbourhood – integrated cost-efficient approach



Opportunities:

- building on **networks** established
- making use of the **horizontal approach**
- adopting **flexible** programme
- working with **partners**



Risk and threats change - What is needed ?

- Close coordination and clear roles
- Flexibility to shift priorities, resources and activities
- Efficient use of models for early detection (e.g. Thrace)
- Efficient use of acquired expertise

....and

- Capacity to work in different setting
- Continual presence in the field
- Capacity and flexibility to deliver quickly
- Combination of experience and innovation



COMPONENT 1: **COORDINATED ACTIVITIES**



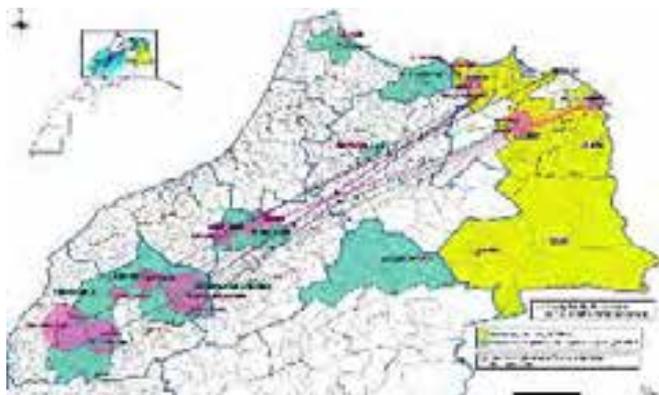
To achieve **FAST progressive control**:

- **Coordinated mechanism under GF-TADs** with regular updates of FMD control strategies and definition of priorities and related workplans
- **Coordination with countries** to support national programmes (regional/sub-regional/national activities)



COMPONENT 2: 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**



COMPONENT 3: CAPACITY BUILDING



- **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**





Horizontal elements of the Pillar II programme



1
Improve
readiness
for
FMD crisis
management
in MS

Progressive control (PSO)

2
European
strategy of

Early warning

Capacity building

3
of FMD

Networks (centres of expertise)

Trainings

Emergency preparedness:
Cont. Pl. - AESOP - PRAGMATIST

Better use of
expertise and
budget

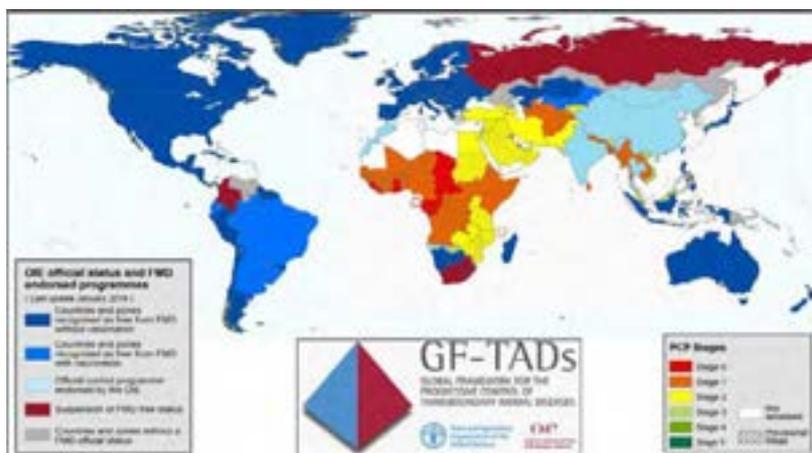


Goal (Pillar)	Component Objectives	Subcomponents € Per annum	Phase V per annum	Per annum Phase IV (2017-18)	Phase V Increase %
2. Reduced risk	1. Co-ordinated activities (under GF-TADS/REMESA) <i>PCP progress in Turkey/Georgia neighbourhood</i>		300,450	297,347	<i>1</i>
		<i>150,450</i>			
	<i>PCP progress in South and Eastern Mediterranean (REMESA countries)</i>	<i>150,000</i>			
			250,000	173,904	<i>44</i>
	2. FAST disease: Improved Early Warning <i>Continuous Multi-disease surveillance in three hot-spots</i>	<i>200,000</i>			
		<i>50,000</i>			
	3. Integrated capacity development <i>E-learning Course development</i>		210,000	74,000	<i>184</i>
		<i>Training delivery</i>	<i>145,000</i>		
		<i>Total</i>		760,450	

Strategic Plan 2019-2022

Pillar III

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



1. Sustained and effective PCP-FMD implementation
2. Improved global laboratory support
3. Better training for progressive control
4. Improved vaccine security



3.1 Sustained Global Progress

- Sustained progress of GF-TADs Global Strategy for **FMD**
- Continued support the FMD Working group including improved PCP information management





How to do it?

Supporting PCP-FMD application:

- PCP-FMD tool-kit
- Regional roadmaps
- **PCP Support Officers (“PSOs”)**
 - Promote risk-based control and management (PCP principles)
 - Extended program - to support all countries engaging in PCP-FMD
 - Training system for “Certification” PSO under GF-TADS – with trained expertise from all roadmap regions
 - EuFMD to manage system and support development
- Leverage additional funds to implement activities

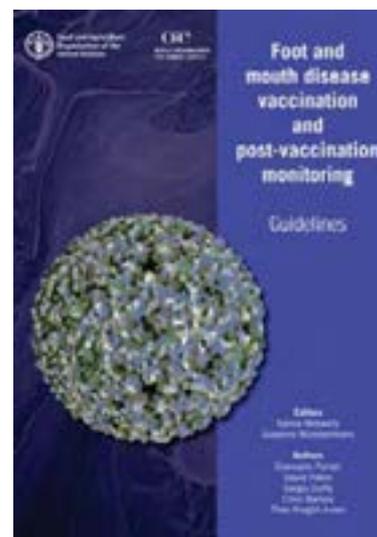
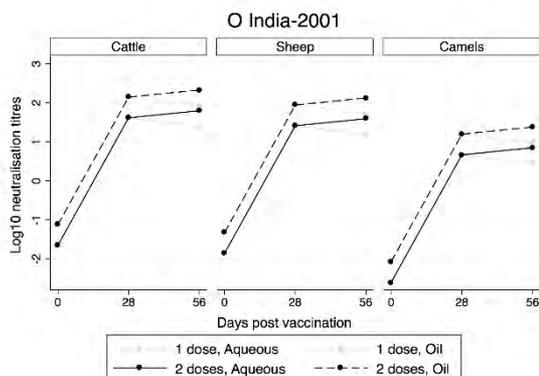




3.2 Improved Global Laboratory Support

HOW TO DO IT?

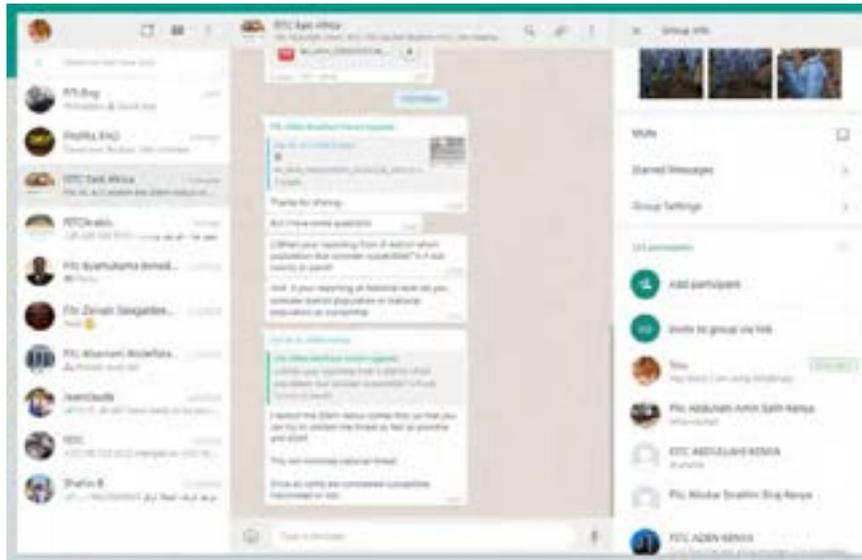
- WRL-FMD and OIE/FAO Laboratory Network
 - CONTRACTED support - KPI's are surveillance targets in different regions
 - Shift in emphasis towards Post-vaccination monitoring and regional vaccine selection and performance
 - Targeted efforts to improve sampling in address Surveillance gaps
- Associated training for all Roadmap regions (online programmes)



3.3 Better Training for progressive control

HOW TO DO IT?

- World-leading suite of training courses for national PC programmes: multiple languages and regions
- Assist countries (+ partners) to deliver national FMD training (online/mobile access)
- Co-ordinated effort with OIE (PPP for progressive control, Safe-Trade,..) and OIE to develop an integrated overall suite of training for FAST diseases





3.4 Vaccine Security

WHY?

Lack of **Global Vaccine Security** affects everyone

The confidence that vaccines are affordable, available, effective and accessible to stakeholders



HOW TO DO IT?

- **Platform for stakeholders** to review barriers affecting access to vaccines for FAST diseases
- bringing together regulators, risk managers, research and private sector stakeholders
- **Supported by Working groups** and associated studies to address information gaps affecting investment decisions





Goal (Pillar)	Component Objectives	Subcomponents € Per annum	Phase V per annum	Per annum Phase IV (2017-18)	Phase V Increase %
3. Sustained global progress	1. Sustained and effective PCP-FMD implementation <i>PCP support to GF-TADS countries (PSO system)</i> <i>Support PCP Roadmaps</i> <i>Co-ordination/Support tools for PCP implementation</i>		170,000	121,424	40
		80,000			
		50,000			
		40,000			
	2. Improved global laboratory support <i>Contract to support OIE/FAO FMD Ref Lab Network</i> <i>Surveillance support</i>		320,000	314,386	2
		200,000			
		120,000			
	3. Better training for progressive control <i>E-learning Course development</i> <i>Training delivery</i>		140,000	97,766	43
		50,000			
		90,000			
4. Improved vaccine security		50,000	-		
	Total		680,000		



Hold - FAST

A Europe secure from the daily threat of FMD And Similar Transboundary (FAST) animal diseases



Vision of the Strategic Plan

A Europe secure from the daily threat of Foot-and-mouth disease And Similar Transboundary (FAST) animal diseases.

Hold-FAST

A Europe secure from the daily threat of
Foot-and-mouth disease And Similar Transboundary
animal diseases



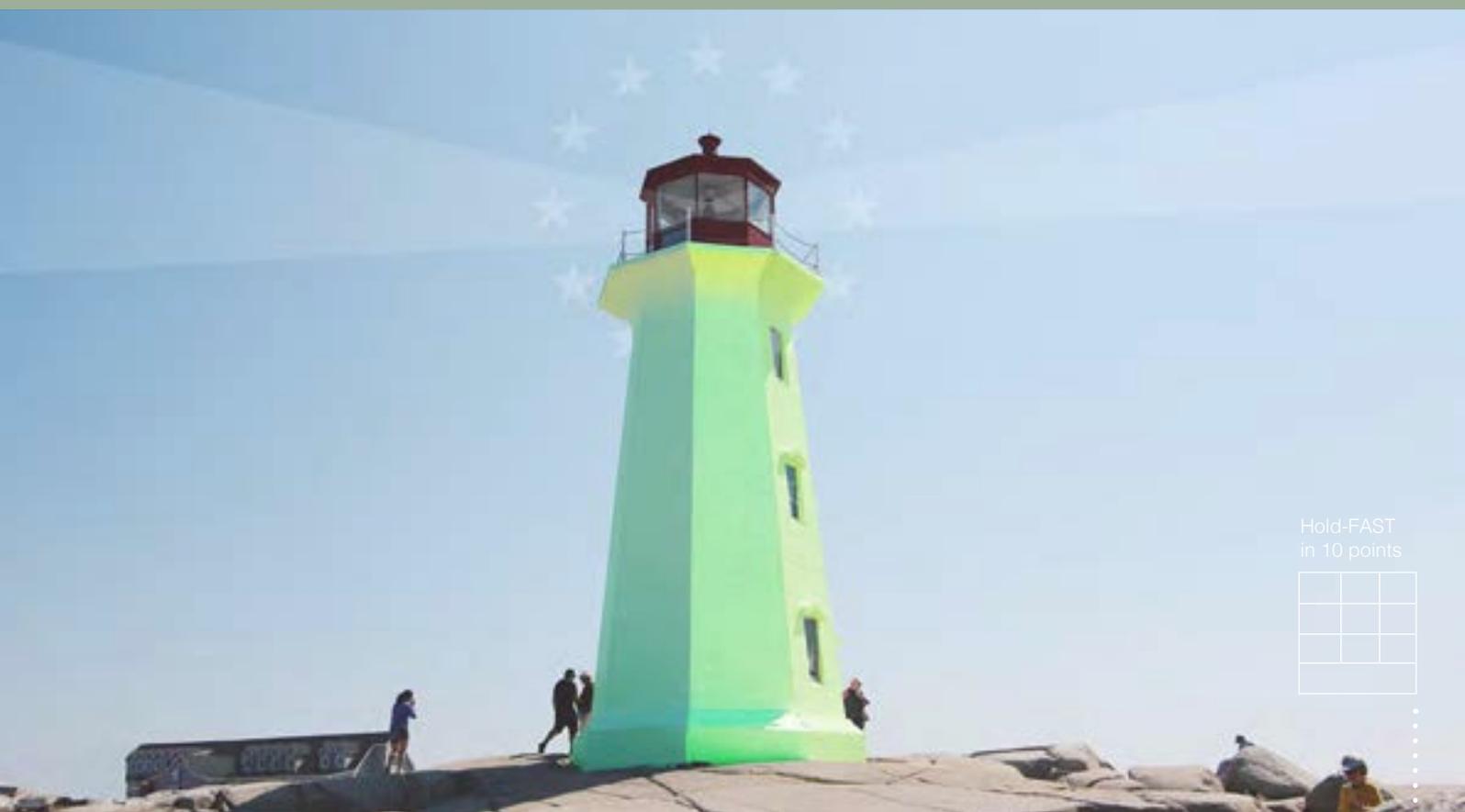
New strategic plan

European Commission for
the Control of Foot-and-Mouth Disease



Hold - FAST

A Europe secure from the daily threat of **FMD** And **Similar Transboundary (FAST)** animal diseases



Hold-FAST
in 10 points

Vision of the Strategic Plan

A Europe secure from the daily threat of Foot-and-mouth disease And Similar Transboundary (FAST) animal diseases

The setting

FMD remains the #1 disease risk - but all member states, not only EU, are at risk of other FAST diseases

Based on 9 strong principles	4 significant new elements	Owned and Governed by the Member states (ExCom) International co-ordination with OIE and FAO (GF-TADS)
Scope: FAST disease threats	5 core-activities retained	Financial support Ec and Member States
3 goals / levels European, neighbourhood, Global	14 Components 14 KPI, strategy and tactics	Environmentally responsible operations

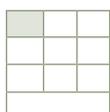
Founded on a proven, highly efficient operational capacity

Hold - FAST

A Europe secure from the daily threat of **FMD** And **S**imilar **T**ransboundary (FAST) animal diseases

Hold-FAST

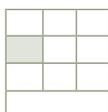
In 10 points



1. Principles

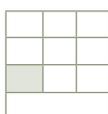
Non-negotiable values and commitments that frame the entire strategic planning activity:

- Continuous co-ordination
- Regular review of the risk situation
- Synergise efforts with the relevant EU
- Sharing of expertise in emergency preparedness and epidemic management
- Continuous engagement with veterinary services in the neighbourhood
- Effective use of European and neighbourhood reference laboratories and expertise
- World-leading training quality and tools
- Continuous improvement in delivery and impact
- An attitude of always seeking to leverage efforts



2. Clear Scope

Foot-and-mouth disease (FMD) and those transboundary animal diseases which pose similarities to FMD.

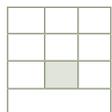


3. Three goals (Pillars)

I IMPROVE PREPAREDNESS	II REDUCE RISK	III SUSTAINED PROGRESS
Improve preparedness for management of FMD and similar TADS ("FAST diseases") crises by Members and across Europe as a whole.	Reduce risk to Members from the FAST disease (FMD and similar TADS) situation in the European neighbourhood.	Sustained progress of the GF-TADS Global Strategy against FMD and the improved security of supply of effective vaccines.

Hold - FAST

A Europe secure from the daily threat of **FMD** And **Similar Transboundary (FAST)** animal diseases

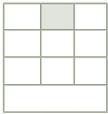


4. Key Performance Indicators, Strategies and Tactics

14 Components > 14 KPIs, each with Strategy and Tactics.

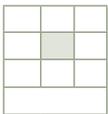
- KPIs: Quantitative measures that reflect progress towards objectives.
- Strategies: Approaches taken to achieve a particular objective.
- Tactics: Specific actions, projects, or initiatives that will be executed to achieve an objective.

Goal	OBJECTIVES	KPI Key Performance Indicators
I IMPROVE PREPAREDNESS	<ul style="list-style-type: none"> • National capacity development • Regional and national capacity in emergency preparedness • Preparedness for use of emergency vaccination • South-Eastern Europe • Applied research program • Proficiency test services (extended EU scheme) • FAST disease information gathering and analysis 	<ul style="list-style-type: none"> • Knowledge Achieved With Training • MS satisfaction with CP tools • MS satisfaction with EV assessments • % countries having tested CP plans for FAST diseases • Satisfaction of Technical Committee with completed studies • Number of eligible non-EU countries participating • MS satisfaction with FAST risk reports
II REDUCE RISK	<ul style="list-style-type: none"> • Co-ordinated activities (under GF-TADS/REMESA) • FAST disease: Improved Early Warning • Integrated capacity development 	<ul style="list-style-type: none"> • PCP-FMD indicators for progress (14 countries) • Regular surveys of satisfaction levels with EW system outputs • Knowledge Achieved with Training (tested) and numbers trained.
III SUSTAINED PROGRESS	<ul style="list-style-type: none"> • Sustained and effective PCP-FMD implementation • Improved global laboratory support • Better training for progressive control • Improved vaccine security 	<ul style="list-style-type: none"> • Process indicators, completion of Roadmaps and #countries utilising PSO expertise • Surveillance targets met in three of the five Roadmaps; system for regional vaccine recommendations being used • Knowledge Achieved With Training (tested) and numbers trained • PPP: satisfaction of stakeholders in rate of progress



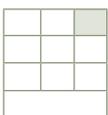
5. Significant new elements to the programme

Modelling capacity	Diagnostic bank	Early warning system	Vaccines
A Europe-wide TADS modelling capacity.	Laboratory proficiency and capacity supported by a diagnostic bank.	Integrated FAST disease early warning system in the REMESA/ neighbourhood region by end of 2020.	Vaccine security platform.



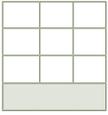
6. Core elements of the programme continued from Phase IV

Training	GET Prepared	PCP-FMD	FAR fund	Global intelligence
A world-leading training programme.	Expertise and support to MS on their preparedness.	Regionally co-ordinated targeted, national assistance to countries to apply the Progressive Control Pathway.	Fund for Applied Research (FAR).	Global intelligence on FMD with regular risk reporting on FMD.



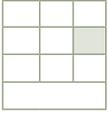
7. Oversight. Governance and co-ordination with partners and technical support structures

Governance		Technical support for decisions on changing priorities	
meets every six months			
EuFMD Executive Committee + OIE, FAO, EC.		EuFMD Standing Technical Committee (STC) for support to decisions on areas of technical complexity.	New Special Committee for Surveillance and Applied Research.
Co-ordination	Co-ordination with the private sector		Emergency management
EC (DG-SANTE), EFSA, GF-TADS (Europe, Mid-East, Global)	PP Platform for emergency planning. For private sector engagement.	PP platform for vaccine security	Co-ordination
		Daily with FAO-OIE and with the GF-TADS Emergency Management Centre (EMC)	



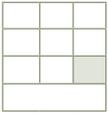
8. Operational management

The EuFMD Secretariat.



9. Financing the plan

Circa Eur. 4,000,000 per annum	
Eur. 3,000,000 EC Programme	Eur. 1,000,000 Raised by the EuFMD



10. Environmental responsibility and Sustainability Objectives

Applying the three "R's": Reduce, Re-use and Re-cycle to all operations.



Thinking of the
environmental
footprint



Food and Agriculture
Organization of the
United Nations



European Commission for the
control of foot-and-mouth disease



European
Commission



43rd General Session of the EuFMD

TURKEY FMD&FASTs SITUATION AND CONTROL STRATEGIES IMPLEMENTED

On Behalf of **Dr. Nihat Pakdil**, CVO

A.Naci BULUT

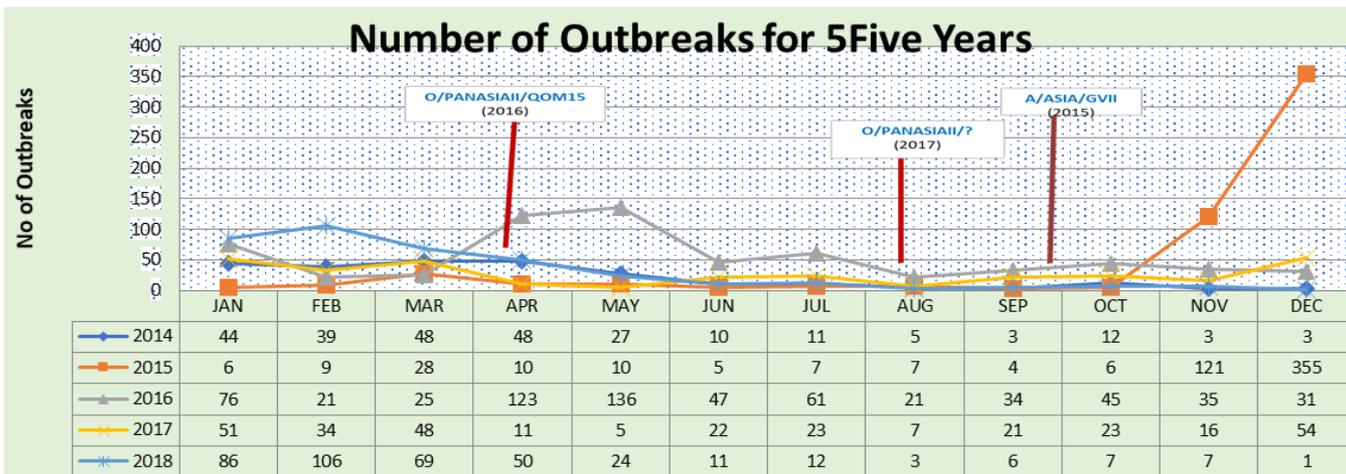
Şap Institute, Ankara, Turkey



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FMD SITUATION

- FMD is endemic in Anatolia region in Turkey
 - Currently only Serotype O (O PanAsiaII/Qom15) circulated
 - Since January 2018 Serotype A (A/ASIA/GVII); and since July 2015 Asia1 has not detected



In 2019:

- only 29 outbreaks due to serotype O (one is PCR(+)) were detected

Thrace region has been free of FMD with vaccination since May 2010



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Map Distribution of FMD Outbreaks in 2018 and 2019



- Currently not only number of outbreak has been declining, but also incidence within the population and no of affected farm have been declining

N:29



▲ A	1
● O	310
✚ POZİTİF	24



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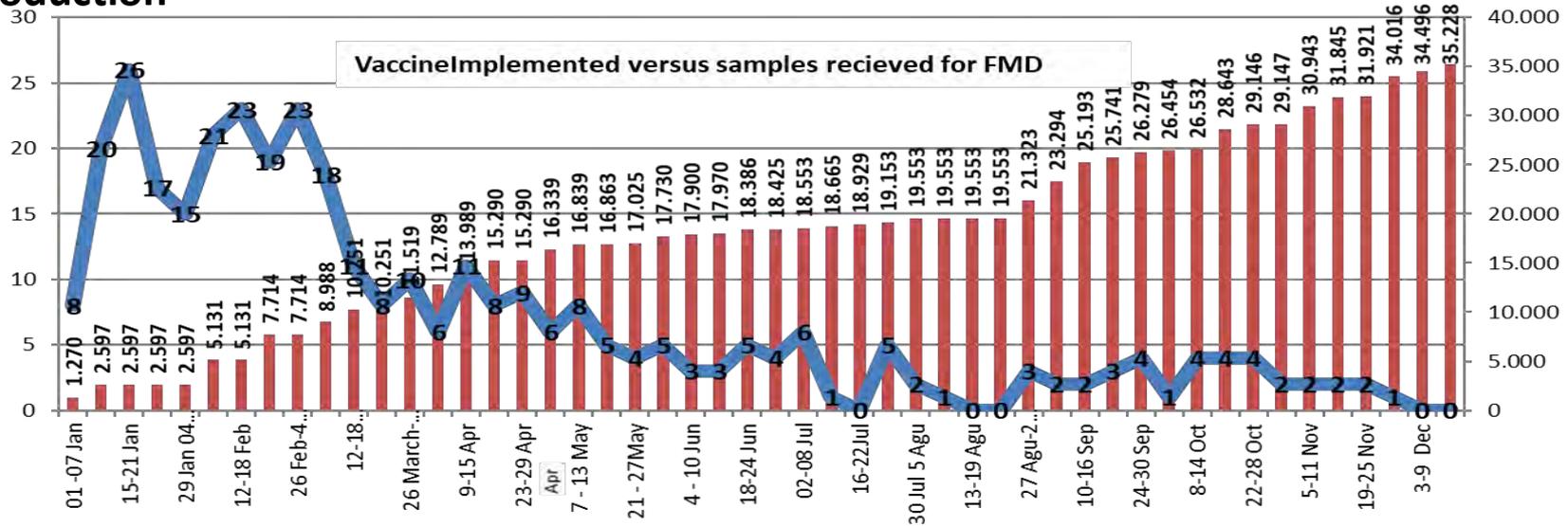
VACCINATION POLICY

- Preventive campaign vaccination :
 - In Anatolia; twice a year for LR;_ (SR not included/only request by owner)
 - In Thrace: : twice a year for LR/once for SR
- Ring Vaccination to response outbreak
 - In Surveillance zone of outbreak
- Targeting vaccination for identified “Hotspot»
- Small ruminant vaccination where risk identified
- Booster vaccination introduced in country wide
- Vaccination implemented based on risk assessment:
 - Early Spring: population assured protection before releasing grazing time
- ***Şap Institute produces FMD vaccine sufficient capacity covered national population with >6PD50 potency vaccine used***



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Vaccination policy response to FMD Outbreak Outputs in terms of reducing risk by Vaccine Introduction



- Overall >97% vaccination coverage was achieved in both, Spring and Autumn vaccination campaign
- Booster vaccination achievement was ranged between 45-75%
 - The latest SP serosurveillance: >90 overall antibody level (combination of all age group; without booster) was determined in both regions, Anatolia and Thrace region.



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Objective of the FMD national plan (RBSP)

GOAL OF NEW STRATEGY

To contribute to the development of
the livestock sector by achieving OIE
status of FMD free with vaccination

by 2023

2019 AchieveStage_3

2021 AchieveStage_4

2022 (end of) Achieve
Stage_5

- The strategy is consisting of two main components as zonal approach:
 - **Thrace region:** currently FMD free with vaccination;
 - **goal:** maintain freedom then progress free status
vaccination not practised
 - **Anatolia:** currently PCP stage2;
 - **goal:** progress to OIE status of FMD free with vaccination



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THE OTHER CONTROL MEASURES IMPLEMENTED, ADDITION TO VACCINATION

- **Diagnosis, Genetic and Antigenic Characterization of Isolates**
- **Epidemiological investigation**
 - Active and passive surveillance
 - Outbreak investigation and case study
 - Sero-surveillance; NSP Prevalence estimation in Anatolia/Risk based surveillance Program for early detection in Thrace
 - *Clinical surveillance in provinces along to borderline*
- **Routine control measures in case of the outbreak**
 - Sampling, biosecurity, restriction, quarantine
- **Control of animal movements and markets**
 - Movement monitored by TURKVET requiring of received vaccine-(2times for young anm. and once for adult within last six month
 - Clinical examination in destination
 - Improvement on dealer certification and regulation as well as of vechiles of animal transportation
- **Training field vets and awareness activities for stakeholders**
- ***Stamping out in Anatolia;* will be introduced with time with different regions or sectors**



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THE OTHER CONTROL MEASURES IMPLEMENTED, ADDITION TO VACCINATION

- **Monitoring and Evaluation System has been already established**
 - Central (GDFC)/Institute/Province level
 - This system administrates assessment and evaluation of the strategy
 - Additionally, steering committee and task force designated for the strategy monitors the plan
- **Routine Surveillance and sero-surveillance**
 - NSP Suro-surveillance: Assessment disease dynamics and identifying risk factors
 - Post vaccination sero-surveillance: Vaccination performance and antibody level
 - New clinical surveillance program & OI procedure
- **Reconstructed database with more functional and features**
 - Animal Registration System by TURKVET
 - LR/SR registered into the system with ear-tag; initiated replacement of electronic ear-tag
 - Animal movement managed and monitored by the system
 - Veterinary Information System (VIS)
 - Outbreak Management
 - Entering outbreak data all notifiable disease
 - Recording vaccination data
 - Sample Management System regulated by the database system
 - Recording surveillance questionnaire data



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What is the new on the new strategy?

- Clinical surveillance in provinces along to borderline
 - This will be extended all area
- Stamping out in Anatolia
- Use extra high potency (10PD50) vaccine
 - in borderline provinces,
 - in response to outbreak- in surveillance zone, and
 - where the risk identified it crucial
- Booster vaccination
- Restriction of the movement
 - Requirement use identified road and check on the check points
 - Requirement vaccination two times within last six months
 - Automatic restriction by Turkvet
- Improvement infrastructure on movement and dealers
- *Collaboration and cooperation with neighbouring countries*



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Summary

- *Vaccination is the main component of control policy implement in Turkey in addition to other control measures*
- *Due to effective control measures;*
 - *Vaccination coverage and protection level reach on desirable level*
 - *Number of outbreak has been decreased*
 - *Current outbreaks with low incidence rate*
 - *NSP prevalence, virus circulation, also has been declining*
 - *Budget allocated to control of the diseases particularly for FMD increased*



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Summary

To reach main goal of the strategy, new aggressive control measures also are put in place;

GOAL OF NEW STRATEGY

To contribute to the development of the livestock sector by achieving OIE status of FMD free with vaccination

by 2023

2019 AchieveStage_3

2021 AchieveStage_4

2022 (end of) Achieve Stage_5

endorsed official control plan (OCP) for FMD in end of 2020



Food and Agriculture
Organization of the
United Nations



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



European
Commission



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LUMPY SKIN DISEASE (LSD)



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Bacground

- Eight years after being occurred in Israel, first LSD outbreak was detected in Turkey in August 2013
 - Index case was in Kahramanmaraş, province in cross border of Syria
- The disease were first spread dynamically around Kahramanmaraş, mainly East Mediterranean, South Eastern and East Central Anatolia regions and then spread throughout of Anatolia in second year
- Means by massive vaccination and stamping out, including the others control measures, it has been currently occurred in limited area in which it has been related to more likely insect activity





d General Session of the EuFMD

MAP DISTRIBUTION FOR LSD IN 2017-18-19

MAP DISTRIBUTION OF LSD OUTBREAKS IN TURKEY IN 2019



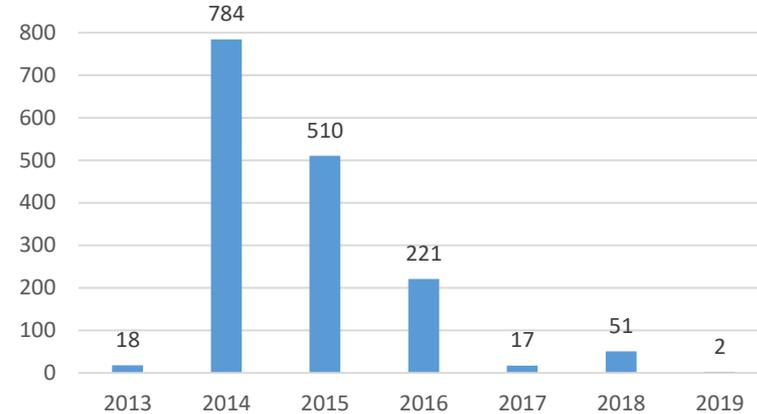
MAP DISTRIBUTION OF LSD OUTBREAKS IN TURKEY IN 2018



n:51



LSD OUTBREAKS BY YEAR



LSD outbreaks in 2017



n:17



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ii	Program (Yıllık)	Gerçekleşme	%	ii	Program (Yıllık)	Gerçekleşme	%
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ii	Program (Yıllık)	Gerçekleşme	%	ii	Program (Yıllık)	Gerçekleşme	%		
			28	EDİRNE	149.362	154.968	103,75 ⁵⁵		
			29	ELAZIĞ	148.720	148.133	99,61 ⁵⁶		
1	ADANA	232.901	248.106	106,53	30	ERZİNCAN	115.043	108.976	94,73 ⁵⁷
2	ADIYAMAN	92.731	90.386	97,47	31	ERZURUM	745.253	795.867	106,79 ⁵⁸
3	AFYONKARAHİSAR	360.000	349.606	97,11	32	ESKİŞEHİR	135.669	147.120	108,44 ⁵⁹
4	AĞRI	351.518	431.398	122,72	33	GAZİANTEP	183.759	185.810	101,12 ⁶⁰
5	AKSARAY	240.487	214.972	89,39	34	GİRESUN	89.687	94.143	104,97 ⁶¹
6	AMASYA	190.193	177.629	93,39	35	GÜMÜŞHANE	73.680	78.063	105,95 ⁶²
7	ANKARA	438.000	484.220	110,55	36	HAKKARİ	42.805	37.972	88,71 ⁶³
8	ANTALYA	162.986	184.828	113,4	37	HATAY	148.367	136.248	91,83 ⁶⁴
9	ARDAHAN	290.968	338.173	116,2	38	IĞDIR	149.911	181.390	121 ⁶⁵
10	ARTVİN	58.481	73.511	125,7	39	ISPARTA	115.941	89.934	77,57 ⁶⁶
11	AYDIN	378.148	442.852	117,11	40	İSTANBUL	97.644	99.112	101,57 ⁶⁷
12	BALIKESİR	525.124	259.853	49,48	41	İZMİR	622.274	620.918	99,78 ⁶⁸
13	BARTIN	49.363	61.345	124,27	42	KAHRAMANMARAŞ	189.294	197.949	104,57 ⁶⁹
14	BATMAN	85.000	79.769	93,85	43	KARABÜK	47.390	47.729	100,72 ⁷¹
15	BAYBURT	85.000	86.179	101,39	44	KARAMAN	61.916	66.157	106,85 ⁷²
16	BİLECİK	32.974	32.633	98,97	45	KARS	450.045	483.696	107,48 ⁷³
17	BİNGÖL	135.325	145.666	107,64	46	KASTAMONU	270.464	217.837	80,54 ⁷⁴
18	BITLİS	81.948	78.942	96,33	47	KAYSERİ	347.594	309.953	89,17 ⁷⁵
19	BOLU	124.175	117.688	94,78	48	KIRIKKALE	68.610	68.272	99,51 ⁷⁶
20	BURDUR	195.297	189.733	97,15	49	KIRKLARELİ	136.173	166.064	121,95 ⁷⁷
21	BURSA	177.810	190.313	107,03	50	KIRŞEHİR	198.000	138.282	69,84 ⁷⁸
22	ÇANAKKALE	187.698	184.98	98,56	51	KİLİS	12.340	12.081	97,97 ⁷⁹
23	ÇANKIRI	139.515	96.074	68,86	52	KOCAELİ	119.437	123.504	103,41 ⁸⁰
24	ÇORUM	213.573	208.736	97,74	53	KONYA	861.377	791.057	91,84 ⁸¹
25	DENİZLİ	252.560	257.360	101,9	54	KÜTAHYA	183.106	186.359	101,78
26	DIYARBAKIR	538.178	291.605	54,18					
27	DÜZCE	63.427	58.332	91,97					

VACCINATION COVERAGE FOR LSD





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LSD_Control Policy

Routine control measures in response to outbreak

- Restriction, Quarantine, Ring Vaccination, Diagnosis
- Cleaning and Disinfection in outbreak areas-Biosecurity
- Insect control
- Stamping-out with compensation
- Control of animal movements
- Mass vaccination
 - S&GP vaccine strain used as 3x doses of sheep&goat
 - Vaccination implemented before session of starting insect activities; ONCE A YEAR
- Pendik Veterinary Control Institute is The National Reference Laboratory conducts diagnosis service
- SGP vaccine used against LSD produced by PVCI and other two private companies



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LSD CONTROL PROJECT

A new Project has been initiated for control of LSD:

- The Project has been funded by EC with National budget contribution
- Aimed eradicated the disease
- Vaccination will be covered by the Project till next year
 - S&GPV vaccine strain (with 3times doses of sheep) used for Anatolia while Neethling based vaccine strain used in Thrace
 - This will be started next year, this year national budget used as before
- Compansation for stamping out covered by national budget
- A technical assistance Project will be conducted as part of the Project:
 - Capacity building of laboratory
 - Training
 - Awareness campaign
 - Surveillance and serosurveillance



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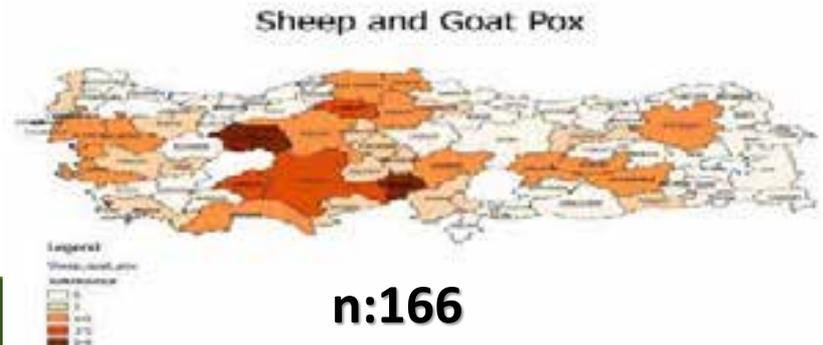
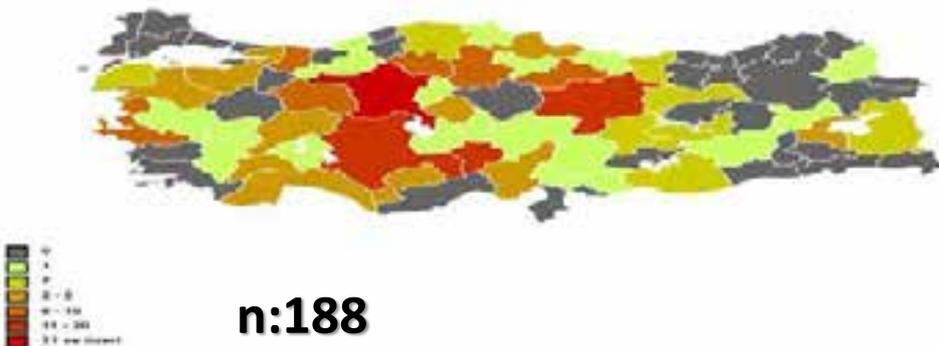
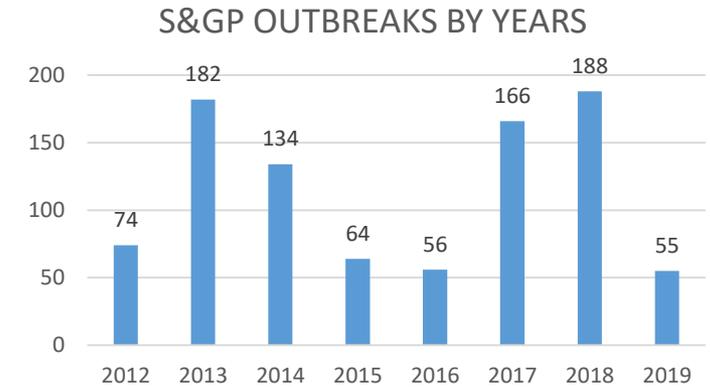
SHEEP&GOAT POX DISEASE (S&GP)



