



Food and Agriculture
Organization of the
United Nations



Components report

Six-month report

October 2022 - March 2023

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



FAO Four Better's. Better life, Better environment,
Better nutrition, Better production.

EuFMD's programme, tools and initiatives

FAST

Foot-and-mouth And
Similar Transboundary
animal diseases

Dt

EuFMD digital
transformation

Tom

EuFMD training
management system

Micro learning

EuFMD micro learning

Vlearning

EuFMD virtual learning

SimExOn

Simulation exercises
online

Get prepared

Emergency preparedness toolbox

Risk Comms

EuFMD risk communications

RMT-FAST

Risk monitoring tool for foot-and-mouth
and similar transboundary animal diseases

Pragmatist

Prioritization of antigen management
with international surveillance tool

EuFMDiS

European foot-and-mouth disease
spread model

Vademos

FMD vaccine demand
estimation model

GVS

Global vaccine
security

PQv

Vaccine
prequalification

PCP

Progressive control
pathway

PSO

Pcp practitioner
officers

PPP

Public private
partnership

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Pillar I: Improve preparedness for management of FAST crises by Members

Component 1.1: Training for Member Nations

The biennium was characterized by Covid-19 restriction measures slowly lifted, resulting in resumed face-to-face training activities, while keeping the format of some courses as virtual workshops. Face-to-face activities during the reporting period included a workshop on Foot-and-mouth and similar transboundary animal diseases (FAST) surveillance in wildlife, laboratory training for foot-and-mouth and lumpy skin disease at Pirbright, real-time training courses and a new hybrid real-time training course piloted in summer 2022. The EuFMD training online platform has been fully functional and 1,470 participants from Member Nations (MNs) have completed virtual learning activities during the reporting period. The demand for virtual learning activities has led to develop additional open-access courses and the transition of two courses to the FAO eLearning academy portal. The web app for the TOM Training Management System, a capacity development support tool that allows countries to monitor the delivery of competency-based education for veterinarians and similar roles, has been developed and being piloted in MNs (Bulgaria, Ireland, Switzerland, and Türkiye). Following the development of the Training Quality Management System (TQMS), two external evaluation visits were carried out in 2021 and 2023, indicating further directions for improvement. The Commission produced an analysis of the impact of the courses delivered in 2021 and noted that learners had cascaded their learning to over 3 000 colleagues, confirming the potential for cascading activities in the region.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
1.1 Training for Member Nations	Increased European expertise in FAST disease emergency management achieved through the delivery of training and the assistance to Member Nations to cascade training at national level.	60% of the countries to have implemented national training activities using EuFMD training resources and/or training support services in four years.	Fully achieved. A total of 97% (38 out of 39) MNs have taken part in training activities during the reporting period. Participants from 25 MNs (64%) indicated they used EuFMD resources in cascading their learning between 2019 and 2021. In the upcoming months, post-course impact assessment surveys will be sent to trainees participating in various EuFMD courses during 2021-2023, to assess how many participants and from which MNs have trained others using the knowledge acquired.

**Refer to Appendices for sub-activities.*

Progress

Sub-activity	Summary of activities
1.1.1 Training support services	<p>The EuFMD virtual learning platform has been fully functioning during the biennium. 1 470 learners from Member Nations have completed virtual training activities during the biennium.</p> <p>A new open-access course relevant for Member Nations has been finalized and two more will be before September 2023.</p> <p>Two open-access virtual learning courses have been transitioned to the FAO eLearning academy website: 1. Introduction to the FMD and 2. Simulation Exercises for Animal Disease Emergencies.</p>
1.1.2 Training programme	<p>The following training courses were delivered during the reporting period:</p> <ul style="list-style-type: none"> - In-country mission Türkiye: “Epidemiology and Outbreak investigations Training” - FAST diseases wildlife surveillance workshop - Two foot-and-mouth emergency preparation course multi-country. - Foot-and-mouth emergency preparation course for Bosnia Herzegovina. - Foot-and-mouth emergency preparation course for North Macedonia. - Foot-and-mouth emergency preparation course for Spain. - Foot-and-mouth emergency preparation course for Germany. - Lumpy skin disease training course multi-country. - One hybrid real-time training. - Two real-time training (NTC30 and NTC 31) - Support for a RVF simulation exercise for Spain. - Support for a RVF simulation exercise for Portugal. - Online workshops on how to organize simulation exercises. - Two FMD laboratory training course (TPI). - LSD laboratory training course (TPI). <p>In the next six months (June 2023 onwards), several courses are planned:</p> <ul style="list-style-type: none"> - Online workshops on how to organize simulation exercises (May-June). - Online workshop on depopulation in FAST diseases (June-July). - Lumpy skin disease training course for Belgium (June-July). - Real-time training courses (July and October). - Foot-and-mouth emergency preparation course for Malta (September). - Foot-and-mouth emergency preparation course for the UK (September).
1.1.3 TQMS	<p>The Training Quality Management System (TQMS) has been developed and implemented to ensure quality of the trainings developed and delivered by the Commission. Two evaluations visits have been conducted and indicated the steps for future developments of the TQMS.</p> <p>Two impact reports have been finalized, targeting the learners of courses in first biennium of the Phase V. The reports provided evidence of the impact in applying and cascading training delivered to learners and identified future areas of development.</p>

Component 1.2: Emergency Preparedness

The development of two tools continued in the biennium - GET Prepared toolbox and EuFMDiS - to support the emergency preparedness of (MN). GET Prepared has grown since the launch of the pilot (44th General Session in 2021) to include 10 new bricks. The Wall was restructured and migrated to a Trello™ platform which provides a more user-friendly approach and allows easier updating. The Wall was released in March 2023. In addition, a guide for *Developing an emergency vaccination plan for foot-and-mouth disease in free countries*, was published by FAO. The EuFMDiS model is now available for use in 14 countries. The user group has been expanded to include Baltic and North-West European countries and new features of the model were further developed. Post-outbreak management has been incorporated in the EuFMDiS model for Denmark and work is in progress to include this feature for the models of other pilot countries (such as Austria). New functionalities are being developed such as

rendering/disposal capacity. The EuFMDiS model has been adapted for other FAST diseases such as sheep and goat pox in Spain and Bulgaria, and PPR in Bulgaria and work is planned to adapt the model for Lumpy Skin Disease. A Public Private Partnership initiative for anticipating FAST disease outbreaks, established with eight European private sector organizations, continued with webinars and workshops alongside member nation contingency planners, discussing topics related to emergency preparedness and contingency planning.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021 - 2023
1.2 Emergency Preparedness	Improved national and regional capacity in FAST disease emergency preparedness through the provision of tools to test and improve contingency plans and through the establishment of networks for emergency preparedness and public-private engagement.	80% of the countries to have introduced some improvement in their contingency plans by the end of the phase as a result of the work done under this component.	Achieved. There was good engagement of contingency planners and public-private partners with scenario-based workshops and webinars related to contingency planning. Tools and guidelines have been developed to contribute to improved contingency plans. Evidence of the contribution of this component to contingency planning will be made available by the end of biennium.

Progress

Sub-activity	Summary of activities
1.2.1 Tools for contingency planning and decision support for the better management of FAST disease risks	A GET Prepared pilot toolbox launched at the GS44 was further developed after some initial delays. The Wall is restructured and migrated to Trello, providing a more user-friendly platform and enabling easier maintenance and further evolving of the toolbox. In addition to the simulation exercises brick, further resources were developed and published for nine bricks, including Disposal, Humane killing of animals, Vaccination, Sampling, Laboratory, Clinical examination, Training, Awareness and Communication. New components (bricks) are prioritized and under development. Identification of resources and examples of good practice for new components is ongoing. A guide to developing an emergency vaccination plan for FMD in FMD-free countries was published by FAO in 2022.
1.2.2 EuFMDiS	The model is operational in 14 countries. EuFMDiS has been used to develop scenarios for three workshops addressing the constraints to using emergency vaccination for FAST diseases. EuFMD users are contributing to the scenario development, thereby demonstrating the usefulness of EuFMDiS to support contingency planning. The model has been adapted for new FAST diseases such as Sheep pox and goat pox (Spain and Bulgaria) and PPR in Bulgaria. The work is in progress to include rendering capacity/carcass disposal, s wildlife component, and shared pasture in the model. The model will be developed for LSD. Market and post outbreak management components are already included in the modeling platform and will be used in a scenario-based workshop for contingency planners and PPP group in May 2023.

1.2.3 Emergency Preparedness Network for contingency planners and experts in emergency preparedness	An emergency preparedness webpage was created in the EuFMD e-learning platform as an information source about webinars, workshops discussion forum and event reports.
1.2.4 Public-private partnerships for the prevention and control of FAST diseases	A series of webinars for the public-private partnership network included: - Business continuity during FAST disease outbreaks – issues and opportunities - Including disposal capacities in contingency plans for FAST disease outbreaks The PPP group participated in two scenario-based workshops, along with contingency planning focal points on <i>Preparedness to use emergency vaccination for FMD in European Countries</i> (March and June 2022). The PPP group will be invited to attend a third workshop in May 2023 to explore post-vaccination surveillance guidelines for countries using emergency vaccination as part of a response to an FMD outbreak.

Component 1.3: Emergency vaccination

During the biennium, further work was conducted to address the constraints on the use of emergency vaccination for FAST diseases. This work included two workshops to define and explore criteria for implementing emergency vaccination in previously FMD-free countries, and using scenarios modelled in EuFMDiS to explore FMD vaccination strategies. The delay in regaining country FMD-free status (and resuming international markets) is a significant barrier to using emergency vaccination as a control measure for FMD. In May 2023, a workshop will explore post-vaccination surveillance guidelines to potentially allow countries to for regain FMD-free status earlier following use of emergency vaccination. The works on addressing constraints to emergency vaccination successfully brought together EuFMD MN contingency planners, the PPP initiative and the EuFMDiS tool to discuss plausible scenarios based in European countries.

A second multi-stakeholder platform (MSP) meeting was held online in January 2022 with a focus on enhancing vaccine security. The main topic was the implementation of a prequalification system for FAST vaccines (PQv), further development of the vaccine demand estimation model (VADEMOS) and the impact of the Nagoya Protocol on FMD research and development including the development of new FMD vaccines that match emerging FMD field variants. The Prequalification scheme for FMD vaccines is now in its operational phase at Stage 1. The EuFMD has established the Standing Committee for PQv (SCPQv) for decision making, governance and oversight and the PQv policy, technical guidance for FMD vaccines and administrative procedures for PQv are published and contracts with three institutions to evaluate PQv applications established. A secure IT system, security policy and procedure are being implemented to manage commercially confidential information (CCI) submitted by manufacturers in support of a PQv application. Six FMD manufacturers have formally expressed interest for submitting PQv applications and three are expected by May 2023. The next stage of implementation will be to link the PQv scheme with FAO procurement through restricted tenders and introduce independent testing of vaccines under the PQv scheme.

A third MSP meeting was held in March 2023 dedicated to the Nagoya Protocol. The Nagoya Protocol is an international agreement that came into force in 2014, governing access to genetic resources, benefit-sharing. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources

is a universally supported concept. However, the Nagoya Protocol is having a negative impact on vaccine security through the exchange of FMD materials. Its application to veterinary pathogens is compromising research and development for FMD including the development of new FMD vaccines trains to match emerging field variants. The MSP forum was used to identify options for a solution to improve access to FMD materials for research and development. EuFMD has written a report to raise awareness of the issues for vaccine security from the application of the Nagoya Protocol to veterinary pathogens “EuFMD Report on the animal health implications of implementation of the Nagoya Protocol with respect to Foot-and-Mouth Disease”.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021 - 2023
1.3 Emergency vaccination	Increased preparedness for use of vaccination in emergency response plans for FAST diseases through an increased understanding of the constraints to use vaccination and through the establishment of new system to increase FMD vaccine security.	60% of the countries to have incorporated changes in their contingency plans regarding the use of emergency vaccination against FAST diseases, as a result of the work done under this component, by the end of the phase. Three million vaccine doses assured under AESOP/assurance programme.	Achieved. Work on PQv has progressed very well and complex technical and administrative procedures have been developed and endorsed. AESOP and Long-Term supply arrangements (LTAs) is delayed due to the amount of work required on PQv and the need to address the legal and regulatory issues of linking PQv with FAO procurements. Stakeholders have indicated that PQv connected with LTA can significantly improve the capacity to implement emergency vaccination through the improved availability of quality vaccines.

Progress

Sub-activity	Summary of activities
1.3.1. Sub-activities to better understand the level of preparedness to use emergency vaccination for FAST diseases in Member Nations	Follow-up to the scoping work to understand the approach to emergency vaccination in MN scenario-based workshops on emergency vaccination were held in 2022 and will continue in 2023, bringing together contingency planners and the PPP initiative. EuFMDiS was used to create scenarios, which enabled creative thinking about contingency planning for vaccination and resourcing of emergency responses.
1.3.2. Establishment of a public and private sector platform (PPSP) for FAST disease vaccination.	After the first meeting in 2020 two more multi-stakeholder meetings MSP/PPSP) have been held during the reporting period to explore options to enhance vaccine security, by improving access to quality vaccines against FAST diseases.
1.3.3.	The Prequalification scheme for FMD vaccines (PQv) has now entered the operational phase at Stage 1.

<p>New system to improve FMD vaccine quality and availability.</p>	<p>EuFMD has established the Standing Committee for PQv (SCPQv) for decision making, governance and oversight. The PQv policy, technical guidance for FMD vaccines. and administrative procedures for PQv are published. Letters of Agreement with three institutions to evaluate PQv applications have been signed. A secure IT system, IT security policy and procedure are being implemented to manage commercially confidential information (CCI) submitted by manufacturers in support of a PQv application. Six FMD manufacturers have formally expressed interest for submitting PQv applications and three are expected by May 2023. The next stage of implementation will be to link the PQv scheme with FAO procurements through restricted tenders and introduce independent testing of vaccines under the PQv scheme. EuFMD has developed a report to raise awareness of the issues for vaccine security from the application of the Nagoya Protocol to veterinary pathogens 'EuFMD Report on the animal health implications of implementation of the Nagoya Protocol with respect to Foot-and-Mouth Disease. The application of the Nagoya Protocol to veterinary pathogens is having a negative impact on research and development for FMD including the development of new FMD vaccines trains to match emerging field variants.</p>
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Component 1.4: Southeastern Europe (SEE)

This component comprises a great variety of activities as it merges two components (Thrace and Balkans) from Phase IV.

The Transboundary High-Risk Area Coordinated Epidemio-surveillance programme (THRACE), that was introduced in 2013 for Thrace region countries, based on the Cameron model, has been upgraded with the new automatic application functionalities and extended to other FAST diseases in 2021 (LSD, PPR and SPGP), maintaining high level of the confidence of freedom. The programme is implemented and supported in partnership with IZSLER. It allowed improved FMD and other FAST diseases awareness and early detection, facilitated communication and cooperation between the veterinary services of the three countries, creating an enabling environment for other joint international initiatives and activities, with the potential to be extended to other countries in SEE region.

Coordination activities in the region have been regularly implemented through SEE Management Meetings, organized on a six-month basis. Meetings dedicated to reporting on programme in the Thrace region have been merged with the SEE management meetings, allowing all countries to report surveillance activities organized through national programmes and epidemiological situation in the region. Since July 2022, regular and yearly FAST disease NRLs meetings have been established and integrated in SEE Management Meetings.

The EuFMD supported 11 small field studies through 1st and 2nd SEE Fund for Applied Research (FAR) calls launched in 2020 and 2022, to create national and regional networks and ensure transfer of knowledge between scientific institutions and veterinary services. All project proposals have been endorsed by competent authorities. One of the supported projects has a regional initiative. Based on the idea to explore and propose guidance on the establishment of stakeholders' implementation networks, a "Guide and a Checklist for stakeholders and policy makers engagement" was developed, providing a standardized framework for stakeholders' engagement with flexibility to adopt the Guide's principles according to the SEE member nations regulatory and policy requirements.

Preparedness work in the region has been supported through organization of learning events, planning and implementation of multi-country and national simulation exercises and specific in-country support on demand.

