2nd West Africa Foot-and-Mouth Disease Roadmap Meeting

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Report

GF-TADs
GLOBAL FRAMEWORK FOR THE PROGRESSIVE CONTROL OF TRANSBOUNDARY ANIMAL DISEASES

Food and Agriculture Organization of the United Nations

WORLD ORGANISATION FOR ANIMAL HEALTH

Vision for the West Africa Roadmap for FMD Control

Regional cooperation among African countries for the progressive control of FMD leading towards freedom of clinical disease by 2025
for regional economic development, food security, and poverty alleviation.

Acknowledgements

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Abbreviations

AMR	Antimicrobial resistance
ANSES	French Agency for Food, Environmental and Occupational Health and Safety
AU-IBAR	Interafrican Bureau for Animal Resources of African Union
AU-PANVAC	Pan African Veterinary Vaccine Center of African Union
CIRAD	French agricultural research and international cooperation organization
CVO	Chief Veterinary Officer
ECOWAS	Economic Community of West African States
EuFMD	European Commission for the Control of Foot-And-Mouth Disease (an Inter-Governmental Commission based in the FAO)
FAO	Food and Agriculture Organization of the United Nations
FAST	Foot-and-mouth disease and similar transboundary animal diseases
FMD	Foot and mouth disease
FMDV	Foot and mouth disease virus
FMD WG	FMD Working Group
GF-TADs	Global Framework for the Progressive Control of Transboundary Animal Diseases
LFD	Lateral Flow Device
OIE	World Organisation for Animal Health
PCP-FMD	Progressive Control Pathway for foot-and-mouth disease
PSO	PCP support officer
PVS	Performance of Veterinary Services
RAG	Regional Advisory Group
RAP	Risk Assessment Plan
RBSP	Risk Based Strategic Plan
ResEpi	Réseau de surveillance épidémiologique / Epidemiology Network
ResoLab	Réseau des laboratoires / Laboratory Network
RT-PCR	Real Time polymerase chain reaction
SAT	Self-Assessment Tool for the foot-and-mouth disease Progressive Control Pathway
VNT	Virus Neutralisation Test
VPP	Veterinary paraprofessionals
VS	Veterinary Services
WRL-FMD	World Reference Laboratory for Foot and Mouth Disease, The Pirbright Institute, UK

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Report of the meeting

Background

Foot and Mouth Disease (FMD) severely affects the production of livestock, disrupting regional and international trade in animals and animal products. The most significant impact of the disease in low and middle-income countries is losses in production, utility and income which together affect livelihood and impact food security and nutrition of farmers in the African region, who rely on their animals for subsistence.

In order to reduce the FMD burden, in 2012, the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE) developed a **15-year global control strategy**. Since its inception, several initiatives have been taken to create an enabling environment to make FMD control a feasible option, particularly for countries most affected by the disease.

The **Progressive Control Pathway for FMD (PCP-FMD)** was introduced as the guiding tool for the national control approach, in which standard control measures are applied in a stepwise and monitored manner. Over 80 countries in the world are currently engaged, at various levels, in the implementation of the PCP-FMD to reduce or eliminate FMD virus circulation by 2027.

For effective implementation of the global FMD strategy and to address some of the anticipated challenges, regional roadmap platforms have been used successfully to assess progress in FMD control. The FMD roadmap meetings are aimed at **(i)** sharing information on FMD virus circulation in the region to assist planning of preventive measures in the short-term, **(ii)** reviewing the outcomes of the ongoing FMD control activities, **(iii)** assessing the progress of each country along the Regional Roadmap and **(iv)** assisting them in preparing their national FMD control programmes.

Since the development of the global strategy, several regional roadmap meetings have been conducted in Asia, the Middle East and Africa. After Lomé in September 2016, this meeting, held in Dakar, was the **second Roadmap meeting for West Africa**, for countries belonging to FMD virus Pool 5, where serotypes O, A, SAT 1 and SAT 2 have been detected or are endemic.

Between January and December 2018, more than 137 FMD outbreaks were reported in eleven countries in West and Central Africa; Burkina Faso, Cameroon, Chad, Ghana, Guinea, Mali, Mauritania, Niger, Nigeria, Senegal and Sierra Leone. The disease was reported for the first time in the region in pigs (Senegal, Gambia, and Côte d'Ivoire) and in small ruminants (Senegal, Mali, and Mauritania). A few countries in the region submitted samples to OIE/FAO reference centres. Until present, more outbreaks continued to occur in the region and reported in Cameroon, Guinea and Sierra Leone. Therefore, field investigation and virus characterization would be critical to understand the circulating strain(s) for an effective control strategy and vaccine selection.

Objectives

The workshop aimed at sharing and updating information on FMD virus circulation in the region, assessing the progress and gaps of each country along the FMD regional roadmap adopted in Lomé (Togo) in 2016, and bringing relevant partners together to assist countries in strengthening surveillance, diagnostic and control capacities. More specifically, the objectives of the meeting were to:

- assess/map the progress on FMD control of West African countries by sharing information on FMD virus circulation and reviewing the outcomes of the ongoing FMD control activities;
- identify support needed by infected and at-risk countries to control FMD and to strengthen their surveillance systems and laboratory capacity;
- support the implementation of the vaccination strategies;
- gain understanding on the PCP-FMD principles and implementation;
- assist countries in preparing and implementing their national FMD control programmes;
- update the Roadmap for regional FMD control in West Africa until 2025, using the principles of the PCP-FMD.

Outcomes and outlook

The expected outcomes were as follows:

- progress of the national control programs mapped;
- FMD regional epidemiological situation, geographical distribution, and serotypes prevalent in the countries better understood;
- FMD control gaps identified and the lessons learnt shared;
- risk factors for disease spread, including movement restriction, in a context of porous borders, understood;
- sample submission to FAO/OIE Reference Laboratories for virus characterization and vaccine matching, including guidance on the appropriate topotype in vaccines by countries, ensured;
- collaboration between Epidemiology and Laboratory Networks reinforced to support a regional progress on FMD control and the surveillance system and laboratory capacity strenghtened;
- support needed by infected and at-risk countries to control FMD and other TADs identified;
- PCP-FMD principles and upcoming steps to progress along the PCP, better understood.

The workshop objectives were met. Information on FMD virus circulation in the region was shared by the countries, in addition to the presentation from the Reference Laboratories network. Country presentations indicated ongoing FMD control activities, challenges and needs. The assessment of progress of each country along the Regional Roadmap was based on country reports, outcomes of the self-assessment and the interviews. Participants were introduced to the PCP self-assessment tool (SAT) and informed on the support available in preparing their national FMD control programmes. The key issues were developed in the meeting's recommendations.

Recommendations discussed at the end of the meeting are included in **Annex 1**.

Session 1. Opening and welcoming remarks

The second West Africa FMD Roadmap meeting of the GF-TADs brought together the Directors of Veterinary Services and FMD points of contact from sixteen countries, representatives of Pirbright Institute, ANSES, Boehringer Ingelheim, CIRAD and the Inter State School of Veterinary Medicine in Dakar, Agricultural Research Institute in Senegal, as well as EuFMD, FAO and OIE to facilitate the meeting.

Dr Karim Tounkara, the OIE Regional Representative for Africa made his welcome remarks on behalf of the Director General of the OIE, Dr Monique Eloit. He referred to the global strategy in the context of globalization, with travel, trade, transport, tourism and terrorism, spreading pathogens around the planet.

Dr Paolo Motta, Pillar III supervisor of the EuFMD workpplan, during his welcome remarks on behalf of Dr Keith Sumption, EuFMD Executive Secretary, gave a quick summary of the current situation of FMD in the region. He thanked the expertise and collaboration in the region, on control and surveillance of FMD.

Dr Gouantoueu Guei, the subregional coordinator and FAO representative for Senegal, highlighted the importance of the collaboration between OIE and FAO to support the implementation of the global strategy and reminded the participants that this meeting, added onto the outcomes of the workshop held in March 2019 in Ghana, that was developed to reinforce the capacity of veterinary services of West Africa.

Finally, on behalf of the Minister of Livestock and Animal Production, Mr Mamadou O. Sakho welcomed the participants, highlighting the importance of FMD and its control in a country where 43% of the population depend on livestock. He emphasized the need to update the information and surveillance, diagnostic and control of the disease in a region with a real issue with animal mobility. He declared the meeting officially opened and wished the participants a successful and fruitful meeting.