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MAP DISTRIBUTION OF S&GP OUTBREAKS IN TURKEY IN 2017-18-19

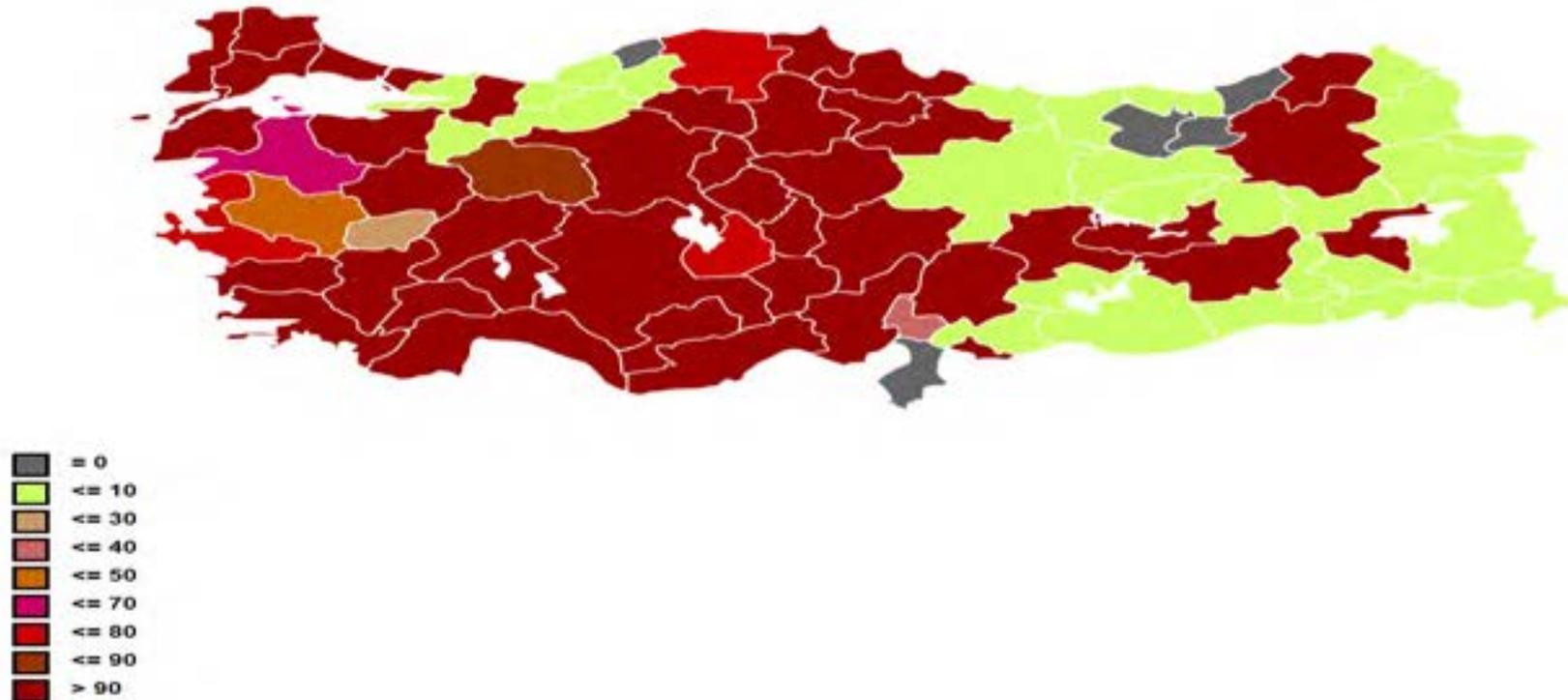
MAP DISTRIBUTION OF S&GP OUTBREAKS IN TURKEY IN 2019





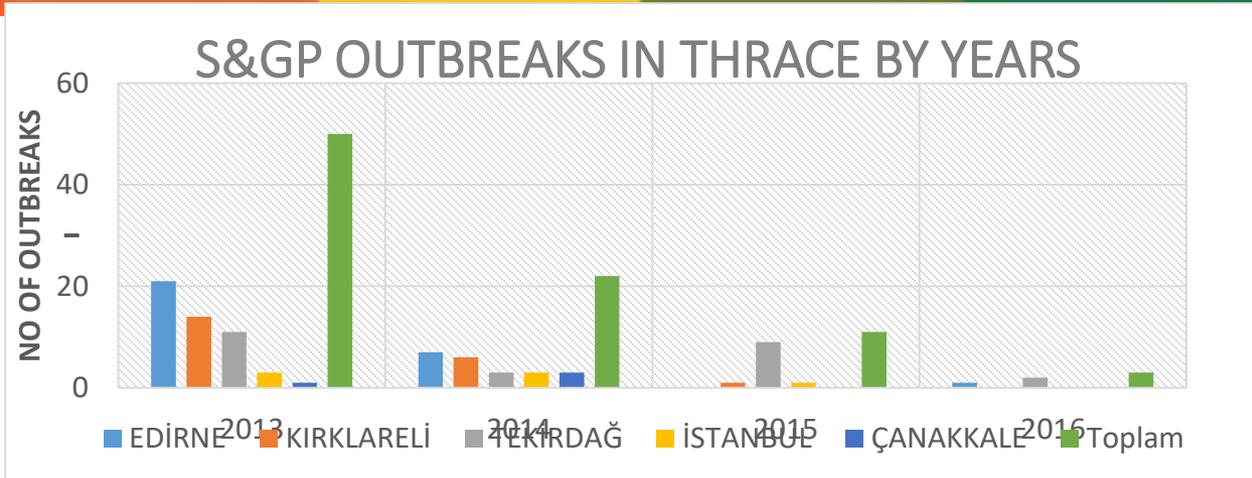
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VACCINATION COVERAGE FOR S&GP IN 2018





43rd General Session of the EuFMD SHEEP & GOAT POX IN THRACE



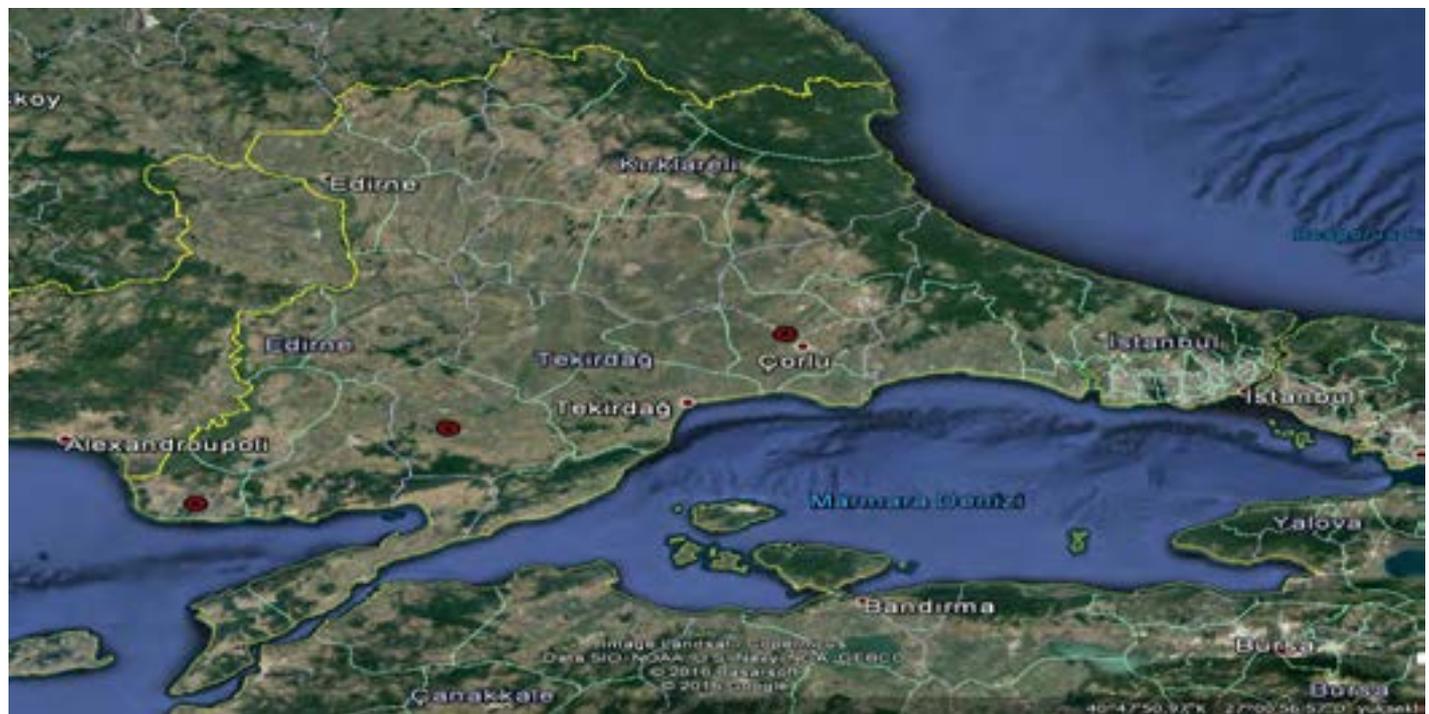
- Three S&GP outbreaks were occurred in Thrace in 2016
 - One in Enez, Edirne
 - Two in Tekirdağ; Malkara and Çorlu
- One outbreak (last one) 2017
 - Ipsala
- Compared by years there has been a gradually declining on number of the outbreaks

PROVINCES	2013	2014	2015	2016	2017
EDİRNE	11	7	0	1	1
KIRKLARELİ	15	6	1	0	-
TEKİRDAĞ	10	3	5	2	-
İSTANBUL	3	2	2	0	-
ÇANAĞKALE	11	6	2	4	-
TOTAL	50	24	10	7	1



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MAP DISTRIBUTION OF S&GP OUTBREAKS IN THRACE IN 2016





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CONTROL POLICY

- Routine control measures in case of outbreak
 - Restriction, Quarantine, Ring Vaccination, Sampling, Diagnosis
 - Control of animal movements
 - Cleaning and Disinfection on outbreak areas

• Current Vaccination Policy

- All small ruminants are vaccinated throughout Thrace
- Small ruminants will vaccinated in outbreaks zone of Anatolia
- Response to outbreak, all small ruminants vaccinated 2 year continuously in outbreak zone after occurrence
- Vaccination is carried out before autumn and winter session that occur high prevalence of the disease

Vaccination in Anatolia by years

YEAR	TARGETED	IMPLEMENTED	COVERAGE
2012	526.402	458.244	87
2013	839.486	650.128	77
2014	2.380.748	2.503.886	105
2015	2.242.482	1.764.441	79
2016	2.260.133	2.360.586	104
2017	3.445.100	3.768.443	109
2018	3.132.272	4.341.777	140

Vaccination in THRACE IN 2018

PROVINCE	TARGETED	IMPLEMENTED	COVERAGE
ÇANAKKALE	166.500	183.160	110,01
EDİRNE	335.276	340.459	101
İSTANBUL	155.675	153.400	100,00
KIRKLARELİ	341.500	346.943	98,66
TEKİRDAĞ	306.350	307.048	100



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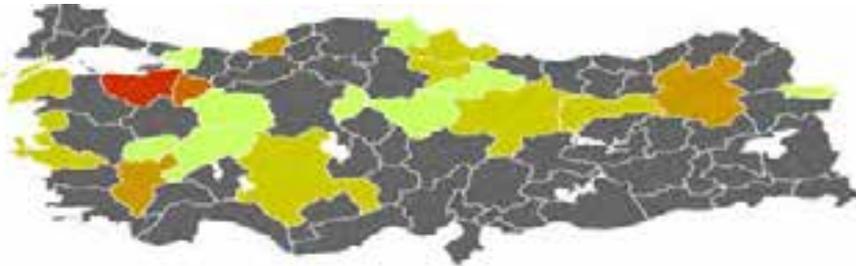
PESTE DES PETITS RUMINANTS (PPR)



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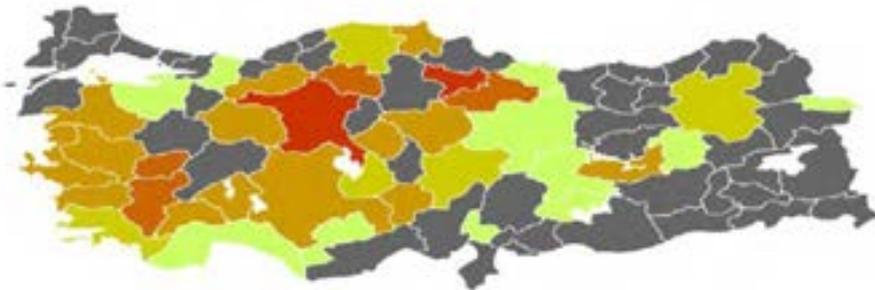
MAP DISTRIBUTION OF PPR OUTBREAK IN ANATOLIA IN 2017-18

MAP DISTRIBUTION OF PPR OUTBREAK IN ANATOLIA IN 2019



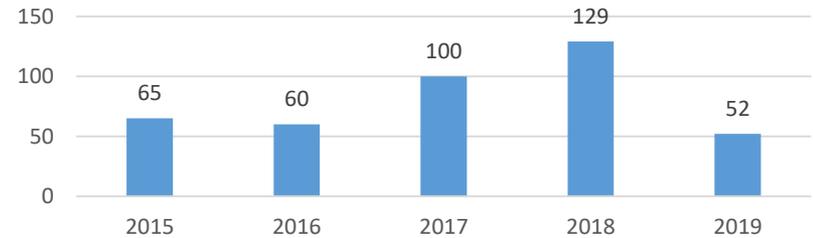
n:52

MAP DISTRIBUTION OF PPR OUTBREAK IN ANATOLIA IN 2018



n:129

PPR OUTBREAKS BY YEAR



MAP DISTRIBUTION OF PPR OUTBREAK IN ANATOLIA IN 2017

PPR outbreaks in 2017



n:100



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CONTROL POLICY for PPR

- A strategy plan has been prepared and implemented since 2016 approaching with regional progressive eradication of the disease
- **ANATOLIA**
- Routine control measures in case of disease outbreak
 - Restriction, quarantine, ring vaccination, sampling, diagnosis
- Control of animal movements
- Unvaccinated animal not allowed for movement.
- Vaccination policy
 - all animals in response to outbreaks (ring vaccination),
 - As protective propose:
 - All new born and
 - Unvaccinated adults
- **THRACE**
- PPR has not been detected clinically in Thrace region since 2013
- Next year vaccination will be ceased
- Initiated the disease control program to achieve zonal free status
 - Control of animal movements strictly applied
 - Initiated serosurveillance activities
 - Continued clinical surveillance program integrated Thrace FMD RBSP



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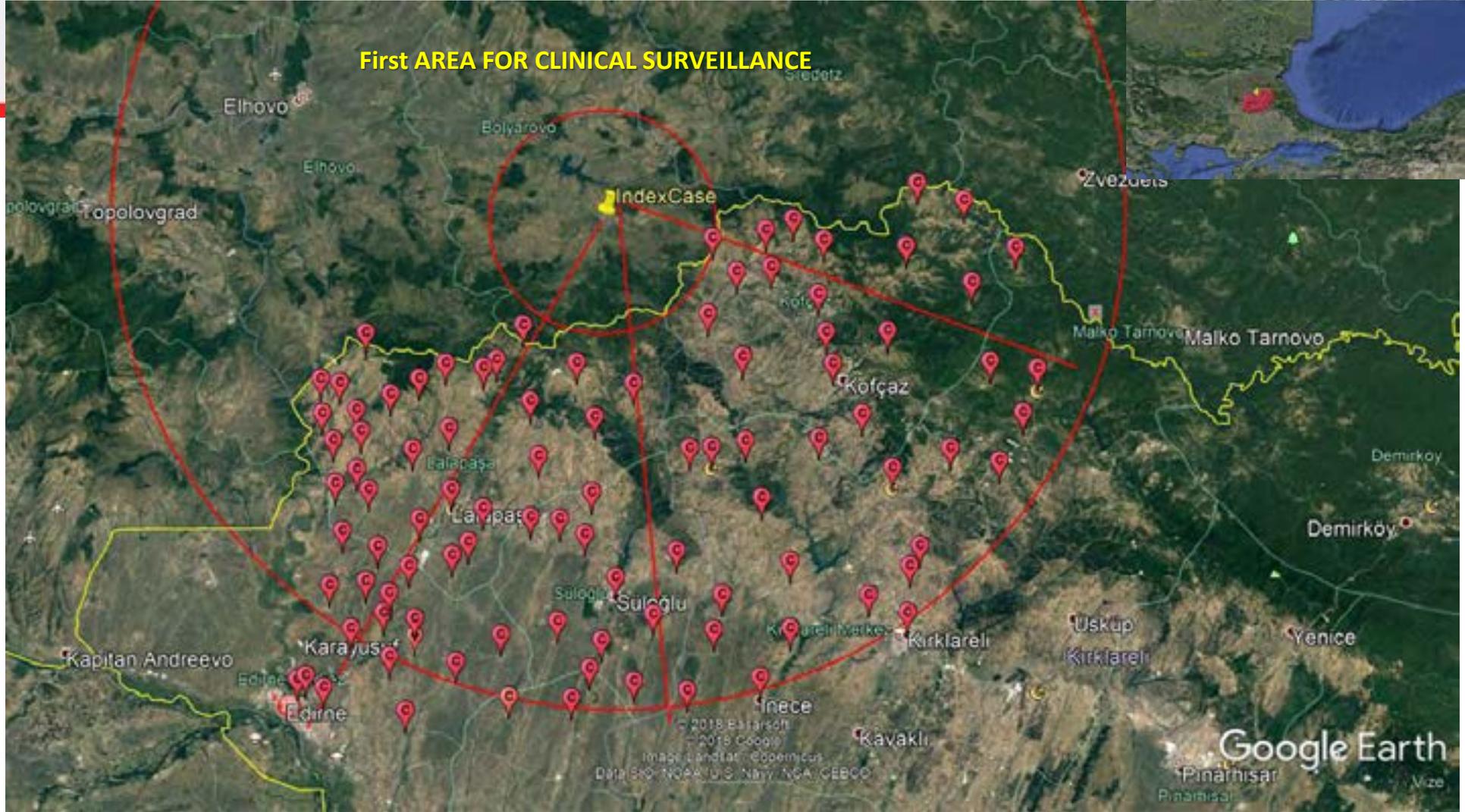


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CLINICAL SURVEILLANCE RESPONSE TO BL PPR OUTBREAK



First AREA FOR CLINICAL SURVEILLANCE





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CLINICAL SURVEILLANCE

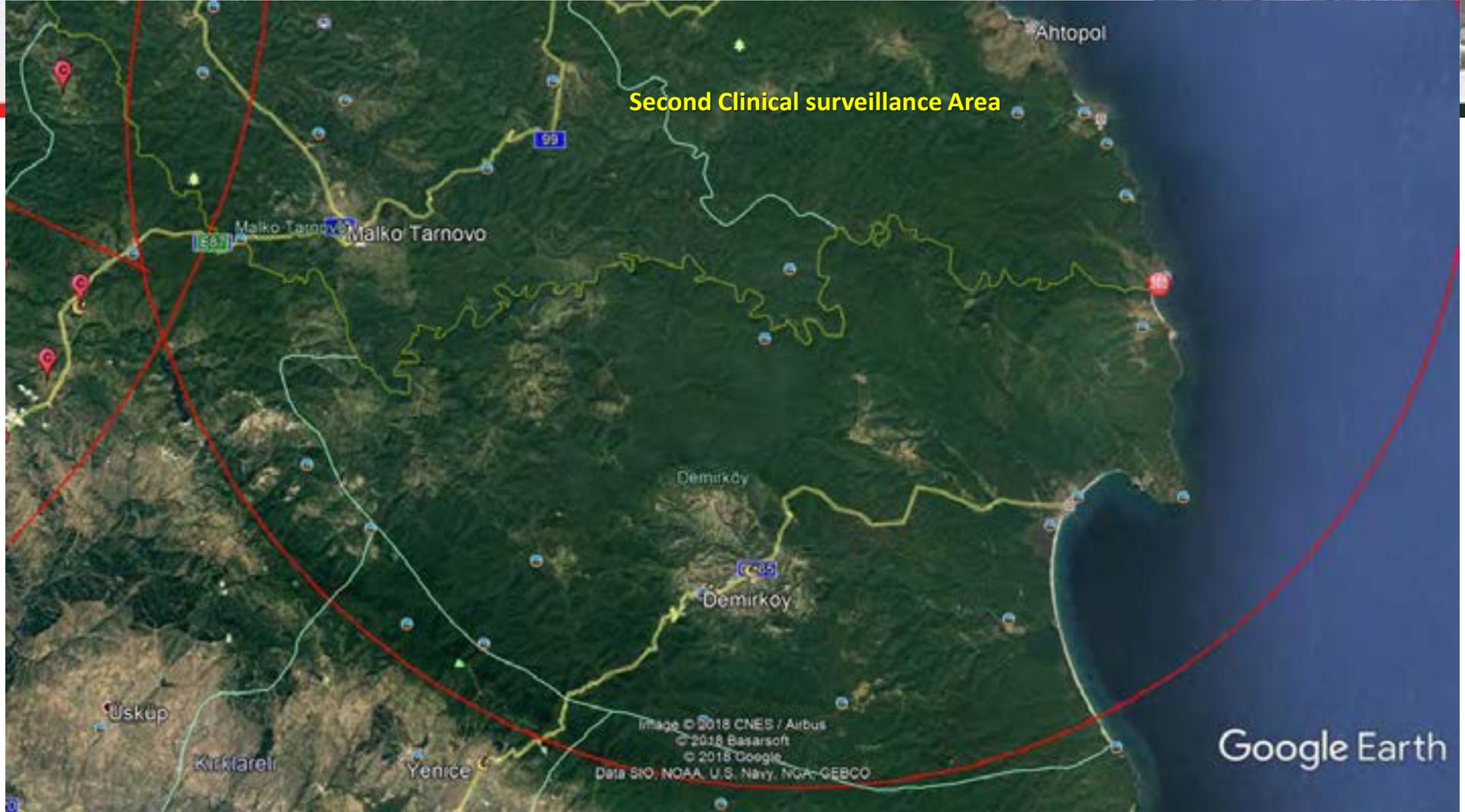
- Clinical surveillance for early detection to response PPR outbreak:
 - **Area** has been extended to 45km deeper from the border, instead of surveillance zone of the outbreak
 - **Location:** Edirne (central, Lalapaşa, süloglu and Havsa districts) and Kırklareli(central and kofçaz) provinces
 - **Epi-Units:** 90 villages
 - **Population size:** 89017 SR (80761 and 8256 Sheep and Goat respectively)
 - Target for clinical examination: 60 animal (for >100 /per epi-unit); all if exist<100/per epi unit
 - Almost all **farms** were visited for examination and totaly 3870 SR were examined
 - Any suspecion detected by the surveillance
 - Result recorded database;[PPR CLINICAL SURV EDRN KRKLL JULY18.xlsx](#)
 - Data collection form;[PPR-KlinikSur kayapa.jpg](#)



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VACCINATION and Other Measures

- In addition regular annual vaccination achieved this year;
 - All SR were vaccinated in those two provinces, Edirne and Kırklareli
- Animal existed surveillance area were kept confidence inside the barns till 13rd July
- Animal movement and market were stanstilled up to finalizing clinical surveillance





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SECOND PHASE CLINICAL SURVEILLANCE

- Clinical surveillance planned with same criteria's with first:
- Villages in Area 35km square:
 - 35 villages from central of Kırklareli
 - 22 villages from Demirköy district
- Up to 7th August:
 - 3180 sheep and goats were examined clinically in total of 35 central villages of Kırklareli Provinces.
 - 1482 small ruminants were examined by PPR clinically in 21 villages of Demirköy district
- There has been not detected any suspicion on PPR clinically



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PPR VACCINE PERFORMANCE SURVEILLANCE

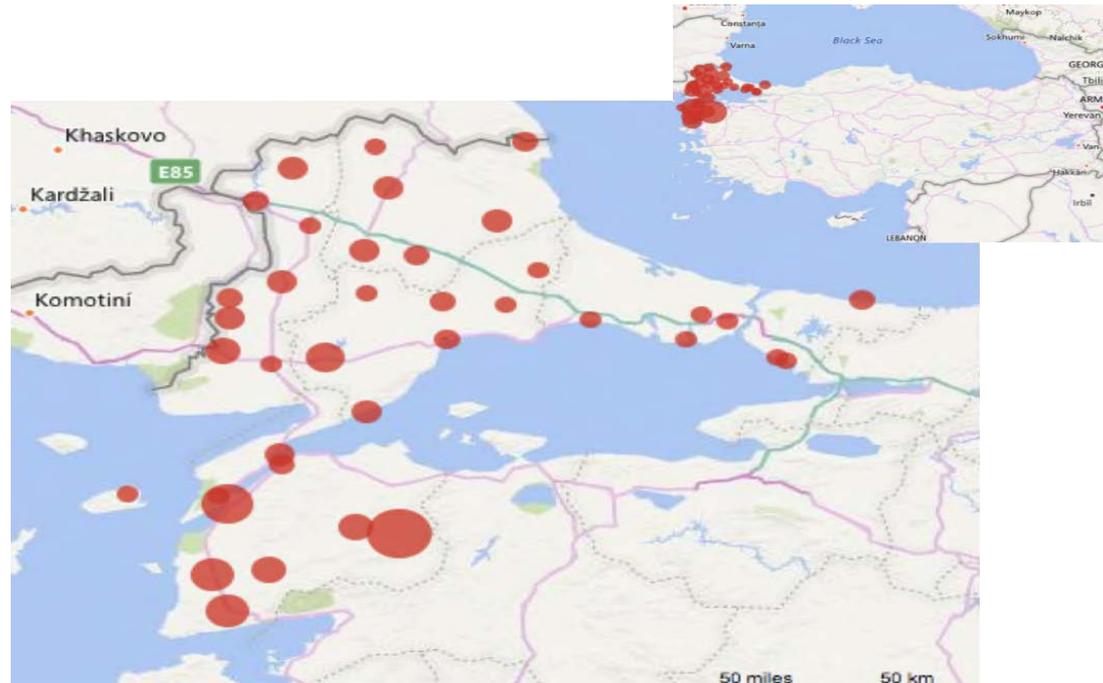


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DESIGN OF SEROSURVEILLANCE

- Used two stage sampling
 - Number of village (Epi-units)
 - Number of animal for sera sampling
- 108 epi-units
- 20 sera samples/per
- Age: young and young adult combination
- 1730 sheep and 325 goat (105 samples for sheep out)
- Mab Blocking ELISA used for test

SAMPLING MAP DISTRIBUTION AND SAMPLING SIZE

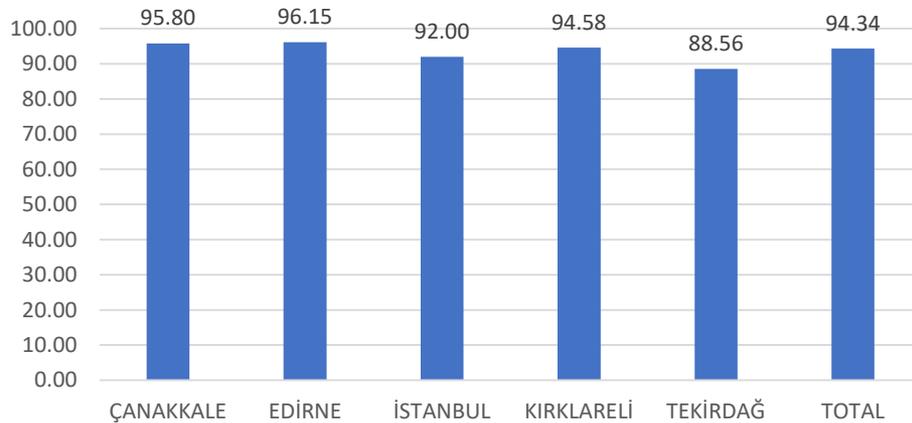




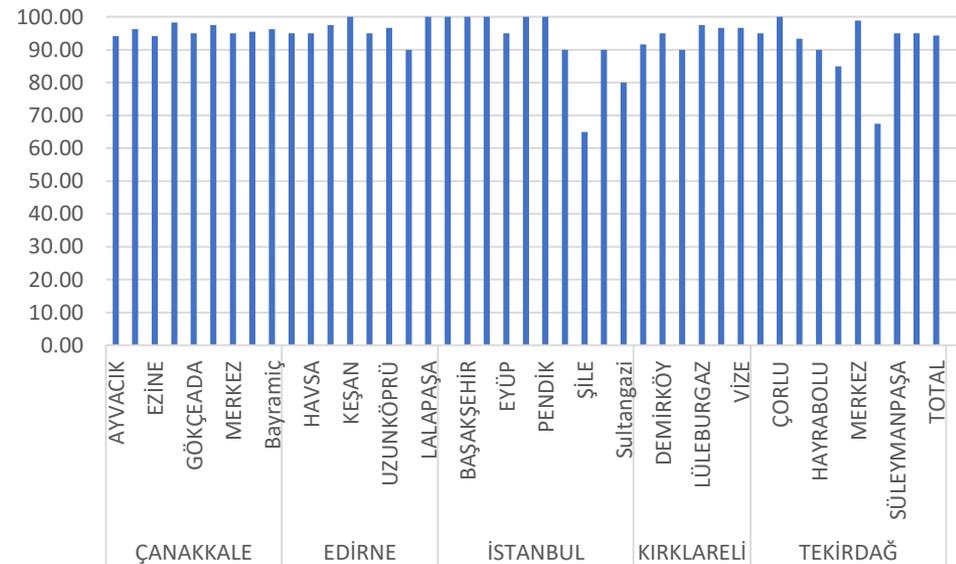
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IMMUNITY COVERAGE BY PROVINCES AND DISTRICTS

Immunity Coverage%



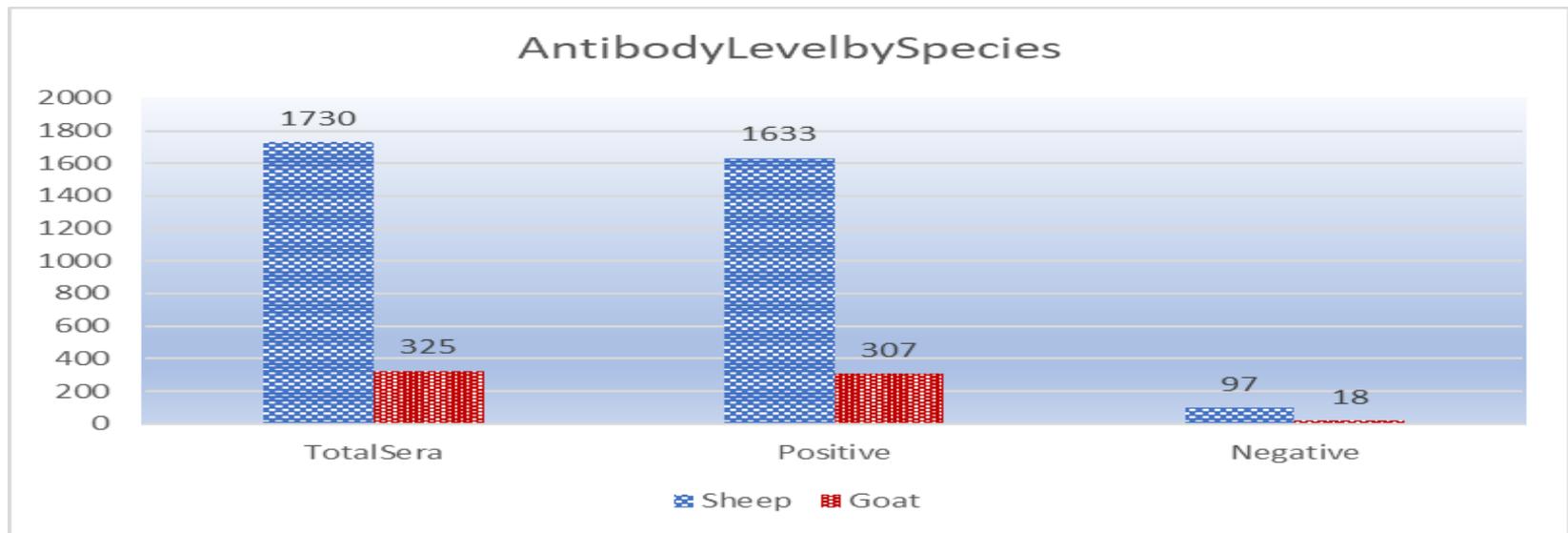
Immunity Coverage%





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SAMPLING PORPORTION AND IMMUNITY LEVEL BY SPECIES





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FMD & TADS Threats in Israel



Dr. Tamir Goshen, Acting CVO.
Israeli Veterinary Services & Animal Health



Israel

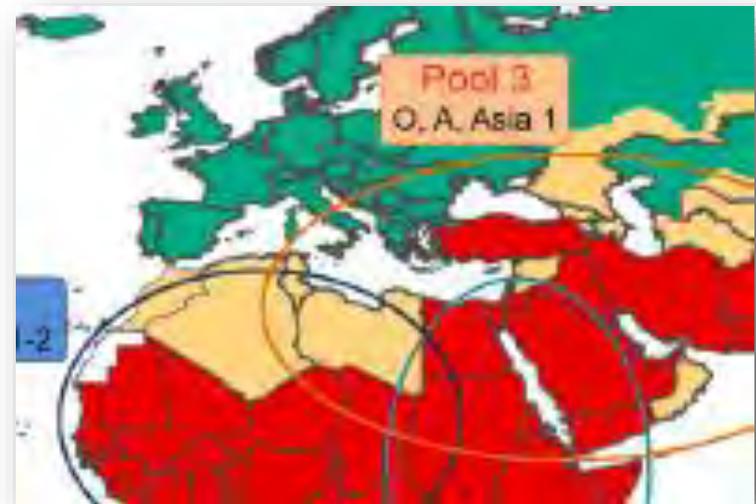
- Dairy Cattle – 200,000 (cows + replacement)
- Beef- Pasture – 50,000 (cows)
- Feedlot – 300,000 Calves, 300,000 lambs.
- Sheep – 500,000 (ewes)
- Goats – 100,000 (does)
- Pigs - 16,000 (sows)





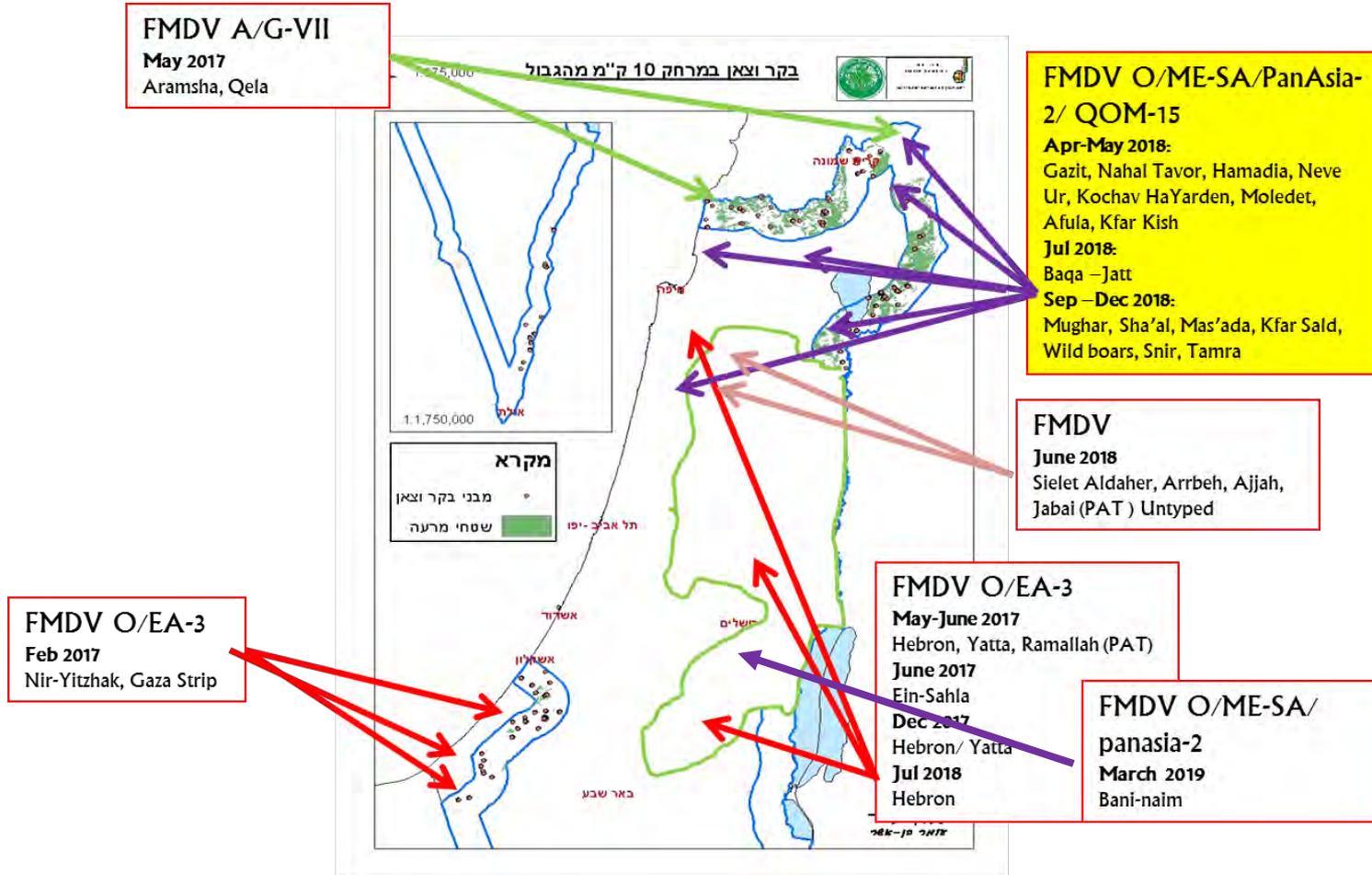
FMD

- Endemic region.
- Incursions close to the borders.
- Little/no warning from neighboring countries.