Four workshops have been developed for the SEE countries during phase V, while over 1200 trainees from the region participated in learning activities organized through component 1.1.

Ten national and five multi-country simulation exercises have been supported in the region or are currently in the planning phase.

The diagnostic bank for FAST disease reagents was established before the end of the first year. Reagents are accessible for the 10 countries to support the early diagnostic response in crisis. Additionally, when there is no crisis, it ensures continuous capacity for proficiency testing scheme and diagnosis of exclusion.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
1.4. South-Eastern Europe	Improved surveillance and emergency preparedness against FAST diseases in South-Eastern Europe achieved through increased collaboration in the region, implementation of risk-based surveillance approaches, assessment and improvement of contingency plans and access to a diagnostic bank.	Confidence of FMD and FAST disease freedom over 90 % in Thrace maintained for 48 months. Focal points of eight countries in the region consider that their preparedness against FAST diseases has increased by the end of the phase (assessed on a scale 0 to 7).	Fully achieved. Confidence of FMD and other FAST diseases (LSD, PPR, SPGP) freedom in Thrace was over 90 % in every cycle report. A survey was sent to the SEE focal points towards the beginning of the phase asking them to rate their level of preparedness. This survey will be repeated towards the end of the phase and combined with feedback from the different activities carried out under this component.

Progress

Sub activity	Summary of activities
1.4.1. Risk Based Surveillance	<p>A database for the Thrace Countries to register active surveillance data, developed in the previous biennium allowing to generate the three-monthly cycle report information automatically, was adapted to other FAST diseases (PPR, SPGP, LSD) during the current biennium. The models' parameters have been updated to reflect the current situation in terms of surveillance components implemented in the different countries and the performance of the tests used. Confidence of freedom from PPR, SPGP, and LSD is currently included in the cycle reports.</p> <p>The guide "THRACE risk-based surveillance system. Countries' data requirements and database user manual" that will be used to describe the risk-based surveillance system implemented in Thrace and promote its adoption by other SEE countries, has been developed and it is available.</p> <p>A scientific poster was developed to present recent updates to the Thrace risk-based surveillance programme and its contribution in increasing the confidence in disease freedom and reconfirming the countries' disease-free status by the World Organization for Animal Health (WOAH). The poster was presented at the 30th WOAH Regional Conference in Catania, Italy in October 2022.</p> <p>Regular Thrace RBS meetings organized twice a year have been merged with the SEE management meetings, allowing all countries to share surveillance activities on FAST diseases from the THRACE programme and nationally organized programs. To have</p>

	<p>consistent data, a presentation template has been developed and sent to the EuFMD NFPs to update data and present during SEE management meetings. The collected data will also be used for further adjustment and extension of the RBS programme in Thrace region to the Balkans.</p>
1.4.2. Coordination activities	<p>Regular SEE Management Meetings held on a six-monthly basis to:</p> <ul style="list-style-type: none"> - Present progress done in the implementation of the EuFMD Phase V workplan for the South-Eastern Europe region; - Agree on additional areas of interest where further support is required to improve emergency preparedness and coordination across the region; - Agree on next steps for different activities to be organized in the following period. <p>A coordination meeting of the SEE laboratory network was organized in 2022, with the participation of representatives from FMD EU reference laboratory (ANSES) and IZLSER. In addition to regular updating, the meeting was used as a platform to discuss and identify preparedness gaps of the laboratories, and potential topics for collaborative applied research. Following the 2nd SEE Fond for Applied Research call published in March 2023, four successful field research studies proposals, endorsed by the national competent authorities have been supported. One of the projects has regional approach and connects veterinary services from Montenegro and North Macedonia.</p> <p>A meeting was organized with the 1st and the 2nd SEE FAR calls main investigators to discuss results, progress and lessons learned, and next steps to facilitate transfer of knowledge at a national and a regional level. All presented small field studies under the 1st and 2nd SEE FAR calls are unique and covering wide range of topics and activities for relevant FAST diseases as agreed with the respective national veterinary competent authorities. Implementation of field studies demonstrated good collaboration between variety of national stakeholders and further indicated importance of the support from the respective national veterinary competent authorities. The main recommendations were to continue with the FAR calls targeting the regional approach and collaboration ensuring that the studies' results are adequately presented through meetings, learning events and publications.</p>
1.4.3. Emergency Preparedness	<p>Support in delivery of the workshops designed for the SEE region: Animal health surveillance workshop, with focus on improving passive surveillance through the identification and collection of individual and population health indicators and its impact on early detection of FAST diseases was organized on 13th July 2022 in Herceg Novi, Montenegro, as hybrid event, preceding Thrace and SEE management meeting, gathering the EuFMD NFPs and NRL's LFPs from the region, while relevant officials from national epidemiological services participated online. Technical support in workshop preparation and delivery was provided by EuFMD's partner SAFOSO.</p> <p>Short workshop that included sessions related biosecurity principles, FMD epidemiological timeline construction and using GET prepared tool as relevant reference for FAST disease management was held as an integral part of the multi-country simulation exercise supported by the EuFMD and held 26-27/04/2023 in Skopje, North Macedonia for 30 participants from Montenegro and North Macedonia. The workshop has been developed in partnership with the Faculty of Veterinary Medicine, University in Skopje.</p> <p>Support in planning and implementation of the simulation exercises:</p> <p>An FMD drill exercise was conducted in Albania in June 2021. The drill was organized as a continuation of the FMD tabletop simulation exercise, conducted in September 2020. The aim was to contribute to the improvement of preparedness and response of animal health crisis system in Albania practicing field activities related to biosecurity, clinical exam, epidemiological enquiry, sampling and samples packaging during visit of the FMD suspicious farm and to make the players aware of their role during implementation of control measures.</p> <p>A multi-country simulation exercise for the Thrace and SEEN region was conducted from 30 November to 2 December 2021. The aim of the exercise was to assess response procedures in case of FMD outbreaks occurring simultaneously in the border areas of endemic and non-endemic countries/regions, with the specific objectives related to cross border collaboration, implementation of the control measures and surveillance.</p> <p>A multi-country laboratory simulation exercise (tabletop) was conducted on 14th of September in the Croatian Veterinary Institute to test preselected laboratory procedures</p>

	<p>from the contingency plan. Representatives from SEE NRLs for FMD, who had active roles during the exercise debriefing session, participated in the exercise. It allowed exchange of experiences and good practices among FAST diseases NRLs, with the impact in work on laboratory contingency plans and procedures, building on laboratory preparedness work. The EuFMD in partnership with the Faculty of Veterinary Medicine - University in Skopje, supported veterinary services from Montenegro and North Macedonia in organization, conduct and evaluation of the FMD - field multi-country simulation exercise (drill), focusing on the practical implementation of the protocols and standard operating procedures (SOPs) in case of suspicion of FMD outbreak on a dairy farm. The aim of the exercise was to practice and test protocols for biosecurity and SOPs for sampling, samples packaging, labeling and dispatch and conduct epidemiological query. The exercise contributed to improvement of emergency preparedness, response, and control systems for FMD in Montenegro and North Macedonia, promoted harmonization of best practices among countries and enhance regional cooperation and collaboration. The simulation exercise had also learning component which included sessions and practical work related to biosecurity principles, FMD epidemiological timeline construction and usage of the EuFMD's "GET-Prepared" tool as relevant reference for FAST disease emergency management.</p> <p>Four national FMD field simulation exercises (drills) in Serbia, currently in planning phase for conduct during May will gather veterinary practitioners and official veterinarians in 4 different country's regions. The aim of the exercises will be to test procedures of the national FMD contingency plan and evaluate the use of the relevant equipment. The EuFMD will support the exercises in partnership with the national veterinary institutes and NRL for FMD</p> <p>The national FMD tabletop and drill simulation exercises in Bosnia and Herzegovina are currently in the planning phase for conduct during June/July 2023. The EuFMD is developing exercise documents in close cooperation with the national veterinary services. The exercise will gather different players relevant for the 2 types of the simulation exercises. All supported and planned simulation exercises, apart from the multi-country simulation exercise for Thrace and SEEN regions were and will be conducted in national languages.</p>
1.4.4. Diagnostic Bank of reagents	The established SEE diagnostic bank was continuously active and available for the SEE national laboratories. Regular meetings with IZLSER and with individual beneficiary laboratories were organized. The meetings were used to plan and implement annual cycles of stockpiled reagents distribution to SEE national laboratories and fresh reagents re-stocking, and to ensure adequate management of the diagnostic bank.

Component 1.5: Applied research

Under this component, three Calls of the Fund for applied research (FAR#8, #9 and #10) were issued on thematic priorities identified with the assistance of the Standing Technical Committee (STC) and the Special Committee on Surveillance and Applied Research (SCSAR). Applications were evaluated by a review panel according to the following criteria and LoAs were issued with applicant institutions.

The criteria established to select the applicants are Relevance to strategic objectives or specific components of the EuFMD Strategy; Address generic problem identified as common to many Member Nations Veterinary Services; Likelihood of tangible results or outputs; Urgency of need for results/outputs and lack of alternative funding; Synergy or complementarity with field-based activities relating to FMD; Value for money.

A methodology to assess the EuFMD Applied Research Programme (ARP) impact in Phase V was developed, and an External Technical Panel constituted to score the impact level of research outputs and outcomes. This evaluation is expected to answer the following questions:

1. What are the outputs and outcomes that can be attributed to activities supported by the ARP during Phase V, thereby demonstrating impact?
2. How well did the Secretariat's internal processes operate in executing the ARP/ FAR?
3. How did the ARP support the development of external/ academic collaborations and relationships?

Regular meetings have been held during the reporting period (May 2021-April 2023) by the three Committees as indicated below with the assistance of the Secretariat.

- Standing Technical Committee: four meetings - 18 January 2022, 6 April 2022, 13 July 2022 and 15 February 2023.
- Special Committee on Surveillance and Applied Research: one meeting - 23 February 2023 (hybrid).
- Special Committee on Biorisk Management Standards: five meetings June 2021, 29 March 2022, 15-6 June 2022, 14-15 November 2022; and on 22 March 2023.

On 26-28 October 2022, the EuFMD organized a three-day hybrid scientific conference (EuFMD Open Session 2022), in Marseille (France). Eighty-eight abstracts were submitted to the scientific committee, reviewed and clustered into the six main technical Sessions. Fifty-six presenters were invited to showcase their work, including 16 keynote presenters, and participate in 12 panel discussions. Plenary sessions were supplemented by two specific workshops. Overall, 150 participants attended the OS22 in person, while more than 600 colleagues worldwide were given the opportunity to attend the conference online (streaming on YouTube®: [day 1](#); [day 2](#) and [day 3](#)), give presentations and interact with the panelists through an online forum. The meeting final report and the Book of abstract has been published online.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
1.5 Applied research	Delivery of valuable tools and knowledge addressing technical issues considered Europe-wide priorities for national preparedness against FAST diseases through an applied research program (ARP).	20 peer reviewed papers and reports published by the end of the phase; average impact level of these publications 7 (scale 0 to 10) as assessed by external technical panel.	Partially achieved. Overall, 20 studies were assigned and LoA issued with institutions. Instead of issuing a new FAR call for application in 2023, the remaining funding at the end of phase V was used to support high-quality proposals submitted to the FAR Calls #8, #9, #10 but not selected at that time. The External technical panel assessment will be provided by the end of the Phase.

Progress

Sub activity	Summary of activities
1.5.1 Funded research projects	
1.5.1.1. Call for research proposals and 1.5.1.2. Research studies	<p>The following research studies have been assigned: Harmonization and calibration of VNT methods used for post-vaccination monitoring in different FMD Reference Laboratories- Pirbright, ANSES, Sciensano, Lelystad and IZSLER. The goals of this project are:</p> <ul style="list-style-type: none"> -Comparison of VNT titres generated by different laboratories; -Analysis of available in vivo vaccine potency test data to establish serological cut-offs for the evaluation of vaccine performance; -Preparation of reference sera calibrated to “protective” responses. <p>10th FAR Call to (i) Promote the study of criteria, guidelines and impact of emergency vaccination against FAST diseases in disease free countries; (ii) Enhance laboratory capacity for FAST diseases in non-endemic countries; (iii) Evaluate vaccination approaches/strategies and vaccine types for FAST diseases and (iv) Promote the development of digital support tools for optimization of surveillance and other control activities for FAST diseases (funding of circa €140,000 was available). Twenty-two applications were received, one of which was withdrawn, two categorized as out of the scope of the present call, and 19 brought forward for review by the grant review board (composed of members of the EuFMD Standing Technical Committee and Special Committee for Surveillance and Applied Research). Nine applications passed the first stage review (scoring 3 or more according to the criteria utilized for the first stage process). Five of these were recommended for support while three were recommended subject to clarifications. After the second stage review, 4 out of the 5 recommended were endorsed by the grant review board. There was a good match between the score assigned by the first stage reviewers and the priority assigned by the grant review board. The selected studies were as follows:</p> <ul style="list-style-type: none"> - Development of an Analytical and Data Processing Tool for EuFMDiS Model Output to Support FMD Contingency Planning, University of Veterinary Medicine Vienna, Austria. - Validation of Lateral Flow Devices (LFD) for detection and serotyping of FMDV and antigenic detection of LSDV, Istituto Zooprofilattico Sperimentale della Lombardia e dell’Emilia Romagna (IZSLER), with Istituto Zooprofilattico Sperimentale dell’Abruzzo e del Molise (IZSAM), The Pirbright Institute, Friedrich-Loeffler-Institut. - Immunogenicity following simultaneous vaccination of FMD and LSD in indigenous cattle in Nigeria, National Veterinary Research Institute (NVRI), Vom, Plateau State, Nigeria, with TPI. Component Reports April 2022 – September 2022 43 - Open-FMD: a data sharing portal to enhance FMD surveillance, The Pirbright Institute, UK, with Epi-Interactive. <p>In addition, one application was retained for funding up to the end of this phase :</p> <ul style="list-style-type: none"> - Study on the immunogenicity of Rift Valley Fever Vaccine (RIFTOVAX-LR), University of Dalhousie (Canada) and University of Kigali, Rwanda.
1.5.2. Meetings for co-ordination and communication	
1.5.2.1. Regular meetings of the STC, SCSAR and SCBRM	<p>Regular meetings have been held by the three Committees during the reporting period (May 2021-April 2023) as indicated below with the assistance of the Secretariat.</p> <ul style="list-style-type: none"> - Standing Technical Committee: 4 meetings - 18 January 2022, 6 April 2022, 13 July 2022 and 15 February 2023. - Special Committee on Surveillance and Applied Research: 1 meetings - 23 February 2023 (hybrid). - Special Committee on Biorisk Management Standards: 5 meetings June 2021, 29 March 2022, 15-6 June 2022, 14-15 November 2022; and on 22 March 2023.
1.5.2.2. EuFMD Open Session	<p>On 26-28 October 2022, the EuFMD organized a three-day hybrid scientific conference (EuFMD Open Session 2022), in Marseille (France), to explore how digital transformation is supporting emergency preparedness and timely response, increasing access to digital learning tools, improving the diagnostic capacity for FAST, and ensuring availability of diagnostics, personnel, and capacities where they are most needed. Eighty-eight abstracts</p>

	<p>were submitted to the scientific committee, reviewed and clustered into the six main technical Sessions. The OS22 focus was on: (i) Emergency preparedness and response; (ii) Digital learning; (iii) Virology and diagnostics; (iv) Vaccinology; (v) Risk assessment and modelling and (vi) Surveillance and control. Fifty-six presenters were invited to showcase their work, including 16 keynotes presenters, and participate in 12 panel discussions. Plenary sessions were supplemented by two specific workshops on FAST Risk Monitoring and Vaccine availability and accessibility. Overall, 150 participants attended the OS22 in person, while more than 600 colleagues worldwide were given the opportunity to attend the conference online (streaming on YouTube®: day 1; day 2 and day 3), give presentations and interact with the panelists through an online forum. The meeting final report and the Book of abstract has been published online.</p>
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Component 1.6: Proficiency test services

Activities of this component ensure continuous support for the countries which are neither EU MNs, nor EU-candidate countries, to take part in the FMD PTS organized by the EU-RL. The annual PTS was successfully organized and completed in its standard timeline in 2022, and it is well on track in 2023. Due to the war in Ukraine, national laboratories from Ukraine and Belarus were not able to participate in the PTS-2022 and unfortunately, it is the same situation with the PTS-2023. The annual EU-RL workshop for the national reference laboratories returned to the in-person format and was organized in September 2022. During the biennium, EuFMD and EU-RL worked closely to coordinate the activities related to PTS participation of the eligible countries, monitoring of the diagnostic performances and identification of training needs. In July 2022, representatives from the laboratories in Moldova and Kosovo* were trained at the EU-RL (ANSES) in molecular diagnosis of FMD.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2022-2023
1.6. Proficiency test services	Europe-wide participation in proficiency test services run by the FMD EU Reference Laboratory through support for countries that are not part of the EU or candidate states.	Seven eligible countries to participate each year in the PTS and attend the annual EU-RL meeting.	Fully achieved. All seven eligible countries registered for PT participation in 2022; however, due to the ongoing war in Ukraine, Ukraine and Belarus were not able to receive the PT samples, and not participated in 2022 and 2023. For the same reason, five countries attended the annual EU-RL meetings.