The agenda and list of participants are in **annexes 2** and **3**, respectively.

Session 2. FAO-OIE Global FMD Control Strategy and regional situation

❖ Update on the implementation of the Global Strategy and second edition of the PCP FMD principles

[Samia Metwally / FAO]

Dr Metwally presented an update on the implementation of the Global Strategy and second edition of the PCP FMD principles. The global strategy was launched in 2012 with main three Components: **(i)** Improving global FMD control, **(ii)** Strengthening Veterinary Services and **(iii)** Improving the prevention and control of other major

diseases of livestock. The FMD component is complementary to the work of the regional organizations and platforms already coordinating FMD control programmes (e.g. PAHO and COSALFA in South America, SEACFMD in South East and East Asia, EuFMD in Europe and AU-IBAR, with the support of relevant Regional Economic Communities. The GF-TADs FMD working group (WG) updated the PCP guidelines citing the system for acceptance of the country stage (regional advisory group - RAG) and omitting PCP stage 5 to transiting from PCP stage 4 to OIE status with/without vaccination. To date, the global strategy has been implemented in the seven roadmaps (virus pools 2-6) with engagement of 80 countries of which 11, 28, 26 and 4 countries in stages 0, 1, 2 and 3 while nine countries reached the OIE status. The results of country PCP assessment during the second West Africa roadmap meeting in 2016, showed 4 and 11 countries in PCP stages 0 and 1, respectively. Dr Metwally also presented the FAO and OIE evaluation and assessment tools for surveillance, epidemiology and laboratory, and announced the translation of the FAO-OIE post vaccination monitoring guidelines to French, Russian and Arabic, which soon will be available online on the GF-TADs website.

❖ Overview of regional FMD virus situation & vaccine recommendations for West Africa

[Donald King / Pirbright Institute, WRL-FMD - Labib Bakkali Kassimi / ANSES]

Dr Donald King and Dr Labib Bakkali Kassimi presented a report on behalf of the OIE/FAO FMD Reference Laboratory Network, that described the FMD situation in the region. It is conjectured that FMD is endemic in all continental countries of West Africa, and that four different FMD virus serotypes (O, A, SAT 2 and SAT 1) circulate in West Africa. Sample submissions from countries within West Africa have increased, with 222 samples being submitted to International FMD Reference Laboratories during 2018 (compared to only 40 in 2013). During 2018, particular attention has been focused on the interconnected and on-going situation due to FMD viruses from the O/EA-3 topotype. Field outbreaks due to this topotype have been widely reported in a number of West African countries and, by the beginning of 2019, outbreaks have been confirmed in ten countries in West Africa (Figure 1). Onward spread of O/EA-3 into North Africa parallels the earlier introduction of the A/AFRICA/G-IV lineage into the Maghreb region during 2017, raising obvious questions about trans-Saharan connectivity between North and West Africa. Other FMD virus lineages that are maintained in the region are the O/WA topotype, serotype A (two genotypes: A/AFRICA/IV and A/AFRICA/VI) and serotype SAT 2 (topotype VII). SAT 1 (new topotype X) has been recently detected in Nigeria and closely related viruses have been also detected in Cameroon. Although serological studies provide evidence for the circulation of this serotype in a number of other West African countries, no SAT 1 isolates have been sequenced elsewhere in the region.

The presentation highlighted gaps in the current knowledge regarding the epidemiology of FMD virus lineages that circulate in West Africa, as well as a lack of empirical evidence for supporting the selection and use of vaccines in the region. The WRL-FMD can support the submission of samples; in the first instance and enquiries could be sent to donald.king@pirbright.ac.uk for further information or advice.

Country	O		A/AFRICA		SAT 1	SAT 2
	WA	EA-3	G-IV	G-VI	X	VII
Benin	2010			2010		
Burkina Faso		2018				
Cape Verde						
Cote d'Ivoire		2018				
Gambia		2018				
Ghana	2016	2018	2016			2018
Guinea		2018				
Guinea Bissau	2016					
Liberia						
Mali	2006		2006	2006		
Mauritania		2018		2017		2014
Niger	2015	2016				2005
Nigeria	2016	2016	2016		2016	2014
Senegal	2006	2018				2009
Sierra Leone		2018				
Togo	2005		2005			

Figure 1:
Distribution of FMD virus lineages in West African countries. Coloured boxes denote samples that have been characterized within each of these six FMD virus lineages (dates define most recent FMD outbreak reported).

❖ Forecasting: risk of new FMDV strains incursion into the region

[Henri Kaboré / EuFMD]

Dr Henri Kaboré presented his role as FMD Global Intelligence Focal Point (GIFP) for the FMDV Pool 5 region and discussed the forecasting of new FMDV strains incursion into West Africa. Over the past four months, Dr Kaboré has **(1)** reviewed and added to the EuFMD Global Monthly Report (GMR), **(2)** encouraged country to deliver "FMD annual risk calendars" (for large and small ruminants) and **(3)** built regional knowledge on live animal market's profile, location, associated value chains and on available FMD vaccines.

The GMR aims at describing the FMD situation (including surveillance and control measures in place) in endemic regions. It is an open-access document for FMD risk managers worldwide (http://www.fao.org/eufmd/resources/reports/gmr/en/). The GMR gathers reported events and presumed viral distribution, useful for risk managers to forecast risk of new strain incursion. Since 2019, the GMR includes tables in annex, displaying the estimated FMDV serotypes' and lineages' relative distributions within countries of each pool region, but also a qualitative assessment of the level of uncertainty on circulating serotypes. These tables are regularly updated through expert consultation, including GIFP's.

Dr Kaboré's presentation reminded that preparedness and response to incursion of new strains should rely on the traditional approach guided by the early warning and early reaction of the disease in an animal population. Early warning may be supported by the understanding of the spatial and temporal drivers for FMD circulation in the region. This implies gaining knowledge on the seasonality (FMD annual risk calendars), direction and intensity of livestock mobility within country and between countries of the region, as well as mapping common pastures or watering areas likely to be hotspots for the disease. Early response in the region would benefit from **(i)** the control of cattle movement and contacts between herds at watering and feeding points and **(ii)** the use of vaccine adapted to the local circulating viruses. Dr Kaboré highlighted the need for **(i)** a reinforcement of laboratory capacities in the region, **(ii)** the establishment of national and regional emergency disease coordination committees, **(iii)** political will at decision maker's level to sharpen the disease control measures, **(iv)** FMD focal points at the national level. He strongly advocated for information sharing between countries in the region.

Session 3. Regional FMD control governance

❖ Follow up on the regional training on FMD epidemiology and diagnostics

[Ismaila Seck / FAO]

Dr Ismaila Seck, regional epidemiologist for West and Central Africa (WCA) updated participants on the FMD situation in the region. The purpose was to better prepare infected countries to design their FMD surveillance plan, identify hot spots for risk mitigation and strengthen the capacities of Veterinary Services on field investigation, sample collection and shipping, and FMD diagnostics. Follow-up actions were developed in the region after the regional training on FMD epidemiology and diagnostics conducted in Abidjan (Cote D'Ivoire) on February 2019. Among these actions, the development of national FMD Risk Assessment Plans (RAP) or surveillance plans for FMD, answers to the Cross border Animal Mobility Survey proposed in Abidjan, investment and allocation of funds for FMD surveillance and diagnostics to reduce its impact, implementation of international biosecurity standards, samples submission to reference centers for virus identification, full characterization and vaccine matching analysis and awareness developed among stakeholders on FMD preventive measures to encourage early reporting of the disease to veterinary services.

Based on these findings, the participants were encouraged to implement recommendations of Abidjan, among which **(i)** harmonize and develop/update their communication materials, **(ii)** duplicate the training to other colleagues to better apply the biosecurity standards during field investigations to reduce the risk of FMD spread, **(iii)** advocacy from ECOWAS to the government to support surveillance and diagnostic activities for all transboundary animal diseases, **(iv)** if not done yet,

conduct the retrospective animal mobility survey over the past two years, **(v)** finalize the draft of the surveillance plan in each country, helping to conduct active surveillance for early detection and identification of circulating virus in the region.

Following the five-day workshop on the PCP-FMD that was co-organized in FAO RAF (Regional Office for Africa), Accra (Ghana) in March 2019, EuFMD Epidemiologists trained and designated nine regional PCP support Officers (PSOs) to support West and Central Africa in the implementation of PCP program at the country level and development of the national control plans. During his presentation, Dr. Seck outlined the outputs of the workshop as follows **(i)** the evidence of Risk Assessment Plan developments with Veterinary Services, **(ii)** the SAT completion of the West Africa Roadmap meeting and **(iii)** the risk-based approach within the PCP is applicable to other priority diseases.