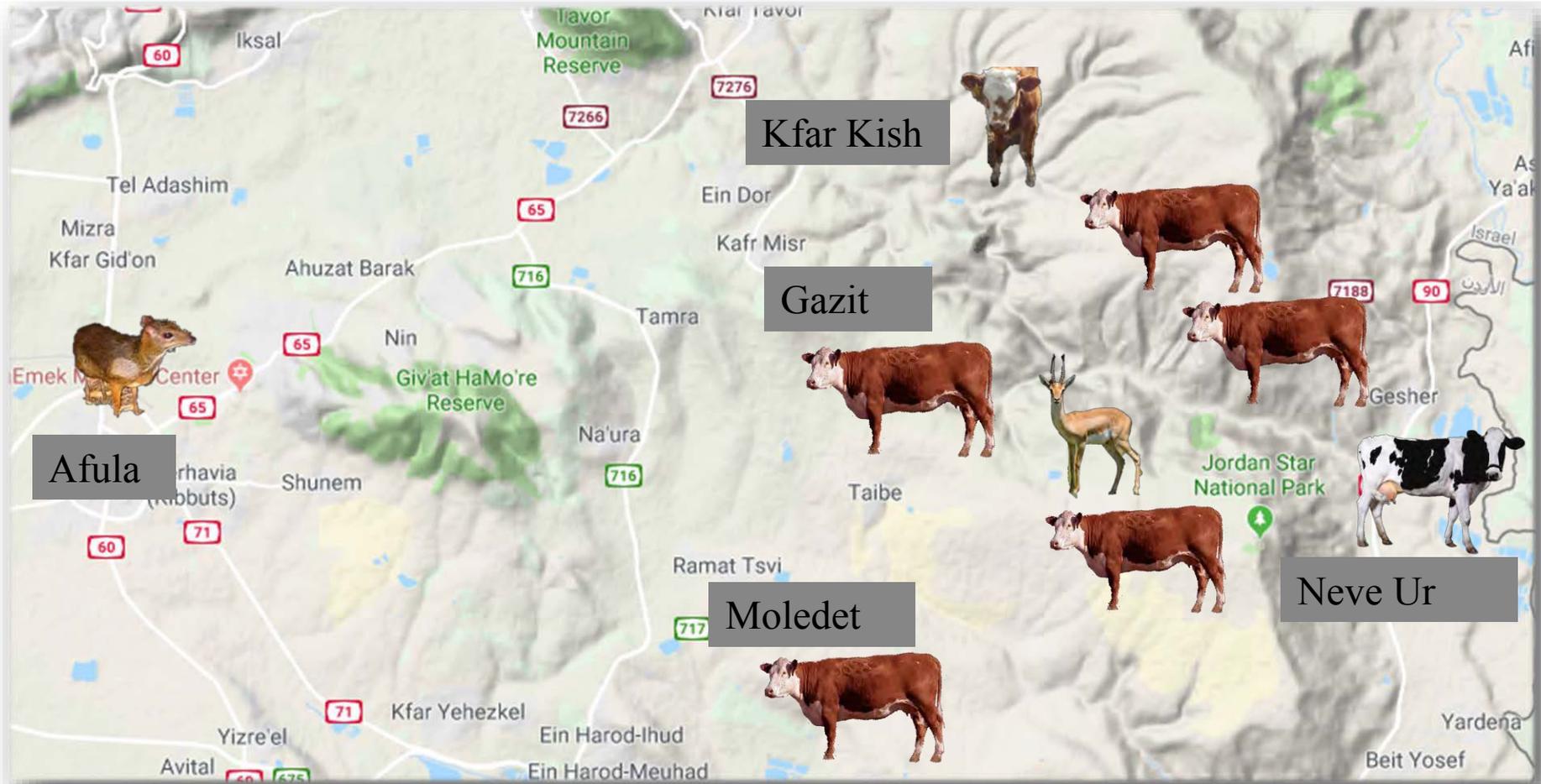


FMD Outbreaks 2017-8



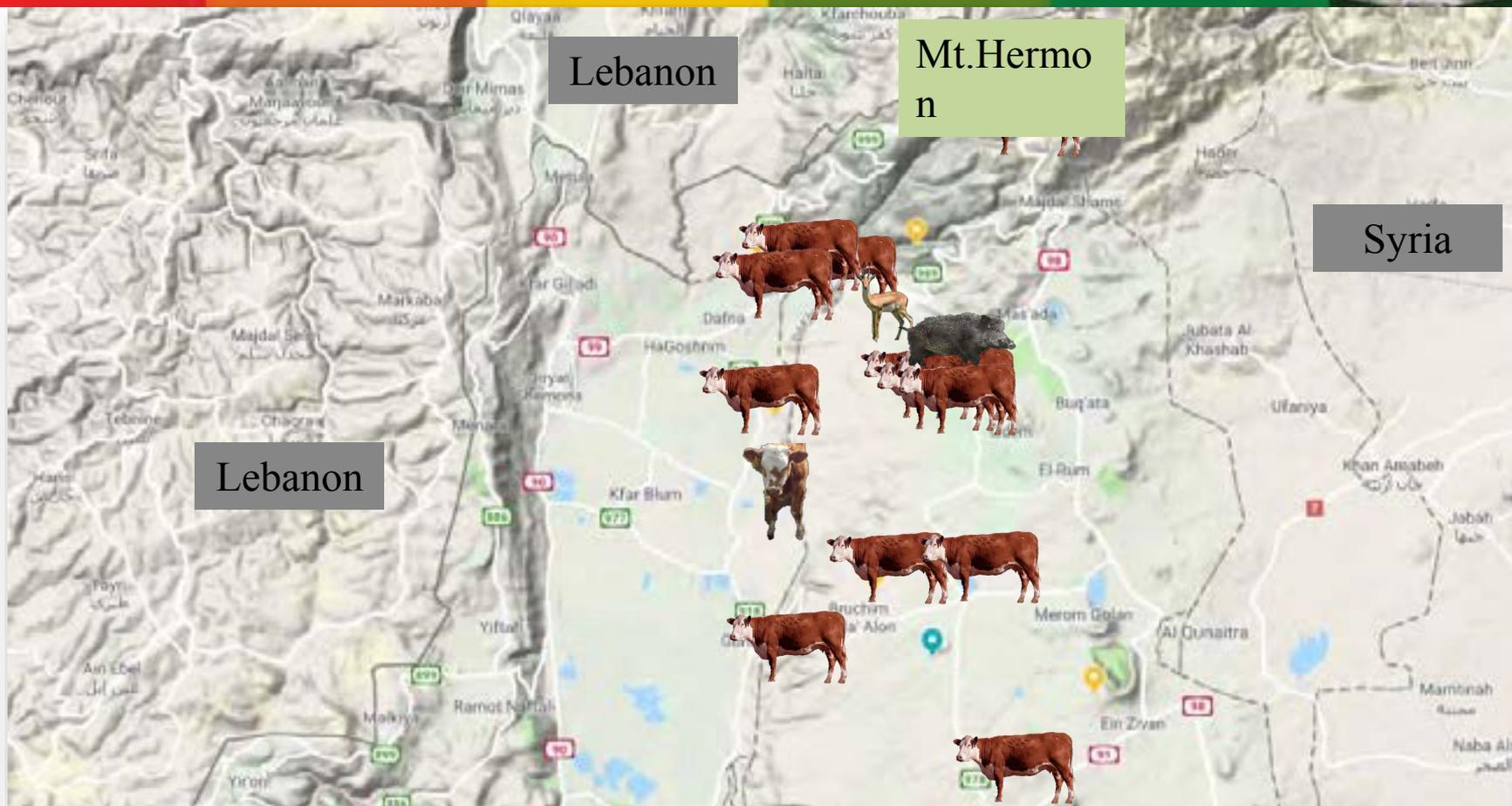


FMD – Valleys





FMD – Golan heights





FMD - Control

- Annual vaccination. (O,A, ASIA-1)
- Asia-1 – last outbreak 1989.
- Nearest outbreak - Turkey 2015.
- Future vaccines – A+0 (ASIA-1 antigen bank).
- W/O early warning – vaccination campaign will continue.



TADS

- Emerging disease:
 - Ephemeral fever.
 - Simbu group viruses.
 - LSD.
 - EHD.
- RVF.



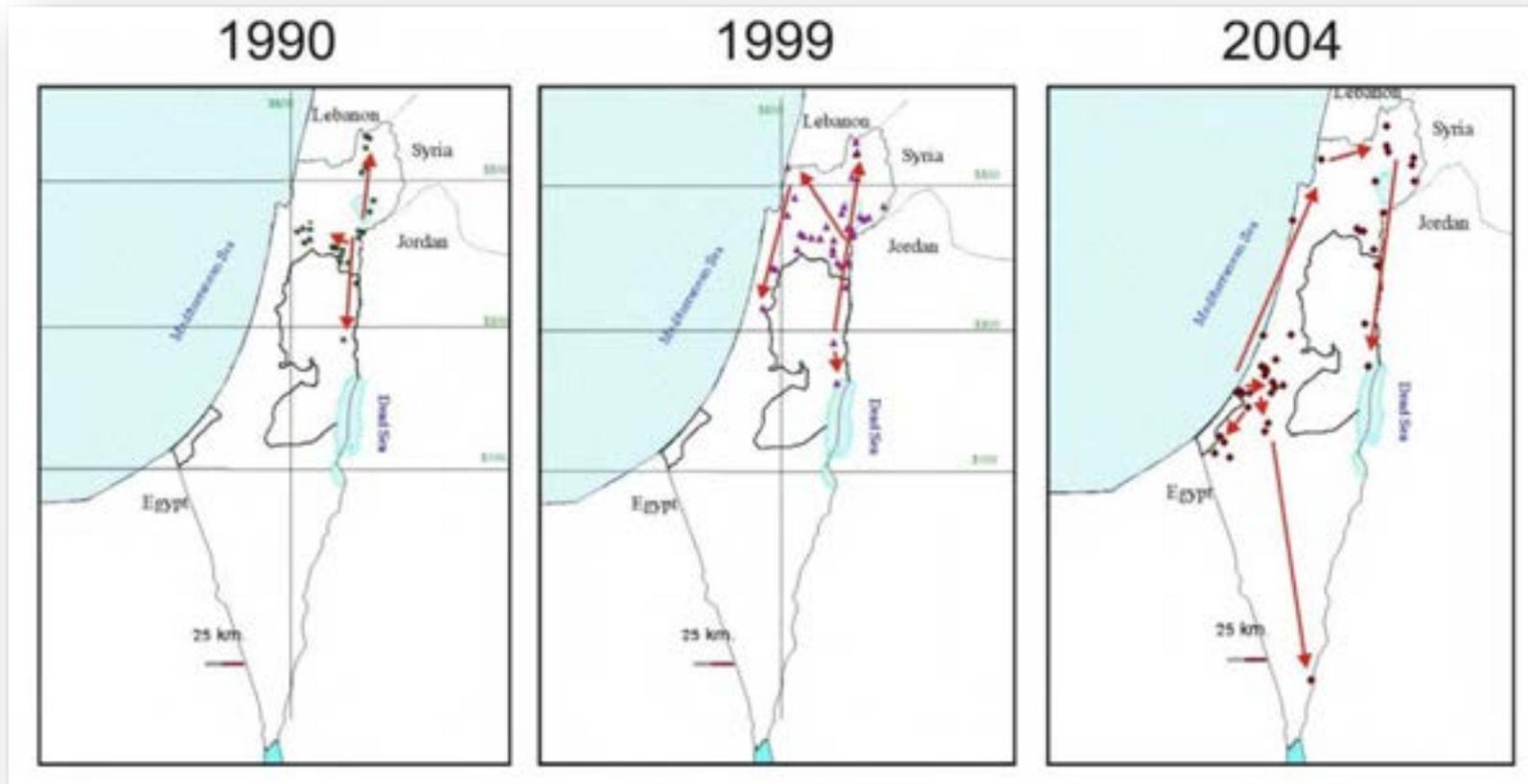
Bovine Ephemeral fever

- Disease caused by an arbovirus (Rhabdoviridae), affects cattle and buffalo.
- Fever ($>40.5^{\circ}$), salivation, nasal discharges, lameness, tremor, respiratory distress, emphysema, milk yield \downarrow , recumbency, transient infertility & abortions.
- High morbidity/low mortality.



Bovine Ephemeral fever

- 1931, 1951, 1990-91, 1999-2001, 2004, 2008-2010, 2014-2015, 2018.





Bovine Ephemeral fever

- Vaccines:
 - Inactivated – not produced, ineffective.
 - Attenuated – matching? Efficacy?



Simbu group viruses

- National monitoring.
- Mosquitos & midges monthly capturing.
- 6 ½ year old heifers – blood sampled monthly.
- Akabane, Aino, Shuni, Peaton





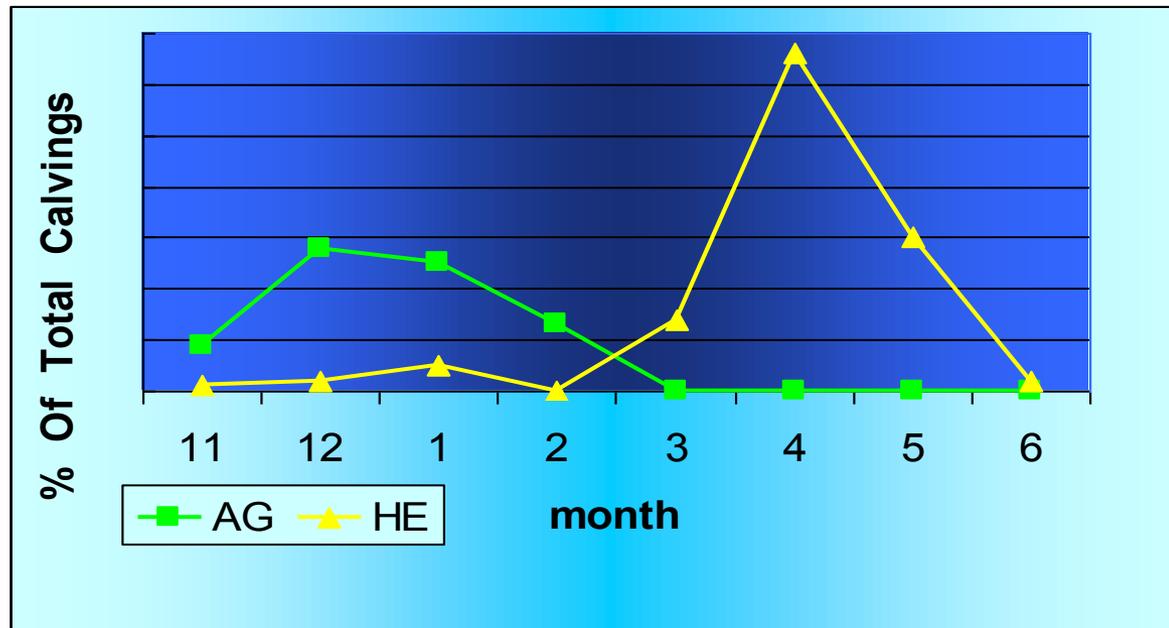
Simbu group viruses

- Akabane:
 - 1969-70.
 - 1985.
 - 2001-2003 (AKAV+AINO).
 - 2012.
 - 2014-2018.



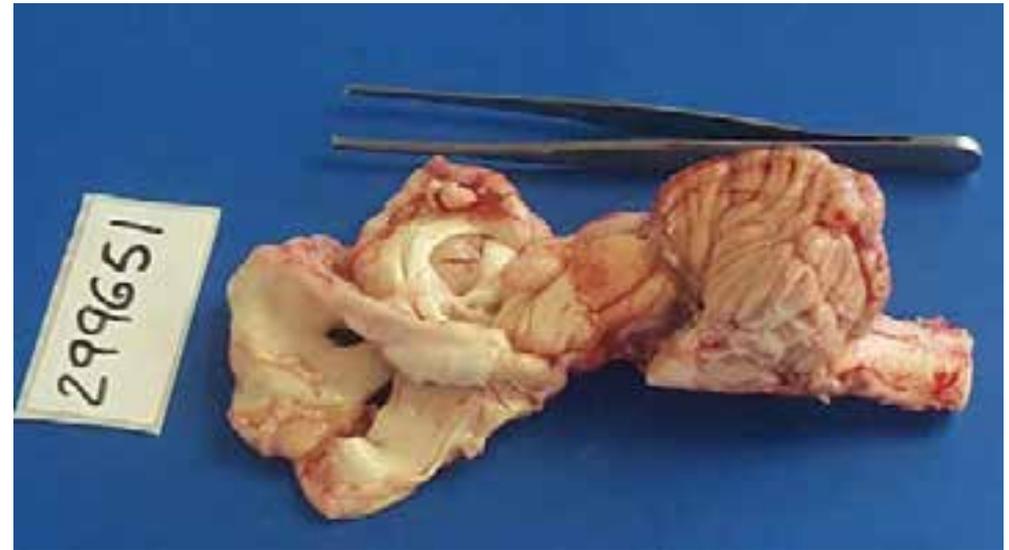
Simbu group viruses

- Abortions.
- Dystocia.
- Arthrogryposis & Hydranencephaly.



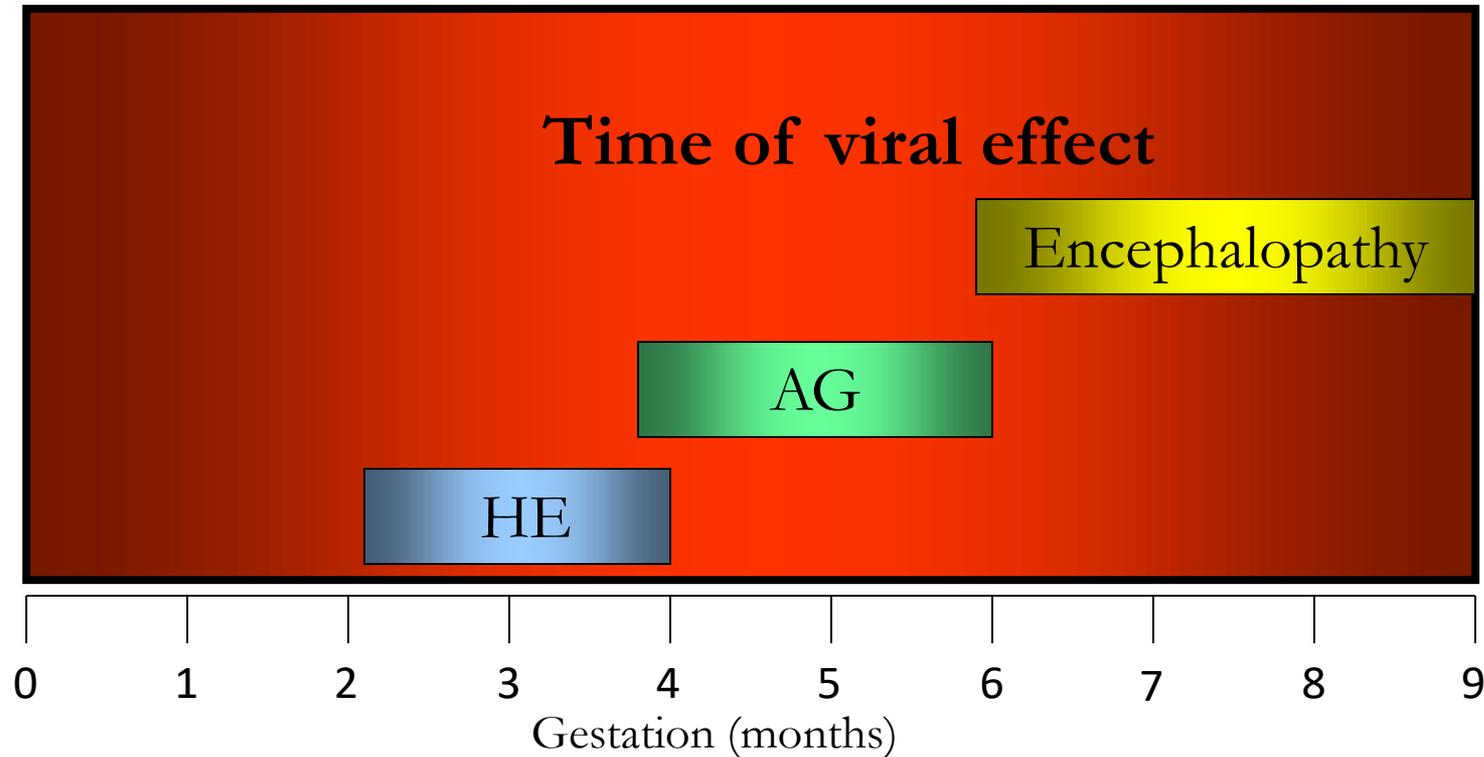


Simbu group viruses





Simbu group viruses



Arthrogryposis = AG

Hydranencephaly = HE



Simbu group viruses

- Cows/Ewes – no clinical signs.
(abortions?)
- No control measures.



Challenges

- Effective control measures.
- Vaccine availability.
- RVF.





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Thanks for listening.





Georgia

Lasha Avaliani

Head of Veterinary Department, OIE Delegate,

National Food Agency

Zurab Rukhadze

National Food Agency





Objective of the FMD National Plan

Goals – Reduce the risk of FMD infection in large and small ruminant populations and ensure maintenance the export capacity of animal and animal products of the country.

Strategic objective – To ensure full operation of FMD Risk Based Strategic Plan by 2019, reach PCP stage 4 by 2020 and reach FMD official free status with vaccination for candidate zone by 2022.

Candidate zone – Racha-Lechkhum Kvemo Svaneti & Mestia



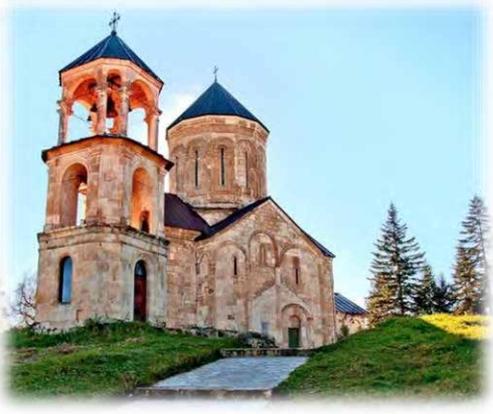
**რაჭა-ლეჩხუმ ქვემო სვანეთის რეგიონისა და შუაქეთის მუნიციპალიტეტის
 ცხოველთა ძირითადი დაავადებებისაგან თავისუფალ ზონად ჩამოყალიბების
 ეროვნული სტრატეგია**

სამოქმედო გეგმა 2019-2020



- სტრატეგია (ძირითადი დოკუმენტი) - 21 გვერდი
- დანართი # 1 (სამოქმედო გეგმის მიმდინარეობის მონიტორინგი და შეფასება) - 6 გვერდი
- დანართი # 2 (საერთაშორისო მიჯნველნი) - 2 გვერდი
- დანართი # 3 (სობანქსაქი) - 12 გვერდი

გვერდი 03, თარიღი 11.02.2019



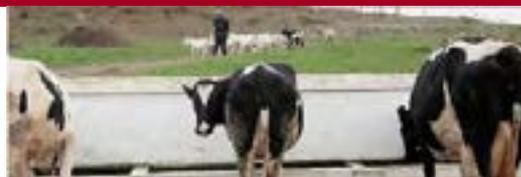


Progress along Stage 3 - Component 1

- No FMD outbreaks detected
 - 10 suspicious case was reported in 2018

Region	Period	Specious	# of samples	results
Racha Lechkhumi	May	LR	2	negative
Tbilisi	June	LR	2	negative
Mtskheta Mtianeti	July	LR	2	negative
Samtskhe Javakheti	July	LR	3	negative
Guria	September	LR	1	negative





Progress along Stage 3 - Component 1

NSP-SP Sero-survey 2018 in Georgia was held by four categories:

- Villages with high risk categories excluded Candidate Area;
- Villages with low risk categories excluded Candidate Area;
- Migrating animals in Eastern Georgia;
- Villages in Candidate Area;

In total 5 000 NSP and 1 000 SP samples were tested;



Serosurvey design

- Guidelines for field veterinarians and laboratory staff with all necessary paper forms has been elaborated
- Field and Laboratory information was entered in Electronic Integrated Disease Surveillance System (EIDSS)

Food and Mouth Diseases Sero-surveys (NSP and SP-Ah surveys) in Georgia, 2015 (IAFT v-3)

General objectives
To conduct the first EIDSS serosurvey (NSP, SP-Ah) in Georgia and to establish a baseline for future serosurveys.

Specific objectives for the NSP and SP-Ah surveys

- To provide baseline and existing information on the prevalence of FMDV antibodies in the State of Georgia.
- To assess the seroprevalence of FMDV antibodies in the State of Georgia (data from 2015 serosurvey).
- To identify seroprevalence in the State of Georgia (data from 2015 serosurvey) and to establish a baseline for future serosurveys.

Fig. Map of Georgia regions and districts.

1. NSP-Ah antibody surveys in large & small ruminants

Objectives

1. Determination of level of FMDV circulation in different high risk herds areas and in the rest of the country (as background).
2. Identify differences in NSP-Ah levels between different high risk herds areas and the rest of the country.

Methodology

- General ruminant serosurvey will be used to establish the level of FMDV circulation within the high herds areas and in the rest of the country. This approach allows accurate and precise estimation of NSP-Ah levels in the different high herds areas and in the rest of the country by conducting of NSP-Ah serosurvey in all ruminants.
- The serosurvey will be conducted in different herds areas (herds) of FMDV in Georgia. Some of the herds are: (1) herds (including 100-200 animals) in the State of Georgia.

Procedure for sampling in non-structured premises (NSP) (NSP)

This procedure study the seroprevalence of FMDV in the country and define high risk areas in order to be able to select and implement effective seroprevalence serosurvey in:

Sample collection/serosurvey/transportation:

1. Blood samples (10 ml) are collected for serosurvey (specimen) at under the direct supervision of the veterinarian with the defined plan. It is desirable to collect samples during morning or afternoon. To long the sheep assigned for this serosurvey. It is desirable to change village or settlement without adding or returning samples without getting permission from the village of tomorrow return the animal, return.
2. In structured premises the number of species or the animal size be restricted (e.g. if there are two different species of birds in order to be able to collect from each species, the village can use the designed in each case plan (e.g. in order to collect from each species) is needed from consent office.
3. Sampling shall be done on the basis of random selection in the villages included in the plan. The first sample shall be collected from each village in the village, if more than one sample shall be taken from the same village there will be taken from every third holding (see from 1000 more than 10 animals from each holding) it is better to take 1 sample from each holding. Sampling shall be done near the nearest settlement. For 10 animals from each village and small ruminant herds (e.g. in order to collect from each species) is needed from consent office.
4. Various labels shall be fixed with blood in maximum 10 tubes in maximum 10 ml tube in order to be able to identify (NSP) or animal from field for use for the sample. The first of these and sample labels shall be marked with a sample number shall be used for every single animal.
5. Collected samples will be transferred to 4 days cold according to the following table if 1 village with (according to the plan) if 100 and more number of samples in the village (e.g. first sample collected in the village will be 01-01 and so on) independent of animal species (e.g. first sample 0001-01), in the village make place within the regional office of OIE. In case of several herds existing in the same village, you maintain the order in the village the major premises (all samples shall have unique number). From the plan distributed from the regional office and 7 days of village will be returned (NSP) to:
6. Animals or the samples shall be identified in order there are no any sign of FMDV infection in the field. Must sample from the animal.
7. Before returning to the lab collected samples shall be kept in 4°C (NSP). Samples shall be returned to the lab in order to process (see Annex 2) (NSP).
8. After taking the blood samples, fill out again of the certificate for each village and herds (NSP).
9. It is desirable to identify in sample use based of identification for the animal from the animal (NSP).

EIDSS sero-monitoring forms
Non-structural protein (NSP)

Monitoring/Sampling form: _____, 2015

Herds/Village: _____, Village

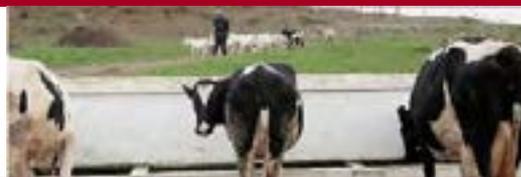
Name and address of contact person: _____

Village: _____, Province: _____

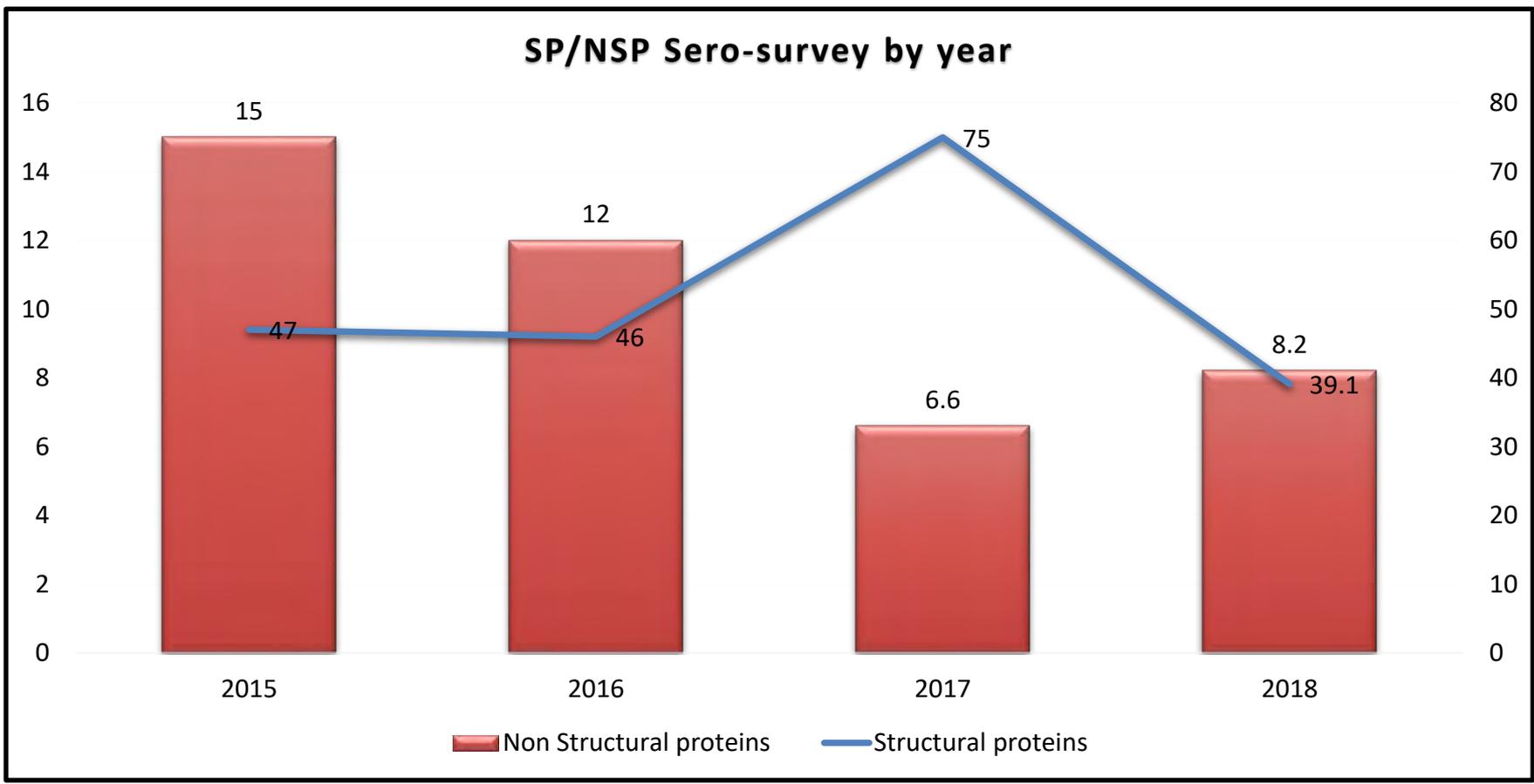
No.	Animal species	Sex (age of animal)	Sex	NSP (sample)	Sample number (in figure)
1	Cattle	♂	Feb. 02		
	Sheep	♂	Mar. 03		
	Goat	♂			
2	Cattle	♂	Mar. 03		
	Sheep	♂	Mar. 03		
	Goat	♂			
3	Cattle	♂	Mar. 03		
	Sheep	♂	Mar. 03		
	Goat	♂			

Signature: _____

Contact person: _____, Contact address: _____



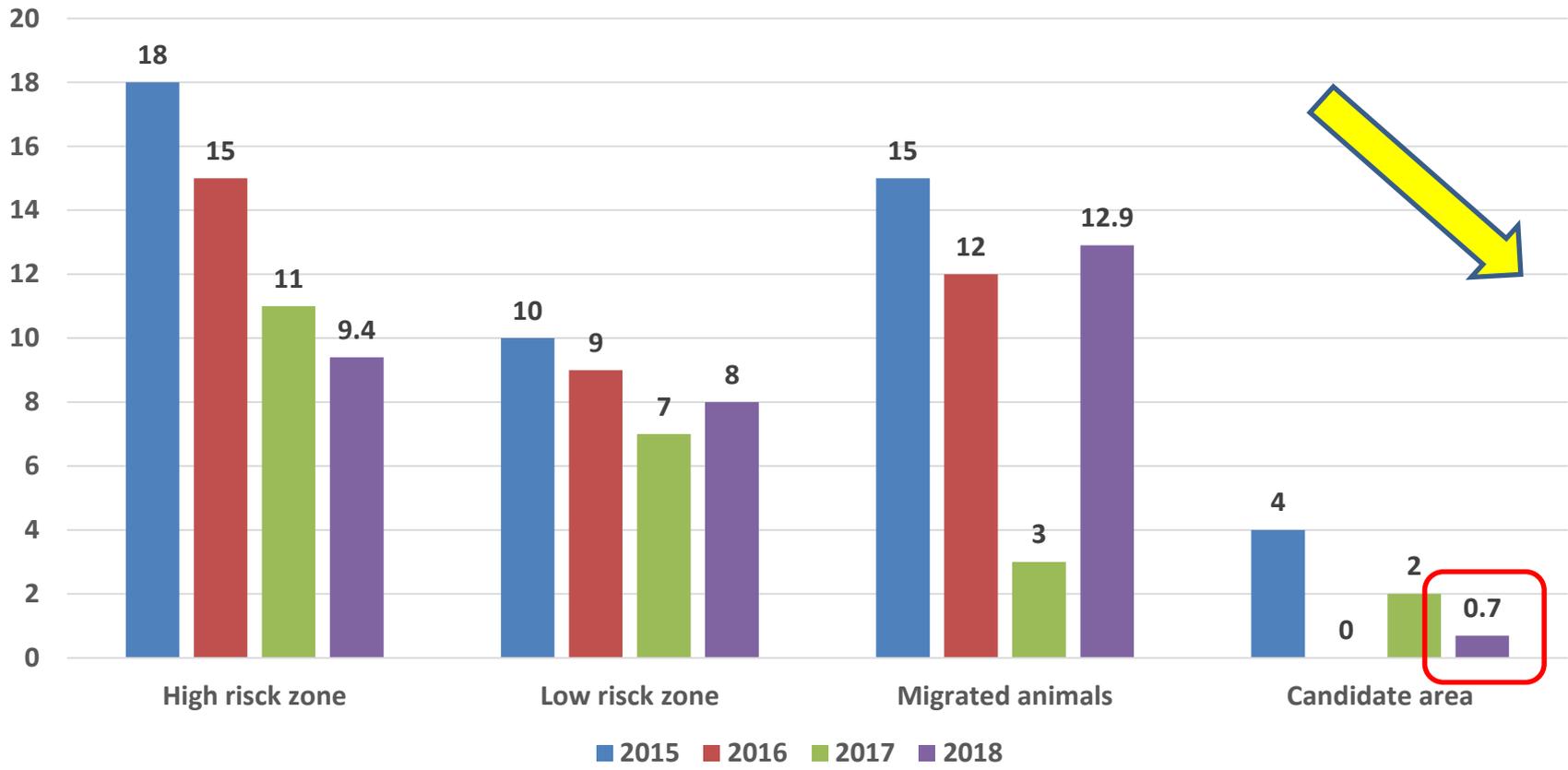
Progress along Stage 3 - Component 1





Progress along Stage 3 - Component 1

NSP-Circulation each risk zone by year

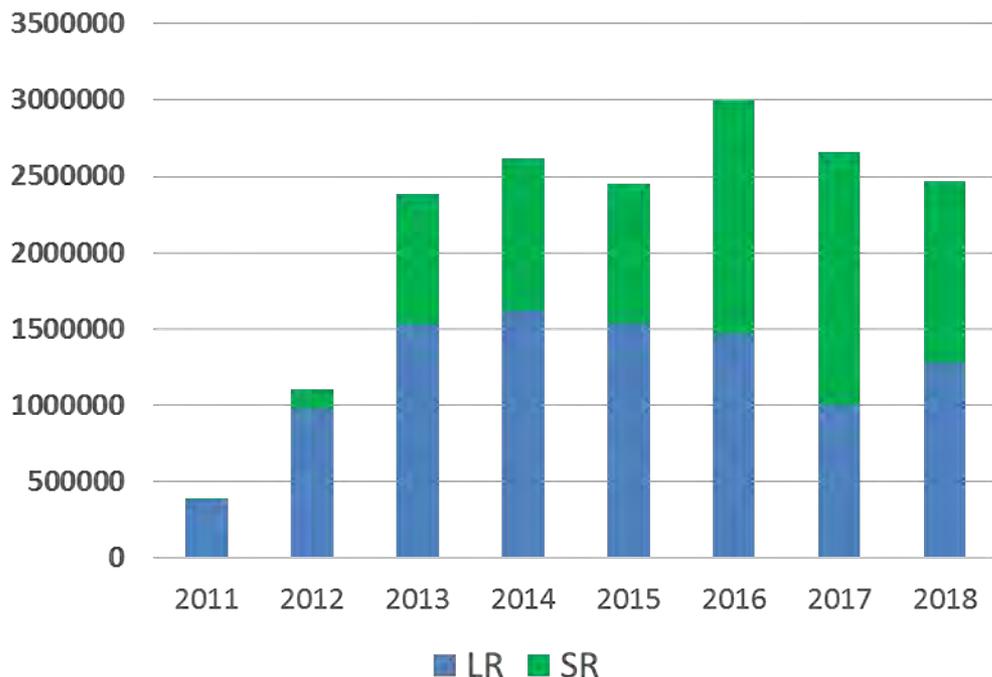




Progress along Stage 3 - Component 1 Major FMD control measures - Vaccination

Strains used A-Iran 05; A G - VII, O-PanAsia2; Asia1-Shamir (*sholkovo*)