Progress

Sub-activity	Summary of activities
1.6.1. Support to eligible countries	All seven eligible countries registered to participate for the PTS in 2022; however, the beginning of the war in Ukraine prevented the delivery of the PTS parcels to Ukraine and Belarus, resulting in PT participation by five eligible countries: Moldova, Bosnia and Herzegovina, Kosovo*, Switzerland, and Norway. To follow up the outcomes of previous PTS, one-week training in molecular FMD diagnosis was organized at ANSES for Moldova and Kosovo*.

	All eligible countries, except Ukraine and Belarus registered to participate in the PTS-2023. The delivery of the PT parcels is planned for 31 May 2023.
1.6.2 Support to eligible countries to attend the annual EU-RL meetings	The annual EU-RL meeting resumed with the in-person format organization in 2022. Nominated representatives from all eligible countries, except Ukraine and Belarus, were invited and participated at the meeting held in September 2022. EuFMD presented an update on its activities, with particular focus on those relevant for the laboratories and the EU RL network. In addition, EuFMD assisted the EURL in preparation and delivery of a dedicated session on European reagent bank.

**All references to Kosovo shall be understood in compliance with UN Security Council Resolution 1244 and without prejudice to the status of Kosovo.*

Component 1.7: Disease risk assessment and forecasting

Under this Component, work has continued to improve the quality, usefulness and availability of information that is intended to be used by Member Nations to assess and monitor the risk of FAST diseases. To accomplish this, information and data are gathered and compiled from other areas of the work program as well as through collaboration with the World Reference Laboratory. The EuFMD's Global Monthly Report has become the Quarterly FMD Report, produced jointly with the World Reference Laboratory. A prototype, proof-of-concept [FMD surveillance dashboard](#) was developed and a FAR project was awarded to the Pirbright Institute to fully develop the FMD surveillance dashboard. Active discussions are ongoing to ensure the sustainability of the surveillance dashboard and ensure inter-operability with EMPRES-i. The PRAGMATIST tool is increasingly used by antigen-bank managers around the world to inform their vaccine bank selections. A peer-reviewed publication describing the PRAGMATIST has been published in collaboration with the Pirbright Institute and as well as other institutions. Finally, a risk monitoring tool for FAST diseases (RMT-FAST) has been developed to assist EuFMD Member Nations to regularly assess the risk of incursion of FAST diseases. This tool has been piloted by three EuFMD MN (Spain, Bulgaria, and Austria) as well as in Pillar II countries (Libya and Mali). The tool was also presented at the EuFMD Open Session. The results from the pilot phase are very positive.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2022-2023
1.7 Disease risk assessment and forecasting	Improved global and neighbourhood FAST disease risk assessment and forecasting, with information to Member Nations and the public made available on a regular basis.	Improved information on FAST disease risks and on antigens available accessible to MN 36 months during phase V.	Fully achieved. Information is available through the joint Quarterly reports (FMD and FAST); the RMT-FAST has facilitated the use of the information to monitor the disease risk.

Progress

Sub activity	Summary of activities
1.7.1 Risk Assessment and Forecasting	<p>The Global Quarterly FMD Report has been published on-time throughout the reporting period, in collaboration with the World Reference Laboratory.</p> <p>A prototype FMD surveillance dashboard has been developed and is available. A FAR fund grant has been awarded to the Pirbright Institute to improve this prototype. Active discussions are ongoing with FAO's EMPRES-i team to avoid duplication of activities and ensure inter-operability.</p> <p>Regular FAST quarterly reports are regularly issued for European and neighbourhood with FAST risk information collected within Pillar II risk reduction programme.</p> <p>A risk monitoring tool for FAST diseases (RMT-FAST) has been developed to assist EuFMD Member Nations to monitor the risk of incursion of FAST diseases This tool provides a framework to apply the information collected through EuFMD activities in Pillar II. The tool has been piloted in Spain, Bulgaria and Austria.</p>
1.7.2 PRAGMATIST	<p>The PRAGMATIST tool is increasingly used by antigen-bank managers around the world to inform their vaccine bank selections. The EuFMD team has participated in meetings with New Zealand and PANAFTOSA about the PRAGMATIST</p> <p>The PRAGMATIST tool has been described in a peer-reviewed article in a scientific journal.</p> <p>PRAGMATIST inputs are regularly updated and included in the joint Quarterly report. Development of PRAGMATIST for endemic countries is ongoing.</p>

Pillar II: Reduced risk to EuFMD Members from the European neighbourhood

Component 2.1: Enhanced coordination with GF-TADs and other partners, and improved implementation of strategic plans for FAST control

The FAST situation has been monitored regularly through the production of relevant reports, bringing together information on disease events and efforts by countries to control diseases such as through vaccination.. The neighboring countries have been supported in developing and implementing the National Strategic Plans to enhance in the PCP stages. Remote support has been offered to countries on interpretation of provided data on FMDV circulation to enhance their surveillance. Regular co-ordination meetings have been held with FAO and WOA, and there has been increasing engagement with the Arab Organization for Agricultural Development (AOAD). New training courses have been agreed with ANSES and IZSLER on diagnostics for FAST diseases and post-vaccination monitoring for all the three regions. The promotion of public-private partnerships continued, and a series of workshops were organized with AOAD for Sudan.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
2.1 Coordination and FAST control framework	Enhanced coordination with GF-TADs and other partners, and improved implementation of strategic plans for FAST control	Activities coordinated at regional level with synergies among partners. At least five countries advancing to PCP stage 3 or above and/or providing FMDV circulation data in PCP stage 2. Reduced risk months where emergency management response is required against FAST diseases.	Fully achieved. One country (Kyrgyzstan) advancing to PCP stage 3; Two countries advancing (Palestine and Jordan) to PCP stage 2. Six countries in PCP stage 2 providing FMD serosurveillance data (two from Middle East Egypt, Lebanon); Four from South-East European Neighborhood (Armenia, Azerbaijan, Georgia, Türkiye).

*Refer to Appendices for sub-activities.

Progress

Sub activity	Summary of activities
2.1.1 Regular monitoring and reporting of FAST situation and control strategies adopted in European neighborhood and regular co-ordination with GF-TADs and other partners.	FAST reports were produced for each quarter. Virtual workshops with the AOAD on PPPs, FMD PCP, AOAD Steering Committee meeting. Virtual Coordination Meeting with sub-regional FAO and WOA offices for the three regions (NA, ME, SEEN). FAO, WOA, were invited to or informed on all EuFMD events carried out in all the regions. Activities in North Africa were organized through the REMESA secretariat. Regular participation in Joint Permanent Committee meetings of the REMESA secretariat. Support shipment of samples from Iraq to SAP Institute under the SOI agreement, in 2023 during SAT2 emergency. Support shipment of samples from Jordan in 2021 and 2023 to WRL during SAT2 and O emergency.

	Tripartite meetings in SEEN countries (Türkiye, Iran, Pakistan). Tripartite meetings in ME (Israel, Palestine, Jordan). With GF-TADs, consultative seminar on progress made on FMD and PPR for ME countries.
2.1.2. Revision of national FAST strategic plans according to updated risk assessment, socioeconomic analysis, monitoring and evaluation results.	Follow-up RBSP support to Lebanon and Syria focusing on risk-based surveillance. Revision of RBSP of Jordan. Risk Assessment Plan workshop with Libya. Revision of RBSP of Sudan. Meetings with Iran on RBSP development.
2.1.3. Implementation of laboratory and epidemiology network work plans in the European neighborhood with development of best practices promoted in Roadmap regions.	Epi-lab networks meetings and GVA meetings in NA. Support of the workplan of the West Eurasian networks (WeiNet, EpiNet) through SOI activities and coordination meetings. A virtual laboratory training course has been conducted by ANSES for SEEN and NA countries following a previous assessment of National Reference Laboratory capacities across the REMESA region. Residential trainings at ANSES and IZSLER on molecular and serology laboratory diagnosis. Online trainings with Sciensano on LSD.
2.1.4. Promotion of public-private partnerships (PPP) for FAST monitoring and control and development of new partnerships.	Consultation meetings with AOAD and veterinary services of Sudan. In depth meeting on potential PPP for FAST diseases in Sudan and follow up meetings. PPP meetings for: a) livestock and animal products export from Sudan; b) vaccine security; c) PPP and pastoralists systems.

Component 2.2: Develop integrated disease surveillance program focused on specific risk hubs

The development of integrated surveillance has been supported through the collaboration with the French Agricultural Research Centre for International Development (CIRAD) on spatial qualitative risk assessment, and subsequent development of risk maps. They were complemented by research activities on identification of the main drivers of animal mobility, modelling and prediction of national and regional animal mobility patterns affecting transboundary animal disease circulation. The enhancement of the capacity in risk mapping through spatial analysis is continuing with AviaGIS, Belgium and trainings are planned for all the neighbouring countries.

Syndromic Surveillance training workshops are in progress with SAFOSO in ME countries. EuFMD has also supported numerous activities to implement surveillance for FMD in the neighborhood including risk-based serological studies in Egypt, Lebanon, Libya, Sudan, Armenia, Azerbaijan, Georgia, Türkiye).

A major initiative supported by EuFMD to facilitate data sharing in the South-East European Neighborhood is through the Statement of Intention (SOI). Initially signed by five countries in May 2016, it has since expanded to seven, and involves the regular reporting of FAST disease outbreaks as well as control measures implemented through an online database maintained through LoA with IZSLT. The SOI agreement allowed the shipping of samples from Iraq to Türkiye during the SAT2 emergency in course. This is a model that could be replicated in other regions.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
2.2 Improved early warning for FAST diseases	Develop integrated disease surveillance program focused on specific risk hubs	Risk hot-spots for FAST diseases identified in at least six EU neighboring countries and risk maps regularly updated. Regular risk-based surveillance for multiple diseases implemented for 12 months in two in the European neighborhood hot spot locations. At least seven countries regularly participating in multi-country risk information sharing system.	Fully achieved Risk hotspots identified in 16 European neighboring countries through creation of risk maps (Middle East: Egypt, Jordan, Libya, Sudan; North/Central/West Africa: Algeria, Chad, Mauritania, Morocco, Senegal and Tunisia; SEEN: Armenia, Azerbaijan, Georgia, Iraq, I,R Iran and Türkiye). Risk based surveillance carried out in Egypt, Lebanon, Libya, Sudan, Armenia, Azerbaijan, Georgia, and Türkiye, although not implemented for multiple diseases. Regular contributions to the SOI platform. Regular sharing of risk information through focal points in ME and NA. Tripartite meetings with Israel, Jordan and Palestine for ME and Türkiye, Iran and Pakistan for SEEN.

Progress

Sub activity	Summary of activities
2.2.1 Identification risk hot-spots for FAST diseases and development of updated risk maps based on animal mobility and other risk factors	In collaboration with CIRAD, regional training carried out in virtual formats for the South East European Neighborhood (six countries, from beginner to intermediate levels), for the Middle East (four countries, from beginner to intermediate level), and for North West and Central Africa (six countries, advanced level). Risk maps were shared with regional partners and CVOs following the training sessions. In the South East European Neighborhood, risk maps (outcomes of the training) were used in national strategy documents and displayed in the SOI platform. A series of workshops on understanding animal mobility drivers were conducted for Egypt, Tunisia and Iran; longitudinal (several sites visited regularly) and cross sectional studies (identified sites visited one time) were designed. Risk maps, were elaborated by combining three to five risk factors for FAST disease introduction (import factors) or spread (national animal movement). Trainings are continuing with AviaGIS Company, Belgium to enhance the capacity of the countries in the use of spatial analysis and GIS for risk understanding.
2.2.2. Implementation of regular risk-based surveillance (RBS) for multiple diseases in hot spot locations	Risk-based FMD serosurveillance in Egypt, Lebanon, Libya and Sudan and SEEN countries. Syndromic Surveillance workshops in ME. In NA, a series of workshops were held with Sciensano on RBS. Under the LoA with IZSLER, kits and reagents were provided to the countries that are conducting RBS (Egypt). For the SAT2 emergency, EuFMD provided in limited amount through the agreement with IZSLER kits and reagents (Jordan Iraq, Türkiye, Palestine, Lebanon, Libya, NW Sriya, Egypt, Armenia, Georgia, Azerbaijan, Iran).
2.2.3. Regular participation of countries in multi-country risk information	The Transcaucasus countries (TCC) Armenia, Azerbaijan and Georgia, Türkiye and I.R. Iran report on a monthly basis on FMD vaccination and outbreaks to the Statement of Intention (SOI) database which is hosted at the IZSLT. Pakistan has agreed to join the sharing of data and information every three months and reporting was not regular. Iraq is reporting in the frame of the SAT2 emergency meetings.

sharing system for FAST diseases.	<p>Tripartite meeting between Israel, Jordan and Palestine held in August 2022 with agreement to meet regularly every three months. During the SAT2 emergency, the frequency of the meeting has been set weekly and monthly according to the countries request.</p> <p>REMESA JPC meetings every six months. Meeting between Iran, Türkiye, EuFMD and EC on Iran's request for FMD vaccine supply, February 2021.</p> <p>Regular technical meetings with SOI focal points on risk information sharing.</p> <p>Quarterly tripartite meetings between I.R Iran, Pakistan and Türkiye. During SAT2 emergency in Iraq, regular technical meetings are held every two weeks for the SEEN countries. The protocol for sample sharing for I.R Iran, Iraq and Pakistan with the SAP institute is functioning.</p> <p>Other meetings include those of the GVA (see component 2.3).</p>
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Component 2.3: Support the capacity development needed to develop and implement control strategies and surveillance for FAST diseases

The support for the enhancement of the laboratory capacity in the European Neighborhood continues to be a key activity for EuFMD. In the three regions, the Groups for Vaccination Advice, guidance and consultation (GVA) are established, meet regularly and serve as a forum to exchange expertise in vaccine efficacy and vaccination effectiveness and provide guidance on immunogenicity. EuFMD is supporting the neighboring countries in undertaking small-scale immunogenicity studies for FMD as recommended in the FAO-WOAH PVM guidelines.