❖ Regional Advisory Group (RAG) and election of members

[Djahne Montabord / OIE]

The Terms of Reference (ToRs) of the Regional Advisory Group (RAG) were presented by Dr Djahne Montabord (OIE). She clarified the modalities for the constitution of the group and the roles and responsibilities of voting and non-voting members of the RAG during and between roadmap meetings. It was noted that the RAG is responsible for the acceptance of the country PCP stage. She highlighted the function of the RAG non-voting members in the validation of PCP stage after countries' self-assessment. It was noted that the terms of the previous RAG ended and an election is due for new RAG.

The participants voting and elected the following members of the RAG for the West Africa region as follows:

- Chairperson: Dr Hayford Asiedu-Baah, CVO and Delegate of Ghana
- Members: Dr Drissa Coulibali, CVO and Delegate of Mali and Dr Mendes Ivo, CVO of Guinea Bissau, the leader of ResEpi and the leader of ResoLab.

❖ Incursion of FMD serotype O in Central and West Africa, actions and training for response

[Ismaila Seck / FAO]

Dr Ismaila Seck, presented the following actions required for improved FMD control in West and Central Africa:

- conduct risk assessments and risk mapping for effective implementation of risk-based FMD prevention, surveillance and control strategies;
- strengthen epidemio-surveillance capacities of the Veterinary Services and support outbreak investigation activities;
- strengthen laboratory diagnostic competencies of the Veterinary Services and support diagnostic activities through training and provision of sampling

equipment, diagnostic kits and assistance to the shipment of samples to Reference Laboratories for virus characterization and vaccine matching;
- strengthen coordination and FMD management at national and regional levels;
- conduct FMD socioeconomic impact studies in target countries and ensure that results are used by the decision makers to strengthen the FMD surveillance and control capacities at national and regional levels.

Session 4. Countries reports

This session is dedicated to country reports. Each country delivered a summary of their FMD control initiatives following the template provided by the FMD WG. Participants are given 15 minutes for presentation followed by 5 minutes of Q & A. Summaries of country presentation, the outcome of their interviews and acceptance of the PCP stage by the RAG are provided in **Annexes 4** and **5**.

Session 5. Animal mobility and cross-border coordination for the implementation of movement control

❖ Animal mobility risk mapping to assist in PCP progress

[Andrea Apolloni / on behalf of AQCR team-CIRAD]

Dr Andrea Apolloni presented the animal mobility risk mapping, based on three sections: the methodology used by CIRAD and their partners to develop risk maps, some results of surveys, and examples of possible analyses that could be helpful for Veterinary Services and possible perspectives.

Livestock mobility, such as commercial movements and transhumance, plays a prominent role in the geographical diffusion of main transboundary animal diseases (FMD, PPR, Rift Valley Fever and CBPP) and their introduction in naïve countries. Collecting and analyzing animal mobility data could enable Veterinary Services to improve their knowledge on mobility network characteristics and develop risk maps to adapt their surveillance and/or control measure to target high risk areas. Pedagogical tools are now available (CIRAD handbook and online courses) and training workshops, requiring a lot of back and forth between Veterinary Services and trainers, are organized with CIRAD to provide tools to perform the above tasks.

The results of a study from four countries (Mauritania, Senegal, Morocco, and Algeria), show **(i)** an heterogeneous area with 15 cities concentrating almost 80% of the total volume, **(ii)** the importance of a regional approach, since the network appeared as an almost sole block involving localities in the four countries and neighboring ones (Tunisia, Nigeria, and Mali) and **(iii)** the existence of several transboundary communities, highly connected set of locations. Finally, the analysis

of temporal variation elicited the importance of religious festivities on mobility patterns. To draw a risk map for the introduction of the disease, the exposure and the occurrence of outbreaks, this mobility data can be combined with other risk factors pertaining to the disease (animal density, market type and locations, permeability of borders, epidemiological situation in neighboring countries, wind and vectors), all maps needing to be validated by expert's opinion. The results for the Algeria case have also shown a good correspondence between high risk area of occurrence and distribution of outbreaks. These risk maps can help Veterinary Services to improve sero-surveillance, using risk-based stratification sampling of areas, thus improving surveillance against introduction and prioritizing control in areas with higher probability of exposure.

Future actions involve the development of an interactive visualization tool, a deeper study of mobility drivers and proxy for patterns' variation (e.g. market prices), the development of new estimators and of models to understand the spatio-temporal patterns of diseases.

The discussions highlighted the importance of developing knowledge and skills based on tools available to better characterize livestock mobility within the region. This activity will provide countries with useful information for the design of risk-based interventions for FMD surveillance and control. It is advised to extend the scope of this activity to cover more countries in the region. National workshops focusing on the methodology and data processes are suggested to build capacity on animal mobility studies at country level.

❖ Results of the animal mobility surveys in West and Central Africa

[Ismaila Seck / FAO]

Dr Ismaila Seck highlighted that, during the FMD regional workshop conducted in Abidjan on February 2019, the participants agreed to conduct animal mobility surveys across 13 countries (Burkina Faso, Cameroon, Chad, Ghana, Guinea, Mali, Mauritania, Niger, Nigeria, Senegal and Sierra Leone,) in West and Central Africa (WCA). He stressed on the fact that in 2018, incursion of serotype O/EA-3 in WCA was likely due to cross border transhumance. Dr Seck reminded the methodology of Spatial Qualitative Risk Analysis (SQRA) applied to transboundary animal diseases (TADs), and the use of its outputs in the optimization and harmonization of TADs surveillance and control at regional level. He introduced the animal mobility survey protocol to be conducted in WCA. Data on legal and illegal livestock movements between 2016 and 2017 (at least) will be collected in each country through the use of digital standardized questionnaires. This activity aims at better understanding the types of animal movements (commercial and pastoralist) in the region, quantifying flows and identifying the risk hotspots for FMD introduction and spread.

Session 6. Epidemiology and laboratory networks

❖ **Group discussion (Epi Network, Lab Network - Round table discussion: implementation of Epidemiology and Laboratory Networks work plans 2019-2020)**

[Etienne Chevanne / EuFMD]

The **Laboratory Network group** discussion was led by Drs Labib Bakkali-Kassimi (ANSES) and Donald King (WRL-FMD). Participating countries were invited to report their laboratory capacities regarding FMD diagnosis and available human resources. They expressed their needs in training, equipment and reagents. Expected outcome of the discussion was the formulation of a two-year work plan for ResoLab.

The discussion highlighted the lack of field samples submitted to national laboratories (Mauritania, Niger, and Togo) and the lack of training of field personnel to sample FMD suspected cases (Benin, Togo). Specific laboratory trainings were requested by Benin on serotyping, by Mauritania and Togo on RT-PCR. The deficiency in laboratory reagents despite technical competencies was also mentioned by Guinea, Senegal, Burkina Faso, Niger, Liberia and the Gambia. Lateral flow devices (LFDs), rapid diagnostic tests for FMDV detection, disseminated in 2018 in Mauritania and in 2019 in Niger, are not yet used in the field. Niger, Benin and Guinea-Bissau reported issues to ship samples to the reference laboratories and requested guidelines while Gambia heavily relies on Senegal National Laboratory. Laboratory human resources are very scarce in Mauritania, Niger and Sierra Leone in particular.

The discussions led to the following recommendations:

- at country level, build synergies between projects/other TADs surveillance activities to make best use of available budget for equipment and reagents;
- national laboratories to produce factsheets for the people sampling in the field; these factsheets would include information on the good practices for sample collection (sample nature and quality) and sample shipment to the laboratory for FMD diagnostic, information should be consistent with the current diagnostic capacities of laboratories;
- ensure laboratory trainings given to countries match with the existing equipment in the national laboratory; ensure that the trained lab staff, once back in their respective laboratory, provide cascade training to their colleagues; promote a regional training approach and knowledge transfer in the region;
- FAO and OIE reference centre network to issue guidelines for countries to process and ship samples to the international Reference Laboratories (who is responsible, how to do, who to contact for support);
- assess technical capacities at the regional level: establish a list of FMD Laboratory Focal Points and trained personnel for International Infectious Substances Shipment;

- ResoLab to establish a website that would act as a single point of information for laboratories in the region, including updated local laboratory contacts for each of the countries, as well as relevant laboratory and field protocols (in English and French); this could be hosted by the WRL-FMD, as page(s) on the global OIE/FAO FMD Laboratory Network website;
- involve regional organizations and country leaders in the ResoLab discussions: AU-IBAR, ECOWAS and CVOs.