FMD prophylactic vaccination in 2011-2018

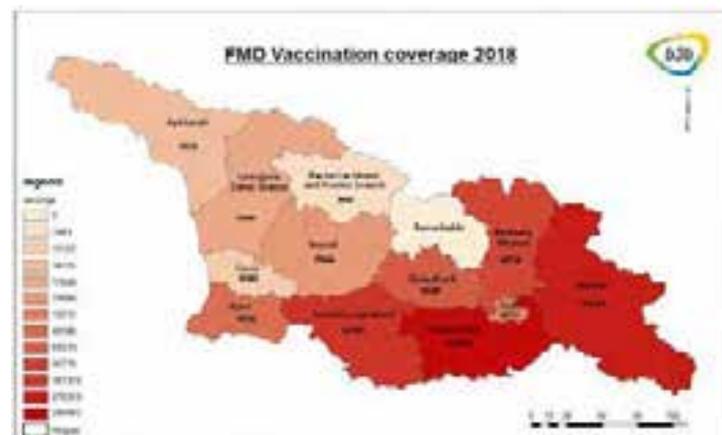


2018 FMD vaccination - 2 risk category

- Risk hotspot - in western Georgia
- Full coverage - in eastern Georgia

Vaccination/revaccination:

1 280 392 LR & 1 183 095 SR





Progress along Stage 3 - Component 1 Major FMD control measures - monitored

Evaluation of vaccine quality and immune responses in naïve animals

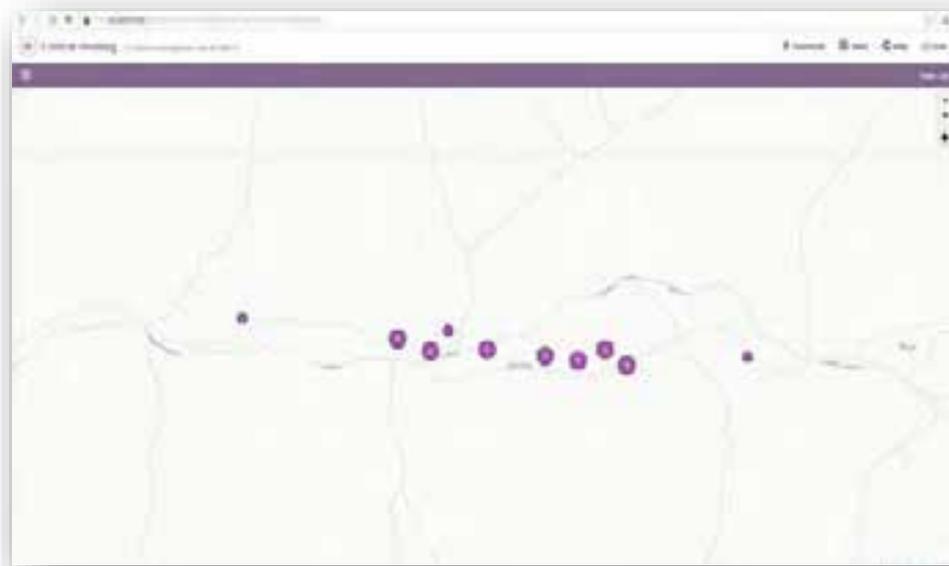
Duration	Specification of action	Date	Status	N of samples
Before the Vacc.	Collect 2x 10-ml blood for serum from each animal	09.10.2018	Completed	20 LR – 20 SR
Day 0	Vaccinate the vaccination groups (18 animal) with a single dose of vaccine as stated on the label	09.10.2018	Completed	
Day 14	Collect 2x 10-ml blood for serum from each animal	24.10.2018	Completed	20 LR – 17 SR
Day 28	Collect 2x 10-ml blood for serum from each animal	07.11.2018	Completed	20 LR – 17 SR
Day 60	Collect 2x 10-ml blood for serum from each animal	09.12.2018	Completed	18 LR – 17 SR
Day 90	Revaccinate 9 cattle/sheep with a single dose of vaccine. Collect 2x 10-ml blood for serum from each animal	08.01.2019	Completed	13 LR – 16 SR
Day 120	Collect 2x 10-ml blood for serum from each animal	03.02.2019	Completed	12 LR – 16 SR
Day 150	Collect 2x 10-ml blood for serum from each animal	03.03.2019	On going	
Day 180	Collect 2x 10-ml blood for serum from each animal	06.04.2019	On going	



Progress along Stage 3 - Component 1 Major FMD control measures - monitored

Clinical investigation in candidate zone

- Up to present 106 Villages and 3 074 Animals are investigated;
- Data in entered in the paper forms and in Epicollect 5;
- GPS coordinates/photos uploaded
- Samples were entered in EIDSS;





Progress along Stage 3 - Component 1 Major FMD control measures monitored

Migration control:

Veterinary Surveillance Points along animal migration route





Progress along Stage 3 - Component 1 Major FMD control measures monitored

awareness campaigns:



5,000

Hot line - 1501



2,000





Progress along Stage 3 - Component 1 Major FMD control measures monitored

Stakeholders support

- *FMD Training and awareness meeting for private veterinarians*

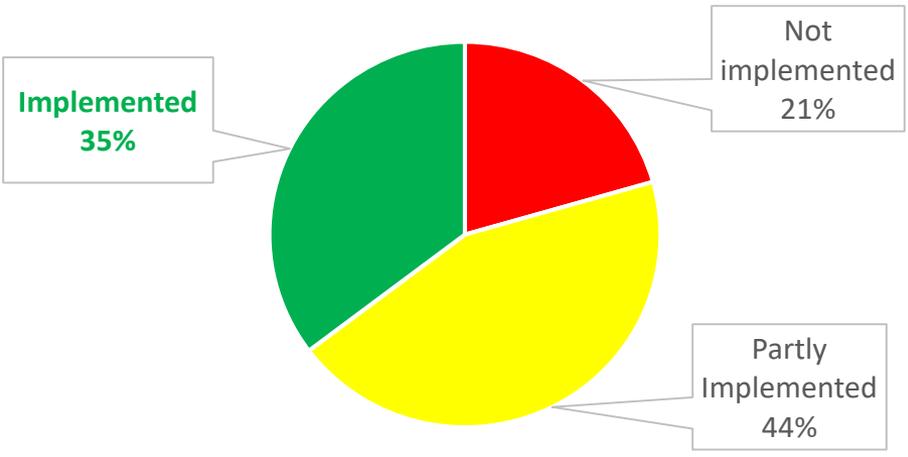




Progress along Stage 3 - Component 1 Assessment of the control plan achievements

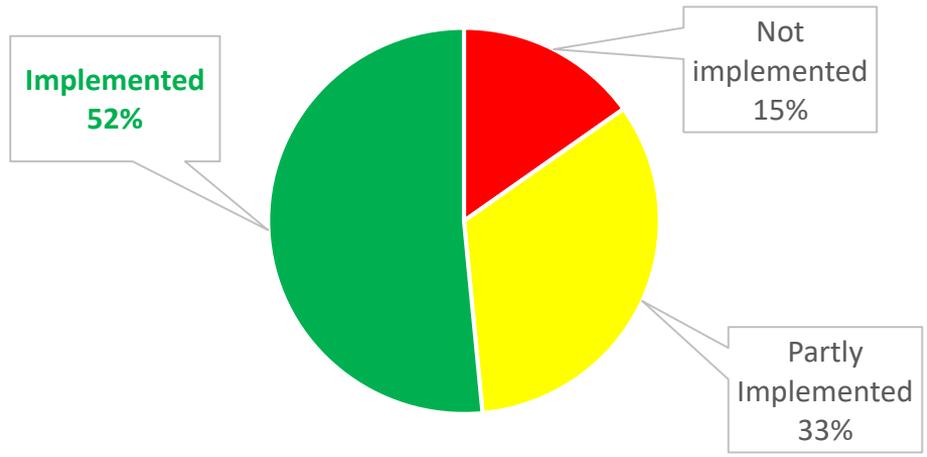
RBSP implementation table

2017 - Number of tactics 34



■ Not implemented
 ■ Partly Implemented
 ■ Implemented

2018 - Number of tactics 38



■ Not implemented
 ■ Partly Implemented
 ■ Implemented



Progress along Stage 3 - Component 2

Activities to strengthen the veterinary services

PVS self assessment 2018

Critical competencies relevant to PCP-FMD Stage 1	Score required	Current score (self-evaluation)	Comments (if any)
I.6.A. Internal coordination (chain of command)	3	3	
I.11. Management of resources and operations	3	3	
II.11 Emerging issues	3	2	Emergency response II.11
III.4 Accreditation / authorisation / delegation	3/4	3	
III.5.A. Veterinary Statutory Body authority	3/4	1	
III.5.B. Veterinary Statutory Body capacity	3	1	
II.6 Early detection and emergency response	3	2	
II.7 Disease prevention, control and eradication	3	3	
II.8B Ante- and post mortem inspection at abattoirs and associated premises	3	2	
II.12.A. Animal identification and movement control	3	3	
I.7. Physical resources	3	3	
I.8. Operational funding	4/5	2	



Progress along Stage 3 - Component 3

Synergies to control other TADs

FMD control contributes to other major TADs

- Contracted veterinarians
- Passive surveillance
- RBSP similar approach – Brucellosis, Rabies, Anthrax (A.D.)
- Candidate zone – FMD, Brucellosis, PPR, TB...

Strengthening veterinary services contributes to control TADs

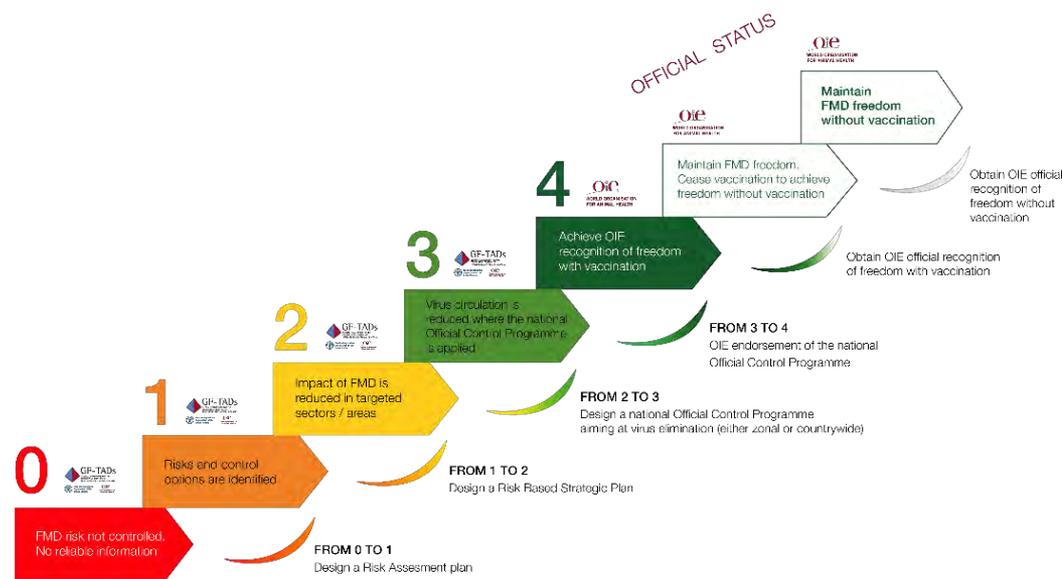
- Cold chain
- Guidelines/training



Provisional PCP-FMD Roadmap for {Georgia}

2019-2025

Country	2019	2020	2021	2022	2023	2024	2025
Estimation in 2019	3	4	4	Free with	Free with	Free without	????





Summary

Main activities for future

- *Finish clinical survey in Mestia (part of candidate zone)*
- *Strengthen movement control in candidate zone*
- *Advocate compensation policy to Ministry of Finances*
- *Finish contingency plan (General and for FMD)*
- *Strengthen National Animal Identification and Traceability*



Thank you for you attention

Acknowledgment

- EuFMD team
- FAO
- OIE
- CIB



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43rd General Session of the EuFMD

Report on the status of FMD antigen and vaccine banks in the European region and neighbourhood

Kiril KRSTEVSKI, EuFMD



43rd General Session of the EuFMD

Background

- **March 2019** EuFMD circulated a questionnaire to all 39 EuFMD Member States and 3 countries from the European neighborhood
- **31 responses** received till publishing (30 EuFMD MS + 1 country from the European neighbourhood) ; and 1 more afterwards

Overall response rate (%)



European Commission for the Control of Foot-and-Mouth Disease



Questionnaire on readily-available stocks of formulated vaccine and/or inactivated antigen for emergency use against FMD and other transboundary animal diseases in EuFMD member countries and the European neighbourhood

Please complete in type or in block capitals.
Please address all replies by e-mail: Kiril.Krstevski@fao.org
Please return no later than **8th April 2019**

Country:

NOTES

- The information provided will form the basis of the presentation to European CVGs to be made at the 43rd General Session of the EuFMD Commission, 17-18th April 2019. Specific, potentially sensitive information on vaccine/inactivated antigen stocks will be summarized separately and it is NOT expected that the information will be made publicly available.





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Summary of the survey

- **91%** of respondent countries **include emergency vaccination** in their FMD contingency plans (same as 2017)
- **89%** of these countries indicated that **have mechanism to support decision making** in relation to **whether to proceed with emergency vaccination and vaccination strategy**:
 - subject matter expert committees will support the decision making
 - models are used for this purpose (increased number compared to 2017)



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Summary of the survey

- **The most important constraints** on the capacity to rapidly **implement an emergency vaccination**:
 - sourcing a suitable human resource pool to conduct vaccination
 - management of vaccinated animals, including post-vaccination monitoring and surveillance
 - biosecurity protocols and property-level risk assessment, including pre-vaccination surveillance.



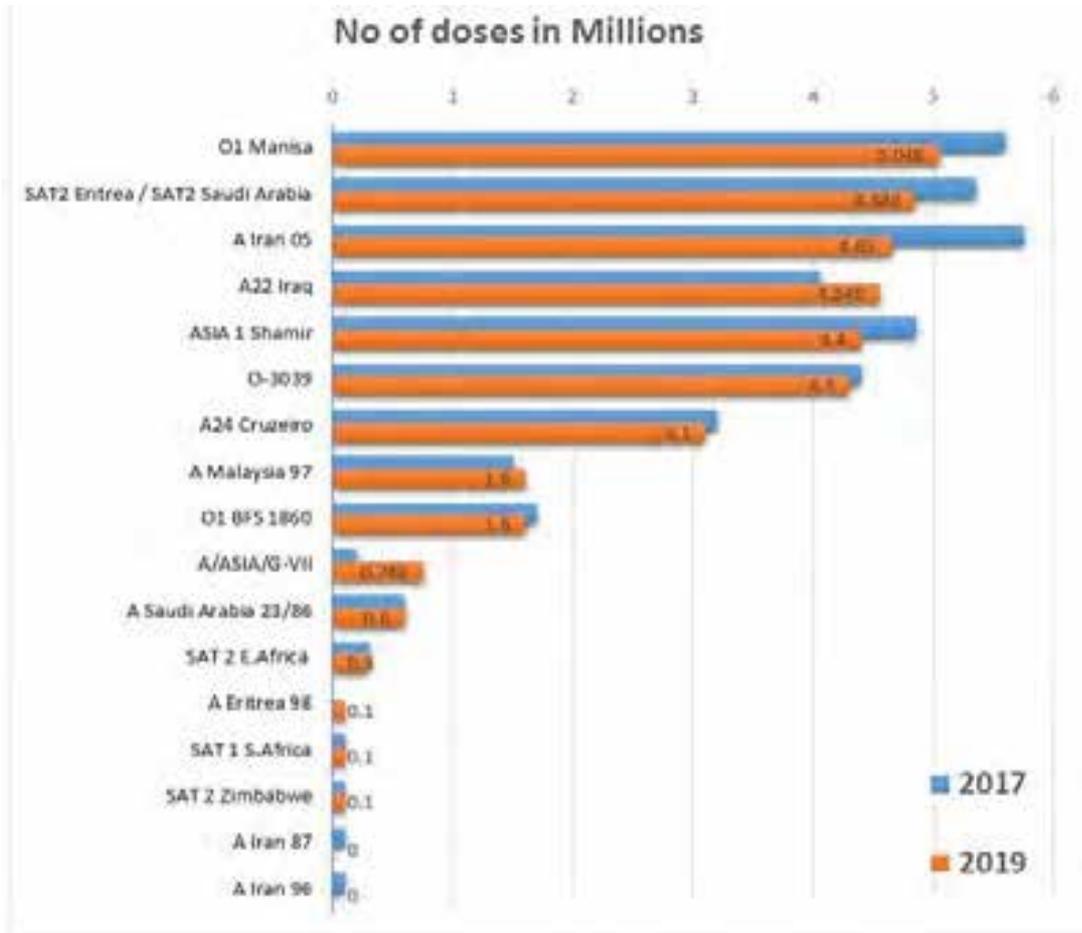
43rd General Session of the EuFMD

Summary of the survey

Approximately **39 002 000 doses**
 across **5 serotypes** and **15**
antigens are held (**NB:** Excluding
 EU bank)

No significant change in the total
 of antigen stocks held since 2017
 (38 mil.)

*NB: Results from 1 country are not presented on the chart
 because no data on vaccine strains was provided*





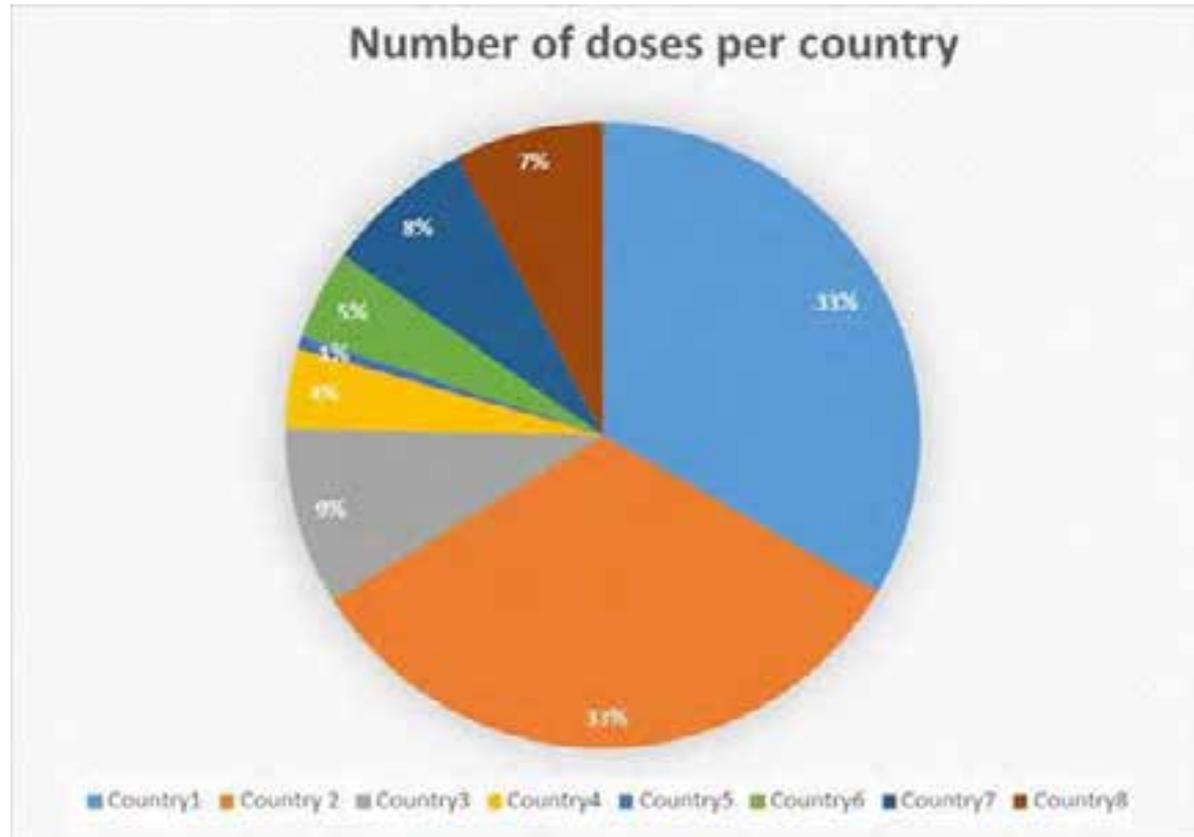
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Who holds FMD antigen?

8 EuFMD Member States
(5 EU MS; 3 non-EU MS)

Commercial contract with third party supplier 8

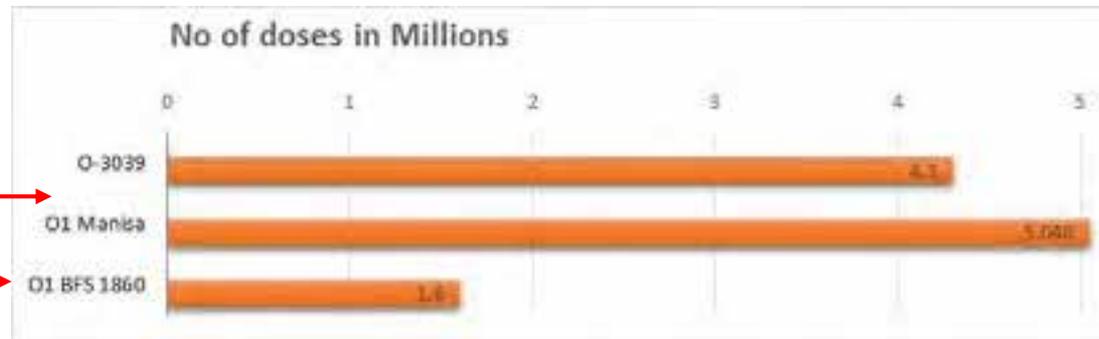
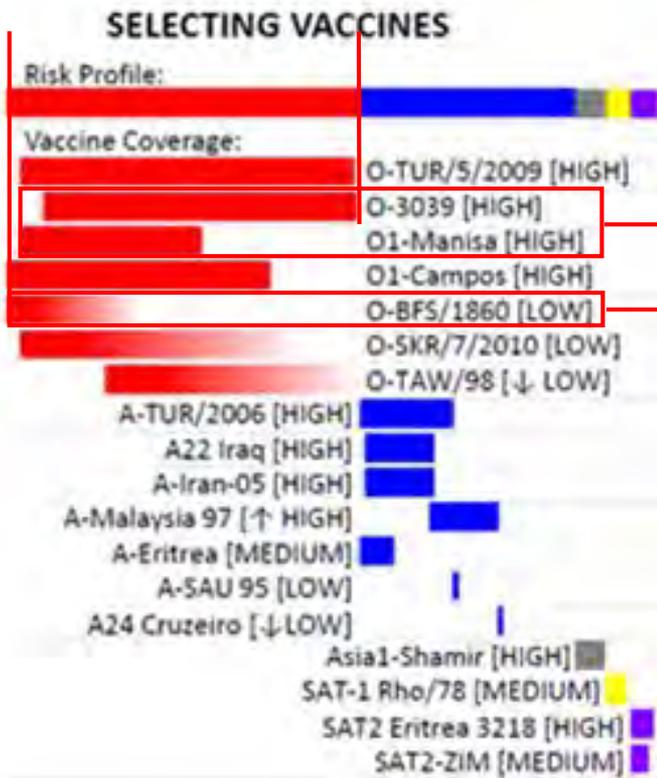
66 % of all antigen doses are held by 2 countries





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Evaluation of the antigens held in relation to the risk profile (recent PRAGMATIST results)



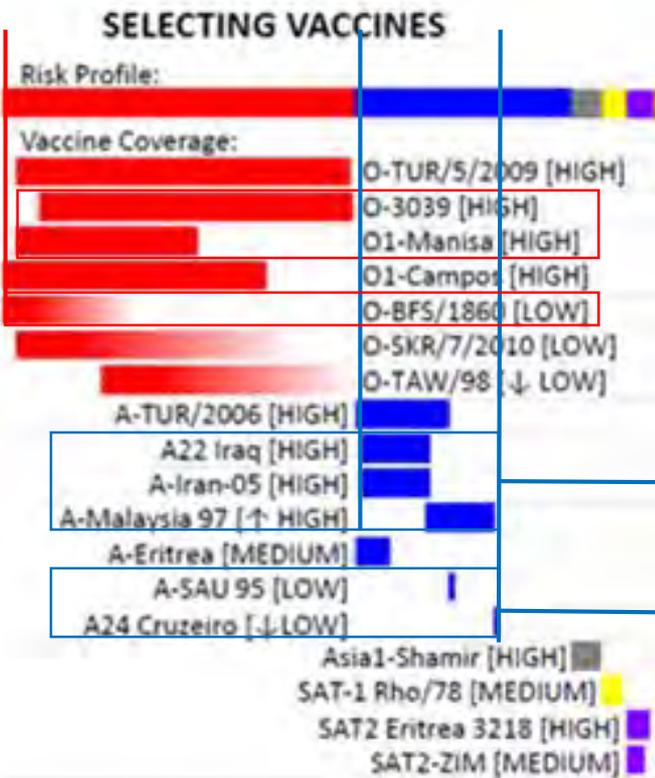
O-3039 and O-Manisa would cover most of the risk

However:

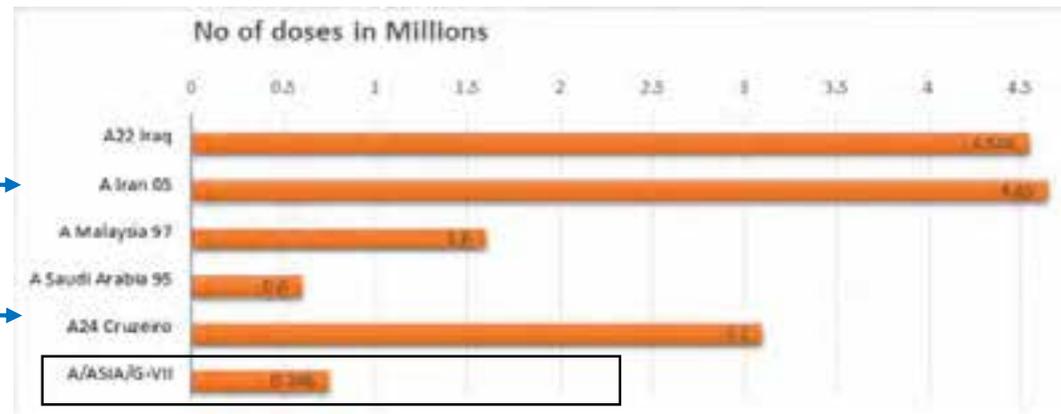
O1-Manisa is not enough if held alone



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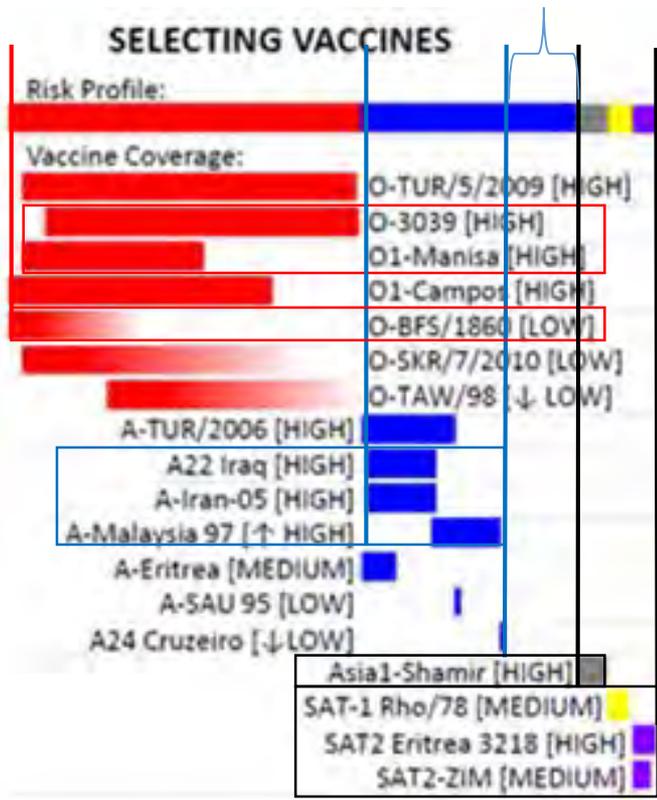
A-22 and A-Iran-05 are not enough without A-Malaysia 97 and A G-VII!



A/ASIA/G-VII is not included in the output



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ASIA 1 Shamir and SAT 2 Eritrea cover most of the risk, well represented in national antigen holdings

However, SAT-1 only by one country





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- **90%** of respondent countries indicated continued interest in, or joining **vaccination network**.
- **Priority discussion topics include:**
 - **Decision making** on vaccination strategies
 - **Operational planning for FMD emergency vaccination** programs
 - **Vaccinated animal management** policies



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National vaccine banks or other arrangements (commercial contract) for the supply of vaccines for emergency use for other TADs

- **6 countries** (3 national banks and 3 with commercial contracts)

Transboundary animal disease	Number of doses	Number of countries that hold vacc.
Bluetongue	3,000,000	1
Classical swine fever	2,960,000	3
Lumpy skin disease	750,000	2
Rabies	530,000	3
Rift Valley Fever	25,000	1



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Conclusions

- Investment in antigen banks in Europe remain significant:
39, 002, 000 doses, 5 serotypes, 15 antigens.
- Results from the PRAGMATIST tool can be used to determine the extent to which national antigen holdings sufficiently cover against exposure to risk.
- **Contingency plans and operational capacity** to implement **emergency vaccination** is a critical component of FMD emergency preparedness.



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Thank you for your attention



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43rd General Session of the EuFMD

Report of the Standing Technical Committee and its working groups

Eoin Ryan

Chair, EuFMD Standing Technical Committee



43rd General Session of the EuFMD

Role of the Standing Technical Committee

- To provide advice and guidance to the Executive Committee and Secretariat on technical matters
- To steer the programme for the special committees
- Open Session conference
- To provide a link between the technical, scientific and policy spheres



43rd General Session of the EuFMD





43rd General Session of the EuFMD

Special Committee on Research and Programme Development

- Incorporates a broad range of knowledge and expertise across the European FMD landscape
- Members act as reviewers for applications to the Fund for Applied Research
- Provide support to the Open Session – chairs and rapporteurs
- Enables the STC and Executive Committee to draw on a depth of expertise in a range of disciplines



43rd General Session of the EuFMD

Establishment of the Special Committee on Biorisk Management





43rd General Session of the EuFMD

- **BioRisk Management Network** launched at 2016 Open Session, Cascais
- 42nd GS, 2017: Establishment of a **Special Committee on Biorisk Management**

Membership:

- Experts on BRM from across the EuFMD
- Chair: **Kirsten Tjørnehøj**, National Veterinary Institute, Denmark

Terms of reference:

- Revision of the **minimum standards** for biocontainment of FMDV
- Identification of **training and support needs** for EuFMD member states
- Provision of technical **advice on biorisk management** to STC, ExCom and Secretariat



43rd General Session of the EuFMD

Potential risk posed by diagnostic samples

- Samples coming into EU for diagnostic testing for FMD – process in place
- Other TADs: level of awareness of other potential pathogens in sample (e.g. FMDV) likely to be high
- Samples for non-TAD or non-infectious testing (e.g. genetics, nutrition): is there a risk of those samples being handled without regard to the FMDV/TAD risk?
- Solution: Awareness, training, communication



43rd General Session of the EuFMD

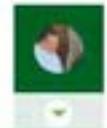
The Open Session: Borgo Egnazia, Italy, October 2018

- Hugely successful
- Almost 300 attendees
- Focus on vaccine security
- Provided a space for public-private partnership discussions on vaccine supply and related issues
- Side-meetings of GFRA and other technical groups, online discussions





43rd General Session of the EuFMD



Open Session Online 2016

Navigation

- Home
- Dashboard
- My courses
 - > Real Time Training
 - > FMD Emergency Preparation

The Open Session of the EuFMD is held every two years and has become the largest technical and scientific meeting on FMD to be held on a regular basis.

The theme of the Open Session 2016 was "The practice of innovation" and the session focussed on innovation, innovative practice and the challenges and lessons learnt from the field, of translating science into improved disease management.

All of the presentations given at the Open Session were recorded, and you can find videos and PDF copies of

Your progress



43rd General Session of the EuFMD

Impact of Fund for Applied Research

- Important tool enabling EuFMD to address specific policy/knowledge gaps through research
- Catalyses the application of larger research programs in policy-specific activities
- Provides a mechanism to leverage interest from others in programs which benefit EuFMD interests
- Relatively small sums, high impact
- Future: proposed changes in scope to additional TADs



43rd General Session of the EuFMD

Progress on projects funded under FAR call

- 4th EuFMD-FAR in February 2017: twelve project proposals were in-line with the priorities of the call and submitted for review, four were selected for funding
- 5th EuFMD-FAR in July 2017: three project proposals were selected as in-line with the priorities of the call and submitted for review, one selected for funding
- 6th EuFMD-FAR in December 2017: one project proposal selected as in-line with the priorities of the call and submitted for review, one selected for funding
- 7th EuFMD-FAR in April 2018: two projects identified for funding



43rd General Session of the EuFMD

What sort of work is funded?

- **European multi-country FMD Spread model (EuFMDiS)** - Project Lead Applicant: Dr Graeme Garner
- Validating the use of **bulk tank milk for surveillance of FMD** among commercial dairy farms in endemic settings - Project Lead Applicant: Dr Nicholas Lyons, The Pirbright Institute
- Evaluation in **field conditions of a safe and cost-effective protocol for shipment of samples** from FMD suspected cases for laboratory diagnostic— Dr Sandra Blaise-Boisseau, (ANSES)
- Validating multiplex real-time RT-PCR as a tool for **FMD detection in bulk tank milk** – Dr. Michael Eschbaumer, The Friedrich-Loeffler Institut (FLI)



43rd General Session of the EuFMD

- **Alternative vaccine selection techniques** ; Dr. Ludi, The World Reference Laboratory for FMD (WRLFMD), The Pirbright Institute
- A project for **engaging para-veterinarians and animal health workers for FMD surveillance and sample collection** for FMD control services in Mali - Project Lead Applicant: Dr Abdoulaye Diaoure, Vétérinaires Sans Frontières Suisse (VSF-Suisse)
- **Wild boar interactions within the overall EuFMDis model** (Graeme Garner)
- A project to evaluate the potential of **environmental and air sampling of large pig farms** for informing control strategies and risk based control measures on-farm (Pirbright Institute)



43rd General Session of the EuFMD

Fund for Applied Research: current projects

Project	STC liaison/oversight
EuFMDis	K Staerk, R Bergevoet
Environmental and air sampling (TPI)	S Mortensen, E Ryan
RiskmapS (CIRAD)	S Mortensen
Paravets and LFD sampling (VSF)	E Ryan, K Schwabenbauer
Field_Eval_Inact LFDs (ANSES)	E Ryan
Bulk milk PCR (TPI)	S Zientara
Bulk milk PCR (FLI)	S Zientara
Alternative vaccine techniques	Joint oversight



43rd General Session of the EuFMD

How are the results of FAR projects made available for policy decisions?

- Project reports provided to EuFMD, disseminated to relevant policy makers
- Papers presented at the Open Session
- Publication in peer-reviewed journals



43rd General Session of the EuFMD

Advice to the Executive Committee

- EuFMD could and should play a role in supporting activities in relation to non-FMD transboundary animal diseases.
- Important points to resolve include
 - how to choose which diseases,
 - how to decide the extent to which EuFMD gets involved
 - how to balance the need for EuFMD to maintain a clear focus on its core work on FMD with a broadening scope
 - How to ensure coordination with other organisations



43rd General Session of the EuFMD

Thank you – any questions?

The Standing Technical Committee 2017-2019:

- Stephan Zientara
- Sten Mortensen
- Ron Bergevoet
- Katharina Staerk
- Karin Schwabenbauer
- Eoin Ryan (Chair)

- *Thanks to Keith, Nadia, Nick, Jenny, Fabrizio and the team*



Item 12/GS43

MINIMUM BIORISK MANAGEMENT STANDARDS FOR LABORATORIES WORKING WITH FOOT-AND-MOUTH DISEASE VIRUS

Proposal for adoption at the 43rd GENERAL SESSION OF THE EUFMD COMMISSION, 17-18 APRIL 2019, ROME,
ITALY

*A List of Changes from the current (2013) Standard is available and circulated
alongside this version*

Key to changes:

Moved text is *indicated in italics*

Changed text [inserted and/or edited] is underlined thus

Deleted text is ~~indicated thus~~

Note on the Version GS43/MBRMS/2

1. The EuFMD Special Committee on Biorisk Management (SCBRM) reviewed the current standard "Minimum Biorisk Management Standard for Laboratories working with foot-and-mouth disease virus", as had been adopted at the 40th General Session of EuFMD on 22-24 April 2013, and which superseded all prior Standards (1993, 1985 and 2009).
2. Their recommendations for changes to the Standard were contained in Version GS43/MBRMS/1, and were circulated in February 2019 to Biorisk managers of facilities handling live FMDV in EuFMD member states ("Tier D") and to Biorisk managers of representative "Tier C" laboratories in the European region.
3. Their written responses were then considered by the SCBRM and a final version (GS43/MBRMS/2) agreed by the SCBRM for proposal to the EuFMD member states on 12th March 2019, with responses invited in advance of the 43rd Session.
4. Points carried forward from the 2013 revision, specifically addressed in the 2019 version:
 - a) A clause on preventive maintenance (Romania): addressed, regarding sufficient resources for maintenance and servicing in specific requirements paragraph I.1 in both Tier C and Tier D.
 - b) The use of Safety Performance Indicators (UK).
 - c) Clarification of the role of the Biorisk Officer (CH): addressed in the final 2013 version.
 - d) Comprehensive updating of the Glossary (DG SANCO): addressed.
 - e) An Annex providing examples/guidelines for inactivation procedures for samples: not done.
 - f) The use of vaporized hydrogen peroxide for FMDV inactivation, following validation: not included.