Working with regional partners, EuFMD continues to provide virtual training courses in numerous areas. In response for two FMD outbreaks in Tunisia and Algeria two tutored virtual courses have been organized for official veterinarians in the respective countries in 2022. A third virtual FMD investigation training has targeted French-speaking participants in countries in North Africa, along with Central and West Africa. A new version of the RVF open-access course has been developed for French-speaking veterinarians. Three virtual tutored courses involving countries in the area have been delivered (on risk along the value chains, post-vaccination monitoring and FMD laboratory investigation). Specific workshops to enhance FAST surveillance were delivered in North Africa, Middle East and South East European neighbourhood. Each workshop had a strong training component together with group discussions and assignments. Tunisia has supported the development of TOM, Training Management System through a pilot aiming central and regional veterinarians in the country.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
2.3 Capacity development for surveillance and improved control programs	Improved capacity to develop and implement control strategies and surveillance for FAST diseases.	Evidence of improved capacities of national laboratories on FAST diagnosis in three countries, and two new training course scheme developed to assist FAST control and early warning system.	Fully achieved. New training schemes developed: <ul style="list-style-type: none"> – ANSES online courses. – IZSLER and ANSES residential trainings. – FLITC course reviewed and delivered. – Short training on FMD diagnosis for NWest Siria by IZSLER In ME, labs from Egypt, Sudan, Jordan, Libya, Palestine, Lebanon can perform Elisa Ab and Ag and Real Time PCR. The national lab of Egypt can perform virus neutralization test VNT as well as gene sequencing and molecular typing. The laboratory capacity of the ME and SEEN countries has been reinforced with evidence of capacities to detect circulation of new strains (i.e. SAT2).The revision of the overall outcomes of the PTs in the past years planned by the end of the Phase will provide more evidence of achievements.

Progress

Sub activity	Summary of activities
2.3.1 Training infrastructure and quality assurance system across the training program	The EuFMD virtual learning platform has been fully functioning during the biennium. The Training Quality Management System (TQMS) has been developed and implemented to ensure quality of the training developed and delivered by the Commission. Two evaluations visits have been conducted and indicated the steps for future developments of the TQMS. Two impact reports have been finalized, targeting the learners of courses in first biennium of the Phase V. The reports provided evidence of the impact in applying and cascading training delivered to learners and identified future areas of development.
2.3.2. Improvement of national laboratories capacity for FAST diagnosis.	Creation and delivery of a virtual training course performed by ANSES. Residential trainings with ANSES and IZSLER. A virtual laboratory training course has been conducted by ANSES for SEEN and NA countries following a previous assessment of National Reference Laboratory capacities across the REMESA region. Biorisk and biosecurity laboratory survey.
2.3.3. Implementation of studies on vaccine efficacy and vaccination effectiveness and sharing of results	Establishment of GVAs groups functioning and meeting regularly in ME, NA and SEEN. Provision of serological kits and technical support for three immunogenicity studies in Azerbaijan, Georgia and Morocco. PVM studies undergoing in Lebanon, Jordan and Egypt. PVM studies conducted in NW Syria, Libya. SSIS undergoing in Sudan.

<p>2.3.4. Development and delivery of training course schemes to assist FAST control and Early Warning System.</p>	<p>Webinars delivered for SAT2 emergency to Iraq, Jordan, Türkiye.</p> <p>Two new training schemes developed for Socioeconomic impact and Passive surveillance to progressively engage audiences through open-access, tutored and workshop activities: open-access courses for both will be prepared before Sep2023, followed by a tutored version. Revision and enhancement of an open-access RVF training course to be finalized before September 2023. A new version has been published as well to address French-speaking participants in the region. Trainings for beginners, intermediate and advanced level trainees from NA, ME, SEEN countries on spatial analysis and GIS mapping in collaboration with AVIAGIS Company, Belgium, in progress. Training workshops on Syndromic Surveillance in ME in progress.</p>
<p>2.3.5. Delivery of learning courses to audience of vets and paraprofessionals to promote awareness of FAST diseases and national cascade of training and resources.</p>	<p>A Strategic prioritization for of the training needs of the Pillar has been finalized in December 2021, allowing the development of new approaches for existing courses and explore the development of new areas of capacity development intervention.</p> <p>FMD Investigation Training courses for Turkish speaking participants since September 2021. Nearly 1 000 Turkish-speaking veterinarians trained since September 2019 on FMD investigation.</p> <p>Development of five new open-access courses (on socioeconomic impact, passive surveillance, preparation of RAP, RBSP and OCP)</p> <p>Risk analysis along the value chain virtual tutored course revised and delivered. Post vaccination monitoring virtual tutored course revised and to start in May 2023. Socioeconomic Impact currently under revision.</p>

Pillar III Sustained progress of the GF-TADs Global FMD Control Strategy

Component 3.1: Global Strategy Implementation

During this biennium, continuous support has been provided to the GF-TADs FMD Working Group (WG) and to improve overall guidance to FMD endemic countries engaged in the PCP-FMD. The PCP-FMD Toolkit has been further developed and improved, with a new pilot version of the PCP-FMD Self-Assessment Tool (SAT) disseminated, and a trilogy of open-access courses developed on ‘Introduction to the Risk Assessment Plan’ (published online); ‘Introduction to the Risk-Based Strategic Plan’ (published online) and ‘Introduction to the Official Control Programme’ (published by June 2023). Direct assistance to the GF-TADs FMD Working Group has been strengthened, improving mechanisms and procedures for the timely and regular review of national plans/programmes and communication with countries and regional groups (i.e. Review Support System and the Support Unit). The PCP-FMD Support Officer (PSO) system has been reinforced and a new structure of the PSO system developed and agreed. The PSO roster now supports 33 countries worldwide. New virtual solutions and formats have been developed and adapted to address the needs of the EuFMD work programme and to support the GF-TADs FMD WG, including the organization of four virtual Roadmap Meetings and two Epidemiology and Laboratory network meetings in the reporting period. Several collaborations have been strengthened during the past biennium, with the FAO ECTAD team in West, Central and Eastern Africa to improve country engagement in PCP-FMD progression, field FMD surveillance and to strengthen PSO support and capacity building.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
3.1 Global Strategy Implementation	Sustained and effective implementation of the FMD Global Strategy achieved through improved technical guidance to countries and assistance to GF-TADS Regional Roadmaps meetings.	Increase to 25 in certified PCP-FMD support officers (PSO) by the end of Phase V; Increase to 15 the submission by countries and processing by GF-TADS WG of strategic plans (risk assessment, risk-based surveillance and/or control plans) every two years.	Partially achieved. Five additional PSO appointments have been made between May 2021 and April 2023. The Support Unit has facilitated virtual introductory meetings for newly assigned PSOs between national authorities, FMD-WG, regional FAO and WOAHA representations and senior PSOs. It is expected that PSO virtual induction trainings to be delivered in first semester 2023 will help achieving the target for Phase V. 13 plans/programmes were reviewed by the FMD-WG, with the assistance of a Review Support Team made up of Senior EuFMD PSOs and the Support Unit, between 2021 and Q1 2023.

**Refer to Appendices for sub-activities.*

Progress

Sub-activity	Summary of activities
3.1.1 Improved technical guidance and support to PCP-FMD implementation by countries, through the management and development of the PCP-support officer (PSO) system.	
3.1.1.1. PSO Network co-ordination and development for improving guidance to countries.	<p>Compared to previous biennium, direct and official PSO support increased from 28 to 33 countries worldwide. In the reporting period, all plans/programmes received by the FMD-WG for were reviewed with technical support of PSOs and/or EuFMD experts.</p> <p>A proposal for PSO system restructuring has been developed in coordination with FAO EMPRESS to ensure sustainable expansion of the PSO global roster.</p> <p>A trilogy of open-access virtual learning courses on the PCP-FMD have been developed in coordination with Comp. 3.3 with the technical involvement of experienced PSOs ('Introduction to the RBSP, 'Introduction to the OCP' and 'Introduction to the RAP' courses).</p>
3.1.1.2. Collaborate with FAO and WOAH to support expert team missions in assisting countries according to WG requests	<p>The EuFMD has provided ad-hoc remote support to the authorities in Mauritius and Comoros, in response to FMD situations.</p> <p>EuFMD experts were involved in an emergency mission in Indonesia in 2022, and the EuFMD PII and PIII team heavily mobilized for the FMDV SAT2 response in the EU neighborhood late 2022 and early 2023.</p> <p>Finally, in response to the harmonized control plan developed by the SADC Secretariat, the EuFMD has developed a concrete response plan, including capacity building opportunities.</p>
3.1.2 GF-TADs Regional Roadmaps meetings for FMD control supported and regional technical networks of experts on disciplines related to PCP progress strengthened through Regional institutional bodies engagement.	
3.1.2.2. Support Regional networks and coordinate with Regional institutional bodies to improve capacities for national strategy development, PCP-FMD progress, and implementation of Risk-Based approaches for FAST diseases surveillance and control.	<p>Active support was provided to FAO regional Virtual Learning Centres (VLCs) in the Middle East, Eastern Africa and Europe and Central Asia in the reporting period, particularly for the development of virtual Moodle page for regional GF-TADs events - having the potential to host regional networks' discussions - and promotion of the regional VLCs in their region.</p> <p>Collaborations were strengthened with ECTAD team in West, Central and Eastern Africa for country PCP-FMD progression, and support to virological surveillance.</p>
3.1.3 Development of tailored PCP-FMD application tools to (i) improve the functional efficiency of the Secretariat GF-TADs FMD-WG, and (ii) increase visibility and impact through support to improved communication and online presence (GF-TADs website on FMD Global Strategy).	
3.1.3.1. Support the GF-TADs FMD Working Group in improving the timing and efficiency of review of national control plans.	<p>A second version of the PCP-FMD Self-Assessment Tool (SAT) was outlined with support of the senior PSOs, considering the expert elicitation exercise carried out in previous biennium, as well as country feedback. A Trello board will be designed in the coming months, to host the validated version of the SAT.</p> <p>A PCP-FMD Review Support System is now fully operational and has facilitated the timely technical revision of plans/programmes submitted by endemic countries. The system has proven very valuable in the delivery of quality plans review to the GF-TADs FMD Working Group – 13 plans or programmes were reviewed - and in revitalizing discussions on national FMD control strategies with countries.</p> <p>The EuFMD has led the establishment of a Support Unit to the GF-TADs FMD WG to assist the FMD-WG in the daily implementation of its activities and the monitoring of their impact.</p>

<p>3.1.3.2. Support the improvement of communication and online presence to enhance visibility and impact.</p>	<p>Communication product: A video on “what you need to know on FMD” for endemic settings was developed under the umbrella of the GF-TADs. Video tutorials for the SAT were recorded.</p> <p>The Support Unit is regularly interacting with the GfTADS Communication officer to follow-up the production of meeting reports that must comply with the GF-TADs communication SOPs. Under the FAR (see Component 1.5) a study was funded to generate dashboards with the WRL-FMD and Epi Interactive. One of these dashboards will display PCP-FMD and FMD surveillance, including FMD virological data gathered by the FAO/WOAH Reference Laboratory Network (see Component 3.2).</p> <p>The Support Unit was involved in the external review of the Global Strategy implementation, led by WOA, through provision of data and facilitation of meetings with the two consultants.</p>
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Activities in close coordination between Components 3.1 and 3.2

The provision of rapid diagnostic tests for Ag-FMDV detection (Lateral Flow Devices, LFD) was supported by the EuFMD in West, Central and Eastern African countries, and started in 2019 with close collaboration with ECTAD regional and country representations. In coordination with Component 1.5, a study was funded for IZSLER to develop and test new LFDs (allowing typing of FMDV) to overcome LFD supply issues that arose in last biennium. These LFDs are currently delivered to Comoros and Uganda as part of the validation phase but will soon be made commercially available by IZSLER.

Component 3.2: Improved Global Laboratory Support

In the current biennium, two annual meetings of the WOA/FAO FMD Laboratory Network were organized by WRL-FMD and supported by EuFMD. Due to the SARS-CoV-2 pandemic, the 2021 annual meeting of the WOA/FAO FMD Laboratory Network was organized as a virtual session on the 23rd and the 24th of November 2021. The 2022 annual meeting of the WOA/FAO FMD Laboratory Network was held in a hybrid format hosted by the new FAO FMD reference laboratory WBVR in Lelystad, from the 29th of November to 1st of December 2022.

A new reporting system has been established for a quarterly global report (accommodating input from the EuFMD Global Monthly Report -available at <https://www.wrlfmd.org/ref-lab-reports>). The WRL-FMD and EuFMD have reviewed and improved the contents of a series of virtual learning modules (FMD Diagnostics) for the delivery of FMD laboratory surveillance training course (FLITC) in all Roadmap regions. A new bilingual FLITC course (4th edition) in French and in English was developed and delivered between mid-November and end of December 2022. The EuFMD conducted a comprehensive historical analysis of all virological data available from the WOA/FAO FMD Reference Laboratory Network reports published between 2012 and 2020. This analysis indicates there is a need for targeted intervention to improve virological surveillance, and that further investigation is required to better characterize the types of technical, logistical, and capacity hurdles currently limiting the surveillance and diagnostics abilities in these regions. An abstract on this preliminary analysis was presented at the EuFMD OS20. In parallel with these activities, the WRL-FMD has developed and launched an interactive dashboard that can be used to display global FMD molecular epidemiological data. The EuFMD and WRL-FMD are collaborating with Epi Interactive to improve FMD surveillance data management and communication,

including the development of an online dashboard (in the framework of a FAR funded study, see Component 1.5).

Collaborations for improved field surveillance and control information were established, including the support to an immunogenicity study in Uganda (WRL-FMD, FAO Uganda, NALIRRI), support to the use of Lateral Flow Devices (LFDs) in multiple countries in West, Central and Eastern Africa (EURL-FMD, FAO ECTAD) and support to shipment of samples to international Reference Laboratories for FMD.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
3.2 Improve- ment of global laboratory support	Strengthened global laboratory surveillance support and improved FMD virus intelligence to guide regional and national implementation of the GF-TADs Strategy.	Enhanced level and quality of surveillance information on FMD Reference Laboratory Network with an increase in the virus pools achieving sampling targets for laboratory surveillance (from 1 to 4 out of 6).	Achieved. Renovated collaboration with the WRL-FMD for diagnostic, surveillance, training and other technical services. A review of historical analysis has been conducted of all virological data available from the WOA/FAO FMD Reference Laboratories to identify gaps in global FMD surveillance and priorities for the near future. Due to the COVID-19 pandemic and increase in cost of international sample shipment, the numbers of clinical samples submitted after March 2020 were considerably lower than before. Overall, the targets have not been met, although an enhanced level and quality of surveillance information was implemented in West and Central Africa (via the roll-out of the use of LFDs and direct support of epithelium samples in Q1 2021).

Progress

Sub-activity	Summary of activities
3.2.1 WOA/FAO FMD laboratory network	
3.2.1.1 Coordination support for the WOA/FAO FMD Reference Laboratory network.	Two annual meetings were organized in this biennium. In the course of this work programme, four annual meetings were held, of which two virtual meetings due to the COVID-19 pandemic. The last meeting in Lelystad was organized in a hybrid format. An FMD genomic dashboard has been developed and PCP-FMD and surveillance dashboards are under development with TPI and Epi-Interactive.
3.2.1.2 Delivery of FMD laboratory surveillance training in all Roadmap regions.	The third version of the updated FLITC course was delivered from November 5 th to December 3 rd 2020. In total 106 participants completed the course, passed the final assessment and received a certificate. The course was very well received as illustrated by the overall rating of the course of 4.7 on a scale of 5 (5 being the maximum score) in the post-course survey. The fourth –bilingual – FLITC course was delivered November – December 2022 with active participation of the francophone audience. Experts from ANSES and SCIENSANO were involved in the technical discussions with participants and online webinars.