The participants of the **Epi Network group** elected Nigeria as the Epi Leader and discussed the actions to improve the epidemiology network in the region. The guiding thematic areas for discussion were on collection, analysis and sharing of risk information, surveillance, animal mobility including marketing and vaccination. The participants noted that absence of relevant legislation hindered the implementation of some activities to advance FMD control. A few countries had bilateral/multilateral cross border meetings to resolve issues such as livestock movements, but these may need administrative and legal support. Sub-regional MoU or agreements on FMD control were proposed.

Vaccination campaigns were also affected by cross border animal movements. Therefore, the best approach was to have coordinated programmes which could also be extended to vaccine matching tests.

The importance of the veterinary para-professionals (VPP) in the control of FMD was discussed. The need to train them on diseases recognition, sample collection and shipment was identified as a key issue in the control of FMD in West Africa where, in some countries, there is a shortage of veterinarians. Strengthening VPP will contribute positively to improvement of early warning systems.

The participants agreed on the following workplan, for the next three years (2020-2022).

Activities	2020	2021	2022
Legal and admin support • Development of RAP • MoU between relevant countries and cross border bi-/multilateral meetings			
Design and implementation of surveillance programs			
Training on RA • Regional training workshop on the RA procedure including communication capacity building			
Training and support on sample collection and shipment			
Mapping of movement patterns at national and transboundary level • Country and regional outlooks • Expand and involve other stakeholders			
Wildlife disease surveys and determining role of wildlife in FMD epidemiology			
Establish Disease reporting systems			
Development of Early warning systems for rapid response			
Regional database for sharing information on FMD			
Training • Training of VPP on FMD detection and sample collection • Training on socioeconomic impact studies			

Participants of this network noted that other challenges, such as virus characterization, vaccine matching testing and vaccine selection, although affect the epidemiology aspect, could be dealt within the recommendations of the laboratory network.

Session 7. Roadmap conclusion

❖ **Long term vision for the region: study on the demands for FMD control in the region over next 20 years**

[Emmanuel Couacy-Hymann / LANADA, on behalf of CIRAD]

Foot-and-mouth disease (FMD) has become enzootic in West and Central Africa. With high morbidity but low mortality, it concerns mainly young animals in herds. It has a huge overall impact in terms of direct and indirect losses, especially for small producers. In the past three decades, an upsurge in FMD has been observed in sub-Saharan Africa, with regular reporting of several outbreaks annually by the

veterinary services. The upsurge could have been due also by the persistence of transhumance, practiced in Sahelian countries with high animal density, supplying coastal countries with live animals.

FMD spreads within a country as well as between countries. Despite some progress in surveillance and control capacity in some countries in the region, the disease is progressing. It takes advantage of porous borders, lack of capacity of the Veterinary Services and low immunization coverage in largely extensive and family-based production systems, as the price of available vaccines remains high and of immediate limited interest to producers.

Projections at 20 years envisage breeding of high genetic value animals for export, the development of a peri-urban dairy industry and intensive rearing (both for cattle and pigs) to meet a growing city-dweller demand. These factors, as well as the development of national plans for the surveillance and control of this epizootic, can promote wider use of FMD vaccine in West and Central Africa. Yet, for the time being, the existing data for these two regions of Africa does not allow to project a favorable increase in vaccination coverage or improving the vaccine effectiveness against foot-and-mouth disease.

Among the mentioned routes, mandatory vaccination against FMD before leaving for transhumance and the settling of livestock, as well as a regional strategic approach, could improve vaccination coverage. However, all these measures cannot help to make a real leap in the adoption of this vaccine for all livestock farmers, as long as ancestral livestock farming practices alone continue. Parallel progress is requested, such as socio-economic studies related to the impact of foot-and-mouth disease, sensitization of livestock breeders, involvement of the private sector, significant improvements in the capacity of veterinary services, development of FMD surveillance and control plans, and, above all, the reduction of cost of the vaccine.

❖ Training needs for veterinary paraprofessionals to support FMD surveillance and diagnosis

[Plenary discussion chaired by Neo Mapitse / OIE and Etienne Chevanne / EuFMD]

The objective of the discussion topic was to identify the training needs to support FMD control within the veterinary paraprofessionals (VPP) in the countries of West Africa and to share information on the initiatives and programmes available within the FAO/OIE/EuFMD .

The discussions began with the presentations of the OIE Competency guidelines for the VPP and the OIE Curriculum guidelines for the VPP. These guidelines recognize the important role that the VPP, including their education and training, have in support of National Veterinary Services and the implementation of activities towards the Global Strategy for FMD Control. The competency guidelines identify the desired

competencies for VPP working in animal health, veterinary public health and laboratory diagnostic tracks. There is a model curricula designed to deliver these competencies for each of the tracks delivered by accredited institutions.

The curriculum guidelines were developed to help VPP training institutions to develop curricula in all these three tracks to produce VPP with these desired competencies and responding to the wide variation globally.

The EuFMD is conducting a study in collaboration with the Royal Veterinary College (London, UK), to better understand the needs for training of VPP and how training may be best adapted to meet their situation. The end result of this study will provide strategic guidance to the EuFMD for the development of a strategy for the training of VPP on FMD and similar transboundary animal (FAST) diseases for 2019-2023. In this context, during the West Africa Roadmap meeting, the EuFMD consulted a range of relevant stakeholders at international level, with the objectives of improving the understanding of the types of VPP active in FAST disease surveillance and control, and the existing training and information-sharing initiatives for VPP in the region.

The training of VPP is very important in West African countries, considering the shortage of veterinarians. Some countries said they would identify the best graduating VPP and enroll them for the veterinary degree to respond to this shortage. However, the absence of national legal framework to regulate the VPP in some countries is identified as a limitation and Veterinary Statutory bodies appear to be paramount to regulate and monitor the quality and registration of VPP. The *Ecole Inter-Etats des Sciences et Médecine Vétérinaires* in Dakar, Senegal was identified as a key player in West Africa for developing this further.

❖ Updated Roadmap for West African countries 2019-2025

[Hayford Asiedu-Baah / Chair of the RAG, CVO of Ghana - D. Montabord / OIE]

At the end of the two first days, three interview panels encompassed the non-voting members of the Regional Advisory Group (RAG) to interview representatives of participating countries. The discussions focused on their FMD situation, their plan for the coming years and the main gaps and challenges identified. The conclusions of each of these interviews were presented, in closed sessions, to the voting members of the RAG, for voting on the acceptance of PCP-FMD stages for country.

The Chair of the newly elected RAG presented the conclusions of these discussions to the participants.

The final version of the Roadmap for 2019, validated with each of the participating countries, is shown in the following page.

❖ Recommendations of the second Roadmap meeting for West Africa

[Andriy Rozstalnyy / FAO]

Taking into account all the information received during the meeting, a set of recommendations was discussed with the participants on the best way to progress along the PCP-FMD. The participants were then given a two-week time to comment the document validated in session. The final version is provided in **Annex 1.**

❖ Next West Africa Roadmap meeting

Ghana offered to host the third meeting of the West Africa FMD Roadmap.