Note that Development of standards covering Tier A and B was postponed but will be under the SCBRM workplan for 2019-2020.

MINIMUM BIORISK MANAGEMENT STANDARDS FOR LABORATORIES WORKING WITH FOOT-AND-MOUTH DISEASE VIRUS (MBRMS)

TIER D.

**LABORATORIES WORKING WITH LIVE FOOT-AND-MOUTH DISEASE VIRUS
IN VITRO AND IN VIVO**

National and International FMDV reference laboratories working with infectious FMDV, including for the purpose of vaccine development and production, in FMD free countries

TIER C.

LABORATORIES PERFORMING FMD DIAGNOSTICS WITHOUT USING LIVE FMDV

CATEGORIES:

- I. CONTINUOUSLY WORKING TIER C LABORATORIES:
 - National reference laboratory without permit to work with live FMDV

- II. CONTINGENCY LABORATORIES UNDERTAKING DIAGNOSTIC INVESTIGATIONS FOR FMD IN THE FRAMEWORK OF A NATIONAL CONTINGENCY PLAN (UPGRADED LOWER LEVEL OR NEW)
 - Regional laboratories supporting routine exclusion diagnostics with the option to be more involved during an outbreak
 - Emergency laboratories

The present document does not reflect the opinion of the European Commission (DG-SANCO)

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FOREWORD

In 1985 the European Commission for the Control of Foot-and-Mouth Disease (EuFMD) at the Food and Agriculture Organization (FAO) of the United Nations adopted a document entitled "*Minimum Standards for Laboratories working with FMDV in vitro and in vivo*". This document described a set of precautions to be taken by foot-and-mouth disease (FMD) laboratories to avoid an escape of virus. It was prepared at a time when the majority of countries on continental Europe employed systematic annual prophylactic vaccination of their cattle. Council Directive 90/423/EEC amending Directive 85/511/EEC on Community control measures for FMD made the above standards a condition for the approval and operation of laboratories handling live FMD virus (FMDV).

Although the above document dealt with all important aspects of FMD containment, it had been found necessary to review it with special reference to the need for more specific technical and general requirements as a consequence of the change in Europe to a policy of non-vaccination. The security standards as specified in the 1993 revision had to be considered as minimum requirements for FMD laboratories located in FMD-free countries with or without systematic prophylactic vaccination. Article 65 of Council Directive 2003/85/EC on Community measures for the control of FMD and repealing Directive 85/511/EEC makes the FMD-lab standards, as amended in 1993, a condition for the approval and operation of laboratories handling live FMDV.

Following the 2007 FMD outbreak in the UK that was ~~possibly~~ linked to *the research and commercial FMD vaccine manufacture establishments co-located at the Pirbright site*, EuFMD undertook to review, and where necessary to adapt, the aforementioned FMD-lab standards. The edition of the "*Minimum Standards for Laboratories working with foot-and-mouth disease virus in vitro and in vivo*" adopted at the 38th General Session of EuFMD on 29 April 2009 superseded the edition adopted by EuFMD in 1985 and revised in 1993.

In the years after the adoption of the 2009 version of the "Minimum Standards", and particularly during the 2009-2011 inspections by the former EU Food-and-Veterinary Office (FVO) of all EU national FMD reference laboratories, it became evident that not all European countries had laboratories that met the "Minimum Biorisk Management Standards for Laboratories working with foot-and-mouth disease virus *in vitro* and *in vivo*". Moreover, as facilities for work with live FMDV are expensive, set up for research and usually without high sample throughput capacity, in most instances, all diagnostic tasks in the framework of an FMD outbreak cannot be carried out at this level. Also, some countries in the European region have endemic presence of FMD and thus do not require the same level of containment laboratories for work with diagnosis of FMDV.

Therefore, the 2013 version introduced four Tiers for FMD laboratories with Tier D constituting high containment facilities with the ability to handle live FMDV *in vitro* and *in vivo*. Tier C laboratories included FMD Contingency laboratories restricted to tests not involving live FMDV (essentially RT-PCR and antibody ELISAs) but also national reference laboratories not using methods involving live FMDV.

The 2019 version further develops the Tier C laboratory concept and defines two laboratory categories:

- category I: national reference laboratories without a permit to work with live FMDV but maintaining a continually alert FMD biorisk management system including trained and vigilant biorisk officer, deputy biorisk officer and laboratory staff
- category II: FMD Contingency laboratories limited to performing FMD diagnostic tests on no risk or very low risk samples or not performing FMD diagnostics except in the framework of an FMD emergency

Tier C category I laboratories comprise national reference laboratories in countries that do not prioritize building and maintaining a Tier D FMD laboratory necessary for work with live FMD virus. The diagnostic methods employed in this type of laboratory could include serotype-specific molecular diagnostic methods that are currently being developed and published.

Tier C category II laboratories are FMD Contingency laboratories and can in the event of an FMD emergency be part of the contingency plans, as foreseen in Annex XV of Council Directive 2003/85/EC. FMD Contingency Laboratories must not work with any infectious FMDV - except for virus that might be present in field samples submitted for FMD diagnosis from the region or country where the laboratory is situated. This means there is no risk of escape unless there is an outbreak in the field – in which case the risk posed by infected holdings by far outweighs any escape risk posed by a laboratory operating according to Tier C.

In contrast to the expectations in 2009 and 2013, there is still no fully validated protocol for inactivation of FMD samples on the suspect premises. However, trained staff adding FMD sample material to lysis buffers in a biological safety cabinet (BSC) poses almost no additional risk, and this procedure was therefore included in Tier C in 2013.

Even testing of non-inactivated samples by antigen ELISA in a Tier C laboratory can be justifiable during an FMD emergency, provided the risk is controlled by e.g. restricting all liquid handling steps to a BSC. It allows these laboratories to supplement RT-PCR results, maintain a back-up method in case RT-PCR fails and determine FMDV serotype. The national competent authority (NCA/CA) decides whether a Tier C Laboratory can be authorized to carry out antigen ELISA. This approach was applied successfully during the 2011 FMD epidemic in Bulgaria.

The authorization of FMD Contingency Laboratories eliminates the complications of sending samples to an extra-territorial laboratory for diagnosis with expected difficulties regarding transportation, importation and language barriers. This combined with delayed and complicated communication between laboratory, field and official veterinarians, and national crisis centres, will easily jeopardize effective and swift control of the outbreak. The capacity of existing Tier C category II laboratories can also be used to substantially lower the psychological threshold for submitting samples for exclusion of FMD as a differential diagnosis when there is no FMD emergency. Several countries allow regular veterinary laboratories to carry out “routine exclusion testing”, e.g. by RT-PCR, in cases which are not considered “suspect cases of FMD” in the legal sense but where FMD is considered a possible differential diagnosis. Using the Tier C measures can also reduce the biological risk associated with this approach.

Not all EuFMD member states are free of FMD, and the Minimum Biorisk Management Standard for FMD should reflect that. Therefore, a 4-Tier system is being implemented as follows:

Tier A: General diagnostic laboratories, in FMD endemic countries

Tier B: Laboratories working with infectious FMDV, in FMD endemic countries

Tier C: Laboratories undertaking diagnostic investigations for FMD without handling/using live FMDV; including both national reference laboratories without permit to work with live FMDV and FMD Contingency Laboratories

Tier D: National and International FMDV reference laboratories working with infectious FMDV, including for the purpose of vaccine development and production, in FMD free countries

Tiers C and D were part of the 2013 version and are further developed in this version, while Tiers A and B are still under development. Until the FMD MBRMS have been internationally adopted for Tiers A and

B, the biorisk managers responsible for the diagnostic laboratory system in FMD endemic countries in the European region are encouraged to apply the principles of the Tier C and D MBRM as far as can be reasonably achieved. In particular, exotic serotypes and topotypes of FMDV should be treated with the same precautions as FMDV in a country free of the disease.

FMD free country*¹

Activity	Biorisk Management Standard
Any handling of infective FMDV strains not present in the field	Tier D
National reference laboratories without permit to work with live FMDV	Tier C category I
Diagnostic investigations for FMD in the framework of a national contingency plan	Tier C category II
General diagnostic or research work on animal samples* ²	No FMD-related requirements <i>(Principles and elements of Tier C Standard should be applied according to risk assessment)</i>

*¹The term “FMD free country” is used here for a country that has been recognized by the OIE as being free of FMD, with or without vaccination, even during the phase of trying to regain this status during or after an epidemic.

*²The term “animal samples” is used here for samples of species susceptible to FMD.

FMD endemic country

Activity	Biorisk Management Standard
Any handling of infective FMDV strains not present in the field	Tier D Standard
Infection of animals and vaccine production with infective FMDV strains present in the field	Tier B Standard <i>(being drafted)</i> <i>(Principles and elements of Tier D standard should be applied depending on the stage of eradication reached)</i>
Handling on a regular basis, including propagation in small volumes, of infectious FMDV strains present in the field	Tier B Standard <i>(being drafted)</i>
General diagnostic or research work on animal samples* ²	Tier A Standard <i>(being drafted)</i>

Tier D. Minimum biorisk management Standards for Laboratories working with live foot-and-mouth disease virus *in vitro* AND *in vivo*

INTRODUCTION

Foot-and-Mouth Disease (FMD) is one of the most infectious diseases known, and manipulating the virus in the laboratory without adequate precautions is a risk of environmental release. It has been shown that as few as 10 TCID₅₀ can be infective to cattle by the airborne route. However, this is under experimental conditions and the low infective dose may relate to the relatively large size of aerosol droplets, which can be efficiently contained by HEPA filtration of air exhaust from facilities handling infective FMD virus (FMDV). As a consequence of the low infective dose, laboratories handling FMDV must work under high containment conditions, **in which the principal objective of the containment measures is to prevent release of virus that would give rise to animal infection outside of the laboratory (veterinary containment).**

The principles on which the containment measures are based are as follows:

- FMD virus is an animal health but not a human health hazard;
- containment measures for FMDV laboratories will differ in certain respects from those required of high containment facilities handling pathogens which present a significant human health hazard;
- effective implementation and maintenance of the containment measures will reduce the risk of an accidental release of virus to a level that can be considered acceptable in a risk management balancing those risks against the expected benefits of the services provided by such laboratory.

The containment measures were prepared on the basis of the documented evidence on the physico-chemical properties of FMDV, its inactivation kinetics, and the form and quantity of FMDV required to infect susceptible species.

Key factors in establishing and implementing a successful containment system include:

1. Physical and operational barriers to the release of FMDV that involve three containment layers and multiple fail-safe mechanisms as follows:

1.1. Primary containment layer:

- contain the live FMDV at source within closed containers or a class I, II or III biosafety cabinet (BSC), or
- in the case of infected animals, contain the live FMDV by physical containment in specially constructed rooms with treatment of all waste and the HEPA filtration of air; in this case the room is considered as primary containment.

1.2 Secondary containment layer:

- containing of FMDV infected materials and staff working with such materials within a closed and highly controlled physical environment, and
- subject exiting solids, fluids and air to a treatment by validated procedures that will remove or inactivate FMDV;

1.3. Tertiary containment layer:

- prevent contact between live FMDV and susceptible livestock outside containment by appropriate measures, such as quarantine restrictions placed on staff and visitors to such livestock.
- physical and/or procedural measures to control access
- procedures for final handling/disposal of decontaminated materials/waste based on risk assessment

2. Commitment by senior management:

- to provide the resources required to attain and maintain the containment measures, including the physical and human environment;
- to recognise the top priority of the management of the risks associated with facilities handling live FMDV;
- to establish and maintain a management system and a working culture in the facility that facilitates continual improvement in preventing possible release of virus, the effectiveness of containment processes and root cause analysis of possible release incidents so as to prevent their recurrence;
- to recognise and promote continual improvement;
- to ensure that users are provided with the necessary training;
- to comply with existing legal requirements and regulations.

General requirements

FMD risk management system: Each facility should establish, implement and maintain a FMD risk management system, appropriate to the level of risk associated with each of the mechanisms and routes by which FMDV could ~~escape or~~ be released.

Policy: The management of the facility should have in place a policy that clearly states the FMD risk management objectives and the commitment to improving the FMD risk management performance.

Risk assessment: To operate a FMD risk management system, a risk assessment system should be in place in order to:

- identify and address the risks (likelihood and extent of impact) of release or escape of FMDV by each facility (plant);
- define the circumstances which would trigger a new or revised assessment, for example plans to construct new or modify existing facilities, changes to the programme, changes to volume of activities, following incidents or as a result of elevated levels of biosecurity threats to the facility.

Hazard identification: The Hazard identification system should identify the situations, and other hazards, associated with the work of the facility that may impact on the risk of FMDV release, including emergencies (such as electrical failure, fire, flood, medical emergencies etc). The requirements in this standard do not necessarily identify all hazards that may occur, but are written to reduce the risk associated with the hazards in facilities handling live FMDV.

The main sources of FMDV are:

- diagnostic specimens,
- infected tissue cultures,
- infected small experimental animals, e.g. ~~baby~~ mice and guinea pigs,
- laboratory based physical and chemical processing of large quantities of virus, and
- infected large experimental animals, such as pigs, cattle, sheep, goats and other susceptible large animals

The principal routes by which the FMDV may escape or be released from laboratories include:

- personnel,
- air,
- liquid effluent,
- solid waste,
- equipment, and
- samples and reagents.

Although full-length RNA derived from FMDV may still be infectious under very specific conditions, for practical purposes samples can be considered “inactivated” after an approved treatment with an appropriate lysis buffer and a disinfection of the sample tube by an approved method. However, as a precaution, such samples should not be handled without appropriate risk management measures, which must, in particular ensure that such samples are at no stage of processing added to cell cultures or injected into animals, except in facilities meeting Tier D requirements.

Risk control: Under the direct responsibility of the management of each facility (plant), the hazards which could lead to a risk of FMDV escape should be identified, quantified, prioritised and control options identified. The requirements indicated in this Standard should be considered a minimum, and do not release the management of each facility from the responsibility to undertake a formal risk assessment process.

Special attention should be given to:

- replacement and reduction in use of live virus where possible;
- security and recording of access to the facility;
- reliability and competency of personnel handling live FMD virus;
- the responsible behaviour of personnel within and when they leave the laboratory, including the use of changing and showering facilities;
- the application of rules for primary containment;
- the maintenance of the physical containment including the air handling systems to ensure a negative air pressure where virus is manipulated and the effective particulate filtration of exhaust air;
- the decontamination of effluent and solid waste;
- the disposal of carcasses in a safe manner;
- the decontamination of equipment and materials before removal from the containment zone

Use of alternative procedures: The use of alternative processes or procedures for inactivation of FMD virus to those specified in this Standard is permissible provided that the information from the validation of the process has been examined and found equal or superior in performance to those currently specified. Decisions on equivalence of the proposed procedures must be evaluated by the EuFMD SCBRM, who can choose to include the EuFMD Standing Technical Committee.

Residual Risk: The residual risk is the risk of a ~~consequential~~ release of FMDV, after application of all control measures. The Biorisk Officer (BRO), management and ultimately the NCA or equivalent should consider the overall biorisk management system together with the hazard identification and risk control procedures, and identify if there are residual risks requiring either more effective controls to be put into place, or work to be suspended or modified.

Authorization of laboratories in respect to FMD:

In respect of work with FMDV, laboratories may be authorized by the competent authorities to carry out one or more of the following types of work:

- (1) infection of small and/or large experimental animals with FMDV;
- (2) manufacturing activities that involve the production of large amounts of infectious FMDV, e.g. large scale virus production for antigen banks or FMD vaccines at a capacity greater than 10 litres;
- (3) activities involving the propagation of infectious FMDV, but are limited to up to 10 litres for each batch, and during which the FMDV is enclosed in containers which can be effectively autoclaved or disinfected;
- (4) to test diagnostic samples for FMDV antigen by ELISA and related methods
- (5) to test diagnostic samples for FMDV genome by RT-PCR and related methods
- (6) to test diagnostic samples for antibody to FMDV by ELISA and related methods
- (7) to apply to the genome of FMDV methods of molecular biology that do not involve live FMDV manipulation.

Laboratories carrying out the type of work mentioned under points 1, 2 and 3 must comply with Tier D.

In accordance with EU legislation, and in most cases national legislation, the manipulation of live FMDV requires a mandatory authorisation by the competent authority.

The FMDV-associated risk of laboratories carrying out the type of work mentioned under points 5, 6 and 7 is usually much lower, while the risk associated with the activity mentioned under point 4 is intermediate.

However, in case the laboratory tests field samples of their own national origin, there is no FMDV related risk as long as the disease is not present in the country and samples are not submitted as suspect samples.

In case of an FMD outbreak, the main risk is posed by the infected holding and the risk of FMDV escaping from a laboratory must be controlled by appropriate measures (see Tier C).

SPECIFIC REQUIREMENTS

The requirements below are intended to assist self-assessment, biorisk audit and inspection of facilities.

I. Management

Specific management requirements:

1. *Biorisk policy, delegation of responsibilities and communication:* The management of a facility is ultimately responsible for biorisks (biosafety and biosecurity) of its premises. This also includes the provision of sufficient resources for sustainable maintenance and servicing of the facility. The management should therefore define and document roles, responsibilities and authorities related to biosafety and biosecurity management in a formal policy statement and communicate this to all staff members.
2. *Formal process of Risk assessment / threat assessment:* The management must ensure that a formal process is in place to conduct, review and update a risk assessment. The need for a structured security threat assessment should be considered for each facility.
3. *System for continual improvement:* The management should put a system in place to guarantee that biosafety and biosecurity procedures and elements are thoroughly reviewed and audited on a regular basis. Records of audit findings should be maintained, including root cause analysis, actions taken to comply with the containment policy and review of efficacy of actions taken.
4. *Standard operating procedure (SOP):* A system should be in place to maintain a complete set of SOPs for all operational processes that are considered critical to the containment of FMDV.
5. *Biorisk Officer (BRO):* It is the duty of the management to properly monitor the biosafety and biosecurity by appointing a BRO, arranging for a deputy or replacement, and creating the necessary framework conditions in the facility. To ensure that biosafety and biosecurity are given full consideration in their activities, the management should carefully define the status, duties and responsibilities of a BRO:
 - (a) The BRO should report directly to the top management representative (Director-General, site Director or similar) and should have authority to stop or modify the work in the facilities in the event that it is considered necessary to do so.
 - (b) The status of the BRO should ensure their independence and the absence of any potential conflict of interest.
 - (c) Adequate financial and personnel resources should be allocated to the BRO to carry out their duties.
 - (d) The BRO should have the possibility of a direct link to the competent authorities responsible for the enforcement of biosafety / biosecurity regulations within the country or geographical/administrative area.
 - (e) The BRO should have appropriate training in virology, containment techniques and procedures to fulfil their duties. It is to be expected that they would also have a broad based knowledge of the FMDV with particular respect to its physico-chemical properties, mode of transmission and other topics of relevance to their role. The BRO must have sufficient resources for regular further training.
 - (f) The BRO should review regularly both technical reports concerning the various containment facilities as well as data relating to their day to day operation and

monitoring. On the basis of such information, the BRO should inform management of any concerns they may have as they arise, as well as prepare an annual report on all relevant containment elements of the facilities.

6. *Accessibility to live FMDV*: Access to live FMDV should be limited to adequately instructed key personnel authorised by the management and should be part of a threat assessment (see Annex I, chapter III).
7. *Record keeping*: Detailed records of handling live FMDV (e.g. virus strains and dates used) should be kept and stored at least 5 years. Inventory lists including information on the location where a virus strain is stored should be maintained and periodically inspected and crosschecked. Laboratory books or other daily records of procedures by staff working with FMDV should be in place to enable retrospective analysis of activities for at least 12 months.
8. *Accident / incident reporting system*: Each facility should have an accident / incident reporting system in place, with a procedure for rating of the risk of the event and a decision making process for recording, reporting and remedial actions. An example of a risk rating system and associated decision tool is given in Annex I.
9. *Accident / Incident review system*: there should be a system in place to ensure each incident/accident is reviewed to ensure that the lessons learned have been identified, the type of failing in control measures is recognised (root-cause analysis), and adequate and proportionate remedial measures set in place. A statistic concerning accidents / incidents should be made available to the management at least annually.
10. *Systems to review biorisk changes*: changes to the design, operation and maintenance of a facility including biosafety / biosecurity procedures and risk assessment should be reviewed, verified, approved and documented through a formal change control process before implementation. Trigger points for review or drafting of new risk assessments should be identified.
11. *Emergency management plans* (contingency plans): all types of emergencies should be identified, including fire, flooding, loss of essential services, breakdown of equipment (e.g. autoclaves, waste treatment plants), security breaches and major events affecting integrity of buildings, and standard management procedures for each event developed, documented and made available to staff.
12. *Access to site*: management should implement and document a system for controlling access to areas of the site where the activities of the area pose a potential hazard. There should be physical security measures to restrict access.

Management should define the different zones on the site, taking into consideration the hierarchy of risk of activities in each zone. A suggested typology is:

<u>Containment zone</u> (e.g. RED)	<u>area where FMDV is manipulated and stored</u> and/or which contain infected animals
<u>Support zone</u> (e.g. ORANGE)	<u>Area outside containment including support services, technical area</u> and access to the Containment zone
<u>Clean zone</u> (e.g. GREEN)	general access and administration

It is necessary to clearly define and document the zones under control of the BRO, including definition of the outer perimeter of the site, lower risk areas for personnel and plant access, the location and barriers of the laboratories in which FMDV is handled, and the location and access points to waste treatment (including ventilation systems).

II. Training

13. The organisation should ensure that personnel are competent for their designated roles and receive appropriate training on a regular basis. In particular, training requirements and procedures for biosafety and biosecurity related training of personnel should be identified (training programme) and established (training manual) and training records should be maintained.
14. Training content and training tools should be defined, taking into account the different target audiences and the individual learning differences within a facility. Training efficacy assessment should be considered wherever possible and appropriate. Training should be reviewed on a regular basis.

The BRO should be in charge of providing information and advice on biosafety and biosecurity to laboratory staff, cleaning personnel, visitors, contractors as well as to other persons working either in locations in which FMD is handled or adjacent facilities such as service areas. Personnel should be made aware of the responsibilities, the specific containment features and the risks associated with such activities.

15. Training should be provided on the specific properties of FMD, the primary and secondary containment features and the biosafety / biosecurity procedures pertinent to each facility.
16. All staff members must be appropriately informed and regularly trained in emergency evacuation procedures with special attention being given to biorisk requirements in cases of fire.

III. Laboratory Biosecurity

Note: Additional considerations and notes are given in Annex I.

The objective of Laboratory biosecurity is to protect biological materials containing FMD virus against deliberate removal from the facility.

17. It is part of the duty of care of every facility handling FMDV to ensure that it minimizes the risk of virus misappropriation by intruders and people with access rights to the facility, through measures taken following a *formal threat assessment process*.

In a threat assessment, the critical assets of a facility should be identified and the facility's vulnerability to threats should be assessed. Based on the threat assessment, structural (e.g. building design, IT etc.), physical (cameras, fences, access etc.) and organisational (security policy, accessibility etc.) measures should be taken.

18. To comply with point 17, the minimum requirements are:

- (a) *Security system* that is appropriate to detect and alert security personnel to the presence of intruders, with a security plan in place for rapid response to intrusion.
- (b) *Entry Recording system*: Access to the facility should be recorded to provide an audit trail of who was in the facility at any given time.

19. *Threat reduction/control measures*: Due to the unpredictability of the actual threat, controls are required to reduce the risk to an acceptable level. These controls should consider structural, physical and organisational measures and must address at least the following scenarios:

- Intruder attempting to remove FMDV from the facility by forced or fraudulent entry;
- Staff member maliciously removing FMDV from the facility;
- Someone maliciously appropriating materials during shipment of virus containing materials.

IV. Personnel

20. Control of entry into and exit from the Containment zone must take place only through changing and showering facilities. This means a complete change from private or Support area working clothes to dedicated Containment zone working clothes on entry and the reverse process on exit but with a full body and hair shower before leaving the Containment zone.

21. A code of FMDV containment practice, including instructions for entry into and exit from Support and Containment zones, must be available.

22. The FMDV containment rules and other relevant documents provided by the management must have been read and signed by relevant employees at the beginning of their employment and prior to accessing the support and containment zones. At this time, it should also be made clear to new staff that any violation of such and similar regulations may result in disciplinary actions by the management and the terms of employment should indicate this.

23. *Control of access to critical areas*: A level of security checks is recommended for all individuals with access to FMDV laboratories or critical plant/service areas of these laboratories. The performance of such checks will depend on the legislation of the country and procedures should have been developed in consultation with the relevant local and national agencies.

Access to FMDV containing materials in the laboratory should be restricted to trained staff on the basis of legitimate needs and must be authorised. The number of individuals with access to virus storage areas should be kept as small as reasonably possible.

24. *Visitors*: There must be rules in place governing the access to controlled zones by visitors, covering at least the record keeping and the possible use of background checks. The security system should verify the identity of visitors through use of unique identifiers including passport or ID card details. The reasons for each visit and the responsible person must be recorded.
25. Visitors must be instructed in the specific containment procedures of each facility before entering the Support / Containment zones. There must be a system of oversight in place that guarantees that these procedures are properly followed.
26. *Oversight (mentoring)*: A system for oversight of new personnel should be established, such that all new staff are assigned a member of Support or Containment zone staff for oversight who is competent and has sufficient understanding of the biosafety rules.
27. Management should establish procedures to support compliance with biorisk management procedures. Management should be equipped with appropriate tools to react correctly in difficult situations where compliance with the biorisk management procedures may be compromised. At the work place, such situations could include excess work load, bullying, bad management style or lack of oversight. Also on the level of individual employees, problems like substance abuse or mental conditions could compromise compliance with biorisk management rules, and policies must be in place to deal with these adequately.
28. Quarantine: each facility must define and apply quarantine periods for persons authorised to work in each category of Controlled Zone, to reduce the risk of personnel causing a release of FMD virus as a result of virus carriage on their body. A range of quarantine periods may be defined depending on the level of exposure to virus. Depending on the risk assessment, quarantine rules may be applied to other areas of a facility as well. For the Green Zone, usually no quarantine period is necessary.

Persons, including visitors, authorised to enter the Support and Containment zones must agree not to keep any animals which are susceptible to FMD, nor reside on premises where such animals are kept, and for the Containment zone must abide by minimum standards of quarantine, i.e. no contact with animals susceptible to FMD for at least 72 hours. For the support zone, the need for quarantine must be risk assessed and will depend on the activities in the area and the risk for virus escapes to the areas.
29. Personal protective equipment; regular supply of appropriate laboratory clothing for use within the Support and Containment zones.

V. Containment Zone Design

30. General construction of buildings and their surfaces, including ducting of the air conditioning system:

- maintain inward flow of air through doorways and other openings at all times (backflow prevention)
- properly maintained condition with a high standard of airtightness
- insect, rodent and bird proof.

31. Windows:

- Sealed, toughened and preferably double glazed, and able to withstand operating pressures and all but major impacts.
- Equivalent standard in animal rooms and at a height where animals are not able to break windows or damage seals.

32. Doors:

warning signs at entrances: (or equivalent in the local language)

<p>ACCESS FOR AUTHORISED PERSONNEL ONLY</p> <p>BIOLOGICAL HAZARD</p>
--

- access through the doors restricted by access control systems that prevent the opening by unauthorised persons.
- airlocks provided with airtight doors which are interlocked to prevent opening of both doors simultaneously; this is particularly important for fumigation air locks
- doors to be equipped with inspection windows where appropriate (i.e. working areas, animal rooms etc.).

33. Walls, floors, ceilings:

- In many respects, the surfaces and materials appropriate to pharmaceutical facilities, respecting GMP standards, are also relevant to laboratories handling FMD virus. Notably, surfaces should be impervious, smooth, crevice free and easily cleaned and disinfected. Cavities within the fabric of the facility should be avoided (e.g. cavity walls) unless all penetrations of the walls, floors and ceilings are thoroughly sealed with suitable materials certified for this purpose. Crevices and joints between surfaces should also be sealed with similar materials. Continuity of seal should be maintained between floors and walls. A continuous cove floor finish up the wall is recommended in particular for areas where major spillages will occur, e.g. animal and post mortem rooms.
- Sealed (airtight) entry of service lines.

34. *Laboratory equipment:*

- *Benches shall be smooth, impervious and resistant to any chemicals used in the facility. The junction between horizontal and vertical surfaces should be radiused¹*
- *Centrifuges, sonicators, homogenizers and other equipment must be designed so as to contain aerosols or be used within BSCs where any aerosols generated will not escape to the atmosphere of the restricted laboratory. When using equipment in BSCs, performance of BSC has to be ensured with the equipment in use by an appropriate test, e.g. using smoke pencil.*

35. *Communication:* All areas equipped with telephones or other means of communication and, in some areas, cameras, to ensure additional security outside of normal operations and allow staff to report issues including accidents and incidents without leaving work area.

36. *Emergency back-up power:* The laboratory facility should be equipped with a back-up source of electricity (e.g. an emergency generator) which starts with a delay of no more than a few minutes in the event of power failure and ensures supply to safety critical systems. The delay period that is permissible will depend on the design and the layout of the ventilation system and the airtightness of the key rooms in the facility where virus in aerosol form may be present. In the design of a Containment zone facility, special attention should be paid to the critical electrical supply circuits. There should be no possibility of the emergency supply being diverted from critical circuits by less important demand from non-critical equipment. The critical supply circuits include air handling systems, cold stores, BSCs and other equipment and installations relating to security and safety of the facility. An appropriately sized UPS should be considered for these safety critical systems. All backup systems should be tested at regular intervals and this process documented.

VI. Handling of FMD virus

37. *Recording receipt of virus containing materials:* A documentation and recording system for the chain of custody should be in place for specimens and samples known or reasonably suspected to contain FMDV (reception, use, storage). The accompanying type and strain identification, or such information generated by the laboratory, should be recorded.

38. Except in cases when this is not technically feasible (e.g. during large animal experimental studies and post-mortem examinations), materials known or expected to contain FMD virus must either be kept within closed vessels or in devices that in combination with suitable operating procedures will function as primary containment. Such devices should be equipped with suitable filters, for example HEPA filters for which the requirements are defined in the Glossary, or equivalent off-gas or vent filters (primary containment). A suitable disinfectant must be kept close to the work areas such that a spillage can be rapidly dealt with.

39. In areas where less than 10 litres of virus is handled, liquids and suspensions containing FMDV must be inactivated by a validated procedure, for example, dilution in disinfectants, before disposal into the liquid waste system of the facility.

¹ Radiused: given a rounded form (to a corner or edge)

40. When large quantities of virus are processed (e.g. for vaccine production), it is necessary to transfer virus within a contained system of vessels, pipes and other equipment. To permit fluid transfers, air needs to enter and exit equipment and infectivity must be efficiently removed by a suitably validated procedure. Usually, this is done by filtration and a number of manufacturers supply filters capable of removing FMD virus with very high levels of efficiency. Procedures are also required for decontamination of vessels, pipes and other equipment after the process has finished and before the process is either repeated or items are opened or stripped down for cleaning or maintenance. Usually this will require a chemical decontamination stage followed by steam sterilization.
41. Inoculation of animals, maintenance of infected animals, euthanasia and post-mortem examinations must take place within the Containment zone in rooms (normally dedicated animal or post-mortem rooms, respectively) that in combination with suitable operating procedures function as a primary containment. Animals cannot be taken out from the Containment area alive. Personnel must wear appropriate and comprehensive protective clothing to minimise exposure of body surfaces to virus splashes and aerosols when handling virus suspensions and when inoculating or handling infected animals. On exit from animal and post-mortem rooms, protective clothes and footwear must be left inside these rooms or in ante-rooms to these rooms. In any case, a complete change of clothes and showering is required before personnel can exit the Containment zone.
42. Movement of materials known or expected to contain FMD virus out of one zone (e.g. laboratory), to another zone (e.g. animal rooms) on the same site must be governed by a standard operation procedure (SOP) that prevents possible loss or spillage of virus. As a minimum requirement, such materials are transported between the zones within a double leak proof container of which at least one has to be break proof. Staff making such transfers should be fully authorised to do so and be familiar with the emergency response procedures in the event of an accident or incident.
43. Laboratory facilities must be kept clean and tidy. Areas including equipment where live virus is handled must be cleaned and appropriately disinfected regularly. In particular, benches and other flat surfaces exposed to virus should be wiped down with an effective disinfectant as soon as open work has finished.

Removal of biological material

44. *Before sending biological material to another laboratory that lacks the required level of containment, the necessary precautions must be taken to ensure that the material does not contain infectious FMDV.*

Thus if the source of the biological material is the Containment zone, it is essential that it is subject to a validated test according to risk assessment (e.g. RT-PCR, cell culture) to demonstrate freedom from FMDV, or a validated treatment that destroys FMDV infectivity (see Annex I chapter VII).

The recipient laboratory must be informed about the potential risk of material coming from a laboratory manipulating FMDV. The recipient laboratory must further sign a statement that it is prepared to receive the material and that it will take the necessary precautions.

45. For the shipment of FMDV-containing materials to other laboratories an innocuity test is not required if the material is sent to a high containment laboratory licensed to handle live FMDV.

The laboratory which provides FMDV to another laboratory has a duty of care to ensure that the recipient laboratory is authorised to handle FMDV. Before shipment, it has to ask for a statement from the recipient laboratory that it is requesting the virus only for legitimate purposes and will not redistribute the virus to other laboratories without written consent. The sending of materials containing FMDV is subject to international regulations for shipping biological materials.

Note: If FMDV has been propagated in cell culture, it is mandatory to classify it as “Infectious Substance, affecting animals” (UN2900) and pack it accordingly (packing instruction P 620).

Removal of equipment and other material

46. It is important to ensure that only the equipment and the materials that are needed are brought into the containment zone.

Before removal from Containment zones, equipment and materials must be decontaminated according to the size and use of the equipment by a validated method. The method of choice for decontamination is autoclaving. Equipment or material that cannot be autoclaved can be chemically decontaminated as long as the method is validated (see Annex I, chapter VI). Before decontamination, dirt and organic material must be removed by thorough cleaning.

VII. Air Handling – Live Virus Facilities

Note: Additional considerations and notes are given in ANNEX I, chapter IV.

Ventilation systems

47. *Negative pressure ventilation system:* All facilities used for the handling of FMDV must operate under a negative pressure ventilation system with HEPA filtration of exhaust air and systems to prevent the escape of unfiltered air through the inlet supply.

In areas where less than 10 litres of virus (in dilution or suspension) are handled, the minimum negative pressure relative to the ambient air should be 35 Pa but due consideration needs to be given to ensure a gradient from the periphery of the Containment zone to the area where virus is handled. From a practical perspective, it is difficult to achieve gradient steps of less than 10 Pa and this will tend to dictate the choice of pressure in the most negative part of the Containment zone.

For areas where larger quantities of virus are handled such as large scale virus production rooms and large animal rooms, the minimum negative pressure should be -50 Pa.

For small animal species, depending on the animal species, route and nature of infection and method of animal containment and handling, high titres of virus in relatively uncontrolled conditions might be produced. Consideration should be given to the appropriate negative air pressure requirements for small animal rooms, with 35 Pa negative pressure as the minimum.

A system should be in place to limit positive pressure occurring within the building due to failures of the Containment zone ventilation system.

48. *Exhaust air filtration system:*

Laboratories: Double HEPA (H13 or H14) filtration of exhaust air. Use of a single HEPA filter may be acceptable, provided that it is demonstrated that open work with live virus is at all times restricted to within BSCs which have HEPA filtration of exhaust air, thereby maintaining an effective double HEPA filtration during open virus work.

Animal rooms Double HEPA filtration of exhaust air is obligatory.

Production laboratories (where volumes greater than 10 litres are produced):
Double HEPA filtration of exhaust air is obligatory.

49. *Inlet air supply:* A system must be in place to prevent escape of unfiltered air via the inlet in case of ventilation shut-down. This may be achieved by a single HEPA filter or automatic dampers in the air inlet system.

50. The air pressures within the different rooms of a Containment zone should be continuously monitored and a system must be in place so that staff working in these areas are informed if significant loss of air pressure occurs so appropriate actions can be taken. Monitoring systems should indicate the working pressure and the minimum and maximum limits within which open virus work is permitted. Under any of these alarm conditions, the primary action is to cease all open virus work and secure the workplace by sealing virus containers and disinfection of surfaces and protective clothing. The opening of doors leading to the Containment zone or to rooms containing infected animals or carcasses should be avoided as far as possible until the pressure difference has been restored.

51. All critical filters (HEPA) should be incorporated into a preventative maintenance programme. In particular, the efficiency of the installed HEPA filters should be checked at least once per year, and in line with requirements of EN 14644.

52. When HEPA filters are installed or replaced, an *in-situ* efficiency test must be carried out by trained personnel with validated equipment. Replacement of HEPA filters must be performed in accordance with an authorised procedure (SOP). Strict precautions must be taken to prevent the spread of virus with used filters or contaminated air. Replacement of filters from outside the Containment zone must take place after decontamination "in situ" or in "safe change" air-handling units. Discarded HEPA filters must be autoclaved or incinerated on site.

Filter specifications and test results supplied by the manufacturer should be incorporated into the maintenance records but cannot replace *in-situ* testing because filters may have been damaged during transportation or may not have been fitted into the gaskets properly during installation.

53. Filters must be changed when the pressure difference exceeds certain limits in accordance with the instructions given by the manufacturer, or sooner if the filter fails one of the prescribed efficiency tests. Additionally, it may be necessary to change some filters more frequently if they are subject to high humidity or high particle challenge.

54. Animal rooms – pre-filters should be designed in a way that they can be changed without shut-down of the ventilation system.

55. The efficiency of the HEPA filters in BSCs must be checked at least once per year. Movement of BSCs must be accompanied by re-validation of the filter integrity due to possible flexing and movement on the filter cartridge or filter housing and operational issues in its new position.

56. Off-gas or vent filters require testing on installation and at least once per year.

VIII. Waste management

Effluent

57. Effluent from Containment zone laboratories and from facilities holding FMDV-infected or potentially infected animals must be treated in a manner, which ensures that there is no residual infectivity in the effluent using a suitable validated procedure. Both heat and chemical treatment may be used to process the effluent provided all of the material in the effluent is exposed to the specific treatment.

58. The treatment must be validated. The possibility that virus particles may be protected from inactivation by proteins or lipids, and/or by aggregation or precipitation, must be taken into account in the validation process.

59. The entire effluent treatment system must comply with high containment conditions. In every case, it must be ensured that no leakage from the primary containment system into the environment can occur. It is preferable to situate the effluent treatment system within the same building as the source of the effluent.