3.2.2. International surveillance and guidance	
3.2.2.1 Support diagnostic services by WOA/FAO Reference Centres, including laboratory typing of FMD samples from the six virus Pools.	A new format for a joint quarterly global report (accommodating input from EuFMD FAST reports) has been prepared and implemented since 2020. For the ongoing Proficiency Testing (PT) scheme, sample panels for a new PT scheme have been prepared and samples dispatched to 24 laboratories supported under the WRL-FMD LoA with EuFMD.
3.2.2.2 Improve the sample collection and typing from regions identified by the WOA/FAO Reference Centres as priorities.	Also in this biennium, the SARS-CoV-2 pandemic has had a negative impact on the submissions of samples to WRLFMD. The temporal evolution of the virologic surveillance in the different FMDV Pools since the establishment of the Global FMD Control Strategy was reviewed during the previous and current biennia, using sample submission and virus characterization data from the FAO/WOAH reference laboratories network. Some gaps are consistent over time, highlighting inadequate virologic surveillance and virus characterization, particularly in FMD virus Pools 2 (South Asia), 5 (West Africa) and 6 (Southern Africa). This analysis indicates there is a need for targeted intervention to improve virologic surveillance, and that further investigation is required to better characterize the types of technical, logistical, capacity hurdles currently limiting the surveillance and diagnostics capacities in these regions. Assistance was provided to the Comoros, the Democratic Republic of Congo and Uganda national laboratories to acquire ELISA-Ag kits, to strengthen FMD surveillance capacities in these countries.
3.2.3 Vaccine selection and performance support	
3.2.3.1 Improve uptake and accurate application of test systems by WOA/FAO Reference Centers and Regional Support Laboratories in Africa and Asia.	The international COVID-19 crisis and the consequences for WRL-FMD have significantly affected the progress of activities to support vaccine selection and performance. An immunogenicity study has been supported in Uganda in collaboration and coordination with the WRL-FMD, FAO ECTAD Uganda and national stakeholders (NALIRRI). Sera from these studies in Uganda have been received to WRL-FMD and testing is completed. Similar immunogenicity studies in Jordan, Lebanon and NW Syria were supported under Pillar II (see Pillar II). With funding from a WOA/FAO Twinning Project, WRL-FMD is helping the African Union's Pan-African Veterinary Vaccine Center (PANVAC) in Addis Ababa to establish systems for evaluating the quality and suitability of FMD vaccines intended for use in Africa. Immunogenicity studies to collect large volumes of reference sera have been completed for six FMD vaccines that could be applied to the African market and further studies (at least three further vaccines) are planned.
3.2.3.2 Progressively support advancement towards validation of new tests for vaccine matching and measures of protection.	To help standardize the protocols that are used to assess whether vaccines are suitable for use in endemic settings, new reference antigens have been selected for Eastern Africa (https://www.wrlfmd.org/node/2096/). Sequencing has been completed and antigenic profiling in partnership with IZSLER, Italy, has been done (funded by a WOA/FAO Twinning Project). Candidate regional reference viruses have also been used for recent studies in Mongolia and for on-going work in Kazakhstan. To address changes in the availability of serotype A FMDV vaccines in Africa (i.e. A-Eritrea-98 no longer supplied by BI), the WRL-FMD has expanded vaccine-matching testing of isolates to evaluate an alternative vaccine (A-SAU-95). Also South American vaccine strains (O1 Campos) either produced by Biogenesis Bago or by Boehringer Ingelheim have been added to the vaccine matching panel. The FAO/WOAH FMD laboratory network has published a new paper to review the status of serotype C; to provide recommendations on the future use of live FMDVs from this serotype and the inclusion of serotype C strains in FMD vaccines. A second paper from the Network describes gaps in availability of reference standards for diagnostic methods.

Component 3.3: Better Training for Progressive Control of FMD

Virtual solutions and formats for capacity building have become increasingly relevant and requested during the current biennium. Further solutions have been developed to address the needs of the EuFMD work programme and to support PCP-FMD countries' progression. The EuFMD training online platform has been fully functional and 1,414 participants have successfully completed courses from target countries in Eastern, Western, Central and Southern Africa and South Asia since the start of Phase V. Additional 406 learners have completed courses about FAST disease topics delivered through the Virtual Learning Centers. A Strategic prioritization of the training needs of the EuFMD three Pillars was finalized in December 2021, allowing the development of new approaches for existing courses and explore the development of new areas of capacity development interventions. Four virtual learning courses have been delivered for Pillar III target countries, focusing on Risk Analysis along the Value Chains (RAVC), Monitoring of post-vaccination programmes for FMD (PVM), FMD laboratory investigation (FLITC) and FMD outbreak investigation for French-speaking participants in West, Central and North Africa. The roll-out of Virtual Learning Centers (VLCs) - as a mechanism for improved regional delivery of EuFMD training courses and cascading of knowhow on course development and delivery at the regional levels - was a key success of the current biennium. Two VLCs have been established, in Southern Africa and for Asia and the Pacific and a third, in Eastern Africa, begun its activities during the 2nd semester of 2021. The VLCs have already rolled-out EuFMD courses tailored to the regional contexts. VLCs for Southern Africa, for the Middle East, for Eastern Africa, for Europe and Central Asia, and for Asia and the Pacific hosted the virtual delivery of GF-TADs online/hybrid FMD roadmap meetings (RMM). There has been a high level of regional interest in the VLCs and they have also attracted funding to independently develop and deliver virtual courses and it is anticipated that these activities will further expand with the aim that the VLCs become self-sufficient. A face-to-face workshop on the application of the PCP-FMD at county-level for Kenyan Veterinary Services has been organized, to support veterinarians with risk-based control program planning, implementation, monitoring, reporting and communication (see Component 3.1). Two open-access courses to support countries progressing to level 1 to 3 of the PCP-FMD have been finalized under the umbrella of the GF-TADs (in collaboration with Component 3.1), specifically on preparation of Risk-Based Strategic Plan (RBSP) and Risk assessment plans (RAP); a third course on preparation of Official Control Programmes (OCP) will be published by June 2023. Following the development of the Training Quality Management System (TQMS) two external evaluation visits have been carried out in 2021 and 2023, indicating directions for improvement. Finally, the Commission has delivered an impact analysis of the courses delivered in 2021: the outcomes confirmed the high level of application of what has been learnt during the courses and indicated that the learners from Pillar III target countries had cascaded their learning to more than 11,000 colleagues, confirming the potential for cascading activities in the region.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
3.3 Better training for progressive control.	Improved national and regional capacity and expertise for progressive control of FMD through delivery of high impact training in at least six roadmap regions.	At least 2,500 individuals from the target countries* have completed at least one EuFMD v-learning course.	Achieved. A total of 1,414 individuals have successfully completed courses from target countries in Eastern, West, Central and Southern Africa and South Asia during Phase V. Additional 406 learners have been trained on FAST diseases by Virtual Learning Centers. The support to the launch of Virtual Learning Centers contributed to reach nearly 3 000 learners.

* Target countries for 2019-21 are those in West, Central, Eastern and Southern Africa and South Asia. Training courses developed should also be relevant to regions included under Pillar II activities.

Progress

Sub-activity	Summary of activities
3.3.1.1 Training Infrastructure.	The EuFMD virtual learning platform has been fully functioning during the biennium.
3.3.2.1 Quality assurance across the training programme and assessment of its impact.	The Training Quality Management System (TQMS) has been developed and implemented to ensure quality of the trainings developed and delivered by the Commission. Two evaluations visits have been conducted and indicated the steps for future developments of the TQMS. Two impact reports have been finalized, targeting the learners of courses in first biennium of Phase V. The report of the impact assessment of the courses delivered in 2021 indicated that more than 70% of the learners had applied what they have learned in their countries. More than 11,000 individuals were estimated to be reached through 'cascading of training' activities.
3.3.3.1 Consultation and prioritization for training development and delivery.	A strategic prioritization has been completed in 2021 and resulting four virtual tutored courses have been updated and delivered for the audiences in target countries (Risk Analysis along the Value Chain, FMD Investigation training for veterinarians in North, West and Central Africa, FMD Laboratory investigation training and Post-Vaccination Monitoring). The FMD Laboratory investigation training was also delivered for the first time for French speaking countries.
3.3.3.2 Development of new courses	Five new open access courses will have been developed (on socioeconomic impact, passive surveillance, preparation of RAP, RBSP and OCP) by September 2023.
3.3.3.3 Delivery of courses	Five virtual tutored courses have been delivered for the target countries and a total of 1 414 individuals from the target countries have completed at least one EuFMD training course to date (note that many of these individuals have completed more than one course). Additional 406 learners have been trained on FAST diseases by Virtual Learning Centers. The support to the launch of Virtual Learning Centers contributed to reach nearly 3 000 learners.
3.3.4.1 Support the development of virtual learning centers (VLCs)	Following the establishment of the VLC established for Southern Africa and the VLC for Asia and the Pacific in 2020, EuFMD and FAO went on to establish a third, the VLC for Eastern Africa in 2021. All three VLCs have been involved in recruiting and encouraging participants for in-depth courses delivered for multiple regions and also in delivering their own regionally tailored courses. This has proved to be an effective mechanism for improving regional delivery of EuFMD's virtual training.

	During the period under review, two of the VLCs (Southern Africa and Eastern Africa) VLCs hosted virtual delivery of GF-TADs online/hybrid FMD roadmap meetings (RMM). It is anticipated that VLCs will play a significant role in further virtual co-ordination of regional roadmap activities in future. There has been a high level of regional interest in the VLCs and all three have also attracted funding to independently develop and deliver virtual courses.
3.3.4.2 Development of resources for cascade training, including of veterinary paraprofessionals	Updates for 2021-23 EuFMD training resources have been used for cascading activities by learners in 30 target countries between September 2019 and December 2021. A further analysis about courses in 2022 will be completed before September 2023. Training for veterinary paraprofessionals has benefited from additional funding from the Bill and Melinda Gates Foundation. Country tailored veterinary paraprofessional competency frameworks have been developed for South Africa, Nigeria, and Uganda. Innovative continuous professional development training programs have developed with a focus on business skills and preventive healthcare. A hundred and fifty veterinary paraprofessionals are currently being trained through a blended model with smartphone-based online learning modules delivered by EuFMD and complementary workshops delivered by in country partners.
3.3.4.3 Develop systems for monitoring of national training of veterinary service staff	TOM Training Management System has been developed for piloting. A Steering Committee has been formed to identify future developments. Consultative meetings have been held to identify countries where to progress with piloting.

3.4 Improved security in FMD vaccine supply

To address priorities and the issues surrounding FMD global vaccine security particularly for endemic settings, the establishment of a new Component of the EuFMD Workplan was suggested during the 43rd EuFMD General Session in April 2019, and approved by the EuFMD Member Nations. This Component 3.4 was developed in the EuFMD work programme for Phase V, to support the Public Private Sector Platform (PPSP) for vaccine security established under Component 1.3, as well as to identify and promote solutions to improve security in access to effective FMD vaccines in endemic settings.

A working group on estimating global demand for FAST vaccines was set-up as part of the public-private vaccine security platform meeting held in January 2020 in Rome. The focus was on exploring informatics and understanding demand for FAST vaccines. Following this meeting, progress has been made for quantifying and estimating future demand for FMD vaccines in countries engaged in the PCP-FMD, and a stochastic modeling approach was developed using R software (a model called VADEMOS). An expert elicitation approach was used to inform the parametrization of the model due to the uncertainty and variation surrounding some of the parameters. Preliminary results were presented during the OS20 in December 2020 and a workshop was held in 2021 for the validation of the model and progress with publication and dissemination of the tool. In addition, a specialized workshop with participation of public and private stakeholders was held on February 2021 to progress consultations around issues of building business environments for supporting disease control and vaccination delivery. A manuscript describing VADEMOS model has been submitted to the *Journal Transboundary and Emerging Diseases* and is currently under review.

A collaboration with *Frontiers Journal* and a number of experts has been launched to produce a collection of scientific and peer-reviewed papers that will be published in a special edition (or Research Topic) of this journal entitled: "Socioeconomics of Vaccine Security for Transboundary Animal Diseases (TADs)".

This Research Topic aims to gather latest research and insights from scientists, economists and policy analysts that are targeted at addressing various aspects of TADs vaccine security.

Indicators of achievement

Activity	Objective	Expected results 2019-2023	Level of achievement 2021-2023
3.4 Improved security in FMD vaccine supply	Improved security in FMD vaccine supply: support to the Public Private Sector Platform (PPSP) for vaccine security to identify and promote Solutions to improve security in access to effective vaccines.	At least four reports published by the PPSP platform to inform and guide innovative approaches and partnerships for accelerated rate of investment in FMD vaccine production by private sector achieved.	Fully achieved. A publication on a model to estimate the current and future demand for FMD vaccine has been developed in the Q2 2021. A publication on the impact of the Nagoya protocol is under revision and reports of the regular meetings of the PPSP were regularly published.

Progress

Sub-activity	Summary of activities
3.4.1.1. Advance understanding of technical and policy constraints and solutions.	A working group on estimating global demand for FAST vaccines was set up as part of the public-private vaccine security platform meeting held on January 2020. For quantifying and estimating future demand for FMD vaccine in PCP-FMD countries a stochastic modeling approach was developed using R software (VADEMOS) and an expert elicitation approach used to inform the parametrization of the model due to the uncertainty and variation surrounding some of the parameters. Preliminary results were presented during the OS20 in December 2020.
3.4.2.1. Regular coordination with the PPSP	A specialized workshop was organized in February 2021 around issues of building business environments for supporting disease control and vaccination delivery. Three PPSP meetings were delivered as follows: <ol style="list-style-type: none"> 1. Explore options to improve security of vaccine supply against Foot-and-Mouth and other similar transboundary diseases, FAO, Rome, Italy, 22-23 January 2020 https://www.fao.org/3/ca7778en/ca7778en.pdf 2. Improving Foot-and-mouth And Similar Transboundary animal diseases vaccine security through stakeholder engagement, Virtual Meeting, 25 January 2022 https://www.fao.org/3/cb8889en/cb8889en.pdf 3. The Impact of the Nagoya Protocol on Vaccine Security for Foot-And-Mouth Disease Research & Development: Options for a solution, 29 March 2023, Rome, Italy 4. https://www.fao.org/eufmd/meetings-and-events/detail/en/c/1619589/
3.4.2.2 Produce technical and policy study reports and guidance and promote the development of the AESOP and prequalification systems under the PPSP.	A collaboration with Frontiers Journal and a number of experts has been launched to produce a collection of scientific and peer-reviewed papers that will be published in a special edition (or Research Topic) of this journal entitled: “Socioeconomics of Vaccine Security for Transboundary Animal Diseases”. This Research Topic aims to gather latest research and insights from scientists, economists and policy analysts that are targeted at addressing various aspects of TADs vaccine security.

Appendices

Sub-Activities, Indicators and levels of achievement per component

Pillar I: Improve preparedness for management of FAST crises by Members

Component 1.1: Training for Member Nations

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021 -2023
1.1.1 Training support services	Maintenance and improvement of training Infrastructure. Availability of the existing open-access resources and generation of new training materials and job aids that can be used by MNs in their trainings at national level. Development of new open-access courses. Whenever is possible, the development of new resources will be done using material developed under 1.1.2. Some of the new resources developed under this sub-activity will be linked to the GET Prepared toolkit, as relevant.	EuFMD online platforms will be functioning and accessible to users more than 23 months per biennium during phase V. a) Open-access resources will be accessible to users more than 23 months per biennium during phase V. b) A number of new resources to be defined will be developed per year.	Fully achieved. EuFMD online platform is fully functional and upgraded. a) Open-access resources accessible to users through EuFMD online platforms b) A new open-access course for Introduction to the FMD Minimum Biorisk Management Standards has been published. Open-access courses for awareness about Sheep Pox and Goat Pox and Passive surveillance are in development to be finalized before September 2023.
1.1.2 Training programme	Evaluation of the training needs and development of a training menu according to these. Each country will receive 10 training credits to choose from a range of options established in the training menu. Implementation of the training programme, delivering the different training courses (online and face-to-face), regional initiatives, missions and tailored in-country assistance. Coordination with the Training Focal Point including regular on-line and/or face-to-face meetings.	At least 90 % of the training credits spent by the MN by the end of each biennium.	Fully achieved. 64% of the TCs will be spent by May 2023. Considering the training activities that will run from June 2023 (scheduled in the EuFMD calendar), the projection is that by the end of the biennium the set indicator will be achieved.
1.1.3 TQMS	Development of a Training Quality Mgt System in order to ensure quality across the training programme; carry out regular evaluations of the impact of our training programme in order to inform the design of a training offer that can achieve higher capacity development at country level. This system will guarantee that EuFMD provides high-quality and high impact training. Accreditation of EuFMD training courses as continuing professional development (CPD) and/or part of a wider system for recognition of training for achievement of competences by veterinary authority personnel. Participation in the working group to define requirements for a post-graduate training programme in the field of veterinary public health (VPH), within the framework of a VetCEE dossier of Competence.	Development and full implementation of the training quality management system by June 2020. Accreditation of EuFMD training courses by the end of the first biennium of phase V.	Fully achieved. Full implementation of a TQMS in the reporting period and coordination of two external evaluations in 2021 and 2023 to assess results achieved and provide recommendations on the follow-up activities. Impact reporting for the courses between 2019 and 2021 and revision of Impact strategy finalized. Two online FMD Emergency preparedness courses submitted for accreditation in Belgium and Germany to relevant bodies.