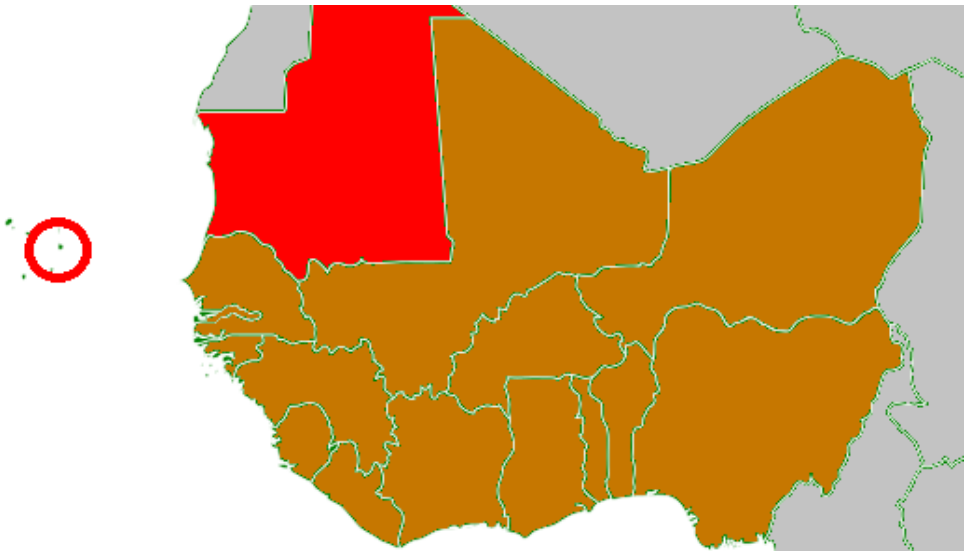
2nd FMD Roadmap meeting for West Africa (4 - 6 September 2019, Dakar, Senegal)

Presentation of provisional roadmap for 2019-2025, based on self-assessment questionnaires

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Benin	1*	1*	1*	1*	1	1	2	2	2	3
Burkina Faso	1*	1*	1*	1*	1	1	1	2	2	3
Cabo Verde	0	0	0	0	0	0	4	4	OIE	OIE
Côte d'Ivoire	1*	1*	1*	1*	1	1	2	2	2	3
Gambia	1	1	1	1*	1	1	2	2	2	3
Ghana	0	0	0	1*	1	1	2	2	2	3
Guinea	1*	1*	1*	1*	1	1	2	2	2	3
Guinea Bissau	1*	1*	1*	1*	1	1	2	2	2	2
Liberia	0	0	0	1*	1	2	2	3	3	3
Mali	1	1	1	1*	1	1	2	2	2	3
Mauritania				0	0	1	1	1	1	2
Niger	1*	1*	1*	1*	1	1	1	2	2	3
Nigeria	1	1	1	1*	1	1	2	2	2	3
Senegal	1	1	1	1*	1	1	2	2	2	3
Sierra Leone	0	0	0	1*	1	1	2	2	2	3
Togo	1*	1*	1*	1*	1	1	2	2	2	3

* provisional status given to the country (countries had six months to provide additional information including Control Plan; if no, they will be downgraded to the previous stage)

0	1	2	3	4	OIE



Annex 1 - Recommendations

Recommendations of the 2nd meeting of the FMD Roadmap for West Africa

Dakar, Senegal 4-6 September 2019

Considering:

- the adoption of the FAO-OIE Global Strategy for the control of FMD (Bangkok, June 2012) with its three inter-related Components, respectively on (1) the control of FMD, (2) the reinforcement of Veterinary Services and (3) the combined control of FMD with other animal diseases;
- the importance of controlling FMD at regional level and the results of previous FMD regional Roadmap meeting for West Africa held in Togo in 2016 as well as regional Roadmap meetings in other African regions;
- the importance of having a Regional Advisory Group (RAG) for West Africa, composed of three CVOs and leaders of the Regional Epidemiology and Laboratory networks (ResEpi and ResoLab) to analyse and present the results of the assessments to the participating countries;
- that many countries of the region remain in Stage 0 of the PCP-FMD and that, for moving into Stage 1, countries are required to present an FMD Risk Assessment Plan;
- the FMD endemicity in most of the countries of the region and the importance of controlling FMD due to its high contagion rate and socio-economic impact - food security, trade and sustainable development;
- that many countries experience a lack of resources in both financial and human resources to enable progress in FMD control;
- the lack of identification and characterization of FMDV strains currently circulating in the region and the need of such information to select or adapt the vaccine strains to be used;
- the possibility offered by EuFMD and the GF-TADs Working Group to provide specific support for countries in PCP-FMD Stage 0 under their on-going work plan, through the PCP support officer system (PSOs);
- that the implementation of the Roadmap vision requires to co-ordinate the set of national efforts under an overall framework of progressive risk management to reduce the impact of FMD in the region: sharing of information, technical knowledge, possible donor support, between countries within the region, beneficiaries of the action.

The 16 countries attending (Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo), agree to:

1. Establish a Regional Advisory Group (RAG), elected for a three-year period (2019 - 2022), voting members comprising:
   - Chair: CVO of Ghana,
   - Members: CVOs of Mali and Guinea Bissau, and experts from Nigeria and Senegal respectively leading ResEpi and ResoLab.
2. Use the results of the evaluations conducted during the roadmap meeting in Dakar (September 2019) as a basis to establish a provisional roadmap for the countries of West Africa (see annex).

The countries identified the following areas of priorities for a better implementation of the Global FMD Control Strategy at regional level to regularly monitor and evaluate the implementation of their national FMD control strategies, in alignment with the Global FMD control strategy and PCP-FMD principles.

➢ Countries

1. To continue progressing along the Roadmap towards the vision of absence of clinical FMD by 2025, based on the guidelines and principles of the progressive control of FMD (PCP-FMD) and the need for competent Veterinary Services.

2. When in provisional stage 1, to submit their risk assessment plan to the GF-TADs FMD WG within the agreed deadline, to allow them to advance to stage 1.

3. To make use of PCP Support Officers (PSO), when assigned by FAO/OIE/EuFMD, to assist their progress on the PCP-FMD and to identify and train regional experts to become PSOs.

4. To improve the knowledge on epidemiology and risk assessment of FMD by:
   - reinforcing passive surveillance, including in the pastoralist communities, to timely recognize and report the disease, thanks to improved awareness, incentives and capacity of all stakeholders from the private and public sectors;
   - establishing or reinforcing risk-based surveillance including animal mobility aspect, to guide active surveillance in the area at risk and very high risk (hotspot), to gain a deeper understanding of FMD distribution in the country.

5. To identify the relevant information that should be shared among the Members of the ECOWAS (i.e. vaccine and vaccination campaigns, circulating strains etc.).

6. To ensure rapid field investigation following any FMD outbreak, by reporting and submitting samples to regional laboratories for confirmation and to the FMD OIE/FAO Reference Laboratories for full characterization and vaccine matching.

7. To appoint and empower national PCP-FMD, epidemiology and laboratory points of contact.

8. To conduct studies to monitor the socio-economic impact of FMD on different stakeholders.

9. To improve cross-border and regional coordination in terms of surveillance, control and information sharing as part of FMD subnetwork of ResEpi and ResoLab work-plans. Interactions between laboratory and epidemiology networks should be developed to encourage exchange of expertise and information sharing, more specifically between breeders and veterinary services.

10. To support and strengthen the West Africa Epidemiology and Laboratory networks to share good practices, lessons learnt and to build capacity in the countries, in order to allow application of the PCP-FMD principles. Priority support should be given to countries in PCP-FMD Stage 0 and Stage 1, where a range of technical areas should be strengthened.

11. To comply with their reporting obligations to the OIE for the benefit of the whole region.

12. To consider requesting an OIE PVS initial evaluation or OIE PVS follow up mission (if the initial PVS evaluation was carried out before 2014) to achieve an updated understanding of their Veterinary Services capacity. This will help building capacity according to the identified gaps (component 2 of the Global strategy for the control of FMD).

13. To consider combining the control of FMD with those of livestock diseases such as PPR and CBPP, which are considered as high priority diseases in the region (component 3 of the Global Strategy for the control of FMD).

14. To encourage national laboratories to participate in the annual proficiency test (organized by the World Reference Laboratory, The Pirbright Institute) and to support these laboratories to build minimal capacities (training, reagents and kits, material…) to conduct surveillance and evaluation activities required for the PCP-FMD.

15. To recognize that there is currently a lack of empirical data to demonstrate adequate performance of the FMD vaccines used in the region, and to prioritize work to assess heterologous post-vaccination responses.

    It is recommended that coordinated studies are undertaken to consider the range of FMD vaccines provided to countries in the region (from international and local suppliers), to measure post-vaccination responses (using Virus Neutralisation Test, VNT), against representative FMD viruses for the serotypes and lineages circulating in West Africa. To minimize test result variability, VNT should be performed at a single central laboratory. If required, testing of samples collected from these studies can be tested at the WRL-FMD (free-of-charge), as part of an on-going OIE Twinning project with AU-PANVAC.

16. To promote responsible and prudent use of antimicrobials when they are applied for clinical treatment of potential bacterial superinfection in FMD cases, considering the growing concern over antimicrobial resistance (AMR).

➢ **Technical partners**

17. Epidemiology and laboratory regional networks (ResEpi and ResoLab) FMD subnetwork to formulate a two-year work-plan that should include coordination and capacity building activities.