60. There must be sufficient storage capacity (tanks) for the storage of untreated effluent in order to safely finish work and shut down the Containment zone in the event of a break down of the treatment plant.

61. The equipment must have automatic monitoring systems to ensure proper function. These systems must ensure that the required conditions for inactivation of FMDV have been reached before the effluent is discharged. The systems should be continuously monitored and all critical data recorded. The system should be designed in a way that in case of any failure, the likelihood of a release of potentially infectious material is minimised.

62. Treatment options:

Heat treatment: FMD virus is sensitive to heat at 100°C for 1 hour or an equivalent heat effect that has been shown to be sufficient to inactivate FMDV in effluent to the extent that no residual infectivity can be detected. The treatment process should be monitored by multiple, automatic and continuous time and temperature measurements, combined with automatic measurement of flow rates or volumes. Any treatment system must ensure homogeneity of the effluent during the inactivation process. All data relevant to the inactivation process and the release of effluent must be recorded. Critical data measuring and logging equipment must be calibrated by qualified personnel at least annually.

Chemical treatment: FMD virus is sensitive to acidic and alkaline pH conditions. Alkaline treatment (e.g. NaOH or Na₂CO₃) at pH 12 for at least 10 hours has been shown to be sufficient to inactivate FMDV in effluent and is particularly effective because of its action on concentrated biological effluents. As with heat, thorough mixing of the materials must be ensured. The treatment process should be monitored by multiple, automatic and continuous time and pH measurements. When inactivated effluent is neutralized, precautions must be in place to prevent recontamination. All data relevant to the inactivation process and the release of

effluent must be recorded. Critical data measuring and logging equipment must be calibrated by qualified personnel at least annually.

Solid waste (animal carcasses, feedstuffs, laboratory waste etc.)

63. The principal requirement is on-site inactivation of FMDV in waste using a validated method.

64. These methods include:

- Inactivation by steam using a vacuum-assisted autoclave (at least 121°C for at least 15 minutes or equivalent heat effect). It is essential that the different autoclave load types (e.g. plastic waste, paper waste, waste liquids, and tissue) are each validated for the maximum load size with suitable recording devices, e.g. thermocouples, at different locations within worst case loads, including the centre of the load. Autoclaves should be double-ended so that treated waste does not re-enter the Containment zone. The efficacy of autoclaves should be retested at least annually and after maintenance by competent personnel. Depending on the national requirements, it may be necessary to dispose of the autoclaved waste by incineration on or off the site.
- Carcasses must be treated on site, in compliance with the requirements for category 1 animal by-products (Regulation (EC) No 1069/2009 and Regulation (EC) 142/2011).
- Incineration on site: The incinerators must comply with national legislation and current safety standards and be fitted with afterburners.

IX. Decommissioning containment compartments for maintenance or renovation purposes.

Note: Additional considerations and notes are given in Annex I.

65. Maintenance, renovation work or decommissioning that may compromise the integrity of the containment barrier, thus possibly allowing the escape of air or liquids, must be preceded by an assessment of the risk and a safety plan.

66. Decontamination of rooms/compartments/critical zones, to reduce the risks to an acceptable level, is required before these can be decommissioned permanently or temporarily, for example during renovation.

The efficacy of the decontamination methods must be demonstrated and documented.

67. Waste building materials generated by demolition and redevelopment and other potentially contaminated materials must be treated in a way that any residual infectivity is inactivated. If validated autoclaving or incineration is not feasible, building materials should be sprayed and/or fumigated to disinfect surfaces, and then stored on site for 6 months before removal.

Glossary

Biorisk (adapted from OHSAS 18001:2007): combination of the likelihood of the occurrence of an adverse event involving exposure to biological agents and toxins and the consequence (in terms of accidental infection, toxicity or allergy or unauthorised access, loss, theft, misuse, diversion or release of biological agents) of such an exposure.

Biorisk officer (BRO) or biorisk advisor (Biosafety / Biosecurity Officer): a staff member of an institution (particularly Tier D laboratories and Tier C Category I laboratories) who has expertise in the biological risks encountered in the organisation and is competent to advise top management and staff on biorisk management issues.

Biorisk responsible person (BRP): a staff member of a Tier C Category II laboratory who has the (delegated) responsibility to maintain a biosafe and biosecure situation in the laboratory during an FMD contingency (outbreak). All BRPs must be trained and competent for this role. A BRP must be present in the laboratory whenever samples are being received and must be reachable whenever diagnostic activities are being carried out; it is therefore advisable to designate and train a sufficient number of BRPs ahead of time.

Biosafety (adapted from: WHO/CDS/EPR/2006.6): Laboratory biosafety describes the containment principles, technologies and practices that are implemented to prevent the unintentional exposure to biological agents and toxins, or their accidental release.

Biosecurity (adapted from: WHO/CDS/EPR/2006.6): Laboratory biosecurity describes the protection, control and accountability for valuable biological materials within laboratories, in order to prevent their loss, theft, misuse, diversion of, unauthorised access, or intentional release from the Facility)

Competent authority (CA) or national competent authority (NCA): The regulatory body with the legally delegated responsibility to ensure that the Management and operations of Tier C and Tier D facilities are in line with this Minimum Biorisk Management Standards for laboratories working with FMDV. Depending on the political organization of the member states, this can be a national, regional or local government or agency.

Containment zone: area of the facility, bounded by physical barriers to prevent air and fluid escape except through air filtration and waste treatment systems. Work with live FMDV and samples suspected to contain FMDV, including manipulation, storage, diagnostic testing involving live FMDV and inoculation of experimental animals must take place in the Containment zone for work with FMDV.

Deputy biorisk officer (DBRO): a staff member of an institution (particularly Tier D laboratories and Tier C Category I laboratories) who has expertise in the biological risks encountered in the organisation and is competent to assist the BRO.

Facility: (complex of) buildings including the Containment zone, Support zone and clean zones on a site with an outer security barrier or fence.

FMD restricted zone: dedicated zone in a Tier C laboratory where samples submitted for FMD diagnostic testing are manipulated or stored. Tier C Category II laboratories only have an FMD restricted zone in an outbreak situation. Routine exclusion testing of samples from FMD-free countries or areas by RT-PCR or antibody ELISA does not require an FMD restricted zone.

HEPA filter: High Efficiency Particulate Air filter: the classification of HEPA filters is on the basis of efficiency of removal of the most penetrating particle size. HEPA filter performance requirements are defined by EN1822 (manufacturer); installed filters need to be tested on site according the requirements

of EN14644. In the context of this minimum standard, all HEPA filters must at least meet H13 requirements; H14 filters can be used for increased the margin of safety.

Management: the administration of the organization, including the activities of setting the strategy of an organization and coordinating the efforts of its employees to accomplish its objectives through the application of available resources, such as financial, natural, technological, and human resources.

Open virus work, or open work: describes the handling of materials containing FMDV (usually liquids) in which exposure to room air occurs, for example during the pipetting of liquids into containers, and the subsequent exposure of the liquid handling object (pipettes etc.) to air.

Primary containment: measures that contain the live virus at source, within closed containers or within a class I, II or III biological safety cabinet, or for animals, by physical containment in specially constructed rooms with treatment of all waste including the HEPA filtration of air.

Routine exclusion testing: To ensure the earliest possible detection of an introduction of the disease into a previously free area, it is advisable to conduct laboratory testing also in cases where the presence of FMD (or another notifiable vesicular disease) is not suspected, but also cannot be excluded. Exclusion testing by molecular methods can be performed in any laboratory designated by the competent authority as per point 13 of Annex XV of the directive 2003/85/EC.

SOP: standard operating procedure.

Support zone: area within the outer security barrier or fence of the facility, containing the support services for the Containment zone, the technical areas and zones for access.

Susceptible species: All domestic cloven-hoofed animals (including cattle, sheep, goats, buffalo and pigs), all wild cloven-hoofed animals (including deer, antelope, giraffes and wild boar) as well as elephants and camelids. (Adapted from the OIE 'Technical disease card FMDV', available at www.oie.int).

Annex I

Additional Considerations and Examples

Chapter I: Establishing an FMD incident risk rating system

Each facility should establish a risk rating system and an associated set of incident management procedures, including reporting and responsibilities in the event that a high risk incident occurs.

Risk is the product of consequence and likelihood. The consequences of an FMDV escape into susceptible livestock (resulting in an outbreak) is huge.

In establishing a risk rating system, the following factors should be considered:

- Where does the incident occur? (for example in an animal room)
- What type of event? (for example a visitor leaving without showering)
- How much potential virus exposure or loss? (for example number of persons, time or volume)
- To where was the virus released? (for example outside of the high containment area, to ruminants, to areas within the perimeter of the facility).

Each facility should establish their own risk rating system, taking into consideration e.g. the history of incidents, estimations of likelihood, objective data, and computer simulations. The risk rating system and reporting requirements should be agreed at the level of the top management of the facility, and reviewed on a regular basis.

Once established, the risk rating system can be used in training of staff on their reporting requirements, setting out the types of event or that should be reported to the line manager and/or biorisk officer.

Example of a risk rating system

Where		What		How much*		To where	
5	Animal room containing FMD infected pigs.	5	Potentially contaminated person, without showering	5	Unknown or very high or long time: > 1 L or Kg fluid or material/day. >10 days air. > 50 persons.	5	Outside containment, probable exposure of FMD susceptible animals.
4	Animal room containing FMD infected animals (not pigs).	4	Potentially contaminated waste.	4	High: 10 – 100 ml or gram fluid of material / day. 1 – 10 days leakage of air. 5 – 50 persons.	4	Outside containment, to Yard or farm with FMD susceptible animals. In contact with other (not FMD) Vet.Bios.Level 3 and 4 susceptible animals.
3	Lab undertaking FMD virus work Or During the first half of the FMDV disinfection process of formaldehyde or steam autoclaves or EthyleneOxide sterilizers.	3	Potentially contaminated air. Or Potentially contaminated person, after showering	3	Moderate: 1 – 10 ml or gram fluid or material / day. 1 – 24 hour leakage of air. 2 – 5 persons.	3	Outside containment, to NON FMD susceptible animals
2	Lab not handling FMD virus but within common building/containment to labs handling FMDV Or During the second half of the FMDV disinfection process of formaldehyde or steam autoclaves or Ethylene Oxide sterilizer.	2	Potentially contaminated fluid.	2	Little: < 1 ml or gram fluid or material / day. <1 hour leakage of air. 1 person.	2	Outside high containment suite but on terrain of the institute

1	In engineering maintenance areas – HEPA filter replacement, etc	1	Other Potentially contaminated items	1	Very little << 1 ml or gram fluid or material / day. <<1 hour leakage of air.	1	In engineering maintenance areas – HEPA filter replacement, etc
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* temperature, humidity, expired time will also have influence on this issue

Relative risk = where x what x how much x to where

Example

A person who was working in the laboratory where live FMDV is handled was observed to pass to the area outside of high containment, without taking a shower, but did not leave the perimeter of the facility.

Risk rating: 3 x 5 x 2 x 2 = 60

relative risk	≤20 is 'Acceptable'	21 – 60 is 'Low'	61 – 250 is 'Substantial'	>250 is 'Catastrophic'
decisions	Report to Biorisk Officer.	Report to Biorisk Officer. Report to Biorisk Committee. Report to General Manager.	Report to Biorisk Officer. Report to Biorisk Committee. Report to General Manager. Call together Crisis Team. Decision about the necessity to inform authorities.	Report to Biorisk Officer. Report to Biorisk Committee. Report to General Manager. Call together Crisis Team. Report to Regulatory authority/Chief Vet. Officer

Chapter II: Improvement of biorisk management through analysis of incidents

Management should take a high interest in learning from reported incidents. Each may be considered a form of failure or non-conformity to the expected performance of the risk control measures, and occur as a result of failure in the engineering controls and/or personnel related control measures.

The cause of each event may be categorised as:

Related to engineering:

- hardware (as facilities and equipment)
- design (as irrational lay-out and ergonomics)
- maintenance (as planning and availability)
- procedures (as standard operations and relevance)
- defences (as protective equipment and signals).

Related to personnel management:

- error-enforcing conditions (as occupational health and attitude)
- housekeeping (as tidiness and discipline)
- incompatible goals (as costs and safety)
- communication (as interpretation and point of time)
- organization (as responsibilities and authority)
- training (as knowledge and experience).

Chapter III: Threat assessment

In a threat assessment, at least the following should be considered:

1. The threat of criminal use of FMDV for any malicious purpose has to be carefully assessed to determine the additional risk that arises from operating FMDV facilities. FMDV laboratories have exclusively peaceful objectives concerned with development and implementation of control measures. They are critical for the technical cooperation with veterinary services around the world in order to minimize the economic impact of FMD on livestock and economies. The threat of criminal use of FMDV is subject to major change as the political agenda of terrorist group changes.
2. The threat and consequences of a terrorist attack will vary by country. Because of the transboundary nature of FMD, there is also the possibility that a deliberate release may occur in another, possibly neighbouring, country. For this reason, effective control measures must be consistently applied throughout all EU member states that operate FMD laboratories. As the motivation for a deliberate release may change unpredictably over a very short period, effective control measures need to be sustained at all times and be sufficiently flexible to allow an enhanced response if required.

Facilities permitted to handle FMDV are obliged to prevent illegal access and removal of the virus. As a consequence, such access to laboratory-held virus must be substantially more difficult than acquiring the virus in the field.

Threat reduction/control measures: due to the unpredictability of the actual threat, controls are required to reduce the risk to an acceptable level. These controls should consider structural, physical and organisational measures and must address the following:

3. Intruder attempting to remove FMDV from the facility by forced or fraudulent entry.
Appropriate controls include 1) physical security measures restricting access to authorised staff and contingency plans in the event of intrusion, 2) secure storage of virus containing materials including maintenance of accurate inventories of stocks.
4. Staff member removing FMDV from the facility
Appropriate controls include 1) vetting of persons before authorisation of access, and escorts for persons allowed temporary access when security clearance is not available; 2) restricted access to FMDV virus material in the lab to trusted staff on the basis of a legitimate need, 3) access to the facility is logged [and records maintained for at least two years] to provide an audit trail of who was in the facility at any given time. 4) Design of the laboratory or facility such that the number of staff needing to enter the secure areas is limited. E.g. some engineering aspects of the design of the facility can be arranged so that certain services can be maintained from outside of the security envelope.
5. Shipment of virus containing materials
Appropriate controls include standard procedures before authorisation, including receipt of adequate information from the intended recipient of its authority to handle FMDV, and written agreement that the recipient laboratory will not redistribute the virus to other laboratories without applying the same risk assessment and will adhere to relevant national or international legislation relating to shipment and supply of dangerous animal pathogens. Individuals undertaking these activities must have received adequate training in this and ensure that their competency is maintained up to date.
6. Disruption of the running of the facility:
Consideration should be given that all critical plants and control systems are adequately protected against malicious attack, which could lead to any disruption in support services and a consequential escape of FMDV. Special attention should be given to malicious attack on digital systems.

Chapter IV: Air-handling

1. Provisions must be in place to ensure that no overpressure is generated in the Containment zone. One approach is to interlock the inlet and extract fans so that the most that can occur is that the air supply and extract fails and the negative envelope pressure decays solely depending on the airtightness of the building. An emergency back-up extract fan is recommended so that the negative envelope can be restored in the event of the main extract fan failing and this should also be interlocked to the supply fan to avoid very high negative pressures which may cause damage to the fabric of the building. As an alternative, the air extraction plant can be divided into several parallel sections so that the negative pressure can be maintained if one section fails or is shut down.
3. It is advisable to have and maintain other filters within the air handling system, notably, pre-filters upstream of the HEPA filters. These additional filters will extend the life of the HEPA filters and reduce the need to change them at the annual maintenance interval. In properly maintained systems, it is relatively rare to change the terminal extract filter due to the efficiency of particulate removal by all of the filters upstream.

However, high levels of humidity will shorten the life expectancy of filters and large amounts of dust generated by nearby building works or other activities will soon blind filters even with efficient pre-filters up-stream.

4. Off-gas or vent filters: This type of filter is often steam sterilised and filter efficiency testing involves different approaches such as the water intrusion test. At the smaller scale, disposal cartridge filters may be appropriate as vent filters to allow gas exchange while preventing virus escape from the container to the laboratory environment.
5. Although not widely used, sterilisation of extract air may be done by heating the air as it passes through an in-line furnace.
6. To save energy, air extracted from a Containment zone may be partially recirculated into the same Containment zone provided it is passed through a HEPA filter before it re-enters the laboratory. However, the advisability of recirculation and the proportion of air recirculated will need to be considered against the quality of the air leaving and re-entering the work place and the activities within the workplace.
7. In the event that HEPA filters become blocked prematurely (i.e. prior to annual testing), this does not normally represent a problem in terms of the integrity of the affected filter(s), but it is probable that the increased resistance to airflow and consequent problems of balancing the pressures in the different rooms of the Containment zone will necessitate changing the affected filters.

Chapter V: Decontamination of compartments:

The compartment must be made airtight to make fumigating possible, if necessary by means of temporary panels.

Formaldehyde procedure:

1. Check the compartment and accompanying drawings for connections with containment facilities that must be closed. Close down utilities such as gas, water, electricity, sewerage, steam and if possible ventilation.
2. Empty the compartment, for example by moving objects to other containment facilities. Remove porous material. Discard material via validated procedures like autoclaves and formaldehyde airlocks. Open non-removable installation parts to make them accessible to vapour.
3. Thoroughly clean the compartment and disinfect critical points which may be contaminated.
4. Prepare the fumigating equipment and shut the compartment airtight.
5. Disinfect (air)ducts and HEPA filters for example separately by injecting formalin.
 - Use a fumigating method in conformance with a validated procedure used for formaldehyde airlocks.
 - Use bioindicators, (preferably a rapid bioindicator system) to demonstrate the efficacy of the fumigating process.
 - Set restrictions for access such as clothing, quarantine for people and demolition material, in order to be able to make corrections in case of accidents.
6. Inspect the maintenance and renovation activities to be performed in the compartment. Maintain detailed records of the full process, which must be undertaken as a

collaboration between scientific staff, engineering/maintenance personnel and BRO or deputy.

7. Staff undertaking these activities must be suitably trained in order for these to be carried out safely and correctly. A risk assessment must be in place defining which precautions must be taken to protect staff and the environment from harm from the disinfection procedures.

Chapter VI: Decontamination of equipment and other materials:

Before removal from the containment zone, equipment and material must be decontaminated:

- *by steam sterilization within an autoclave*
- *after surface cleaning and disinfection, fumigation with formaldehyde (10 g/m³ at 70 % RH) for at least 10 minutes or (3 g/m³ for 24 hours or equivalent with other aldehydes, e.g. glutaraldehyde, or ethylene oxide (0.8 g/litre at 50°C for 1.5 hours)) or other fumigation methods that have been shown to be effective against FMDV. Equipment, for example contractors' tool boxes, laptops, etc. which is fumigated out of a Containment zone should be cleaned and be opened as much as reasonably possible to allow penetration of the gaseous fumigant; or*
- *thorough washing in an appropriate chemical disinfectant² such as:*
 - *4 % Sodium Carbonate anhydrate or 10% washing soda (Na₂CO₃ Decahydrate);*
 - *0.5 % caustic soda (NaOH);*
 - *0.2 % citric acid;*
 - *4 % formaldehyde or equivalent with other aldehydes, e.g. glutaraldehyde*
- *a validated disinfection protocol with an alternative method that has been shown to be effective against FMDV.*

Decontamination of clothing before removal from the Containment zone for laundry must include a wet heat treatment step. A laundry process without autoclaving is permitted if performed on-site in a double-ended pass-through laundry device. Such a laundry process must include a validated alternative inactivation step.

Documents should be sent out of the Containment zone preferably in electronic format. In case papers have to be taken out of the Containment zone, they must be treated by a validated procedure e.g. autoclaving, irradiation or ethylene oxide treatment.

Chapter VII: Inactivation of biological material:

Before removing biological material from the Containment zone and sending it to a non-FMDV facility, the material must be inactivated by a validated method.

There are several methods that can be used for the inactivation of FMDV:

² *Note:* The efficiency of these chemical disinfectants is considerably improved by the addition of a non-ionic detergent. Some countries have national databases listing validated disinfectants.

- Binary ethylenimine (BEI): inactivates virus by alkylation of nucleic acids with minimal effects on proteins³.
- Formaldehyde fixation of tissues (4%): 24h per 1cm thickness of tissue
- Inactivation using β -Propiolactone (BPL): Suitable for solutions that contain little protein, e.g. cell culture supernatant; mechanism of action: BPL destroys the nucleic acids (alkylation)
- or a validated treatment with an alternative method.

³ Hans G. Bahnemann. 1975. Inactivation of Viruses in Serum with Binary Ethyleneimine. J. Clin. Microbiol. Vol. 3, No. 2, p. 209-210

TIER C. LABORATORIES PERFORMING FMD DIAGNOSTICS WITHOUT USING LIVE FMDV.

TIER C LABORATORY CATEGORIES:

- I. CONTINUOUSLY WORKING TIER C LABORATORIES:
 - NATIONAL REFERENCE LABORATORY WITHOUT PERMIT TO WORK WITH LIVE FMDV
- II. CONTINGENCY LABORATORIES UNDERTAKING DIAGNOSTIC INVESTIGATIONS FOR FMD IN THE FRAMEWORK OF A NATIONAL CONTINGENCY PLAN (UPGRADED LOWER LEVEL OR NEW)
 - REGIONAL LABORATORIES SUPPORTING ROUTINE EXCLUSION DIAGNOSTICS WITH THE OPTION TO BE MORE INVOLVED DURING AN OUTBREAK
 - EMERGENCY LABORATORIES

Introduction

The following Minimum Standards for laboratories undertaking diagnostic investigations, refers to the laboratories mentioned in Annex XV to Council Directive 2003/85/EC which are designated by the competent authorities as “national laboratories” or in point 13 of Annex XV as “other laboratories”. These laboratories would be licensed to undertake diagnostic tests, as part of national contingency plans, but only test field samples originating from the country where the laboratory is situated using assays which do not contain or require live FMD virus as reagents or controls and that do not amplify infective virus. Such “FMD Contingency Laboratories” must operate to standards that will result in inactivation of live virus if received in samples. During an outbreak, they may offer significant advantages in respect of speed and sample throughput as the number of laboratories fully meeting the “MBRM Standards for FMDV Laboratories” is very limited. In some “FMD Contingency Laboratories”, rooms equipped with an air handling system providing HEPA filtration of exhaust air may be available for the most critical activities.

Real-time RT-PCR has been introduced in many laboratories, e.g. regional veterinary laboratories. While the inactivation treatment prior to RT-PCR in principle may be carried out on the suspect premises, there currently is no validated and fully satisfactory procedure that could be used for this purpose and thus opening the vessels containing potentially infectious material in a BSC followed immediately by inactivation is considered a suitable alternative.

Furthermore, a national competent authority may decide to authorize a “FMD Contingency Laboratory” to test non-inactivated samples by **antigen ELISA** in order to allow these labs to supplement RT-PCR results, maintain a back-up method in case RT-PCR fails and to determine the serotype although this procedure poses a higher risk. The use of a **lateral flow device (LFD)**, either on the premise or in a “FMD Contingency Lab” in a BSC, is an alternative to antigen ELISA that poses a lower risk but currently does not allow serotyping.

Serology using commercially produced **FMDV-ELISA kits** can be performed in many laboratories, e.g. regional veterinary laboratories, which can process samples with a high throughput. In case of an outbreak, the NCA can include such laboratories to increase the throughput of diagnostic samples significantly, which will often be a crucial factor for successful disease control and timely recovery of the previous disease-free status. Serological samples should be opened and processed in a way that the generation of potentially infectious aerosols is minimized and air that might contain such aerosols should be directed through a HEPA filter as far as possible.

While due to the dynamic nature of an FMD epidemic samples coming from holdings without clinical signs may occasionally contain virus, samples from holdings with clinical signs suggesting the presence of FMD represent a higher risk and should be handled with special caution.

SPECIFIC REQUIREMENTS:

I: Management and responsibilities

1. The management of a facility is ultimately responsible for biological risks (biosafety and biosecurity) on its premises. This also includes the provision of sufficient resources to manage the duties and responsibilities of a Tier C laboratory (both categories).
2. It is the duty of the management of Category I laboratories to properly monitor the biosafety and biosecurity by appointing a BRO (Biorisk Officer) and deputy (DBRO), while category II laboratories must designate a biorisk responsible person (BRP). When receiving suspect samples and during outbreaks, there must be a BRO/DBRO or BRP on-site at all periods in which samples are being received and contactable at all periods when diagnostic activities are ongoing.
3. The BRO/DBRO must have sufficient experience and technical training to enable assessment of FMD risk and risk management procedures. The management should carefully define the status, duties and responsibilities of the BRO/DBRO:
 - a. The BRO should report directly to the top management representative (Director-General, site Director or similar)
 - b. The status of the BRO should ensure his/her independence and the absence of any potential conflict of interest.
 - c. The BRO should have appropriate training in virology, containment techniques and procedures to fulfil his/her duties. It is to be expected that he/she would also have a broad based knowledge of the FMDV with particular respect to its physico-chemical properties, mode of transmission and other topics of relevance to his/her role.
 - d. Procedures for reception, handling, testing, storage and shipment of suspect and positive samples must be defined by the BRO. Moreover, the BRO must be involved in the technical running of the facility.
4. For category I laboratories, a biorisk policy and systems for incident recording, assessment and notification, risk and threat assessments, and emergency management plans described for Tier D must be in place.
5. Procedures for safely handling suspect and positive samples must be defined by the BRO for category I laboratories, and by the BRP for category II laboratories.
6. **When instituting category II laboratories during an FMD emergency, the national competent authority (NCA/CA) shall ensure that the laboratories implement Tier C standards.**

For category II laboratories, once a positive sample has been identified, all potentially contaminated areas are classified as Containment zone.

II: Facility design and access

1. There must be a designated FMD restricted zone used for the receipt, testing and storage of suspect sample material which is separated from other essential activities in the laboratory.
2. All potentially contaminated areas are classified as FMD restricted zones. Access doors should display a warning sign that access is restricted to authorised personnel only.
3. Controls must be in place to limit human and animal access, particularly people working with susceptible species.

4. Communications and reporting office space:
 - a. The laboratory must have an adequate provision of office space, computing and communications facilities (e.g. electronic communications, facsimile) to reduce the need to a minimum for staff, papers and physical records to exit the FMD restricted zone.
5. Rest rooms
 - a. The FMD restricted zone should have sufficient rest rooms and lavatory facilities in relation to the staff number expected at peak periods of activity to reduce the need to a minimum for staff to exit the FMD restricted zone.
 - b.

III: Personnel and training

1. Personnel must be authorised to enter and work in the FMD restricted zone by the BRO/DBRO or the BRP. For category I laboratories, authorised personnel working in the FMD restricted zone must be trained, their competencies maintained for their designated roles, and evidence of the training and competency recorded. The BRP for category II laboratories must ensure sufficient training of personnel before start of work in the framework of an FMD emergency. Where facilities for the inactivation of waste from the FMD restricted zone are located outside of this area, staff working with such waste must also be trained appropriately and evidence of the training recorded.
2. Authorised personnel must:
 - a. change all clothing before entering and when leaving the FMD restricted zone
 - b. sign an agreement stating that for at least 72 hours after leaving the FMD restricted zone they will not have any contact with animals of susceptible species, nor enter buildings or enclosed fields where animals of susceptible species are kept, and not handle items used in the care of susceptible species
 - c. the agreement of the authorised personnel to these conditions must be recorded and a reminder notice of these conditions placed in a visible location at the exit point of the FMD restricted zone
3. Entry and exit of personnel to the FMD restricted zone must be recorded.
4. Entry and exit points to the FMD restricted zone must be kept to the minimum – preferably a single point of entry/exit.
5. A step-over line, or other clearly demarcated boundary, shall indicate the exit point. This is the point where the change of all clothing should occur. Changing facilities and lockers are required to enable staff to deposit personal items outside the FMD restricted zone. All outer protective equipment worn in the FMD restricted zone must be packaged safely and stored in the FMD restricted zone until treatment.
6. Preferably, personnel should shower out at the exit point. If this is not possible, personnel must remove their outer protective equipment and wash their hands at the exit point and shower before leaving the laboratory premises. If showers are not available on the premises, personnel should shower as soon as possible.

IV: Handling of samples

1. Sample reception area:
 - a. The FMD restricted zone must contain a specified area for sample reception which must:
 - b. be easily disinfected in the event that leakage of samples occurs into packing materials or following opening of the packages
 - c. be equipped to enable repacking of samples into appropriate transport containers for dispatch to laboratories meeting the MBRM Standards for FMDV laboratories
 - d. have suitable facilities for waste disposal and have hand-washing facilities ~~at the exit points.~~

2. Sample preparation area
 - a. The FMD restricted zone must contain a specified area for serum separation and/or RNA extraction.
 - b. This area must have suitable facilities for surface disinfection and waste disposal and have hand-washing facilities ~~at exit points.~~
 - c. Samples originating from a holding with clinical signs indicating the possible presence of FMDV pose a higher risk. They must be opened, and the subsequent liquid handling steps be carried out in a biosafety cabinet (BSC). Centrifugation should be carried out in closed rotors or sealed centrifuge buckets, which can contain a spillage in case the primary vessel fails.
 - d. Infectivity of the samples must be reduced before further processing in all cases where this does not affect the intended diagnostic tests. E.g. by mixing with an effective lysis buffer containing chaotropic salts prior to RNA extraction, or by heating serum samples for 2h at 56°C. If suspension of lesion epithelium for RT-PCR or antigen ELISA is prepared using mortar and pestle or similar open method, this must take place in a BSC, the SOP for the procedure must reflect the high risk involved, and personnel should be aware of this high risk.

3. Testing area
 - a. The FMD restricted zone must contain a designated area for testing
 - b. This area must have suitable facilities for surface disinfection and waste disposal and have hand-washing facilities ~~at exit points.~~
 - c. The testing of serum samples originating from a holding with animals showing clinical signs indicating the possible presence of FMDV should if possible be carried out in a BSC.
 - d. Antibody ELISA testing of samples from a holding without clinical signs should be carried out in a way that aerosol generation and spread is minimized. In particular, the initial steps including the first washing step are critical.

- e. The testing of vesicular material for antigen e.g. by ELISA or lateral flow device (LFD) poses the highest risk of all activities carried out in Tier C Laboratories. It must be carried out in a way that all liquid handling steps are performed in a BSC. If an incubator is used to guarantee the required incubation temperature, plates should be sealed or placed in a suitable secondary vessel.
- 4. Sample storage area
 - a. The FMD restricted zone must contain a specified area for the storage of samples
 - b. This area must be secured from unauthorized access, and have suitable facilities for surface disinfection.
 - 5. Packaging and shipment of samples
 - a. Samples must be put into watertight primary containers (e.g. plastic tubes) and the primary containers must be packed in watertight secondary packaging, which should be a strong crushproof and leak-proof container, with absorbent material that can absorb the entire contents of all the primary containers. The packaging process must include a disinfection of the secondary packaging. The packaging should comply with packing instruction P 650 and the European agreement concerning the international carriage of dangerous goods by road (ADR) - unless the requirements for transport by air or ship apply, which may be higher. Diagnostic samples with unknown infection status should be labelled as biological substance, category B (UN3373).

V: Waste management

- 1. Location of autoclave
 - a. An autoclave should be present on the site, preferably vacuum-assisted and with sufficient capacity for throughput at the maximum operating capacity of the laboratory.
- 2. Liquid waste
 - a. Heat or chemical treatment of all waste water through a validated effluent treatment system is the preferred method, in compliance with requirements specified for FMD laboratories
 - b. Alternatively, or additionally, the laboratory may demonstrate that it has put in place a robust management system for inactivation of liquid waste that is potentially contaminated with virus or has been in contact with potentially infectious materials. If treatment of all liquid waste from the FMD restricted zone (including waste water from the showers) is not possible, at least the ELISA buffers and washing fluids must be collected and treated.
- 3. Solid waste
 - a. For biological, solid waste, and all solid disposable materials that have been in contact with potentially infectious specimens, treatment by autoclave within, at an exit point to the FMD restricted zone, or on site, is the preferred option.

- b. If such a treatment of all solid waste is not possible, handling of solid waste must be risk assessed by BRO/DBRO/BRP and discussed with management. Waste must be effectively chemically decontaminated, packaged into suitable leak- and break-proof containers and surface decontaminated by a validated method at the exit from the FMD restricted zone. Such packages must be transported in a controlled fashion as clinical waste under ADR regulations (UN 3291) for incineration at the closest authorized processing plant, or for autoclaving at another facility using a validated protocol for comparable material.

VI: Equipment and material

1. Removal of equipment, materials and clothing from the FMD restricted zone:
 - a. Removal of any material and equipment from the FMD restricted zone shall be subject to authorisation by the BRO/DBRO or the BRP
 - b. The BRO/DBRO or BRP will ensure that materials and equipment which has been in contact with risk materials (specimens) will not be removed from the FMD restricted zone without a validated treatment to inactivate FMDV.
 - c. The reason for removal, date and destination will be recorded.

VII: Declassification

1. Declassification of the FMD restricted zone:
 - a. The FMD restricted zone can only be declassified after decontamination according to a plan agreed with the national competent authority (NCA/CA).
 - b. If heat treatment or scanning of all paper from the FMD restricted zone is not possible, they should be packed into suitable containers, which should be disinfected and kept under lock for at least two years. If the containers have to be opened before, this has to be done in a FMD restricted zone meeting the Tier C standards.
 - c. All clinical specimens handled in the FMD restricted zone during a period when potentially infectious FMDV material was handled, should be considered as potentially contaminated with FMDV and should be destroyed before the declassification of the FMD restricted zone. Alternatively, the material needs to be tested and certified free from FMDV or undergo a validated inactivation process and surface decontamination in order to be released (see Annex 1, chapter VII). Samples may also be shipped to tier D laboratories according to international regulations for shipment of biological materials. These samples and processes must be approved by the BRO or BRP and/or the NCA/CA. Relevant documentation on these samples must be maintained according to national and international law.

2019 Revision of the Minimum Standards⁴ for work with FMDV.

The “Minimum Biorisk Management Standards for Laboratories working with foot-and-mouth disease virus” (MBMS) have been thoroughly reviewed and text updated with the purpose to make it easier to read by improving the logical flow and to minimize the number of repetitions.

This means that a number of points and sentences have been moved in both in Tier D and Tier C.

Moreover, the Tier C laboratory concept has been further developed to reflect that it caters to two different laboratory categories:

- category I: national reference laboratories without a permit to work with live FMDV but maintaining a continually alert FMD biorisk management system including trained and vigilant biorisk officer, deputy biorisk officer and laboratory staff
- category II: FMD Contingency laboratories limited to performing FMD diagnostic tests on no/very low risk samples or not performing FMD diagnostics except in the framework of an FMD emergency

The changes comprise three categories:

- **Moved text**: listed below – but not indicated in the document
- **Changed text**: listed below and indicated in the document
- **Removed text**: listed below – but generally not indicated in the document

Introductory page 1, description of revision process:

- Changed to reflect the current (2018-2019) revision process.
- Tasks from 2013 version:

List of general changes made for consistency – not marked in the text:

1. Names of document and document parts:
 - a. More consistent use of “Tiers” – e.g. Removed “Sections” in the foreword, on pg. 2 and on the front pages of Tier D and Tier C. and used “Tiers” instead
 - b. Changed descriptions/names of Tiers C and D to focus on the difference: if the laboratory works with live FMDV or not: on Pg. 2 and first pages of Tiers D and C:
 - c. More consistent use of the names for the entire document and for the Tiers C and D
 - d. Tier C subdivided in two categories: national reference laboratories and contingency laboratories
 - e. Restricted zone changed to Containment zone in Tier D – and to FMD restricted zone in Tier C, as most Tier C laboratories do not have Tier D containment measures
2. Microbiological safety cabinet and MSC changed to biological safety cabinet and BSC throughout the document
3. Biosafety officer (BSO) changed to Biorisk officer (BRO) because for FMDV this role covers both biosafety and biosecurity
4. ANNEX changed to Annex
5. Some clean-up of words: which/that, principle/principal, TCID changed to TCID₅₀
6. Laboratory animals changed to small experimental animals and large experimental animals
7. Tier D specific requirements V.34-IX.67 (previously V.34-X.71): numbers of points adjusted due to moved points/text for improved logical flow in the document
8. PCR changed to RT-PCR

List of SPECIFIC changes – marked in the text:

⁴ MINIMUM BIORISK MANAGEMENT STANDARDS FOR LABORATORIES WORKING WITH FOOT-AND-MOUTH DISEASE VIRUS

http://www.fao.org/fileadmin/user_upload/eufmd/Lab_guidelines/FMD_Minimumstandards_2013_Final_version.pdf

Key to changes.