Component 1.2: Emergency Preparedness

Sub activity	Description	Indicators 2019-2023	Level of achievement 2021 - 2023
1.2.1 Tools for contingency planning and decision support for the better management of FAST disease risks	Development of a comprehensive toolbox (GET Prepared) of resources for contingency planners. Development of resources such as guidance documents or assessment tools to fill gaps in the GET prepared.	Identification and compilation of examples of good practice in emergency preparedness during the first year of phase V. Online GET Prepared tool available by the end of the first biennium. Updated indicator estimated that at least 30% of the components of emergency preparedness ('bricks in the wall') will contain resources by the third year of phase. Two new resources will be developed per biennium if a need is identified.	Fully achieved. Good practices identified for prioritized components. The Get prepared wall was restructured and migrated to Trello. The restructured wall was released for public use in March 2023. Ten out of 31 bricks (components) are developed and activated in the wall. New components are prioritized and under development. A guide for developing an emergency vaccination plan for foot-and-mouth disease in free countries was published in 2022 by FAO.
1.2.2 FAST disease modelling for Europe	Incorporation of new countries to EuFMDiS to enable both national and Europe-scale assessment of the effects of FMD incursions and control measures. Addition of new features in EuFMDiS as agreed by the expert panel under the Standing Technical Committee (STC). Adaptation of the model to other FAST diseases. Support to EuFMDiS users to facilitate the use of the model to carry out studies that are useful to test their contingency plan.	By the 3 rd year of phase V, ten countries will be added (baseline seven countries). By the 3 rd year of phase V, EuFMDiS will be adapted for two more FAST diseases. At least five users support activities (trainings, webinars, and meetings) held per year.	Fully achieved. The model has been developed for three Baltic countries (Estonia, Lithuania, and Latvia) and Denmark. Altogether, the model is ready for 14 countries. Dialogue is underway with Sweden, Netherlands, Belgium, and France for model development. The model for classical swine fever has been developed for Spain, and its expansion to other European countries is planned. The model has been developed including post- outbreak management component and market. The work is ongoing for the inclusion of carcass disposal capacity, wildlife component, and shared pasture. The model has been expanded for other FAST diseases such as Sheep and goat pox, and PPR. Work is in progress to expand this model for LSD. Three exercises, three webinars, and one training (Estonia) were organized to support users.
1.2.3 Emergency Preparedness Network for contingency planners and experts in emergency preparedness	Development of an online page to host the Emergency preparedness network. Provision of opportunities for member to interact and learn through webinars or other resources.	Online site developed and participants enrolled by the end of 2019.12 webinars or other resources (videos, podcasts, papers) presented to the network members during each biennium. At least one face-to-face (f2f) meeting held per year.	Achieved. The objective for this component was achieved, but the specific indicators developed in 2019 were not also due to covid. An emergency preparedness webpage was created in the e-learning platform. Combining three previously existing groups made the page useful for distributing notices (e.g. about upcoming webinars, presentations). he mechanisms to better engage with contingency planners needs to be further explored Opportunities were provided for the members to interact and learn through webinars and other open access resources developed by EuFMD

			(i.e. emergency toolkit, GET prepared). Contingency planners and CVOs were invited through other mechanisms to attend emergency preparedness events such as workshops and webinars.
1.2.4 Public- private partnerships for the prevention and control of FAST diseases	Public-private partnership discussion forum and initiatives to increase collaboration and engagement of the private sector in the prevention and control of FAST diseases.	Two meetings per year (f2f or on-line) with different representatives of the private sector. Two simulation exercises involving the private sector organized by the end of the first biennium of phase V. At least one recommendation document drafted after each simulation exercise.	Fully achieved. A group of eight European private sector organizations named 'PPP initiative for anticipating FAST disease outbreaks' was created and met intermittently. The PPP initiative members and their nominees were invited to webinars and scenario-based workshops to address issues of interest to the PPP group and to contingency planners. The interaction between PPP members/nominees and contingency planners at these events stimulated good discussions on various topics, including constraints to using emergency vaccination; disposal issues and business continuity during an emergency response.

Component 1.3: Emergency vaccination

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021 - 2023
1.3.1. Sub-activities to better understand the level of preparedness to use emergency vaccination for FAST diseases in Member Nations.	Addressing constraints to the use of emergency vaccination in MN.	MN consider the use of emergency vaccination in their CP plans, criteria for implementing vaccination, and the main constraints to its use.	Fully achieved. Following scoping work conducted in the first biennium, contingency planners and the PPP initiative identified criteria for considering the use of emergency vaccination for FMD and identified the main constraints to implementing vaccination. Many MN do not plan vaccination-to-live for FMD due to the longer waiting period to return to trade and post vaccination monitoring to prove freedom from FMD. A workshop scheduled for May 2023 will explore options for post-vaccination surveillance to potentially allow countries for regain FMD-free status earlier following use of emergency vaccination. Human resourcing was identified as a major factor in implementing emergency vaccination, and the success of FMD outbreak response. This factor is still to be explored in a future workshop.
1.3.2. Establishment of a public and private sector platform (PPSP) for FAST disease vaccination	PPSP regular meetings. Development of guidance papers and studies.	Two PPSP f2f meetings per annum. Three guidance papers and/or studies to be available by the end of the first biennium of phase V.	Fully achieved. Between 2020 and 2023, three multi-stakeholder meetings (MSP/PPSP) have been held to explore options to enhance vaccine security, by improving access to quality vaccines against FAST diseases. The first MSP meeting was held in January 2020 in Rome with a follow-up meeting in January 2022 on improving access to quality vaccines against FAST diseases. A third MSP meeting was held in March 2023 dedicated to the Nagoya Protocol that utilized the MSP forum to identify options for a solution to the negative impact on FMD research and development including the development of new FMD vaccines.
1.3.3. New system to improve FMD vaccine quality and availability	Prequalified supplier system for the immediate procurement of vaccines meeting pre-agreed quality criteria for use in MN. Assured Emergency Supply Options (AESOP) for FMD vaccines.	Quality criteria defined by month 18 of phase V. System established by the end first biennium of phase V. Characteristics of the new system defined and agreed by month 18 of phase V. System established by the third year of phase V.	Fully achieved. The Prequalification scheme for FMD vaccines (PQv) has now entered the operational phase at Stage 1. EuFMD has established the Standing Committee for PQv (SCPQv) for decision making, governance and oversight and the PQv policy, technical guidance for FMD vaccines and administrative procedures for PQv are published and contracts with three institutions to evaluate PQv applications established. A secure IT system, IT security policy and procedure are being implemented to manage commercially confidential information (CCI) submitted by manufacturers in support of a PQv application. Six FMD manufacturers have formally expressed interest for submitting PQv applications and three are expected by May 2023. The next stage of implementation will be to link the PQv scheme with FAO procurements through restricted tenders and introduce independent testing of vaccines under the PQv scheme. Work on AESOP and Long-Term supply arrangements (LTAs) is delayed due to the amount of work and complexity required on PQv and the need to address the legal and regulatory issues of linking PQv with FAO procurements and better understand the business models associated with FMD vaccine supply.

Component 1.4: Southeastern Europe (SEE)

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
1.4.1 Risk Based Surveillance	<p>Support to Greece, Bulgaria and Türkiye to maintain and improve the RBS system established in Thrace. This will include the revision of the Cameron model, as necessary.</p> <p>Adaptation of the current RBS system to other countries or regions and to other diseases, as considered necessary, for example to support the exit strategy in the Balkan countries to recover LSD-free status.</p>	144 country-months surveillance system operational	<p>Fully achieved.</p> <p>Confidence of freedom percentage as an output of the model adopted (developed by A. Cameron at all) is stable and above 90%.</p> <p>The database has been upgraded and many of the Thrace cycle report information have been automatized, so that reports can be downloaded directly by the country focal points.</p> <p>Some scoping work took place, and it is ongoing to assess the best way to support SEE countries in their surveillance activities. It was concluded that the support in the region in relation to LSD and PPR is already covered by other partners/projects working in the region. Interest in establishment of the RBS systems similar to THRACE and other passive surveillance approaches was expressed by the Balkan's countries.</p> <p>The THRACE coordination meetings have been merged with the SEE management meetings and now all the countries consistently report surveillance activities planned in national programmes. Gathered data will be used for development and implementation of RBSs in the region.</p>
1.4.2. Coordination activities	<p>Management meetings will be organized regularly to define priorities in the region and follow up the outcomes of the activities carried out under this component. Additional multi-country activities, such as simulation exercises should also contribute to improve the collaboration between countries in the region.</p> <p>Support for the establishment of national stakeholders' networks to connect veterinary services, laboratories, research institutions, universities, industry, and farmers to ensure that there is a transfer of knowledge from stakeholder networks to decision-makers, and that research is orientated to fill knowledge gaps identified by veterinary services.</p> <p>The key stakeholders that should be part of these national networks will be identified by each country and support will be given for these networks to produce studies or to organize activities that aim at improving emergency preparedness and response. Research</p>	<p>Two management meetings organized per year.</p> <p>a) Eight countries have established a national stakeholders' networks to connect veterinary services, laboratories, research institutions, universities, industry, and farmers by the end of the four years. b) Three of these national stakeholders' networks to have produced studies or organized activities that aim at improving national emergency preparedness and response during the first biennium.</p> <p>Update 2021-2023</p> <p>Eight countries to successfully participate in a call for research studies with the aim to promote the creation of stakeholder networks between veterinary services and research institutions and universities by the end of four years research based on policy needs and have produced studies or organized activities that aim improving emergency preparedness and response, during the phase V.</p>	<p>Fully achieved.</p> <p>Regular SEE Management Meetings held on a six-monthly basis.</p> <p>Proposals under the 2nd SEE FAR call selection for EuFMD funding analyzed and four proposals (i.e. three individual countries and one regional) were supported;</p> <p>A meeting was organized with the 1st and 2nd SEE FAR Call principal investigators and the EuFMD's NFPs to discuss results, progress and lessons learned, and next steps to facilitate transfer of knowledge at a national and a regional level.</p>

	studies done with EuFMDiS in the region will be encouraged, as this tool can assist to improve national contingency plans.		
1.4.3. Emergency Preparedness	<p>Specific workshops on topics of interest in the region will be organized or additional places for participants from South-Eastern Europe will be made available to participate in workshops organized under component 1. Specific laboratory training activities will be considered according to the country needs. These might include training to comply with the “Minimum standards for laboratories working with FMDv”, following the guidance given by the Special Committee on Biorisk Management (SCBRM). Technical support to organize national simulation exercises (including laboratory simulation exercises) will be offered to the countries from South-Eastern Europe. Economic support will also be given to facilitate observers from other countries.</p> <p>Multi-country simulation exercise will be organized for participants from South-Eastern Europe countries. Representatives from different institutions will be invited to participate in these simulation exercises (laboratories, veterinary services, universities, industry, and the like) In-country assistance to apply the GET Prepared toolkit and to improve contingency plans. This support will be given by a consultant provided by the EuFMD or by experts within the region supported by EuFMD.</p>	<p>At least two representatives from each country participate in a workshop per biennium.</p> <p>a) Eight countries to organize a national simulation exercise receiving support by EuFMD, during the first biennium of phase V.</p> <p>Update 2021-2023</p> <p>Four countries to organize national simulation exercises receiving support by the EuFMD during the second biennium of phase V.</p> <p>b) One multi-country simulation exercise will be organized per year.</p> <p>Update 2021-2023</p> <p>Two multi-country simulation exercises will be organized during the second biennium of phase V.</p> <p>c) Eight countries to receive specific in-country support to improve their contingency plans during the first biennium of phase V.</p>	<p>Fully achieved.</p> <p>A animal health surveillance workshop, with a focus on improving passive surveillance through the identification and collection of individual and population health indicators and its impact on early detection of FAST diseases was organized as hybrid event, preceding Thrace and SEE management meeting, gathering the EuFMD NFPs and NRL’s LFPs from the region, while relevant officials from national epidemiological services participated online. A workshop on biosecurity principles, construction of FMD epidemiological timeline and use of GET Prepared tool was organized as an integral part of the multi-country simulation exercise in April 2023.</p> <p>Six national simulation exercises are in the planning phase to be conducted in May/June July. Three multi-country simulation exercises in the region have been supported by the EuFMD.</p> <p>Countries that were supported in implementation of the simulation exercises have also received technical support in contingency planning as integral part of the simulation exercises planning through analyses of the relevant exercise reference material and conclusions and recommendation in the exercise evaluation report, mostly related to contingency planning, relevant protocols and procedures and overall emergency management of FAST diseases that caused crisis in simulation.</p>
1.4.4. Diagnostic Bank of reagents	Establishment of a diagnostic bank of reagents for FAST diseases available for the countries in the region.	Diagnostic bank with capacity to respond for 360 months (country-months TADs) e.g. FMD bank for 10 countries for 36 months of the phase.	<p>Fully achieved.</p> <p>The diagnostic bank of FMD reagents has been established before the end of the first year and is fully functional for 10 countries.</p>

Component 1.5: Applied research

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
1.5.1 Funded research projects			
1.5.1.1. Call for research proposals	Following advice received by the STC, the SCSAR, and the SCBRM, a call for research proposals will be released and widely circulated on a regular basis. Research applications will be reviewed in a two-stage process, first by external referees (Referee Panel) then by the STC (acting as the Grant Review Board). Successful applications will be contracted through LoAs.	a) Two calls for research proposals released year, starting in 2020. b) Announcement of results to be done one month after the closing date of the call for application. c) LoAs signed two months after the announcement of the results.	Achieved. a) 9 and 10 th Call released. The STC suggested to reduce the number of calls and improve the budget available for each study endorsed for an improved impact of the programme. b) Results (and request for revisions) were announced one month and a half after the 10 th Call (August 2022) despite the high number of applications to be reviewed. c) Due to administrative issues, LoA issuances were delayed (>2 months after the announcement).
1.5.1.2. Research studies	Research projects will be carried out according to the signed LoA, completed project will be assessed and results will be made available	a) Reports and project results to be produced by institutions awarded grants within the deadlines established in the LoA.	At the time of the report, studies ongoing for FAR#8 and 10. Extension of LoA granted to project partners.
1.5.2. Meetings for co-ordination and communication			
1.5.2.1. Regular meetings of the STC, SCSAR and SCBRM	Meeting will be regularly organized to for the STC and the SCSAR so they can discuss and produce advice and guidance on research priorities. This includes meeting at the Open Session which is held every two years and guiding the Secretariat on the format and content of the session. Meetings of the SCBRM will also be regularly organized so they can discuss and provide guidance on laboratory training, including the Minimum Standards and support needs of the FMD Biorisk management community.	c) At least two meetings (online or face to face) of the STC held each year b) At least one meeting of the SCSAR held each year (one meeting to be held at the EuFMD Open Session which is held every two years) c) At least one meeting of the SCBRM held each year.	Fully achieved.
1.5.2.2. EuFMD Open Sessions	The EuFMD Open Session will be organized every two years and the topic of these sessions will be decided following the advice of the STC and the SCSAR.	Two Open Sessions organized during phase V.	Fully achieved. The OS22 was held in Marseille, France, in hybrid format. In 2020 a special edition of the OS was delivered in virtual format.

Component 1.6: Proficiency test services

Sub activity	Description	Indicators 2019-2023	Level of achievement 2022-2023
1.6.1. Support to eligible countries to participate in EU-RL PT for FMD	Support to eligible countries to participate in PTS for FMD NRL	Seven eligible countries to participate each year in the PTS for FMD NRL.	Fully achieved. Five out of seven eligible countries participated in the EU-RL PTS for FMD in 2022 and 2023. Non participation of two countries due to external circumstances.
1.6.2 Support to eligible countries to attend the annual EU-RL meetings		Seven eligible countries to participate in the annual EU-RL meetings.	Fully achieved. Five out of seven eligible countries attended the EU-RL annual meeting in 2022.