18. Recognizing that sharing information between FMD Reference Laboratories in the region would be helpful, ResoLab to establish a web page (in English and French) containing contact information for national laboratory points of contact, and a table to summarize core laboratory capacity for each country (diagnostic tests used, availability of reagents, logistical arrangements to send samples and relationships with regional/international reference laboratories, field sampling/transport protocols). If needed this web page could be hosted by WRL-FMD.

19. The GF-TADs FMD Working Group and EuFMD to provide regional trainings on the PCP-FMD principles and surveillance processes, in order for Member States to develop and implement robust risk assessment plans and risk-based strategic plans.

20. The GF-TADs FMD Working Group, in collaboration with relevant regional and global partners and the OIE/FAO Reference Laboratories, to continue committing appropriate resources and organizing training programmes to improve laboratory diagnostic and epidemiological capacities and to undertake follow-up PVS evaluations.

21. FAO, OIE and EuFMD, to provide capacity building activities to the national Points of Contact and other relevant stakeholders through online courses and webinar series.

22. FAO and OIE, in collaboration with regional partners, to develop socioeconomic guidelines for Member States to measure the impact of FMD on the livestock and livelihood (as a convincing tool for the Government and development partners' investment in FMD control).

23. FAO and OIE, in collaboration with the regional economic community and AU-IBAR, to develop and implement a regional FMD control strategy for West Africa, to provide a framework that unites Member States and stakeholders for the purpose of creating a mutually agreed upon strategy, with assigned responsibilities for implementation.

24. FAO to continue supporting Member States in capacity developments in the area of epidemiology, through in-service applied veterinary epidemiology training (ISAVET) program and diagnostics with focus on enhancing the capacity of the regional leading laboratories in support to the region.

25. Explore the possibilities of setting up a regional vaccine bank with support of FAO, OIE and regional economic organizations AU-IBAR, ECOWAS.

Vaccine recommendations, based on FMD virus lineages circulating in the region

OIE/FAO Reference Laboratories recommend that Veterinary Services ensure that the vaccines used are appropriate for the viruses circulating in the region and are in line with OIE standards. Based on *in vitro* vaccine-matching data generated by WRL-FMD, the following vaccine strains can be considered for use against the six FMDV lineages that are circulating in the West African region.

- For O/EA-3 topotype: recent data indicates that O/Manisa or O/PanAsia-2 (or equivalent) vaccine strains are well matched.
- For O/WA topotype: older data (2014-16) supports the use of O/PanAsia-2 (or equivalent) vaccine strains.
- For A/AFRICA/G-IV and A/AFRICA/G-VI clades: the A/Eritrea-98 vaccine is no longer widely available and there is poor antigenic match to alternative A/Iran-05 and A22 vaccines.
- For SAT 1/X topotype: only limited data is available that indicates a poor match to SAT1/RHO/78.
- For SAT 2/VII topotype: data from 2012 indicates that Eritrea and Zimbabwe vaccines are antigenically matched.

This summary highlights gaps in current surveillance activities in the region that limit the availability of *in vitro* vaccine matching datasets. Based on these data, there are obvious concerns regarding the suitability of vaccines that are currently available for some FMDV serotypes present in the region (such as serotypes A and SAT 1). *In vivo* data regarding the performance of vaccines against these FMD virus lineages is also often lacking. Therefore, in order to help select the most appropriate vaccine, it is recommended that countries increase FMD surveillance, sampling and shipment of samples to reference laboratories to identify circulating strain and for vaccine matching analyses. It is also suggested that countries request that vaccine manufacturers provide evidence to confirm the efficacy of their products against the circulating FMD virus lineages in the target host species (either as individual monovalent components, or after formulation of a multivalent product sold to the market).

All participants thank the Government of Senegal and the Government of Italy for collaborating with FAO, OIE and EuFMD under the GF-TADs programme to hold successfully the 2nd GF-TADs Regional PCP-FMD Roadmap Meeting for West Africa.

Dakar, September 6th, 2019

Annex 2 - Agenda

2nd Regional FMD West Africa Roadmap Meeting of the GF-TADs

Dakar, Senegal - 4-6 September 2019

Fleur de Lys Hotel

Agenda

Day 1 - 4 September 2019

Schedule	Topic	Chair/Facilitators/Speaker
08:00 - 09:00	Registration	All
Session 1: Opening and welcoming remarks		**Chair :** Senegal
09:00 - 09:50	Organization representatives	K. Tounkara (OIE) P. Motta (EuFMD) G. Guei (FAO)
	Ministry of Livestock and Animal Productions of Senegal	Official representative
09:50 - 10:00	Adoption of the Agenda	N. Mapitse
10:00 - 10:30	*Coffee-break and group photo*	
Session 2: FAO-OIE Global FMD Control Strategy and regional situation		**Chair :** Mali
10:30 - 11:30	Update on the implementation of the Global Strategy and second edition of ***the*** PCP FMD principles	S. Metwally (FAO)
	Overview of regional FMD virus situation & vaccine recommendations for West Africa	OIE/FAO Ref. lab. network
	Forecasting: risk of new FMDV strains incursion into the region	H. Kaboré (EuFMD)
Session 3: Regional FMD control governance		**Chair :** Liberia
11:30 - 11:50	Follow up on the regional training on FMD epidemiology and diagnostics	I. Seck (FAO)
11:50 - 12:00	Regional Advisory Group (RAG) and election of members	D. Montabord (OIE)
12:00 - 12:20	Incursion of FMD serotype O in Central and West Africa, actions and training for response	I. Seck (FAO)
12:20 -12:45	Roundtable discussion: preparedness, prevention, detection and response to an incursion of new strains	All

Schedule	Topic	Chair/Facilitators/Speaker
12:45 - 13:45	*Lunch*	
Session 4: **Countries reports** (15 minutes presentation - 5 minutes questions/answers per country) **Chair : Benin**		
13:45 - 15:25	• ***Stage 0**: Cabo Verde, Ghana, Liberia, , Sierra Leone*	
15:25 - 15:45	*Coffee-break*	
15:45 - 16:45	• ***Stage 1 (provisional)**: Burkina Faso, Guinea, Niger, Togo*	
16:45	Closure of day 1	
16:45 - 18:45	**Closed sessions**: interviews with countries to review their PCP-FMD result of the self-assessment tool and control activities; 30 min per country	

Day 2 - 5 September 2019		
08:00 - 09:30	*Closed Meeting WG - RAG*	
Session 5: **Animal mobility - Cross border coordination for the implementation of movement control** **Chair : Ghana**		
09:30 - 09:50	Animal mobility risk mapping to assist in PCP progress	A. Apolloni (CIRAD)
09:50 - 10:05	Results of the animal mobility surveys in West and Central Africa	I. Seck (FAO)
10:05 - 10:20	Roundtable discussion	All
10:20 - 10:40	*Coffee-break*	
Session 4 (Cont.): **Countries reports** (15 minutes presentation - 5 minutes questions/answers per country) **Chair : Nigeria**		
10:40 - 12:00	• ***Not yet assessed**: Mauritania* • ***Stage 1 (provisional)**: Benin, Cote d'Ivoire, Guinea Bissau*	
Session 6: **Regional Epidemiology and Laboratory Networks** **Chair : Cote d`Ivoire**		
12:00 - 13:00	• Group discussion Epi Network, Lab Network - Round table discussion: implementation of Epidemiology and Laboratory Networks work plans 2019-2020	
13:00 - 14:30	*Lunch and prep for breakout group reports*	
14:30 – 15:00	Report from breakout groups (10 minutes per group)	Rapporteurs
15:00 – 15:30	Plenary discussion	All
Session 4 (Cont.): **Countries reports** 15 minutes presentation - 5 minutes questions/answers per country) **Chair : Guinea Bissau**		
15:30 - 16:50	• ***Stage 1 (final)**: Gambia, Mali, Nigeria, Senegal*	
16:50 - 17:10	*Coffee-break*	
17:10	Closure of day 2	
17:15 - 19:15	**Closed sessions**: interviews with countries to review their PCP-FMD result of the self-assessment tool and control activities: 30 min per country	