The colour coded changes listed below are shown in the proposed Standard as italics, underlined or strike-through

Moved text is indicated in the Proposed Standard (not this document) in italics

Changed text [inserted or edited] is underlined thus

Deleted text is ~~indicated thus~~

Tier D:

General requirements:

1. Introduction:
 - a. Removed possibly
 - b. Full FMD facilities changed to facilities for work with live FMDV
 - c. Fitted for research changed to set up for research
 - d. Changed confirm RT-PCR to supplement RT-PCR
 - e. Changed exclusion diagnosis to routine exclusion testing
 - f. Inserted “In the European region” to emphasize that the encouragement to apply principles of the Tier C and D as far as reasonably is for laboratories in the endemic part of the European region
 - g. Added explanatory note in 1.1 Primary containment layer
 - h. Specified that solids, fluids and air are exiting subjects
 - i. 1.3 Tertiary containment layer:
 - i. Inserted quarantine for visitors
 - ii. Added two measures
2. General requirements:
 - a. Removed escaped or
 - b. Removed baby from baby mice
 - c. Inserted full-length
 - d. Risk control:
 - i. Special attention points:
 1. Security check of personnel changed to Reliability and competency of personnel
 2. Solid waste added to decontamination of effluent (missing)
 - e. Use of alternative methods:
 - i. processes added
 - ii. Decisions about alternative methods is moved from National competent authority to SCBRM, who can include the Standing Technical committee
 - f. Residual risk:
 - i. consequential removed
 - ii. Regulatory body is changed to NCA or equivalent (see also glossary)
 - iii. Added the option to modify the work
3. Authorization of laboratories:
 - a. Points (2) and (4): border line for Manufacturing activities simplified to up to 10 litres for each batch, which means 10 litres at any step of production
 - b. Refers to Tiers C and D instead of Sections
 - c. Sharpening description of situation where there is no risk (including routine exclusion testing)
- Specific requirements:**
 4. Requirement I.1: added sentence regarding provision of sufficient funds for maintenance and servicing
 5. Requirement I.3: added and review of efficacy of actions taken

6. Requirement I.5: **biorisk officer replaces biosafety officer** – for FMD facilities both biosecurity and biosafety are important
7. Requirement I.5 (a): added **or modify**
8. Requirement I.5 (e): **added requirement for funds for further training of BRO**
9. Requirement I.5 (f): **senior management changed to management** : definition of management layers are up to the facilities
10. Requirement I.6: **added reference to threat assessment**
11. Requirement I.9: **explanatory remark inserted**
12. Requirement I.11: items for contingency plans **added break down of equipment with examples** autoclaves and waste treatment plants (previous Requirement VIII.61 integrated).
13. Requirement I.12: Access to site – it was realized that though the color-codes may be useful for understanding, they derived from one facility and are not implemented at all FMD facilities. For this reason, the SCBRM discussed and agreed on **new names for zones** , while keeping the colors codes as examples. The new zone names have been included in the glossary.
 - a. **Remark on Red, Orange and Green zone constituting the Controlled zone which is within the outer security barrier or fence has been removed. This is covered in Laboratory Biosecurity in requirement 17 as part of threat assessment.**
 - b. Explanation of Support zone is added **area outside containment, including** and **technical area**
 - c. The minimum requirements are changed to **It is necessary** to
14. Requirement II.16: security changed to **biorisk** (includes both biosafety and biosecurity)
15. Requirement III.17: **removed sentence allowing the option to decide to not undertake threat assessment**
16. Requirement III.19: concept **maliciously** inserted
17. Requirement IV. 20:
 - a. **remark on code of practice made available** to all employees and guests was repeated in IV.21 and IV.25, and has thus been **removed from IV.20.**
 - b. specified **full body and hair** shower
18. Requirement IV.22:
 - a. “each employee” **changed to “relevant employees”** .
 - b. Specified that the **documents must be read and signed before access can be given**
19. Requirement IV.23: “Control of access to **controlled zones and** critical areas” has been changed to “Control of access to critical areas”.
 - a. Personnels access to FMDV containing materials has been **changed** from “trained and dedicated staff” **to “trained staff”, and** instead **access must be authorized.** It is up to the facilities how they arrange the authorization.
 - b. To reflect different organization in different European countries, “the police and relevant government agencies” has been **changed to “relevant local and national authorities”** .
20. Requirement IV.25: visitors should not carry out **decontamination** , so this example is **removed. “of oversight”** has been inserted.
21. Requirement 26: specified that it has to be **a competent member of Support or Containment zone staff** who have oversight
22. Requirement IV.27: **Human resources department changed to “Management”** .
 - a. **Requirement rephrased to two sentences** to improve ease of understanding.

23. Requirement IV.28:
 - a. Restricted zone changed to **Containment and Support zones** (also in IV.29).
 - b. **Three days changed to 72 hours for Containment zone.**
 - c. **For the support zone, the need for quarantine must be risk assessed and will depend on the activities in the area and the risk for virus escapes to the areas**

24. V. Heading changed from Facility Design to **Containment Zone Design**

25. V.30: **“(backflow prevention)” added.**

26. V.32:
 - a. **“(or equivalent in the local language)” added**
 - b. **Door access control system description changed** to allow different systems in different facilities/countries
 - c. Airlocks – sentence regarding gaseous decontamination changed to: **this is particularly important for fumigation air locks** –
 - d. Windows in doors changed to **where appropriate** – e.g. doors to and from changing rooms are not a good place to have windows.

27. Requirement V.33: changed suitable sealing material such as silicone mastic to **suitable materials certified for the purpose**

28. **From requirement V.34: number of requirements adjusted** due to moving of requirements/text to improve logical flow in the document.

29. Requirement V.34:
 - a. requirements IX.62 and IX.63 about benches and centrifuges, sonicators etc. moved here to new requirement V.34 for better logic.
 - b. Added **When using equipment in BSCs, performance of BSC has to be ensured with the equipment in use by an appropriate test, e.g. using smoke pencil.**

30. Requirement V.35 (previously V.34): added sentence about **other means of communication.**

31. Requirement V.36 (previously V.35): Emergency back-up power: **Rephrased to allow other means of emergency power** depending on risk assessment based on the design of the facility and the work to be carried out in the facility (how airtight, +/- animal work, etc.).
 - a. Repeated text removed
 - b. **Appropriately sized UPS mentioned**
 - c. Added requirement for **testing and documenting systems at regular intervals.**

32. Requirement VI.37 (previously VI.36): **added documentation for the chain of custody** to recording system.

33. Requirement VI.39 (previously VI.38): **cell culture removed** as in the General point about Authorization of laboratories. Amount of virus specified.

34. Requirement VI.41 (previously VI.40):
 - a. **Euthanasia added**
 - b. Added sentence specifying that **Animals cannot be taken out from Containment areas alive**
 - c. **last sentence rephrased** without losing meaning.

35. Requirement VI.42 (previously VI.41): prevention of spill should be in both contained and non-contained area, thus **“in the non Restricted zone of the facility” removed.**
 - a. **Description of leak- and break-proof double container rephrased.**

36. Requirement VI.43 (previously VI.42):
- suitable disinfectant changed to **effective** disinfectant.
 - requirements for cleaning, tidying and disinfection specified.**
37. Requirement VI.44-45 (previously IX.67-68): requirements moved to FMD handling to improve logical flow of document.
- Viable changed to **infectious**
 - Changes to text: **“innocuity test” is changed to “a validated test according to risk assessment (e.g. PCR, cell culture)”.**
 - Refers to Annex I chapter VII for** validated treatment that destroys FMDV infectivity.
 - “requirements governing transportation of dangerous foods” changed to “regulations for shipping biological materials”.**
 - Note on FMDV cell culture shipped as UN2900 moved here from Tier C.
38. Requirement VI.46: Removal of equipment and other material moved from IX.64-66:
- One new general sentence about **limiting transportation of materials and equipment into the Containment zone to the essentially needed.**
 - Two general introductory lines from Requirement IX.64 - **added the requirement for validated methods.**
 - New general paragraph specifying autoclaving as the method of choice, and referring decontamination for materials/equipment that cannot be autoclaved to procedures described in Annex I, chapter VI:
 - which includes the specific methods for inactivation of materials/equipment, clothing, paper that was previously described in Requirements IX.64-66.
 - Specific reference to formaldehyde and ethylenoxide removed from main text.
 - Added sentence specifying that dirt and organic material have to be removed by thorough cleaning** before decontamination.
39. Requirement VII.47 (previously VII.43):
- Specified that it is escape **of unfiltered air** through the inlet supply.
 - Cell culture removed from definition of border line for small quantities of virus – and **definition changed** (as in General requirements under Authorization of laboratories).
 - Minimum negative pressure now defined relative to ambient air.**
 - Foot note on definition of 1 Pa removed since Pa is an internationally recognized unit.
 - Added **relative to ambient air.**
 - Paragraph about airhandling in small animal rooms moved from Annex 1, chapter IV.
 - In recognition that positive pressures cannot be completely avoided, phrasing is changed from “prevent positive pressure” to “limit positive pressure”.**
 - “failures or faults of the ventilation system” collapsed to “failures of the ventilation system”.**
- >10l.
40. Requirement VII.48 (previously VII.44):
- rephrased from “following open work” to **“during open virus work”**
 - Production laboratories added **explanatory note**
41. Requirement VII.49 (previously VII.45): **air specified as “unfiltered air”.**
42. Requirement VII.50 (previously VII.46):
- “by manometer” removed** to reflect that new Tier D facilities will rely on continued electronic monitoring of air pressures. The change allow for manometers in older facilities and as choice in new facilities.
 - Text changed to make sense:** “so appropriate actions can be taken.”
43. Requirement VII.51 (previously VII.47): **specified that it is the installed HEPA filters** that should be tested annually (in situ test).

44. Requirement VII.52 (previously VII.48): inserted sentence regarding disposal of Discarded HEPA-filters – burnt changed to incinerated.
45. Requirement VII.53:
- a. Added The efficiency of the HEPA.
 - b. Added and operational issues in its new position.
46. Requirement VIII.58 (previously VIII.54): the specification for the highest virus load in the most difficult matrix removed as a result of recognizing that it is not possible to fill neither the buffer tank nor the boiling tank with the highest possible virus load in the most difficult matrix. It is thus up to the individual facility to design a scheme for validating the effluent treatment plant according to risk assessment.
47. Requirement VIII.59 (previously VIII.55): added sentence specifying that it is preferable to have the effluent system in the building where the effluent is produced.
48. Requirement VIII.60 (previously VIII.56): added sentence specifying purpose of having sufficient storage capacity for effluent.
49. Requirement VIII.62:
- a. Heat treatment: validated changed to calibrated.
 - b. : Chemical treatment:
 - i. NaOH and Na₂CO₃ only mentioned as examples - changed to general: Alkaline treatment –
 - ii. The sentence specifying that when inactivated effluent is neutralized, precautions must be in place to prevent recontamination. The background is that some current facilities have their neutralization plants in the contained area.
 - iii. Validated changed to calibrated.
50. Requirement VIII.64 (previously VIII.60):
- a. Sterilization changed to inactivation
 - b. Autoclave specified as vacuum-assisted
 - c. Autoclave cycle changed from “at least 115 dgr C for 30 minutes” to “at least 121 dgr C for at least 15 minutes” – maintained “or equivalent heat effect”.
 - d. Tissue added to examples of loads.
 - e. Specified that validation of each load type should be for worst case loads.
 - f. Typical length of autoclave periods removed as these will range from 20 minutes for simple loosely packed loads to 4-6 or more hours for larger pieces of tissue/carcasses or compressed bedding.
 - g. Annual revalidation of autoclaves by experienced personnel has been changes to retesting of efficacy of autoclaves annually and after maintenance by competent personnel.
 - h. Rendering of carcasses has been changed to treatment of carcasses, since there are now more reliable methods.
 - i. Regarding incineration on site, national legislation has been added.
51. Previous Requirement VIII.61 regarding Emergency procedures has been integrated into Requirement 11, and has thus been removed.
52. Previous IX Equipment and Materials Requirements IX.62-68 have been moved and thus removed:
- a. Previous IX.62-63: benches and aerosol producing equipment moved to V Facility Design V.34 – no change of text – one remark added to previous IX.63.
 - b. Previous IX.64-66: removal of equipment and other materials moved to VI Handling of FMD virus together with removal of biological material. IX.64-66 collapsed to VI.46 and description of specific methods moved to Annex 1, chapter VI.

- c. Previous IX.67-68: Removal of biological material moved to VI Handling of FMD virus VI.44-45 – text only changed to allow for test by PCR following risk assessment – and change from requirements governing transportation to regulations for shipping biological materials.
53. Requirement IX.65 (previously X.69): First line added decommissioning instead of separate sentence for decommissioning – this was done to emphasize that also maintenance and renovation work requires in-depth risk assessments and safety plans.
54. Requirement IX.66 (previously X.70):
- a. Critical zones added to include the permanent decommissioning of an entire facility (also the Support zone spaces need to be evaluated).
 - b. Standard treatment procedure fumigation with formaldehyde removed – instead more open phrasing calling for demonstration and documentation of the efficacy of the decontamination methods.
55. Requirement IX.67 (previous X.71): validated incineration included as method + or changed to and/or to indicate that spraying followed by fumigation is also an option.

Glossary:

Revisions:

- **Changes to the following items:** Biorisk officer, Containment zone, HEPA filter
- **New items:** Biorisk responsible person, Competent authority, Containment zone, Deputy biorisk officer, Facility, FMD restricted zone, Management, Routine exclusion testing, SOP, Support zone, Susceptible species
- **All marked with yellow in the Minimum biorisk management standard for FMDV**
- HEPA filters: remark about H14 changed from recommendation to statement
-

Annex 1:

Chapter III:

- first line: added “at least”.
- 3. Added accurate
- 5. Added: Individuals undertaking these activities must have received adequate training in this and ensure that their competency is maintained up to date
- Added a point 6. Disruption of the running of the facility

Chapter IV:

- Point 1: about air-handling in small animal rooms: moved to Tier D, requirement 47
- Point 2-3: few clean ups in words – no change of meaning –

Chapter V:

- Point 6: added Maintain detailed records of the full process, which must be undertaken as a collaboration between scientific staff, engineering/maintenance personnel and BRO or deputy
- Added new point 7: Staff undertaking these activities must be suitably trained in order for these to be carried out safely and correctly. A risk assessment must be in place defining which precautions must be taken to protect staff and the environment from harm from the disinfection procedures.
-

Chapter VI:

- Specific methods for decontamination of equipment and other materials moved from previous requirements IX.64-66

- Inserted “cleaning and” and “or other fumigation methods that have been shown to be effective against FMDV”
- Specified the Sodium carbonate and washing soda
- Alternative methods specified as: that has been shown to be effective against FMDV.

Chapter VII:

- New chapter with inactivation methods for biological material

Tier C:

Not marked in text:

1. Structure changed to reflect structure of Tier D:
 - o Headlines for seven sections (I-VII) have been introduced
 - o The consecutive order of the sections differ between Tier C and D – this could not be rectified before the deadline January 20th, but may be done before February 15th if accepted by EuFMD

Section	Tier D	Tier C
I	Management	Management and responsibilities
II	Training	Facility design and access
III	Biosecurity	Personnel and training
IV	Personnel	Handling of samples
V	Facility design	Waste management
VI	Handling of FMD virus	Equipment and materials
VII	Air handling	Declassification
VIII	Waste management	-
IX	Decommissioning	-

Introduction:

2. Last two paragraphs regarding packaging and shipment of samples moved to Requirement IV.5 Packaging and shipment of samples.
3. **Specific requirements:**
4. Requirement I.1: new requirement regarding management, including provision of sufficient resources
5. Requirement I.2: Management has duty to appoint BRO for category I labs – and BRP for category II labs – reflecting difference between lab categories
6. Requirement I.3: Added sentence and bullet points regarding the BROs status, duties and responsibilities.
7. Requirement I.4: moved from previous Requirement 11 and directed to category I laboratories that must have these systems in place at all times. Added biorisk policy, threat assessment and emergency management plans as in Tier D.
8. Requirement I.5: new requirement defining responsibility for procedures for suspected and positive samples

9. Requirement I.6: **During FMD emergency, NCA shall ensure that category II labs implements Tier C standards** (including systems mentioned in Requirement I.4) – **last half of previous Requirement 12 + responsibility for category II standards placed with NCA.**
10. Requirement II.1: **fusion of previous Requirement 3 and first part of previous Requirement 12.**
11. Requirement II.2: **second half of previous Requirement 12.**
12. Requirement II.3: **limit access of humans – added animals:** **fusion of previous Requirement 3 and first half of Requirement 14.** **Last half of previous Requirement 14 regarding separation of vehicles removed.** According to the national contingency plans, vehicles do not present a risk, as veterinary authorities at the infected premises will have ensured that the vehicles have not been in the infected part of the premise – or they have been disinfected before leaving the premise.
13. Requirement II.4-5: **previous Requirements 20-21 – text unchanged.**
14. Requirement III.1: **previous Requirements 4 and 5,** with **specification of difference between category I and II laboratories.**
15. Requirement III.2: **previous Requirement 6 with few words changed** – quarantine specified in hours rather than days –.
16. Requirements III.3-4: **previous Requirements 7-8 with few words changed.**
17. Requirement III.5: **fusion of previous Requirements 9 and 13,** and **added a specification of changing point.** Moreover, **second sentence of previous Requirement 10** is included.
18. Requirement III.6: **most of previous Requirement 10 regarding showers and previous Requirement 15 in the sense that it has been removed as it is implicit in this new Requirement III.6.** **The shower requirement has been arranged as a 3-step option** depending on availability of a shower facility and emphasizing that showers are important:
 - a. Preferably shower at exit point
 - b. If not possible, shower elsewhere at facility
 - c. If not possible shower elsewhere as soon as possible
 - d. It should be considered if these could be made mandatory for category I laboratories ?
19. Requirements IV.1-4: **previous Requirements 16-19 - a few words changed and requirement for hand-washing facilities being placed at the exit points removed** (should consider if this is also relevant for category I laboratories ?).
 - e. Requirement IV.2 d:
 - i. inactivation of samples changed to **reduction of infectivity**
 - ii. appropriate buffer changed to **effective lysis buffer**
 - iii. **Sentence of risk of preparing suspension of epithelium using mortar and pestle and how to handle this.**
 - f. Requirement IV.3 c: **must be carried out changed to should if possible be carried out.**
 - g. Requirement IV.3: **subpoints d. and e. swapped to improve flow** – antibody ELISA finalized first – then vesicular material.
 - h. Requirement IV.4 b: **requirement for secured from unauthorized access** added for sample storage.
20. Requirement IV.5 **Packaging and shipment of samples: moved from Introduction.**
 - a. Few words changed.
 - b. **Remark about air transportation changed.**
 - c. **Note on cultured FMDV to be shipped as UN2900 moved to Tier D,** since there will be no cultured samples in a Tier C laboratory.

21. Requirement V.1: previous Requirement 22. Preferably vacuum-assisted inserted.
22. Requirement V.2: previous Requirement 23.
23. Requirement V.3: previous Requirement 24. Added chemical decontamination before packaging of waste. And condition for transportation for incineration of site and autoclaving at another facility (validated cycle for comparable material). BRO/DBRO/BRP risk assessment.
24. Requirement VI.1: previous Requirement 26 (Requirement 25 not used in the 2013 version).
25. Requirement VII.1: previous Requirement 27 with added option to test samples free and to ship samples/materials to Tier D laboratory. Sentence on documentation shortened and referring to national and international law.



Food and Agriculture
Organization of the
United Nations



European
Commission



43rd General Session of the EuFMD

Revision 2019



EuFMD Minimum BioRisk Management Standard

Kirsten Tjørnehøj, Chair EuFMD SCBRM
Biosafety officer
DTU National Veterinary Institute
Lindholm
Denmark





43rd General Session of the EuFMD

EuFMD SCBRM:

- EuFMD Special Committee for **BioRisk Management**
- **Biorisk officers** (BRO/biorisk professionals/duty holders) from FMD containment facilities in the European area
- **Currently from:** UK, The Netherlands, Switzerland, Spain, Sweden, Italy, Israel, Germany, Denmark
- **Background:** Agronomists, Microbiologists, Engineers, Veterinarians
- Most have a general BRO role for their institutes, also covering other agents – involvement in research varies



43rd General Session of the EuFMD

FMD laboratory biorisk management legal basis:

FAO EuFMD:

Minimum Biorisk Management Standards For Laboratories Working With Foot-and-mouth Disease Virus (EuFMD MBMS)

- Version GS40/4.2bis as adopted by the 40TH GENERAL SESSION OF THE EUFMDCOMMISSION, 22-24 APRIL **2013**, ROME, ITALY
- **EU: implemented through ANNEX XII to COUNCIL DIRECTIVE 2003/85/EC:**
 - ”..... must operate **at least in accordance with** Section I of the ‘Minimum biorisk management standards for laboratories working with foot-and- mouth disease virus in vitro and in vivo’ 2013....”



43rd General Session of the EuFMD

EuFMD SCBRM tasks:

- Revision and development of the EuFMD MBRMS
- Training in biorisk management
- Annex/database with accepted inactivation/disinfection methods
- Evaluate alternative methods
- Opinions on biorisk related matters for EuFMD



43rd General Session of the EuFMD

EuFMD MBRMS – quick summary:

- Defines the roles, duties and responsibilities of the management and the biorisk officers
- Institutes biorisk, risk assessment (RA) and hazard identification
- Has 70 specific points covering management, personnel, training, biosecurity, facility design, handling of live FMDV, air, waste, effluent and materials, biological materials across barriers and shipment, commissioning and decommissioning,
- The EuFMD MBMS are regularly reviewed by the EuFMD SCBRM



43rd General Session of the EuFMD

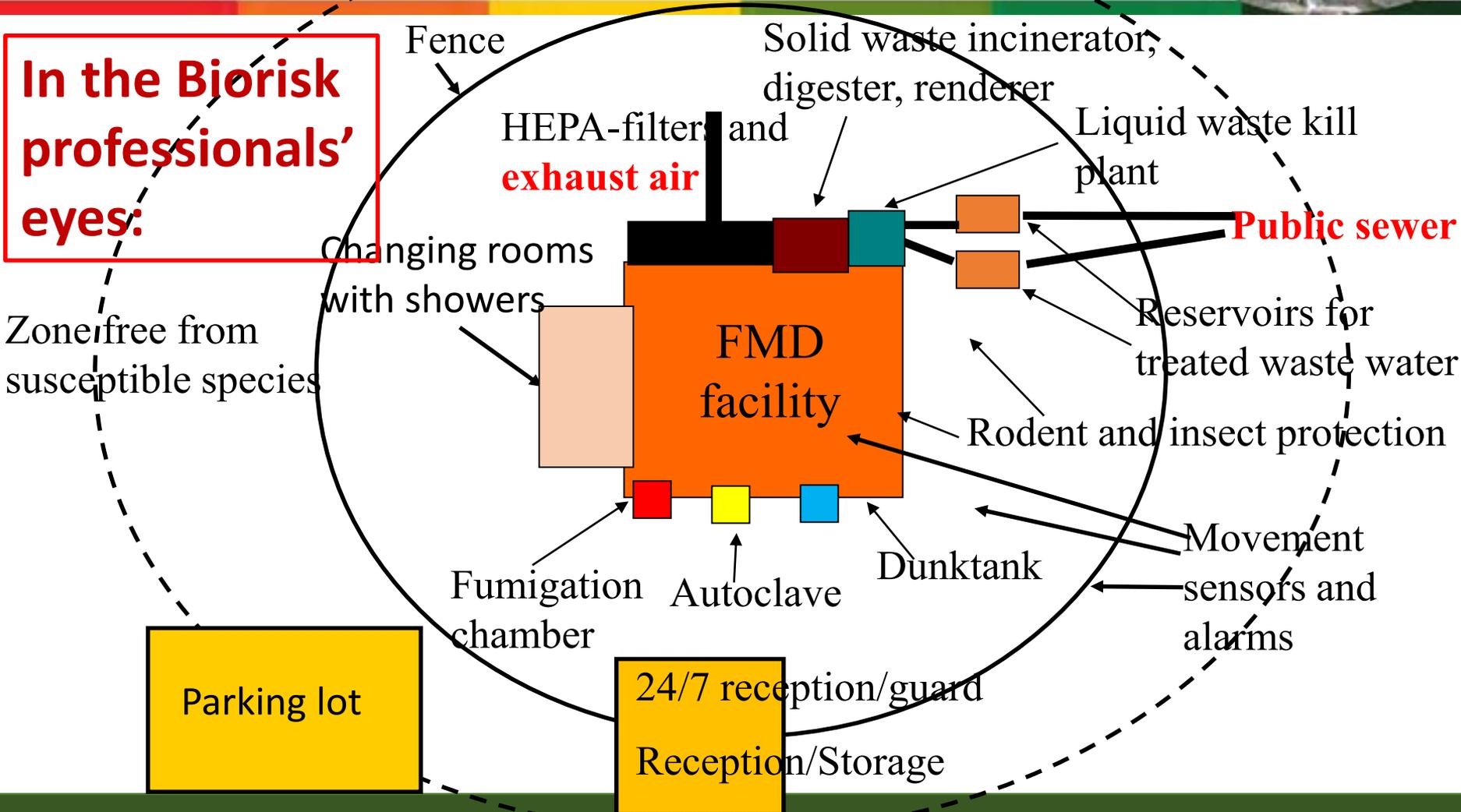
How a FMD facility may look to the people working in it:





43rd General Session of the EuFMD

In the Biorisk professionals' eyes:





43rd General Session of the EuFMD

Participants in revision process:

- **SCBRM:** Cesare Berneri, IZSLER, Brescia, Italy
- Douwe Kuperus, WBVR, Lelystad, The Netherlands
- Gonzalo Pascual, Spain
- Kathrin Summermatter, IVI, Switzerland
- Kirsten Tjørnehøj, DTU VET, Lindholm, Denmark
- Michael Eschbaumer, FLI, Insel Riems, Germany
- Ulrika Allard Bengtsson, SVA, Sverige
- **FAO:** Keith Sumption
- Eoin Ryan
- **Additional experts:**
- Kiril Kravstevski, EuFMD, FAO
- Patrick Houston, WRL/ERL FMDV, Pirbright, UK
- **Observers:** Graeme Harkess, BSO, WRL/ERL, Pirbright, UK
- Katharina Stärk, Switzerland
- Nicolas Proeschel, Boehringer- Ingelheim
- Paul Guntram, MSD



43rd General Session of the EuFMD

2019 Revision goals:

- **Improve logical flow and minimize repetitions:**
 - moved text in both Tier D and Tier C
- **Implement technological improvements**
- **Tier C divided into two laboratory categories:**
 - **Category I:** National reference laboratories without live FMDV permit
 - continuously alert FMD biorisk management system
 - trained and vigilant biorisk officer/deputy biorisk officer/laboratory staff
 - **Category II:** FMD Contingency laboratories
 - Continuous: limited to FMD diagnostic tests on no/very low risk samples
 - FMD emergencies: only FMD diagnostic tests in the framework of an outbreak
- **Adapt chronology in Tier C to chronology in Tier D**



43rd General Session of the EuFMD

2018-2019 Revision process:

- Workshops:
 - Palermo March 2018: SCBRM, invited experts from UK, EuFMD
 - Zürich January 2019: BROs from most Tier D labs and 2 vaccine producers
- Telephone meetings
- 24/1: review by biorisk managers from 17 Tier D and 20 Tier C labs
- March: review by EU, CVOs of MS and other affected countries, as well as vaccine industry
- April 2019: presented at the General Assembly of the Eufmd Commission in Rome



43rd General Session of the EuFMD

Response biosafety professionals Jan. 2019:

Laboratories	SENT for review	Replied		Accepts	Comments
Tier D	17	14	82,4%	5	9
Tier C	20	12	60,0%	10	2
TOTAL	37	26	70,3%	15	11

Altogether approx. 140 comments



43rd General Session of the EuFMD

Changes of content - I:

• Tier C and D:

- Facility management to ensure sufficient resources for:
 - Sustainable maintenance/servicing of facility
 - Biorisk Officer training
- Approval of alternative procedures:
 - SCBRM - can consult STC/others
 - National competent authority kept informed
- Supervisors need tools for difficult people situations
- Glossary updated
- Numbers of some points changed

• Tier D:

- Not only phones acceptable
- Magnahelix not compulsory – other means of measuring with alarms acceptable



43rd General Session of the EuFMD

Changes of content II:

• Tier D:

- Other plans for emergency power acceptable – UPS mentioned
- Depending on RA: PCR can be used to test free for removal of biological material
- Methods for inactivation of biological materials moved to Annex 1, chapter VII
- If neutralizing inactivated effluent, care must be taken to prevent recontamination
- Autoclaving changed to 121 dgr. C for at least 15 minutes or equivalent
- Decommissioning:
 - Efficacy of method must be demonstrated and documented
 - Incineration added



43rd General Session of the EuFMD

Changes of content III:

- **Tier C:**
 - Two laboratory categories
 - Structure from Tier D adopted
 - A number of management measures introduced for category 1 laboratories
 - National competent authority responsible for implementing full Tier C if activating category 2 laboratories during outbreak – Biosafety responsible person (BRP) at lab responsible for training
 - Shower requirement specified:
 - At exit point
 - If not possible: elsewhere at laboratory premise
 - If not possible: as soon as possible



43rd General Session of the EuFMD

Changes of content IV:

- **Tier C:**
 - Solid waste:
 - Autoclave preferred
 - RA by BRO/DBRO/BRP:
 - For incineration at closest site
 - Autoclaving at other facility
 - Declassification – clinical specimens etc.:
 - Destroyed
 - Tested free
 - Validated inactivation method
 - Shipped to Tier D labs



43rd General Session of the EuFMD

SCBRM future work:

- Continued development of the MBRMS, including Tiers A and B
- Training in biorisk management
- Annex/database of accepted inactivation/disinfection methods
- Evaluate alternative procedures
- Opinions on biorisk related matters for EuFMD



EUFMD

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE



eofmd
e-Learning



III
3 YEARS of
the EUFMD

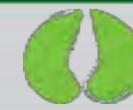


Item 13. Standing and Special Committees



The proposed revision of the Terms of Reference (2019) of the STC :

1. **To maintain an overview of the risks of FMD and similar transboundary diseases** (“FAST diseases”, as defined below) that are not normally present in the majority of member states, for European livestock (large and small ruminants, pigs and wildlife), and **advise the Executive Committee** on appropriate policies or programmes that the Commission should consider provide on the basis of an in depth understanding of the risks of entry and the options available and practicable for veterinary authorities, and the likely consequences of any actions proposed.
2. **To maintain an overview** of relevant initiatives related to international surveillance and risk assessment **and provide guidance** on how the EuFMD programme can add –value or synergise with such initiatives.
3. **To keep in close communication with the work of the Special Committees**, referring such matters to the Committees as are consistent with their TORs and with the feasibility that they can provide a well- considered scientific opinion, **and ensuring the resultant opinions are communicated to the Executive.**



Procedure for future election of STC members (GS44, 2021)

The proposal is to continue the current (2017-19) number of members (6) but with a revision in the procedures to be followed before each General Session:

- At least three months In advance of the Session, the Secretariat **ensures the member states are aware of the vacancies** to be filled;
- The current practice of the outgoing Chairperson and Officers preparing the list for proposal is continued;
- That **three of the six members would normally stand-down** at each Session
- That members of the STC would not normally continue for more than two Sessions (4 years), without a break;
- That a geographic and political balance is maintained between members of EU and non-EU, such that non-EU countries and those from most immediately at risk of FAST diseases are represented.
- At the Session, the Commission's Rules of Procedure (ROP) are to be followed, and the election process is supervised by the FAO Department that will ensure alignment with standard FAO Governance procedures.



PROPOSAL TO ESTABLISH THE SPECIAL COMMITTEE FOR SURVEILLANCE AND APPLIED RESEARCH (SCSAR)

IN

REPLACEMENT OF THE SPECIAL COMMITTEE FOR RESEARCH AND PROGRAMME DEVELOPMENT (SCRPD)

The new TORs will reflect the needs for:

1. Guidance to the STC and Secretariat on surveillance and applied research priorities for FMD and similar TADS (FAST diseases)
2. Reference Centre and other technical expertise to guide the programme, the training to be developed
3. Technical expertise to provide specific assistance to NRLs in the neighbourhood to undertake aboatory confirmation or specialised studies
4. A network of expertise to assist in scaling up support on FAST diseases according to risk.
5. Expertise to review proposals for applied research projects



Competences needed in the Special Committee

Specific technical expertise recognized at European /Global level on epidemiology and surveillance for one or more FAST diseases. Centres – or Experts would have one or more competence from the following

1. Expertise in the epidemiology and laboratory diagnosis of schedule 1 or 2 FAST diseases and strong working connections with EU-RL or competent laboratories to support activities.
2. Expertise in potential vaccines for assessment of their potential use against FAST in Europe, and/or studies on the performance of vaccines against one or more FAST diseases.
3. Expertise in specialised disciplines that are considered critical for planning or response to FAST diseases, such as surveillance and control in wildlife.

Assumed these Centres/experts have a working knowledge of contingency plans and control measures applicable in the EU for the disease specialisation, and are engaged in relevant research and therefore have a very good understanding of the research gaps and priorities.



Membership - Special Committee

1. **Maximum of 20 members : from EuFMD MS**
2. **Proposal that the name of the Centre providing the expertise is endorsed - by Default the name of the Technical Director**
3. **FMD: all of the current FAO, OIE and EU-RL**
4. **FAST diseases: additional Centres of expertise that include the OIE/FAO/EU-RLs for PPR, capripox viruses and such additional centres as are needed for expertise on Category 2 risks (RVF, BEF and emerging diseases in the neighbourhood).**

Additional expertise - a FAST Network

Annex 1 : a proposal for funding (200,000€) of the FAST Network. This proposal should “bridge” between EuFMD –SCSAR and expertise from REMESA /neighbourhood

FOR DECISION

**ITEM 14 FINANCIAL
POSITION AND BUDGET -
BIENNIUM 2020-2021**

**PAPER ON THE FINANCIAL POSITION AND BUDGET:
ADMINISTRATIVE (MTF/011) FUNDS
BIENNIUM 2020-2021**

2020 and 2021 budgets (US\$) for approval by the 43rd General Session

For decision

1. The proposal to index the biennial budget contributions of member states, for each category level of contributions to a standard measure of inflation (the consumer price index (CPI) as recorded by the Organisation for Economic Cooperation and Development (OECD)).
2. As the CPI differs between the Eurozone and the EU countries, and expenses of the Commission are in all EU countries and others in the region, the index to be applied is proposed to be the *mid-point between the CPI for the eurozone countries and that of the European countries. The index should use the OECD data for the CPI change in the 2 year period of the previous two full calendar years before each Session (thus 2019-2020 for the 44th Session in April 2021, and 2021-2022 for the 45th Session in 2023).*
3. To apply this index at every Session, with the following exceptions where there have been unforeseeable impacts of change in exchange rates between the USD and Euro, since budget contributions are set in USD and the major expenditure from the MUL/011 is effectively in euro.
4. To maintain a periodic review of the categories in which countries are placed for contribution, considering that changes in GDP and livestock populations will occur over time. As the last review was in 2015, a review period of every 6 years is proposed (therefore at the Session of 2021).
5. The budget for the biennium 2020-2021, as proposed in Table 1 , on the basis of the mid-point CPI (Eurozone and EU28) of 4.5% for the 4 full calendar years from 2015-2018.
6. The proposed expenditure from the Administrative Fund based on the proposed total annual contributions of US\$ **643,725**.

EuFMD Administrative Fund – MTF/INT/011/MUL

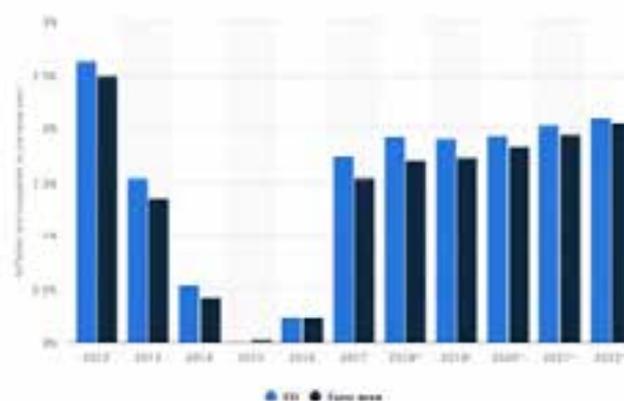
Background to the Administrative Fund and to the Categorisation of Contributions

1. The Secretariat manages three Trust Funds, for the Administration of the Secretariat (MTF/INT/011/MUL, with contributions from the Member States,), the delivery of the EC Funded Work Program (MTF/INT/003/EEC) and an Emergencies and Training Fund into which additional voluntary contributions have been received for provision of training (MTF/INT/004/MUL).
2. In fulfilment of the commitment made by Member States on entry into membership, the member states must contribute to supporting the Secretariat through an annual contribution, the amount of which is agreed at the regular General Sessions of the Commission.
3. Each regular Session must on its Agenda consider the financial position, review the Budget for expenditure for the coming biennium and agree upon the scale of contributions needed to support the administration of the programme.
4. The current scale of contributions was adopted at the 41st General Session in 2015, with five categories, based on a formula for classification agreed by the Commission in 1997, which used two equal criteria, a) the FAO contribution and b) livestock population (formula – 1 for cattle, 0.5 for pigs, 0.2 for sheep and goats). The data used in the assessment is given in Table 3 in this paper.
5. The Executive, at its 97th Session in Rome in January 2019), considered the questions arising from the 41st General Session on categorization and recommended that if the member states that had raised questions in 2015 could propose a solution that would not reduce the overall contributions, they were encouraged to do so.
6. The need for review of categories in which countries arises from changes in the GDP of the country and of its share of the European livestock population at risk. It is therefore proposed that the General Session of 2021 reviews the rankings of countries using the established formulae, providing that a member state or the Executive Committee proposes this to occur.

Budget Contributions proposed: 2020-21

7. At the 41st Session in 2015, both the scale of contributions was agreed as well as a change from 4 to 5 categories for contribution. As Inflation rates in European and EU area were very low before the 2015 General Session the overall change was mainly in terms of categories rather than an overall increase in budget.
8. Inflation rates since 2015 have been higher (Figure 1), therefore the Executive Committee considered at the 97th Session the need for an increase and also on how in future the level of contributions may be linked to that of inflation.
9. The 42nd General Session agreed to maintain the overall budget of 606,997 USD in contributions, based on the tight control of expenditure in 2015 and 2016, avoiding an increase in the current biennium (2018 and 2019).

Inflation rate in the European Union and the Euro area to the previous year)



Financial position at the end of 2018

10. The official balance in the Administrative Fund at 1st January 2019 was USD 310,167, after contributions of USD 612,100 and expenditure of USD 934,444.
11. It must be noted the expenditure includes hard commitments to staff whose contracts continue in to 2019 and therefore when corrected for only expenditure within the calendar year 2018, the corrected balance would be **USD 557,700**, effectively a reduction of circa USD 80,000 in the balance held.

Balance	01-01-2018	USD 632,511
MS contributions received	31-12-2018	USD 612,100
Total expenditure committed Effective Expenditures 2018	31-12-2018	USD 934,444 (of which USD 252,241 Exp.19 Salaries Cons. lines) USD 686,911 (effective Exp. year 2018)
Balance	01-01-2019	USD 310,167 (including Commitment 2019)
<i>Balance Year End effective 2018</i>		USD 557,700

The commitments are in line with the budget allocated. Closure of the financial year 2018 in February 2019, the re-allocation of unspent funds from year 2018 to year 2019 will be processed.

12. The Financial Statement provided by the FAO on the expenditure in 2018, and an updated table of the Outstanding Contributions, will be provided at the 43rd Session.
13. The principal categories for expenditure in 2018 were in the Budget Lines of Professional Salaries of persons on time-limited basis (“project post professionals”) (USD 298,927) and personnel on temporary contracts (in FAO term these are “consultants”) (USD 576,819). As mentioned previously, the cost of hard commitments to temporary staff shows in the year of the commitment (2018) even though it covers a longer period (into-2019).
14. In 2018, The Secretariat staff positions supported under the Administrative Fund were the key positions for the Administration of the Work Programme as well as the normal Secretariat functions. By agreement with the EC, operational staff delivering the activities were supported from the EC through a separate Fund.)