Component 1.7: Disease risk assessment and forecasting

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2022-2023
1.7.1.1 Collection and integration of risk information from different sources	Definition of a system for regular collection of specific information from different sources, including information collected through the work developed under Pillars II and III and information provided by key informants. Harmonization and quality check of the collected information.	a) Definition on information to be collected and how to collect it by month nine of phase V. b) Regular collection of information according to the new system from month ten of phase V.	Fully achieved. Disease information is regularly collected and available within the Quarterly reports. This information is used to inform the RMT-FAST
1.7.1.2 Disease risk assessment and forecasting	Regular assessment of the collected information to understand FAST disease trends and risk factors to be able to provide some forecasting	First assessment of information done by the beginning of the second year of phase V	Fully achieved. The RMT-FAST has been developed and piloted in Spain, Bulgaria and Austria. Through this, risk pathways by which FAST diseases could enter were prioritized.
1.7.1.3 On-line reporting tool	Development of an on-line map-based tool with an adaptable dashboard for regular reporting to Member Nations on FAST disease risks. Monthly update of the information available through the tool.	First version of the online map-based tool by the end of the first biennium and full version available by the end of the phase.	Fully achieved. The joint quarterly report has been published regularly and on-time. A prototype surveillance dashboard is available .
1.7.2.1. PRioritisation of AntiGen Management Surveillance Tool (PRAGMATIST)	The PRAGMATIST tool will be kept updated and the results of the validation and sensitivity analysis carried out will be incorporated. In co-ordination with Pillars II and III, work might be done to make the PRAGMATIST tool more flexible and increase its availability, adapting it to endemic countries. A “user-guide” will also be developed.	a) PRAGMATIST to updated on a regular basis during phase V b) PRAGMATIST to be regularly used to inform MN and ExCom representatives	Fully achieved. PRAGMATIST inputs are kept updated through the Quarterly report and are used to inform the Excom representatives. A You Tube video is available to assist users with using the tool. PRAGMATIST has been described in a peer-reviewed scientific publication . The adaptation to endemic countries is underway.

Pillar II: Reduced risk to EuFMD Members from the European neighbourhood

Component 2.1: Enhanced coordination with GF-TADs and other partners, and improved implementation of strategic plans for FAST control

Sub activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
2.1.1 Regular monitoring and reporting of FAST situation and control strategies adopted in European neighborhood and regular co-ordination with GF-TADs and other partners.	Co-ordination with the GF-TADs partners (FAO, OIE), with other International Agencies providing technical support to countries (e.g. AOAD) and networks established in the regions, achieving a jointly agreed workplan with close daily interaction in the implementation and reporting to the regional steering committees and Joint Permanent Committee.	a) Three-monthly reporting of FAST situation and control strategies in EU neighborhood produced and shared with EuFMD Member Nations and GF-TADs partners. b) Co-ordination meeting (online) with partners every three months for planning and evaluation.	Fully achieved. FAST reports are produced every quarter. Coordination meetings with GF-TADs and other regional partners held regularly. Two workshops with AOAD and GF-TADs on: (1) RVF and vector borne diseases; (2) FMD PCP Five workshops with AOAD on PPP in Sudan. Regular SOI and JPC meetings for SEEN countries. Four REMESA meetings and recommendation to coordinate back-to-back meetings with NA countries not involved in FMD PCP.
2.1.2. Revision of national FAST strategic plans according to updated risk assessment, socio-economic analysis, monitoring and evaluation results	Provide technical assistance for implementation of strategic plans for FAST control at national level on the basis of PCP principles, availability of resources and results of control strategies already in place. Tools already developed by FAO (LMT, SET, EMAI*) and results of their implementation will be regularly considered for enhancing the assistance provided according to the needs. Emergency support for FAST diseases will be provided to countries under this component according to the priorities identified with EC and GFTADs partners and considering the risks for EuFMD Member Nations identified.	At least seven FAST strategic plans revised by the end of the biennium (including those currently under revision) according to updated risk assessment, socioeconomic analysis, monitoring and evaluation results.	Fully achieved. Palestine, and Jordan advanced to stage 2. Inputs provided to strategic plans in six countries (Georgia, Iran, Lebanon, Libya, Sudan, Syria, and Türkiye). Support has been provided to EMC-AH upon request. In collaboration with EMC and EMPRES, coordination of the emergency strain O in Jordan and Palestine in 2021-2022 and SAT2 emergency in Türkiye, Iraq, Jordan in 2023. In collaboration with EMPRES VLC RNE, a series of webinars were delivered for the ME and West Eurasia on the response to SAT2 emergency. Tripartite meetings with Israel, Jordan and Palestine in collaboration with EMC. In collaboration with WRLC, ANSES, IZSLER, technical assistance on FMD diagnosis provided to the countries during the SAT2 emergency. The SOI agreement allowed the shipping of samples from Iraq to the SAP Institute in Türkiye, during the SAT2 emergency. The agreement with WRL allowed the shipment of samples from Jordan during the O and SAT2 emergencies. Information shared on SAT2 between WRLC, Kimron Veterinary Institute, Israel, and SAP Institute allowed the preparation of specific probes and primers for SAT2 XIV topotype. Input has been provided to national FAST control and surveillance plans through bilateral meetings with countries (see 2.2). Inputs provided in designing PVM and SSIS (see 2.3). FAST surveillance workshops in all three sub-regions: in NA support provided through Spain funds in collaboration with Sciensano. Syndromic

			Surveillance workshops in collaboration with SAFOSO in implementation. Letter of Agreement with IZSLT and development of tools such as the Risk Monitoring Tool, VADEMOS, and PRAGMATIST tested, and Self-Assessment Tool implemented.
2.1.3. Implementation of laboratory and epidemiology network work plans in the European neighborhood with development of best practices promoted in Roadmap regions	Co-ordination of inputs and efforts with the leading technical institutional partners (including CIRAD, EFSA, IZSs, ANSES and others) to achieve improved laboratory and epidemiology networking in the European neighborhood for better early warning and support to risk-based control strategies with increased efficacy and improved guidance to the countries of the sub-regional epidemiology and laboratory networks established in roadmaps.	Laboratory and epidemiology network workplan implemented (two by the end of biennium) and results reported in respective roadmaps. Two virtual learning courses delivered according to the needs identified.	Fully achieved. Virtual learning course delivered by ANSES on diagnostics for FAST diseases and post-vaccination monitoring for NA and SEEN countries. Letters of Agreement to enhance the laboratory capacity: <ul style="list-style-type: none"> - Residential trainings on molecular and serology diagnosis with ANSES and IZSLER, in addition to kits provision, and Proficiency Tests . - with Sciensano, LSD training. - With IZSAM. Laboratory and training on RVF and entomological surveillance. Biorisk and biosecurity survey to identify the capacity and needs of the laboratories. Support of the workplan of the West Eurasian networks (WelNet, EpiNet) through SOI activities, including facilitation of sample shipment and testing (Iran-Türkiye agreement), information sharing on outbreaks and control of FAST diseases, risk mapping, trainings on socio economic impact (meat market prices) assessments and PPP). Support to ME and NA epi-lab networks through supporting specific activities indicated in the workplans.
2.1.4. Promotion of public-private partnerships (PPP) for FAST monitoring and control and development of new partnerships	Improved engagement with private sector (including private veterinarians, training providers and vaccine producers) in line with PCP and PPP principles.	Public-private partnerships promoted for FAST monitoring and control and at least three new PPP schemes developed in the EU neighboring region.	Fully achieved. Three schemes of PPPs in development with AOAD in Sudan. Inputs to Iran PPP.

Component 2.2: Develop integrated disease surveillance program focused on specific risk hubs

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021 - 2023
2.2.1 Identification of risk hot-spots for FAST diseases and development of updated risk maps based on animal mobility and other risk factors	Identification of risk hot spots for FAST diseases taking into consideration animal movements, wildlife, presence and circulation of animal diseases, efficacy of control programs, socioeconomic situation and other risk factors.	At least six countries with identified risk hot spots for FAST diseases and updated risk maps based on animal mobility and other risk factors.	Fully achieved. 16 countries produced or updated FAST risk maps (four of which are considered preliminary since they were completed for the first time). Three countries were included in the animal mobility understanding of the drivers (Tunisia, Egypt, Iran). Following the termination of the Letter of Agreement with CIRAD, a new Service Contract has been signed with the Belgian Company AviaGIS that is providing training courses to all the neighboring countries on spatial analysis and GIS for FAST diseases early detection, control and decision making. Animal movement is one of the key topics examined during the trainings for its impact on FAST diseases spread.
2.2.2. Implementation of regular risk-based surveillance (RBS) for multiple diseases in hot spot locations	Implementation of risk-based surveillance for multiple diseases in risk hotspot locations of neighboring region on a regular or continuous basis for detection of FAST virus circulation and early warning of FAST unusual epidemiological events.	Regular risk-based surveillance implemented for multiple diseases in hot spot locations in at least three countries.	Achieved. Risk-based serosurveillance for FAST diseases have been supported in four countries (Egypt, Lebanon, Libya, Sudan), either through advising on study designs and/or provision of diagnostic kits. In Jordan and Palestine, inputs provided to RBS in design.
2.2.3. Regular participation of countries in multi-country risk information sharing system for FAST diseases.	Improve the sharing of risk information between countries and among technical networks, and promote the collaboration between countries for improved surveillance of FMD and similar TADs.	At least seven countries regularly participating in multi-country risk information sharing models for FAST diseases.	Fully achieved. Seven countries are contributing to risk information sharing through the SOI. 5 countries are regularly reporting. Three countries in ME (Israel, Jordan, Palestine). Data sharing is also taking place in the Middle East and North Africa on an ad-hoc basis during meetings organized under other initiatives (e.g. GVA - see component 2.3).

Component 2.3: Support the capacity development needed to develop and implement control strategies and surveillance for FAST diseases

Sub activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
2.3.1 Training infrastructure and quality assurance system across the training program	Maintenance and improvement of the training infrastructure, including online platform. Development of Training Quality Management System (TQMS) in order to assure high quality across the training program (this sub-activity is coordinated with Pillar I and III).	EuFMD online platform functioning and accessible to users more than 23 months per biennium during phase V. Training Quality Management System (TQMS) by June 2020.	Fully achieved. Updated for 2021-23: EuFMD online platform is fully functional and upgraded. Full implementation of a TQMS in the reporting period and coordination of two external evaluations in 2021 and 2023 to assess the results achieved and provide recommendations on the follow-up activities. Impact reporting for the courses between 2019 and 2021 and revision of Impact strategy finalized.
2.3.2. Improvement of national laboratories capacity for FAST diagnosis.	Definition of training program according to the outcomes of Laboratory Mapping Tool exercise and PTs results. Support and facilitate the implementation of PTs in the neighboring regions.	Three national laboratories with improved capacity for FAST diagnosis (baseline: Laboratory Mapping Tool – exercise 2019).	Achieved. Targeted training delivered awaiting PTs impact review.
2.3.3. Implementation of studies on vaccine efficacy and vaccination effectiveness and sharing of results.	Assistance further implementation of PVM studies in North Africa, Transcaucasus and new studies in I.R Iran, Iraq and Middle East countries. Build and assist vaccination advisory groups within epi-lab networks in different FMD roadmaps.	Three studies on vaccine efficacy and vaccination effectiveness implemented and results shared (including those currently implemented TCC).	Fully achieved. Three immunogenicity studies from Azerbaijan, Georgia and Morocco implemented and shared. PVM studies undergoing in Lebanon, Jordan and Egypt .PVM studies conducted in NW Syria, Libya.SSIS undergoing in Sudan. Three Groups for Vaccination Advice, Guidance and Consultation (GVA) in place and meeting regularly in SEEN, ME and NA.
2.3.4. Development and delivery of training course schemes to assist FAST control and Early Warning System.	Organization of v-learning, workshops and in country meetings on topics that have been identified as a priority to assist progressive control of FAST diseases, surveillance and early warning system. This may include, but is not limited to topics such as PPP, socioeconomic analysis, serosurveillance design, early detection and exercises to assess FAST emergency preparedness. Delivery of training material and courses in local languages and assist implementation of cascade training and related field studies and activities. Develop a track training system to map trainings for vets.	Two new training course schemes developed in the biennium to assist FAST control and early warning system with 50% of participants from targeted regions completing training.	Fully achieved. RVF open-access is now available in English and French. Both courses are under revision to improve the quality of course; the improved version to be published before September 2023. Two new schemes developed for Socioeconomic impact and Passive surveillance to progressively engage audiences through open-access, tutored and workshop activities: open-access courses for both will be prepared before Sep2023, followed by a tutored version.

2.3.5. Delivery of learning courses to audience of vets and paraprofessionals to promote awareness of FAST diseases and national cascade of training and resources.	Development and delivery of online courses and resources for wide dissemination of training which aim to raise awareness of FAST diseases, their clinical signs, diagnosis, reporting mechanism and control. This will include adaptation of existing EuFMD online courses together with the creation of new courses and resources. Courses will be made available in local languages, and support provided to enable the cascade of these courses and resources at national level.	Number of virtual learning courses delivered to large audience of veterinarians and paraprofessionals with 2000 participants completing the courses.	Fully achieved. Update 2021-23 Over 2100 learners have completed virtual learning course since September 2019. Following virtual tutored courses have been held since September 2021. Three FMD investigation editions (Algeria, Tunis and a combined for North West Central Africa) in French. One Risk analysis along the value chain. One Post-vaccination monitoring. FMD Practical Management series in Russian: one webinar in December 2022 and another webinar in April 2023.

Pillar III Sustained progress of the GF-TADs Global FMD Control Strategy

Component 3.1: Global Strategy Implementation

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
3.1.1.1. PSO Network coordination and development for improving guidance to countries.	Ensure support to countries in provisional and full stages of the PCP-FMD, by establishing a mechanism to assist and develop capacity of the PSOs (training and mentoring scheme) and by improving the guidance for progressive control programmes.	a) Training and mentorship scheme for PSOs fully implemented by Sept 2022, and at least 10 new PSOs certified by Sept 2023 compared to Sept 2021. b) Increase to 20 the submission by countries and processing by FMD-WG of strategic plans (risk assessment plan, risk-based strategic plan and/or official control programmes) by 09/ 2023.	Partially achieved. a) Training development framework for PSOs was enriched in collaboration with Comp. 3.3. The planned online induction training of PSOs is expected to provide over 10 new PSOs before the end of September 2023. b) 13 Plans/Programmes were reviewed by the FMD-WG, with the assistance of a Review Support Team and the Support Unit between 2021 and Q1 of 2023.
3.1.1.2. Collaborate with FAO and WOAHA to support expert team missions in assisting countries according to FMD-WG requests.	Provide technical assistance and support by EuFMD experts to respond to emerging FMD, and FAST diseases situations, for progressive control at regional or national levels.	EuFMD experts are involved in at least three countries or regional requests for technical support to FAST situations by September 2023.	Fully achieved. Virtual and remote support has been provided directly to national authorities in Mauritius and Comoros. EuFMD experts were involved in emergency missions in Indonesia in 2022, and heavily engaged in the response to the FMDV SAT2 situation in the Middle East and the Southeast European neighborhood in 2022-2023 (see Pilar II). EuFMD developed a concrete proposal for support, to the harmonized FMD control plan submitted by the SADC Secretariat to the FMD-WG. Currently, the EuFMD is responding favorably to a request by WOAHA to facilitate a FMD risk analysis training of veterinarians in Namibia.
3.1.2.1. Ensure rollout and follow-up of GF-TADs Regional Roadmaps meetings for FMD control	Organization and facilitation of regional Roadmap Meetings (MENA, West Eurasian, Eastern Africa, Central Africa, West Africa, SADC, SAARC) including the support in technical assessment and follow-up actions; Co-ordination with the Working Group including regular on-line and/or face-to-face meetings.	Support the organization in co-ordination with the FMD WG of at least two Roadmap Meetings annually.	Fully achieved. Operational and technical support for the organization, delivery, and follow-up of four virtual Roadmap meeting and two Epidemiology and Laboratory network meetings in collaboration with regional FAO-VLC (Comp.3.3). The EuFMD Support Unit is involved in the organization and delivery of two in-person Roadmap meetings in Q1 and Q2 of 2023, for West Eurasia and South Asia, in collaboration with the PPR Secretariat.