Schedule	Topic	Chair/Facilitators/Speaker
Day 3 - 6 September 2019		
08:00 - 09:30	*Closed Meeting WG - RAG*	
Session 7: Roadmap conclusion		**Chair:** Benin
09:30 - 09:50	Long term vision for the region: study on the demands for FMD control in the region over next 20 years	E. Couacy-Hymann (LANADA)
09:50 - 10:15	Training needs for veterinary paraprofessionals to support FMD surveillance and diagnosis	All participants
10:15 - 10:35	*Coffee-break*	
10:35 - 10:50	Updated Roadmap for West African countries 2019-2025	RAG Chair/FMD-WG member
Session 8: Final Discussions and Report		**Chair :** Ghana (Chair RAG)
10:50 - 11:20	**Roundtable discussion on regional priorities** and way forward	All participants
11:20 - 12:15	**Recommendations** of the 2nd Roadmap meeting	A. Rozstalnyy
12:15	Closure of the meeting	AU-IBAR/FAO/OIE/RAG Chair
12:15 - 13:15	*Lunch*	

Country Interviews agenda

Day 1 - 4 September 2019

	Time	Countries panel 1	Countries panel 2	Countries panel 3
1.	17:30 - 18:00	▪ *Cabo Verde*	▪ *Burkina Faso*	▪ *Liberia*
2.	18:00 - 18:30	▪ *Ghana*	▪ *Togo*	▪ *Niger*
3.	18:30 - 19:00	▪ *Guinea*		▪ *Sierra Leone*

Day 2 - 5 September 2019

	Time	Countries panel 1	Countries panel 2	Countries panel 3
4.	17:30 - 18:00	▪ *Senegal*	▪ *Mauritania*	▪ *Nigeria*
5.	18:00 - 18:30	▪ *Gambia*	▪ *Côte d'Ivoire*	▪ *Mali*
6.	18:30 - 19:00	▪ *Guinea Bissau*		▪ *Benin*

Panel 1	Panel 2	Panel 3
Samia Metwally (FAO)	Etienne Chevanne (EuFMD)	Neo Mapitse (OIE)
Ismaila Seck (FAO)	Djahne Montabord (OIE)	Andriy Rozstalnyy (FAO)
Karim Tounkara (OIE)	Paolo Motta (EuFMD)	Emmanuel Couacy-Hymann (CIRAD)
		Ibrahim Wora Salami (FAO)

Annex 3 - List of participants

COUNTRIES PARTICIPANTS	
BENIN	
Dr AKPO Yao Délégué OIE Directeur de l'Elevage Ministère de l'Agriculture, de l'Elevage et de la Pêche PK 0,5 Route de Porto-Novo BP. 2041 **Cotonou - BENIN**	**Dr GNANVI Corneille** Chef du Service Santé Animale Direction de l'Elevage Ministère de l'Agriculture, de l'Elevage et de la Pêche 04 BP. 1256 **Cotonou - BENIN**
BURKINA FASO	
Dr TRAORE Kadjanna Ze Albert Chef de Service Epidémiologie Coordonnateur du RESUREP Direction Générale des Services Vétérinaires Ministère des Ressources Animales et Halieutiques 09BP. 907 **Ouagadougou 09 - BURKINA FASO**	**Dr OUANDAOGO Sandaogo Hamidou** Laboratoire National d'Elevage Direction Générale des Services Vétérinaires Ministère des Ressources Animales et Halieutiques 09 BP. 907 **Ouagadougou 09 - BURKINA FASO**
CABO VERDE	
Dr CONCEIÇÃO MONTEIRO EVORA SILVA Maria Imaculada Responsable Laboratoire Vétérinaire Direction du Service de l'Elevage Ministère de l'Agriculture et Environnement BP. 278 DGASP/DSP Achada de S. Filipe **Praia - CABO VERDE**	**Dr MENDES RODRIGUES BARBOSA DOS SANTOS Francisca** Secteur Surveillance Epidémiologique Direction Service de l'Elevage Ministère de l'Agriculture et Environnement BP. 278 DGASP/DSP Achada de S. Filipe **Praia - CABO VERDE**
COTE D'IVOIRE	
Dr KALLO Vessaly Sous-directeur de la Santé Animale Direction des Services Vétérinaires Ministère des Ressources Animales et Halieutiques BP. V 84 **Abidjan 12 - COTE D'IVOIRE**	**Dr N'GUESSAN Assanvo Lambert** Chef de Service Santé des Ruminants Direction des Services Vétérinaires Ministère des Ressources Animales et Halieutiques BP. V 84 **Abidjan 12 - COTE D'IVOIRE**
GAMBIA	
Dr CEESAY Abdou OIE Delegate Director General /CVO Department of Livestock Services, Ministry of Agriculture Abuko Livestock Complex **Abuko - GAMBIA**	**Mr BAH Saidal Ali** Laboratory Manager Central Veterinary Laboratory Central Veterinary Laboratory Department of Livestock Services **Abuko - GAMBIA**
GHANA	
Dr ASIEDU-BAAH Hayford Acting Director of Veterinary Service Veterinary Service Directorate Ministry of Food and Agriculture Box M161 **Accra - GHANA**	**Dr DANSO Edward Fenteng** Head of Epidemiology OIE Focal Point for Disease Notification Veterinary Services Directorate Ministry of Food and Agriculture P.O. Box M161 **Accra - GHANA**

GUINEA	
Dr MANE Seny Directeur National des Services Vétérinaires Ministère de l'Elevage BP 559, quartier Almamya **Conakry -GUINEA**	**Dr DIALLO Mamadou Ramadan** Directeur du Laboratoire Central Vétérinaire de Diagnostic Direction Nationale des Services Vétérinaires Ministère de l'Elevage BP 559, quartier Almamya **Conakry -GUINEA**
GUINEA-BISSAU	
Dr IVO Mendes Directeur de Services Vétérinaires Direction Générale de l'Elevage BP 26 **Bissau - GUINEA BISSAU**	**Dr NUNES GORREIA Apia** Responsable du Département de Sérologie au Laboratoire Vétérinaire Direction Générale de l'Elevage Av. Dom Settimio Arturo Ferrazzeta, n°26 **Bissau - GUINEA BISSAU**
LIBERIA	
Dr ANDERSON Joseph R. N. OIE Delegate, Senior Director/CVO Livestock Veterinary Sservices Ministry of Agriculture National Livestock Bureau Somalia Drive, Gardnersville P.O. Box 10-9010 **Monrovia 10 - LIBERIA**	**Mr FARNGALO Eddie Miaway** Director Epidemiology Unit Ministry of Agriculture Central Epidemiology Unit Livestock Veterinary Services Old LPRC Road, SomaDrive Gardversville **Monrovia 10 - LIBERIA**
MALI	
Dr COULIBALI Drissa Délégué OIE Directeur National des Services Vétérinaires Ministère de l'Elevage et de la Pêche Hamdallaye ACI 2000, Derrière Immeuble ABK 1 Rue 209,03 BP 220 **Bamako 3 - MALI**	**Dr SAMAKE Kassoum** Virologie Laboratoire Central Vétérinaire Km8, Route de Koulikoro BP 2295 **Bamako - MALI**
MAURITANIE	
Dr HABIBOULLAH Habiboullah Chef du Service Santé Animale Direction des Services Vétérinaires Ministère du Développement Rural Ksar **Nouakchott - MAURITANIA**	**Mr HAMA Sidi Mohamed** Responsable laboratoire de Microbiologie médicale Office National de Recherches et de Développement de l'Elevage (ONARDEL) Ministère du Développement Rural Ksar **Nouakchott - MAURITANIA**
NIGER	
Mr GAGARA Haladou Responsable Sérologie et Enquêtes Epidémiologiques Laboratoire Central de l'Elevage (LABOCEL) Ministère de l'Agriculture et de l'Elevage BP. 485, Quartier Terminus **Niamey - NIGER**	**Dr MAIKANO Issoufou** Epidémiologiste Responsable Composante Santé Animale PRAPS Direction Générale des Services Vétérinaires Ministère de l'Agriculture et de l'Elevage BP. 12091 **Niamey - NIGER**