Supported under the Administrative Fund in 2018 (underlined are Consultants)

Executive Secretary	(P5)	Keith Sumption
Communications and Networks Officer	(P2)	Nadia Rumich
Chief Operations Officer	(Cons)	<u>Cecile Carraz</u>
Pillar I Co-ordinator:		<u>Mark Hovari (from 8/2018 Maria de la Puente)</u>
Pillar II Supervisor/Deputy Executive secretary		<u>Fabrizio Rosso (part-time)</u>
Pillar III Supervisor		<u>Nicholas Lyons (part-time)</u>
Online training programmes Manager		<u>Jenny Maud</u>
Risk management support Officer		<u>Graeme Garner (from 8/2018, Koen Mintiens)</u>
Short Term Placements (STPs) supporting the administration of the Training and THRACE/Balkans Programmes		<u>Rodrigo Nova Chavez (UK/Chile) (STP)</u> <u>Daniel Donachie (UK) (STP)</u> <u>Kiril Krstevski (N.Macedonia) (STP)</u>

15. Previous Sessions have recommended a reserve (balance) of at least USD 200,000 on all occasions and closer to USD 500,000 in the year that the EC Contract is up for renewal since the member states expect the programme to continue even during the negotiation phase and given that the first payment from EC may occur 12 months after the programme has been agreed to initiate. The administrative fund thus acts as a buffer in this situation to enable continuity.
16. The outstanding contributions at 31st December 2018 were only USD 73, 333 (Albania, Belgium, Greece, Romania and Serbia). This is lower than in previous years thanks to the efforts to ensure the situation is well communicated to CVOs and good levels of action on their part to address the issues.

Policy on linkage of change in levels of Contributions to Inflation

17. The Executive considered the recent levels of inflation (CPI between 1.5 and 2%) and projected inflation (OECD) in 2020 (Figure 3), of closer to 2%.
18. They considered this would have a significant impact if uncorrected by contributions, and leaving an increase until 2021 could result in a requirement of a corrective increases of far higher than annual inflation, unlikely to be agreeable to the MS.
19. They therefore requested the Secretariat to review the OECD data on consumer price index (CPI) for the Eurozone countries and for the EU as whole, and prepare a proposal based upon these official figures for CPI.
20. The 2015 General Session was the last time that the contributions were increased after a period of more than 8 years without a change. Given the OECD data (Figure 2), and with the year-end of 2015 set at 100, the CPI change to the 4th quarter of 2018 was 104.3, 104.7, and 108.3 respectively, for EU zone (red), the 28 countries of the EU (blue), and the OECD Europe members (purple). The last figure is affected by Turkey and a few other countries which experienced very high inflation.
21. Considering that **the basis for the increase based on CPI is that :**
Our costs are mainly those of working in Italy, therefore to apply the Eurozone inflation maybe appropriate, but the EU28 inflation rate is also relevant since our costs (travel, meetings, etc.) are not only in Italy but across Europe.
22. The policy proposed is that the increase in contributions be based on a mid-way point between Eurozone and EU28 rates, in this case an index of 104.5 (representing a 4.5% rise over 4 years since 2015).
23. For subsequent sessions the proposals should be based upon:

The change in the CPI, for the previous full 2 year period (thus 2019 and 2020, at the 44th Session, and so on), to the end of year preceding the Session.

Figure 2. Change in CPI in the 48 month period between Quarter 4 2015 and Quarter 4 of 2018 (Source OECD <https://data.oecd.org/price/inflation-cpi.htm>, accessed February 18th 2019)

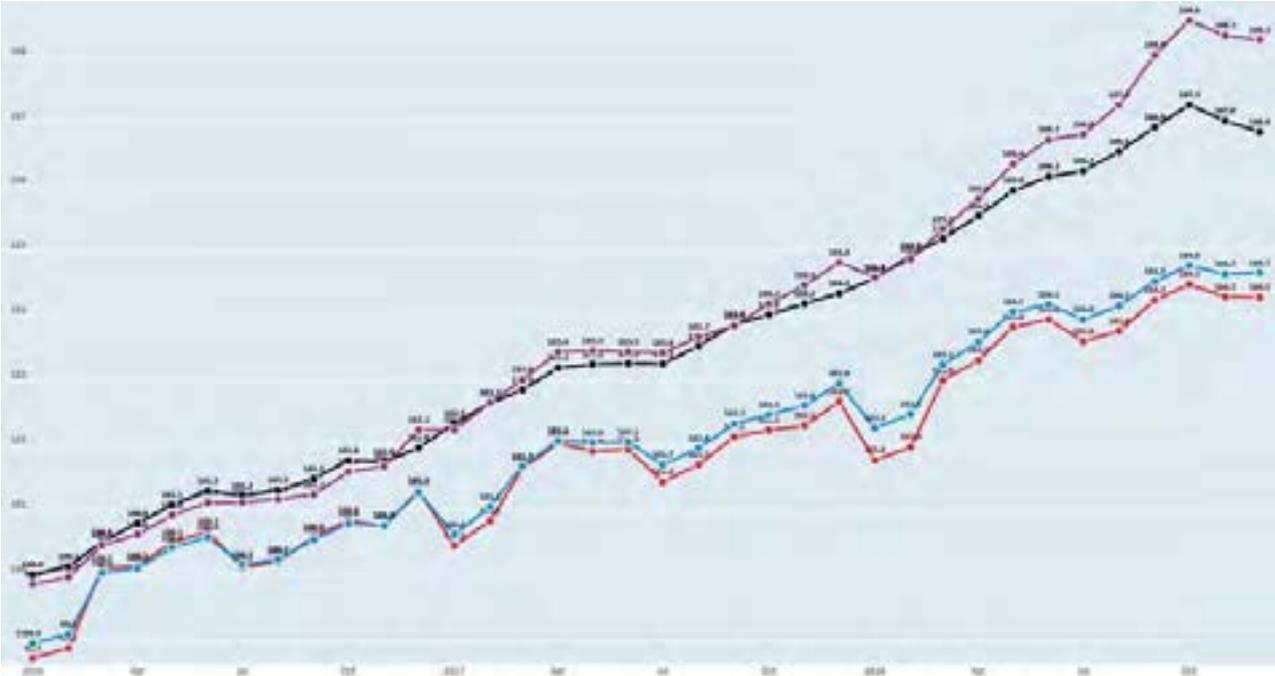
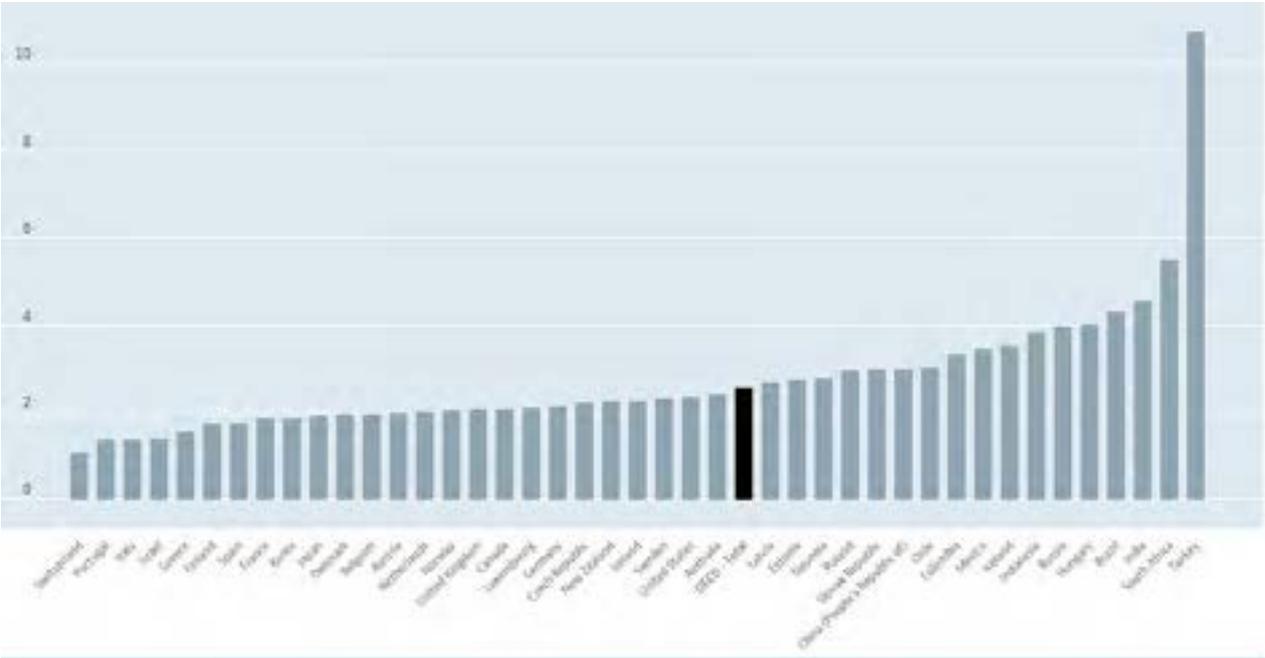


Figure 3. The CPI projection for 2020 is shown below, and for most of the EU is between 1.5 and 2%. Source OECD <https://data.oecd.org/price/inflation-cpi.htm>, accessed February 18th 2019



Proposed Budget for 2020-201

24. The Executive Committee considered the above financial position and the proposal of the Secretariat in respect of composition of staffing of the administrative and technical team, taking into account the agreement with the EC relating to their maximum level of support for project operations.
25. The following is proposed for funding under the Administrative Fund:
- **Professional positions**, as follows:
 - The position of Executive Secretary (P5), on an unchanged basis, with overall responsibility to the Commission for delivery of the Strategy and as Budget Holder, and with specific responsibility for oversight of the GF-TADS (Pillar 3) programme ;
 - To support 20% of the position of Communications and Networks Officer (P2), with expectation the remainder would be supported under the EC (003) programme as per agreement with EC;
 - A new position of Deputy Secretary/Lead Technical Officer for the HOLD-FAST work programme, at a P4 level, with expertise in risk management in the European neighbourhood and in Member States, to manage the extensive co-ordination and programme management of the Pillar I and II programmes;
 - **Temporary (<11 month) positions to support administration and programme delivery:**
 - Pillar 1 coordinator, to manage the Pillar I programme development and delivery (this position is a continuation of a current job position 2017-19)
 - Work programme Operations coordinator with responsibilities to manage the administrative team and operational delivery of the EC and Commission work plans (continuation of existing job position since 2017)
 - Operations assistant to the Coordinator
 - One or more **Short Term Placements (STP), on the same basis of secondment of three to six months** to the Secretariat, of junior-mid level veterinary officer from member states, **on same basis as operated in 2013-19**; the number and affordability of these will be decided at the first Executive Committee after the General Session, and are not shown in the budget table
26. On the above basis, and income from contributions of USD 643,725 per year in 2020 and 2021, the expenditure budget is proposed as follows:

Table 1 – Proposed Budgets for 2020 and 2021

	PROPOSED budgets for MTF/INT/011/MUL			
	2019	2019	2020	2021
	Agreed 42nd	Proposed	Proposed	Proposed
Salaries (P Officers)	392,801	392,801	455,349	455,349
Temporary Staff (“Consultants”) and Short Term Placements (STPs)	282,115	300,000	186,660	186,660
Contracts				
Travel	10,000	10,000	40,000	40,000
Training				
Expendable equipment				
Hospitality				
Gen Operation Expenses				
Total	684,916	702,801	682,009	682,009
Income from MS Contributions	606,997	616,005	643,725	643,725

27. Impact on the financial reserve: the above contributions (income) and expenditure plan will see a reduction over the period of the balance to circa USD 390,000 (at 31st December 2021). However the balance might be much lower than this as a result of any delay in EC Phase V agreement, or as a result of financial deductions at the closure of the Phase IV (there is usually a level of expenditure not accepted by EC, that must then be settled by use of the Administrative fund, to close with a balance of 0). The plan for expenditure is thus conservative, and Executive Committee will be in a position from mid-2020 to decide on further cuts or possibly, additional spend..

28. Note that

- If the increase in Contributions based on the CPI is not approved, the balance will fall to below USD 300,000 (when effect of inflation rate of 2% is taken into consideration) and this is unlikely to be a sufficient reserve to bridge between EC programme financing agreements so activities may be forced to cease/be put on hold.
- In the upcoming period, all other administrative costs would be charged to the programmes relating to the EC (where eligible) or Emergency and Training activities.

29. Table 2 indicates the Level of Contributions per category and for each MS, for 2020-21.

EMERGENCY AND TRAINING FUNDS –MTF/INT/004/MUL

30. In addition to the Administrative Fund, the Commission has managed additional Trust Funds through which funds have been received from member states and others, and disbursed for activities which are agreed with the Commission at its General Sessions or Executive Committee. The Fund current known as MTF/INT/004/MUL started in the first years of the Commission and in particular was important in the management of contributions for the fight against FMD in Thrace, before a specific fund was established with the EEC to relieve the burden on the EEC/EU members.
31. Since 2012, contributions to cover the costs of additional training courses requested by member states and others have been received and disbursed through MTF/INT/004/MUL and the use of funds will be reported to the Session, together with a projection of the committed and predicted contributions in 2017-19 and the outgoing expenditure expected.
32. On the basis of commitments to support the management of future training courses, for the Governments of Australia and New Zealand and others, and the benefits these courses provide in terms of cross-subsidising the training support for the Member States, and on the basis that the Fund is not predicted to be overspent as a result of the activities, the Secretariat proposes to extend the “not-to-exceed” (NTE) date of the EMERGENCY AND TRAINING FUND (004) to 31st December 2021.
33. The Full Paper for the Session will include Annexes with certified expenditures, and projected contributions and outgoing expenses until 2021.

Table 2. Budget Contributions 2010 to 2019– and with proposal for 2020-2021 based on 4 year change in Consumer Price Index (CPI)

Member Country	1997 Rank	2015 Rank	1997 cat. level	2010-11 contrib.	2012-13 contrib.	2015-15 (40GS) contrib.	2016-17 contrib.	2015 category	2017 category	2019 category	2018-19 (42 nd GS)	2020-2021
												+1.125% (=4.5% over 4 years)
GERMANY	1	1	1	42,374	42,374	42,374	46611	1	1	1	46611	48708
FRANCE	2	2	1	42,374	42,374	42,374	46611	1	1	1	46611	48708
U.K	3	3	1	42,374	42,374	42,374	46611	1	1	1	46611	48708
ITALY	4	4	1	42,374	42,374	42,374	46611	1	1	1	46611	48708
SPAIN	5	5	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
TURKEY	6	6	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
NETHER.	7	7	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
POLAND	8	8	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
BELGIUM	9	9	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
DENMARK	10	10	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
SWEDEN	11	14	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
SWITZ	13	12	2	21,260	21,260	21,260	23386	2	2	2	23386	24438
ROMANIA	12	16	2	21,260	21,260	21,260	15,650	3	3	3	15,650	16354
AUSTRIA	14	13	3	12,786	12,786	12,786	15,650	3	3	3	15,650	16354
IRELAND	15	11	3	12,786	12,786	12,786	15,650	3	3	3	15,650	16354
GREECE	16	15	3	12,786	12,786	12,786	15,650	3	3	3	15,650	16354
NORWAY	19	17	3	12,786	12,786	12,786	15,650	3	3	3	15,650	16354
FINLAND	17	19	3	12,786	12,786	12,786	13,809	4	4	4	13,809	14430
CZECH REPUBLIC	18	20	3	12,786	12,786	12,786	13,809	4	4	4	13,809	14430

FOR DECISION

Member Country	1997 Rank	2015 Rank	1997 cat. level	2010-11 contrib.	2012-13 contrib.	2015-15 (40GS) contrib.	2016-17 contrib.	2015 category	2017 category	2019 category	2018-19 (42 nd GS)	2020-2021
												+1.125% (=4.5% over 4 years)
SERBIA	20	23	3	12,786	12,786	12,786	13,809	4	4	4	13,809	14430
PORTUGAL	21	18	3	12,786	12,786	12,786	13,809	4	4	4	13,809	14430
HUNGARY	22	21	3	12,786	12,786	12,786	13,809	4	4	4	13,809	14430
SLOVAK R.	24	24	3	12,786	12,786	12,786	13,809	4	4	4	13,809	14430
ISRAEL	26	22	4	4170	4170	4170	13,809	4	4	4	13,809	14430
BULGARIA	23	29	3	12,786	12,786	12,786	4,504	5	5	5	4,504	4707
LITHUANIA	25	25	4	4170	4170	4170	4,504	5	5	5	4,504	4707
ALBANIA	27	30	4	4170	4170	4170	4,504	5	5	5	4,504	4707
CROATIA	28	26	4	4170	4170	4170	4,504	5	5	5	4,504	4707
LATVIA	29	32	4	4170	4170	4170	4,504	5	5	5	4,504	4707
SLOVENIA	30	28	4	4170	4170	4170	4,504	5	5	5	4,504	4707
ESTONIA	31	34	4	4170	4170	4170	4,504	5	5	5	4,504	4707
FYROM	32	36	4	4170	4170	4170	4,504	5	5	5	4,504	4707
LUXEMBOURG	33	33	4	4170	4170	4170	4,504	5	5	5	4,504	4707
CYPRUS	34	35	4	4170	4170	4170	4,504	5	5	5	4,504	4707
BOSNIA-H	35	31			4170	4170	4,504	5	5	5	4,504	4707
ICELAND	36		4	4170[2]					5	5	4,504	4707
MALTA	37	37	4	4170	4170	4170	4,504	5	5	5	4,504	4707
GEORGIA	Not ranked	27	4			4170	4,504	5	5	5	4,504	4707
MONTENEGRO									5	5	4,504	4707
TOTAL											616005	643,725

FOR DECISION

Table 3. Livestock Populations (2013), Converted to Total Units (TU) by 1997 formula, % Contribution of the countries to UN system and position in the European scale based on an average of both (final column)

Area Code	Region	Area Name	Cattle 2013 (Heads)	Goats 2013	Sheep 2013	Pigs 2013	Buffalo 2013	Total Units (1997 formula)	%TU in Europe (A)	UN Contrib 2015	%European Cont FAO (B)	(A plus B)/2
125	E	Liechtenstein	6,350	368	4,000	1,800	-	8,124	0.00	0	-	0.00
64	E	Faroe Islands	2,300	-	70,000	-	-	16,300	0.01	0	-	0.00
134	E	Malta	15,220	4,598	10,930	49,450	-	43,051	0.01	0.016	0.04	0.03
273	E	Montenegro	84,000	-	207,000	18,000	-	134,400	0.04	0.005	.01	0.03
99	E	Iceland	68,014	877	463,807	26,033	-	173,967	0.06	0.027	0.06	0.06
154	E	N. Macedonia	238,333	75,028	731,828	167,492	640	483,450	0.16	0.008	0.02	0.09
146	E	Rep. of Moldova	191,200	128,900	695,100	410,400	-	561,200	0.18	0.003	0.01	0.10
50	E	Cyprus	57,000	243,130	347,000	357,900	-	353,976	0.12	0.047	0.11	0.11
63	E	Estonia	261,400	4,900	81,900	358,700	-	458,110	0.15	0.04	0.10	0.12
256	E	Luxembourg	193,623	4,456	8,582	87,518	-	239,990	0.08	0.082	0.20	0.14
1	E	Armenia	661,003	29,020	645,711	145,044	531	868,471	0.28	0.007	0.02	0.15
119	E	Latvia	393,000	13,300	83,600	355,200	-	589,980	0.19	0.047	0.11	0.15
80	E	Bosnia and Herzegovina	446,893	69,369	1,019,782	529,644	-	929,545	0.30	0.017	0.04	0.17
3	E	Albania	498,000	810,000	1,808,000	158,000	120	1,100,600	0.36	0.01	0.02	0.19
27	E	Bulgaria	526,112	293,639	1,361,545	30,945	9,212	1,122,621	0.37	0.017	0.04	0.20
198	E	Slovenia	460,063	26,351	114,152	296,097	-	636,212	0.21	0.101	0.24	0.23
73	E	Georgia	1,128,800	54,400	688,200	204,300	18,000	1,379,470	0.45	0.007	0.02	0.23
98	E	Croatia	442,000	69,000	620,000	1,110,000	-	1,134,800	0.37	0.047	0.11	0.24
126	E	Lithuania	729,200	13,600	82,800	807,500	-	1,152,230	0.38	0.074	0.18	0.28
199	E	Slovakia	471,091	34,823	409,570	631,464	-	875,702	0.29	0.172	0.41	0.35
113	E	Kyrgyzstan	1,404,168	960,391	4,680,823	51,777	-	2,558,299	0.84	0.002	0.00	0.42
208	E	Tajikistan	2,043,725	1,772,982	2,959,495	662	15,000	2,990,551	0.98	0.003	0.01	0.49
272	E	Serbia	913,144	225,073	1,616,000	3,144,215	-	2,853,466	0.93	0.04	0.10	0.51

FOR DECISION

Area Code	Region	Area Name	Cattle 2013 (Heads)	Goats 2013	Sheep 2013	Pigs 2013	Buffalo 2013	Total Units (1997 formula)	%TU in Europe (A)	UN Contrib 2015	%European Cont FAO (B)	(A plus B)/2
105	E	Israel	465,000	100,000	540,000	176,900	-	681,450	0.22	0.398	0.96	0.59
52	E	Azerbaijan	2,444,500	651,115	7,979,424	6,495	260,889	4,173,855	1.36	0.04	0.10	0.73
97	E	Hungary	760,000	89,000	1,185,000	2,989,000	-	2,509,300	0.82	0.268	0.64	0.73
167	E	Czech Republic	1,352,822	24,042	220,521	1,586,627	-	2,195,048	0.72	0.388	0.93	0.82
67	E	Finland	911,847	4,509	135,546	1,300,385	-	1,590,051	0.52	0.522	1.25	0.89
213	E	Turkmenistan	2,250,000	2,290,000	14,000,000	29,000	-	5,522,500	1.80	0.019	0.05	0.92
174	E	Portugal	1,471,000	398,000	2,073,000	2,014,000	-	2,972,200	0.97	0.477	1.14	1.06
57	E	Belarus	4,367,000	73,200	59,900	4,242,900	-	6,515,070	2.13	0.056	0.13	1.13
162	E	Norway	849,984	62,800	223,661	848,063	-	1,731,308	0.57	0.856	2.05	1.31
183	E	Romania	2,009,135	1,265,676	8,833,830	5,234,313	-	6,646,193	2.17	0.227	0.54	1.36
84	E	Greece	679,000	4,250,000	9,520,000	1,077,000	1,750	3,971,500	1.30	0.642	1.54	1.42
210	E	Sweden	1,496,526	-	576,769	1,398,875	-	2,311,317	0.76	0.965	2.32	1.54
11	E	Austria	1,955,618	73,212	364,645	2,983,158	-	3,534,768	1.15	0.802	1.92	1.54
230	E	Ukraine	4,645,900	664,800	1,073,400	7,576,700	-	8,781,890	2.87	0.1	0.24	1.55
211	E	Switzerland	1,563,214	90,000	410,000	1,487,704	-	2,407,066	0.79	1.053	2.53	1.66
108	E	Kazakhstan	5,851,227	2,362,824	15,197,780	922,296	10,000	9,824,496	3.21	0.122	0.29	1.75
104	E	Ireland	6,902,600	8,700	5,110,600	1,552,000	-	8,702,460	2.84	0.42	1.01	1.93
54	E	Denmark	1,614,644	-	151,300	12,075,750	-	7,682,779	2.51	0.679	1.63	2.07
255	E	Belgium	2,454,704	40,473	114,407	6,592,978	-	5,782,169	1.89	1.004	2.41	2.15
235	E	Uzbekistan	9,966,600	2,681,500	14,077,500	94,500	-	13,365,650	4.37	0.015	0.04	2.20
173	E	Poland	5,859,541	81,727	249,481	11,162,472	-	11,507,019	3.76	0.926	2.22	2.99
150	E	Netherlands	3,999,220	412,550	1,033,570	12,212,300	-	10,394,594	3.40	1.663	3.99	3.69
223	E	Turkey	13,916,924	8,357,286	27,425,233	2,986	107,435	21,074,921	6.88	1.335	3.20	5.04
203	E	Spain	5,696,910	2,609,990	16,118,590	25,494,720	-	22,189,986	7.25	2.989	7.17	7.21
106	E	Italy	6,091,500	891,604	7,015,700	8,661,500	402,659	12,003,711	3.92	4.472	10.73	7.33

FOR DECISION

Area Code	Region	Area Name	Cattle 2013 (Heads)	Goats 2013	Sheep 2013	Pigs 2013	Buffalo 2013	Total Units (1997 formula)	%TU in Europe (A)	UN Contrib 2015	%European Cont FAO (B)	(A plus B)/2
185	E	Russian Federation	19,930,354	2,118,697	22,061,282	18,816,357	6,002	34,174,528	11.16	2.451	5.88	8.52
229	E	United Kingdom	9,844,000	98,000	32,856,000	4,885,000	-	18,877,300	6.17	5.207	12.50	9.33
68	E	France	19,095,797	1,291,028	7,233,720	13,487,588	-	27,544,541	9.00	5.623	13.49	11.25
79	E	Germany	12,587,020	165,000	1,641,000	27,690,100	5,000	26,793,270	8.75	7.18	17.23	12.99
		TOTALs	162,267,226	35,989,938	218,191,684	186,043,808	837,238	306,125,454	100.00	41.67	100.00	100.00



OFFICE MEMORANDUM

TO: K. Sumption
Secretary, EUI-MID

DATE: 3 April 2019

FROM: David McSherry
Head, Trust Fund Liaison Group

SUBJECT: MTF/INT/011/MUL etc. - Reports and Status of Contributions as at 31 March 2019

As requested, please find for your information Project Status Reports for:
MTF/INT/003/EC (TF. No. 617197), MTF/INT/004/MUL (TF. No. 909700),
MTF/INT/004/MUL Baby 01 (TF. 620745) and MTF/INT/011/MUL (TF No. 904200)
At 31 March 2019.

Thank you and regards.

CSFE: 0368/19

FN 9/2 - MTF/INT/003/EC (TF. No 617197)
MTF/INT/004/MUL & MTF/INT/004/MUL Baby 01
MTF/INT/011/MUL

cc: Runich AGAH
Carrax, AGAH
Pedolla AGAH
LiCastro AGAH
Rijavec, CSFE
Scanlon, CSFE
TF Unit Chrono

Financial Statements and Report
31 March 2019

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS
EUROPEAN COMMISSION
FOR THE CONTROL OF FOOT-AND-MOUTH-DISEASE

The European Commission for the control of Foot and Mouth Disease is a body established under Article XIV of the Organization's constitution for the purpose of promoting and coordinating national and international action for the control of foot-and-mouth-disease in Europe and its final eradication. The funds are handled as a Trust Fund under financial Regulation 6.1, with the symbol M797N198110001.

FUNDS

The Organization does not maintain separate bank accounts for each Trust Fund, but instead manages and invests Trust Fund monies combined in pooled bank accounts. The provisional balance of funds held by the Organization on behalf of the European Commission for the Control of Foot-and-Mouth Disease as at 31 March 2019 amounted to USD 115,681.

INCOME AND EXPENDITURE

Contributions to the Commission's Trust Fund amounting to USD 135,149 were received from Member countries of the Commission up to the 31st of March 2019.

Outstanding contributions at 31 March 2019 amount to USD 593,225.

The Commission's Trust Fund expenditures up to the 31st of March 2019, amounted to USD 554,353.


David McSherry
Head, Trust Fund Liaison Group
Finance Division

TRUST FUND No. 9042.99 - MTI/IN/T011/MUL -
Inter-Regional - European Commission for the Control of Foot-and-Mouth Disease

Status of Contributions as at 31 March 2019
 (expressed in USD)

ORACLE CODE: TF-AQALD-TFAA97AA65122

Member Governments	Outstanding 1/1/2019	Contributions due for 2019	Received up to 31/03/2019	Outstanding 31/03/2019
ALBANIA	9,000.00	4,504.00		15,512.00
AUSTRIA	0.00	15,650.00		15,650.00
BELGIUM	23,386.00	23,386.00	23,386.00	23,386.00
BOSNIA	0.00	4,504.00		4,504.00
BULGARIA	0.00	4,504.00		4,504.00
CYPRUS	0.00	4,504.00		4,504.00
CROATIA	0.00	4,504.00		4,504.00
CZECH REPUBLIC	0.00	13,809.00	13,809.00	0.00
DENMARK	0.00	23,386.00		23,386.00
ESTONIA	0.00	4,504.00		4,504.00
FINLAND	0.00	13,809.00		13,809.00
FRANCE	0.00	46,611.00		46,611.00
GEORGIA	0.00	4,504.00		4,504.00
GERMANY	0.00	46,611.00		46,611.00
GREECE	15,650.00	15,650.00		31,300.00
HUNGARY	0.00	13,809.00		13,809.00
ICELAND	334.00	4,504.00		4,838.00
IRELAND	0.00	15,650.00	15,650.00	0.00
ISRAEL	0.00	13,809.00		13,809.00
ITALY	0.00	46,611.00		46,611.00
LATVIA	0.00	4,504.00		4,504.00
LITHUANIA	0.00	4,504.00		4,504.00
LUXEMBOURG	0.00	4,504.00		4,504.00
LYR of MACEDONIA	0.00	4,504.00		4,504.00
MALTA	0.00	4,504.00		4,504.00
NETHERLANDS	0.00	23,386.00		23,386.00
NORWAY	0.00	15,650.00		15,650.00
POLAND	0.00	23,386.00		23,386.00
PORTUGAL	0.00	13,809.00		13,809.00
ROMANIA	31,300.00	15,650.00	31,300.00	15,650.00
SERBIA	13,809.00	13,809.00	27,618.00	0.00
SLOVAK REPUBLIC	0.00	13,809.00		13,809.00
SLOVENIA	0.00	4,504.00		4,504.00
SPAIN	0.00	23,386.00		23,386.00
SWEDEN	0.00	23,386.00		23,386.00
SWITZERLAND	0.00	23,386.00		23,386.00
TURKEY	23,386.00	23,386.00	23,386.00	23,386.00
UNITED KINGDOM	0.00	46,611.00		46,611.00
TOTALS	116,823.00	611,501.00	135,149.00	593,275.00

2019 UNITED NATIONS OPERATIONAL RATES OF EXCHANGE

Currency Name	Code	1-Jan-19	1-Feb-19	1-Mar-19	1-Apr-19	1-May-19	1-Jun-19
Euro	EUR	0.871	0.876	0.879			
		15-Jan-19					
		0.875					
		1-Jul-19	1-Aug-19	1-Sep-19	1-Oct-19	1-Nov-19	1-Dec-19

Average Rate:

January 0.871
 0.876
 1.783
 0.875

0.873 Jan rate
 0.876 Feb rate
 0.879 March rate
 April rate
 May rate
 June rate
 July rate
 August rate
 Sep rate
 Oct rate
 Nov rate
 Dec rate

Total
 Average rate

2.828 Total

0.876 Average Rate

MT/FIN/TY/D/12/M/JL - TF number 904200

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

Financial Report from 1st January to 31 March 2019

	USD	USD	EUR	EUR
Balance as at 1 January 2019		534,888		452,599
Interest received	0			0
Contributions from member countries and Institute	190,149		116,957	0
Project Income Earned (CI M)	0			0
Expenditure				
Salaries	257,440		225,267	
Consultant	277,007		242,424	
Contracts	12		6	
Out of Travel	14,564		12,725	
Locally Contracted labour	0		0	
Training	106		218	0
Hospitality	0		0	
General Operating Expenses	2,838		2,456	0
Internal Consultancy Services and Support	174		152	
Expendable Equipment	208		291	
Non-Expendable Equipment	1,054		975	
Total Expenditure		<u>556,353</u>		<u>492,428</u>
Provisional Balance as at 31 March 2019		<u>116,601</u>		<u>117,780</u>

The Financial Statements of the Commission are maintained in US Dollars in accordance with the accounting policies and administrative systems of FAO. The amounts stated in Euros, including the opening balance, have been converted from US Dollars at the average monthly UN Operational Exchange Rates for 2019. The average monthly UN Operational Exchange Rate applicable for period to 31 March 2019 is USD 1 = EUR 0.879.





TF Project Status Report (Aggregate Values)

Up to Period: 30'6'03'

FAO Total FAO Organizations (Total)
 TFAA597A6389122 904200 RTF AN7017AMUL European Commission for Control of Foot-and-Mouth Disease (Project)

Project/Year	2019 Year 2019 up to 2019-03			2020 Year up to 2019-03			Future Years			Project Total	
	Budget	Expenditure	Balance	Budget	Expenditure	Balance	Budget	Expenditure	Balance	Expenditure	Balance
Revenue											
5001 Contributions Received	0	1,343,734	1,343,734	0	1,343,734	1,343,734	0	0	0	1,343,734	1,343,734
5002 In-kind Revenue (Chk)	0	134,910	134,910	0	134,910	134,910	0	0	0	269,820	269,820
5003 Project Income Carried (Chk)	0	10,140	10,140	0	10,140	10,140	0	0	0	20,280	20,280
5004 Revenue Balance and Transfer of Income (Chk)	0	16,832	16,832	0	16,832	16,832	0	0	0	33,664	33,664
Total Funds Received	0	1,635,616	1,635,616	0	1,635,616	1,635,616	0	0	0	1,635,616	1,635,616
Expenditure											
5010 Support Materials (FAO)	60,509	60,509	0	280,610	6,773,770	12,503	0	0	0	6,493,672	5,995,000
5011 Support Materials (Partner)	1,879,112	1,879,112	0	1,407,912	1,407,912	0	0	0	0	3,286,024	3,286,024
5012 Support Materials (Partner)	1,695,540	1,695,540	0	1,300,822	1,936,511	124,911	0	0	0	3,026,363	2,851,451
5013 Support Materials (Partner)	24,000	24,000	0	24,000	24,000	0	0	0	0	48,000	48,000
5014 Support Materials (Partner)	22,524	22,524	0	22,524	22,524	0	0	0	0	45,048	45,048
5015 Travel (FAO)	1,972,440	1,972,440	0	1,903,820	4,562,727	658,907	0	0	0	3,876,267	3,117,340
5016 Travel (Partner)	30,335	30,335	0	30,335	30,335	0	0	0	0	60,670	60,670
5017 Exp. on Procurement (FAO)	64,884	28,807	36,077	64,884	63,165	1,719	0	0	0	129,769	129,769
5018 Exp. on Procurement (Partner)	20,221	20,221	0	1,084	4,927	3,843	0	0	0	24,105	24,105
5019 Exp. on Procurement (Partner)	17,328	17,327	1	17,328	17,327	1	0	0	0	34,655	34,655
5020 General Operating Expenses (FAO)	603,111	603,100	11	603,110	606,312	3,202	0	0	0	1,206,220	1,206,220
5021 Support (FAO)	14,140	14,141	1	14,140	14,140	0	0	0	0	28,280	28,280
5022 General Operating Expenses (Partner)	206,208	206,217	9	206,208	206,208	0	0	0	0	412,416	412,416
Total Expenditure	3,213,393	3,213,393	0	3,213,393	13,427,352	22,846	0	0	0	13,427,352	13,427,352



STATEMENT 2

GITF/INTAD/REG - II NUMBER 617197

EU Funded Activities (Phase IV): 2016-2019) carried out by the TACD European Commission for the Control of Foot-and-Mouth Disease (FIBFD)

Financial Report from 1 January to 31 March 2019

	USD	EUR	EUR
Balance as at 1 January 2019		1791,737	1,011,007
Interest received	0		0
Contribution received	0		0
Refund to donor		0	0
Expenditures			
Salaries Professional	105,452		60,100
Consultancy	261,198		141,322
Contract	108,731		55,246
Locally Contracted Labour	0		0
Duty travel	100,117		51,077
Training	63,068		32,006
Hospitality	0		0
Technical Support Services	0		0
General Operating Expenses	117,825		60,215
Expendable Equipment	14,000		7,372
Non-Expendable Equipment	1,064		534
Incidental Common Services and Support	481		257
Support Costs 7%		11,820	6,130
Loss/ Total Expenditure	1,156,218		592,963
Balance as at 31 March 2019		635,519	418,044

The Financial Statements of the Center have been audited in US Dollars in accordance with the auditing policies and administrative systems of IAD. The amounts stated in Euros, including the opening balance, have been obtained from US Dollars at the average monthly UN Operational Exchange Rates for 2019. The average monthly UN Operational Exchange Rate applicable for the period to 31 March 2019 is USD 1:EUR 0.876.





TF Project Status Report (Aggregate Values)

Up to Period: 2017-03

FAC Total FAO Organizations (Total)

YFEU9PA1630d 617197 MTF ANTI0302EC EU Funded Activities (Phase IV: 2015 - 2019) carried out by The FAO European Commission for the Control of Foot-and-Mouth Disease (EUFMD) (Project)

Funds Received	Pillar Years		Current Year - 2018 up to 2018-03		Cum. Value up to 2019-02		Future Years		Project Total	
	Budget	Expend	Balance	US \$/€	Expend	US \$/€	Expend	US \$/€	Expend	US \$/€
2011 MTD Contributions Received (Phase I)	0	1,126,174	929,827	0	0	1,126,174	0	0	0	1,126,174
2012 TF (Phase II) (Phase I)	0	15,000	0	0	0	15,000	0	0	0	15,000
Total Funds Received	0	1,141,174	929,827	0	0	1,141,174	0	0	0	1,156,174
Expenditure										
4011 Salaries & Wages (Phase I)	240,000	240,000	0	0	240,000	240,000	0	0	0	240,000
4011 Costs - Other (Phase I)	2,125,000	2,125,000	0	0	2,125,000	2,125,000	0	0	0	2,125,000
4011 Contributions (Phase I)	4,200,000	4,200,000	0	0	4,200,000	4,200,000	0	0	0	4,200,000
4021 Travel (Phase I)	1,000,000	1,000,000	0	0	1,000,000	1,000,000	0	0	0	1,000,000
4022 Fuel (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4023 Equipment (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4024 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4030 Transport (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4031 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4032 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4033 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4034 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4035 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4036 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4037 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4038 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4039 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4040 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4041 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4042 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4043 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4044 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4045 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4046 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4047 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4048 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4049 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4050 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4051 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4052 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4053 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4054 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4055 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4056 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4057 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4058 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4059 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4060 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4061 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4062 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4063 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4064 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4065 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4066 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4067 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4068 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4069 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4070 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4071 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4072 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4073 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4074 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4075 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4076 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4077 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4078 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4079 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4080 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4081 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4082 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4083 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4084 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4085 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4086 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4087 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4088 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4089 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4090 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4091 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4092 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4093 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4094 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4095 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4096 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4097 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4098 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4099 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4100 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4101 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4102 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4103 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4104 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4105 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4106 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4107 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4108 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4109 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4110 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4111 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4112 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4113 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4114 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4115 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0	0	0	100,000
4116 Other (Phase I)	100,000	100,000	0	0	100,000	100,000	0</			

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