<p>3.1.2.2. Support Regional networks and coordinate with Regional institutional bodies to improve capacities for national strategy development, PCP-FMD progress, and implementation of risk-based approaches for FAST diseases surveillance and control</p>	<p>Strengthen technical capacities and the network of PSOs to provide tailored national support to countries on epi and lab issues relevant for FMD-PCP progress in target regions. Achieved through: (i) support of the relevant Regional Epi and Lab Networks and (ii) engagement and collaboration with Reg. institutional bodies (AU-IBAR, IGAD, SAARC, SADC, SACIDS). The activities of the PSO mentoring and training network to be linked to the training dev and delivery under component 3.3.</p>	<p>a) Support to the formulation and implementation of regional Epi and Lab networks workplan in at least one Roadmap region by September 2023 b) Collaboration agreement achieved and implemented with regional partners in East Africa and at least 1 Roadmap by September 2023.</p>	<p>Fully achieved. a) Discussions with University of Warwick to facilitate FMD modelling project in three Eastern African countries were held in the margins of the OS22. b) Discussions with ECTAD team in Eastern Africa (Kenya, Uganda) allowed the delivery of an in-person PCP-FMD workshop for the county Veterinary Directors in February 2023, in the margin of the Real-time trainings organized under a MoU with Kenya (see Pillar I, and Component 3.3) and the revitalization of FMD control planning in Uganda. Support was provided to regional networks via the establishment of the Virtual Training Centres (VLCs) (see Comp. 3.3) in Eastern Africa, the Middle East, and Europe and Central Asia.</p>
<p>3.1.3.1. Support the GF-TADs WG in improving the timing and efficiency of review of national control plans.</p>	<p>Provision and improvement of tools and guidance documents to (i) facilitate and assist country ability to develop national strategic plans for PCP-FMD progression and (ii) assist the GF-TADs WG documents assessment and review mechanism.</p>	<p>a) TRAC is used in at least two roadmap regions by September 2023 and other tools are regularly adopted by countries for strategy development and/or monitoring (SAT and vaccine demand model). b) Provision of technical support in the revision of at least 70% of programmes submitted.</p>	<p>Fully achieved. a) The Review Support Team made up of EuFMD senior PSOs was involved in <u>all</u> Plans/Programmes technical revisions between 2021 and Q1 2023. New templates for national strategic documents have been developed in various languages (including Portuguese). A trilogy of open-access virtual learning courses on RAP, RBSP and OCP was developed in collaboration with the EuFMD training Team. The SAT has undergone further simplification to make it more user-friendly to countries and this latest version is being tested. b) The Support Unit to the GF-TADs FMD-WG was fully operational in the reporting period. Since the PCP-FMD Review Support Team has been established, time between plan/programme submission and delivery of the FMD-WG feedback has been reduced below two months. To date 100% of plans submitted have all been reviewed.</p>
<p>3.1.3.2. Support the improvement of communication and online presence to enhance visibility and impact.</p>	<p>Development of an interactive online dashboard for the integration and communication of relevant information on the PCP-FMD stage, progress activities and objectives, and to display the planning of related events.</p>	<p>a) Online FMD dashboard developed and finalized by Sept 2022 and quarterly updated. b) Websites updated on monthly basis.</p>	<p>Fully achieved. a) The PCP-FMD and FMD surveillance dashboards have been published in coordination with Comp. 1.7. Regular coordination and consultation were also held with WRL-FMD for synergy and technical engagement. The FAR was mobilized to progress on the FMD surveillance dashboard, which interoperability with FAO EMPRES IT solutions is carefully considered. b) EuFMD websites and GF-TADs websites have been regularly updated, the latter with continued support from EuFMD staff.</p>

Component 3.2: Improved Global Laboratory Support

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
3.2.1.1 Coordination support for the WOA/FAO FMD Reference Laboratory network	Provide direct support to the annual workplan co-ordination and activities of the WOA/FAO FMD Ref. Lab. network to ensure better technical expertise development and networking at regional levels, including support in the organization of the annual workplan coordination meeting.	One annual meeting organized per year and the number of invited representatives attending from regional labs is at least equal to the number of attendees supported in Phase IV.	Fully achieved. Four annual meetings achieved of which two were virtual meetings due to the COVID-19 pandemic. The last meeting in Lelystad was organized in a hybrid format.
3.2.1.2 Delivery of FMD lab. surveillance training in all Roadmap regions	Develop and hold at least one annual, global (online) training in FMD laboratory surveillance in English and in French.	Two online global training courses delivered by the end of the Phase, preferably one in English and one in French.	Fully achieved. WRL-FMD, in collaboration with EuFMD, has delivered the third FLITC course (November – December 2020) and the fourth –bilingual – FLITC course (November – December 2022).
3.2.2.1 Support diagnostic services by WOA/FAO Ref Centres, including laboratory typing of FMD samples from the six virus Pools.	Support diagnostic services for samples submitted to the WRL, as well as testing that can be delegated to leading laboratories in the WOA/FAO FMD Reference Laboratory Network with WRL support and supervision.	a) 500 samples per year submitted for antigen detection and serotyping, and 100 samples per year for vaccine matching; b) 200 samples per year for VP1 sequencing.	Partially achieved. Due to the COVID-19 pandemic, the numbers of samples submitted have been lower than in pre-pandemic years. However, some requests from African countries are still formulated for the EuFMD to coordinate and/or support the sample shipment. Further guidance may be needed for countries to ship samples to international Reference Centers, as it is still considered a key barrier to sample testing by members of the Reference Laboratory Network for FMD. Many vaccine matching tests and virus neutralization tests were performed, and numerous sequences were shared and analyzed with numbers matching the indicators. Quarterly report summarizing WRL-FMD activities available here .
3.2.2.2 Improve the sample collection and typing from regions identified by the WOA/FAO Reference Centres as priorities.	Support sampling from outbreaks and testing, including procurement of reagents and kits, and assist sample shipment mechanism from National Labs in Pools 3, 4, and 5 to the Regional and International Reference Laboratories.	Adequate number of antigen ELISA kits and PCR reagents provided for surveillance.	Achieved. Despite the challenges in shipment, support has been provided to Burkina Faso, Niger, Mauritius as well as Middle East and SEEN with the purchase of ELISA-Ag kits in response to recent outbreaks.
3.2.3.1 Improve uptake and accurate application of test system by WOA/FAO Reference Centers and Regional Support Laboratories in Africa and Asia.	Support sample screening at labs in Pools 3, 4 and 5 and shipment from these and other areas of high strategic importance to International Ref Labs. Support vaccine matching tests or complete genome sequencing (where appropriate), virus neutralization tests (VNTs) in the context of PVM studies and vaccine quality studies.	a) Characterization of FMDV from at least 30 different outbreaks across six different countries, and 100 FMD viruses per pool.	Partially achieved. Due to the COVID-19 pandemic, the numbers of samples submitted are still considerably lower than in previous years, but more sequences are shared and analyzed and also many vaccine matching tests and virus neutralization tests have been carried out in the context of diagnostic services, PVM studies and vaccine quality studies.

<p>3.2.3.2 Progressively support advancement towards validation of new tests for vaccine matching and measures of protection.</p>	<p>Review and assist the development of improved vaccine matching methods, for prioritizing development and implementation of tests to cover a wider range of reference viruses and vaccine strains.</p>	<p>a)Outcomes of ongoing studies for novel methods reviewed and assessed. b)Collaboration with Regional Laboratories at least 2 Pools to cover reference viruses and vaccine strains established</p>	<p>Achieved. Clear progress has been made in the development of new vaccine matching methods and interpretation of results in the context of the twinning project between TPI and AU-PANVAC. Vaccine matching reports have been improved with heterologous titres reported in combination with r1 values. There is an ongoing discussion about harmonisation and standardisation of virus neutralisation tests between the world-leading reference laboratories.</p>
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Component 3.3: Better Training for Progressive Control of FMD

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
3.3.1.1 Training infrastructure	Maintenance and improvement of the training infrastructure, including online platform. This sub-activity is coordinated with sub-activities 1.1.1.1 and 2.3.1.1.	a) EuFMD online platform will be functioning and accessible to users more than 23 months per biennium during phase V. b) Database of training data completed by September 2022. c) Report of analysis of training data and platform analytics available on a six monthly basis from September 2022.	Fully achieved. a) EuFMD online platform has remained fully functional and was constantly upgraded. b) and c) A total of 1414 individuals accessed training since 2019 while 11,000 were estimated to have been reached through cascade training. Impact assessment report of the courses delivered in 2021 indicated that more than 70% of the learners had applied what they have learned in their countries.
3.3.2.1 Quality assurance Across the training programme and assessment of its impact.	Development of a Training Quality Management System (TQMS) in order to ensure quality across the training programme; carry out regular evaluations of the impact of the training programme in order to inform the design of a training offer that can achieve higher capacity development at country level. This system will guarantee that EuFMD provides high-quality and high impact training. This sub-activity is co-ordinated with sub-activities 1.1.1.1 and 2.3.1.1.	a) at least one external review of the TQMS conducted by 2023. b) report on impact of training programmes available on a six monthly basis. c) report on impact analysis of courses conducted 2019-21.	Fully achieved. a) Full implementation of a TQMS in the reporting period and coordination of two external evaluations in 2021 and 2023 to assess the achievements and provide recommendations on the follow-up activities. b) and c) Reporting of the courses' impact between 2019 and 2021 and revision of EuFMD impact strategy were finalized.
3.3.3.1 Consultation and prioritization for training development and delivery.	Priorities for the new training to be developed, and for delivery of existing training will be guided by the findings of the PSO system, the Regional Advisory groups (RAGs) for each Roadmap, by GF-TADS partners and EuFMD's consultations with national and regional partners.	Update on training development and Delivery prioritization available for EuFMD Executive Committee and GF-TADS partners every six months.	Fully achieved. Completion of a strategic prioritization of capacity development actions in the region and delivery of four virtually tutored courses. Progress has been reported in all Executive Committee meetings every six months.
3.3.3.2 Development of new courses	Based on the priorities identified in 3.3.3.1, new courses will be developed, suitable for delivery in multiple regions and translation into regional languages.	Four new courses developed and delivered by September 2023.	Fully achieved. Development of five new open-access courses as follows: on socioeconomic impact and cost-benefit analysis, on Passive surveillance for FAST diseases, on introduction to the RAP, RBSP and OCP.
3.3.3.3 Delivery of courses	Courses will be delivered at global, regional or national level, including delivery of training in appropriate regional languages (including English, French, Russian and Arabic).	At least 3,000 individuals from the target countries* have completed at least one EuFMD course within phase V.	Achieved. A total of 1,414 individuals have successfully completed courses from target countries in Eastern, West, Central and Southern Africa and South Asia during Phase V. Additional 406 learners have been trained on FAST diseases by Virtual Learning Centers. The support to the launch of Virtual Learning Centers

			contributed to reach nearly 3 000 learners. Some courses were delivered in languages other than English, an example being the delivery of Lumpy skin disease online course in French for Francophone SADC countries in 2021
3.3.4.1 Support the development of virtual learning centers	Support GF-TADs regional partners in the development of VLCs which will provide regionally tailored online courses, support virtual networking, promote national cascade of training courses and resources and attract the specific needs of the region. Support regional partners to transition these VLC's to independent sustainability in the long term.	At least three regions with VLCs established and supported by EuFMD by end of Phase V with at least two VLCs managed sustainably (independent of regular ongoing EuFMD support)	Fully achieved. Three VLCs (Southern Africa, Asia and the Pacific, Eastern Africa) have been established and have delivered EuFMD courses. In addition, all three VLCs have attracted additional outside funding, making progress towards long-term sustainability. They are no longer under EuFMD funding and in addition to promoting the delivery of training on FAST diseases, they are also supporting training on other TADs relevant to specific regions.
3.3.4.2 Development of resources for cascade training, including of veterinary paraprofessionals (VPPs)	Based on the priorities identified in 3.3.3.1, resources and tools suitable for countries to provide training at national level will be developed. Resources will be developed in a variety of modalities including those suitable for provision of training by mobile phone, and those suitable for training of VPPs.	At least 40 of the target countries using EuFMD resources or courses for training of national staff by September 2023.	Achieved. EuFMD training resources have been used for cascading activities by learners in 30 target countries between September 2019 and December 2021. A further analysis about courses in 2022 will be completed before September 2023. Competency Frameworks for veterinary paraprofessionals have been developed in South Africa, Uganda and Nigeria. In-country partner training institutes have benefited from capacity development workshops. Training courses for veterinary paraprofessionals on “Growing a business in preventive healthcare” and “Prevention and Control of infectious diseases” have been developed. Training delivery is ongoing.
3.3.4.3 Develop systems for monitoring of national training of veterinary service staff	Develop system which will allow national veterinary services and individual training participants to record and monitor the training undertaken, promoting continuing professional development and allowing countries to assess capacity building priorities for their veterinary service.	A system for national training monitoring established for use in at least ten countries by September 2023.	Partially achieved. TOM Training Management System has been developed for piloting. Consultative meetings have been held to identify countries where to progress with piloting. Five countries have piloted the tool across the three Pillars.

3.4 Improved security in FMD vaccine supply

Sub-activity	Description	Indicators 2019-2023	Level of achievement 2021-2023
3.4.1.1. Advance understanding of technical and policy constraints and solutions	Understand the barriers and drivers for improved vaccine access and supply in countries in PCP-FMD Stage 1 to 3. Consultative and research work to quantify the current unmet demand and predicted future growth for vaccines with a special focus in SSA and characterize technical and regulatory challenges for novel vaccine platforms opportunities.	a) Develop a decision-support tool/model to estimate the unmet demand by December 2021 b) Organized virtual workshops to validate the assumptions and results of the model by December 2021; c) Report/present estimated current unmet demand and future growth at General and Open Sessions.	Fully achieved. a) A model to estimate the current and future demand for FMD vaccine has been developed and expert elicitation process applied to parametrize the model; preliminary results of the model development have been obtained and presented at the Open Session 2020 and a validation workshop will be organized in Q2 2021. b) A meeting was organized in January 2020 for the establishment of a public-private vaccine security platform. c) First result of predicted demand for FMD vaccine at country and regional levels presented in EuFMD OS2022.
3.4.2.1. Regular coordination with the PPSP.	Regularly share information and guidance in order to improve understanding of issues and to identify pathways or actions to improve vaccine access and inform strategies to increase supply in countries in PCP Stage 1 to 3.	a) Two PPSP face-to-face meetings. b) One PPSP report produced per year.	Fully achieved. a) Three PPSP meetings were organized in January 2020, January 2022 and March 2023 and the meeting reports delivered. b) two reports were produced and another one is under preparation.
3.4.2.2 Produce technical and policy study reports and guidance and promote the development of the AESOP and allied prequalification systems under the PPSP	Based on the priorities identified during the PPSP meetings and by the Secretariat, guidance papers and advisory documents will be developed through the establishment and support to working groups of experts and/or the development of studies on related issues.	a) Three guidance papers and/or studies to be available by September 2023 b) Satisfactory review of PPSP members	Fully achieved. a) The model for vaccine demand estimation has been presented at the OS20 and a paper is under development; a paper on the impact of the Nagoya protocol on vaccine development is under review and reports of the meetings of the PPSP have been regularly published A specialized workshop was organized in February 2021 around issues of building business environments for supporting disease control and vaccination delivery.

PROTECT RESPOND CONTROL

MOVE FAST

FAST, Foot-mouth
And Similar Transboundary
animal diseases.

EuFMD Committees

Executive Committee, Standing Technical
Committee (STC), Special Committee for
Surveillance and Applied Research (SCSAR),
Special Committee on Biorisk Management
(SCBRM), Tripartite Groups.

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