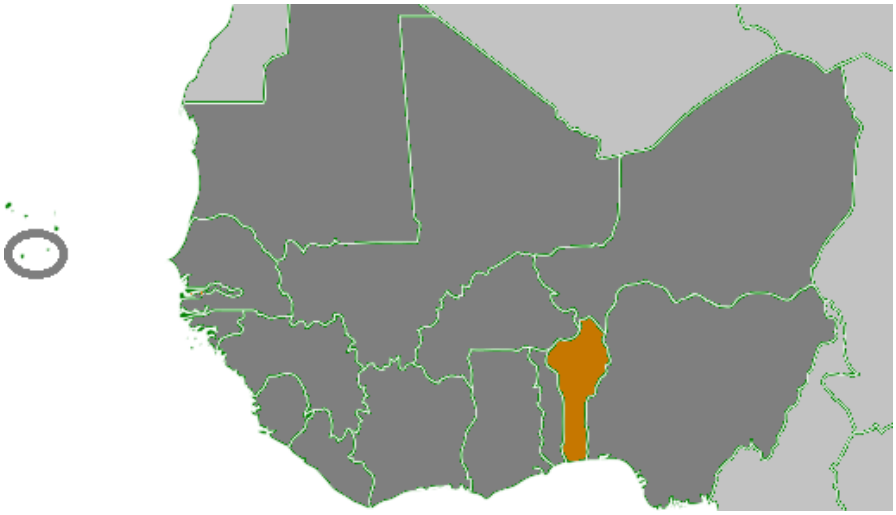
NIGERIA	
Dr ULARAMU Hussaini Gulak Chief Veterinary Research officer National Veterinary Reserch Institute Vom, Federal Ministry of Agriculture and Rural Development **Abuja - NIGERIA**	**Dr VAKURU COLUMBA Teru** Deputy Director/Head Epidemiolgy Division Federal Ministry of Agriculture and Rural Development Department of Veterinary and pest Control Services, AREA 11, P.P.B. GARKI **Abuja - NIGERIA**
SENEGAL	
Dr LO Mbargou Délégué OIE / Directeur des Services Vétérinaires Secrétaire Général de la Commission Régionale de l'OIE pour l'Afrique Sphères ministérielles-Ousmane Tanor DIENG- Diamniadio, 3ème Etage BP. 45677 **Dakar - SENEGAL**	**Dr FALL Mathioro** Chef Bureau Surveillance épidémiologique Direction des Services Vétérinaires Sphères ministérielles-Ousmane Tanor DIENG - Diamniadio, 3ème Etage BP. 45677 **Dakar - SENEGAL**
Ms GAYE Laye DIOP Ingénieur d'étude ISRA/LNERV Laboratoire National de l'Elevage et de Recherches Vétérinaires Yeumbeul **Dakar/Hann - SENEGAL**	
SIERRA LEONE	
Dr JALLOH Amadou Tejan OIE Delegate Director Livestock and Veterinar Services Division-MAF (CVO) C/O Livestock and Veterinary Services Division Ministry of Agriculture and Forestry **Freetown - SIERRA LEONE**	**Dr JUSU Sheku** Senior Animal Production Officer Ministry of Agriculture and Forestry (MAF) Livestock Division Service **Freetown - SIERRA LEONE**
TOGO	
Dr BANKOLE Anani Adéniran Responsable Laboratoire Central Vétérinaire de Lomé Direction de l'Elevage Ministère de l'Agriculture, de la Production Animale et Halieutique 59 Rue de la Kozah BP. 4041 **Lomé - TOGO**	**Ms GO-MARO Kossiwa Wolali** Ingénieur des travaux de laboratoire Responsable Assurance Qualité Point Focal FMD Direction de l'Elevage 59 Rue de la Kozah BP 4041 **Lomé - TOGO**
FAO	
Dr SAMIA Metwally Senior Animal Health Officer (Virology) AGAH, Animal Production and Health Division Food and Agriculture Organization of the United Nations Viale delle Terme di Caracalla **00153 Rome - ITALY**	**Dr Andriy Rozstalnyy** Animal Health Officer Animal Health Service Animal Production and Health Division Food and Agriculture Organization of the United Nations Viale delle Terme di Caracalla **00153 Rome - ITALY**
Dr SOUMARE Baba Regional Manager FAO-ECTAD West and Central Africa 2 Gamel Abdul Nasser Road P.O. Box GP **Accra - GHANA**	**Dr FAYE DIOUF Coumba** Coordinatrice Nationale FAO-ECTAD 15, Rue Calmette Representation **Dakar - SENEGAL**

Dr WORO SALAMI Ibrahim Animal Health and Production Consultant FAO Regional Office for Africa/AHSP-UNIT P.O. Box GP 1628 **Accra - GHANA**	**Mr VARUN KUMAR Chaudhary** International Communications Consultant Food and Agriculture Organization of the United Nation (FAO) Viale delle terme di Caralla **00153 Rome - ITALY**
Mr GOMEZ Philip LIVESTOCK OFFICER-FAO Food and Agrculture Organization 10 Street East, « M » Section **Fajara - GAMBIA**	**Dr Ibrahim Wora Salami** Animal Health and Livesstock Project Consultant FAO Regional Office for Africa 2 Gamel Abdul Nasser Road P.O. Box GP **Accra - GHANA**
Dr NDIAYE Elhadji Youssou Expert Epidémiologiste FAO-ECTAD Sénégal HLM Villa 309 **Dakar - SENEGAL**	**Dr SECK Ismaila** Regional Epidemiologist FAO Regional Office for West and Central Africa **Accra - GHANA**
Dr NIANG Ahmadou Tidiane CTL ECTAD /FAO **Dakar - SENEGAL**	
EuFMD	
Dr MOTTA Paolo **Veterinary Epidemiologist** Technical Specialist Risk Management European Commission for the control of Foot-and-Mouth Disease FAO, Viale delle Terme di Caracalla **00153 Roma - ITALY**	**Dr KABORE Henri** FMD Global Inteligence Focal Point European Commission for the control of Foot-and-Mouth Disease FAO/**Ouagadougou** P.O. Box 7192 **Ouagadougou - BURKINA FASO**
Dr CHEVANNE Etienne Animal Health Officer European Commission for the control of Foot-and-Mouth Disease/FAO FAO, Viale delle Terme di Caracalla **00153 Roma - ITALY**	
OIE	
Dr MAPITSE Neo Joel Head of Status Dept. OIE HQ 12 rue de Prony **75017 Paris - FRANCE**	**Dr TOUNKARA Karim** Head of Regional Represention for Africa BP. 2954 **Bamako - MALI**
Dr MONTABORD Djahne Technical advisor Mamonovsky pereulok, 4, bld. 1, (1st/VII) **123001 Moscow - RUSSIA**	**Mr SANOGO Abdramane** Accounter OIE Regional Representation for Africa BP. 2954 **Bamako - MALI**
Ms BAGAYOKO KONATE Aïssata Secretary Regional Representation for Africa BP. 2954 **Bamako - MALI**	

SPEAKERS	
Pr COUACY-Hymann Emmanuel President of the OIE Biological Standards Commission LANADA Quartier Agriculture BP. 208 **Bingerville - COTE D'IVOIRE**	**Dr KING Donald** Head/FMD Reference Laboratory The Pirbright Institute Ash Road, **Pirbright, Surrey - UNITED KINGDOM**
Dr BAKKALI KASSIMI Labib Responsable Laboratoire de Référence fièvre aphteuse **ANSES** 6 Laboratoire de Santé Animale 14 rue Pierre et Marie Curie **94700 Maisons-Alfort - FRANCE**	**Dr APOLLONI Andrea** Researcher Direction Régionale du **CIRAD** 37 av Jean XXIII BP. 6189 **Dakar - SENEGAL**
Observers	
Dr IMBERT Stéphane Veterinary Public Health Regional Director EMEA BOEHRINGER INGELHEIM AH 29 avenue Tony Garnier **69007 Lyon - FRANCE**	**Dr DENORMANDIE Nicolas** Directeur Technique Service Scientifique Santé Publique Vétérinaire BOEHRINGER INGELHEIM 29, Avenue Tony Garnier **69007 Lyon - FRANCE**
Dr MAXWELL Melody USDA-APHIS Agriculture Attache US Embassy **Dakar - SENEGAL**	**Ms MINOUNGOU Lim-Bamba Germaine** Agricultural specialist USDA-APHIS **Dakar - SENEGAL**
Dr AKPO Ayayi Justin Professeur Titulaire Vacataire à l'EISMV B.P. 12104 **Dakar-Yoff - SENEGAL**	**Mr DIOP Gaye Laye** Ingénieur d'étude LNERV/ISRA Yeumbeul route de Boun **Dakar - SENEGAL**
Pr WINDSOR Peter A. Professor Emeritus Livestock Health, Production & Welfare Specialist Veterinary Surgeon Mekong Livestock Research Sydney School of Veterinary Science **Camden, NSW, 2570 - AUSTRALIA**	

Annex 4 - Summary of contents of country reports

Benin

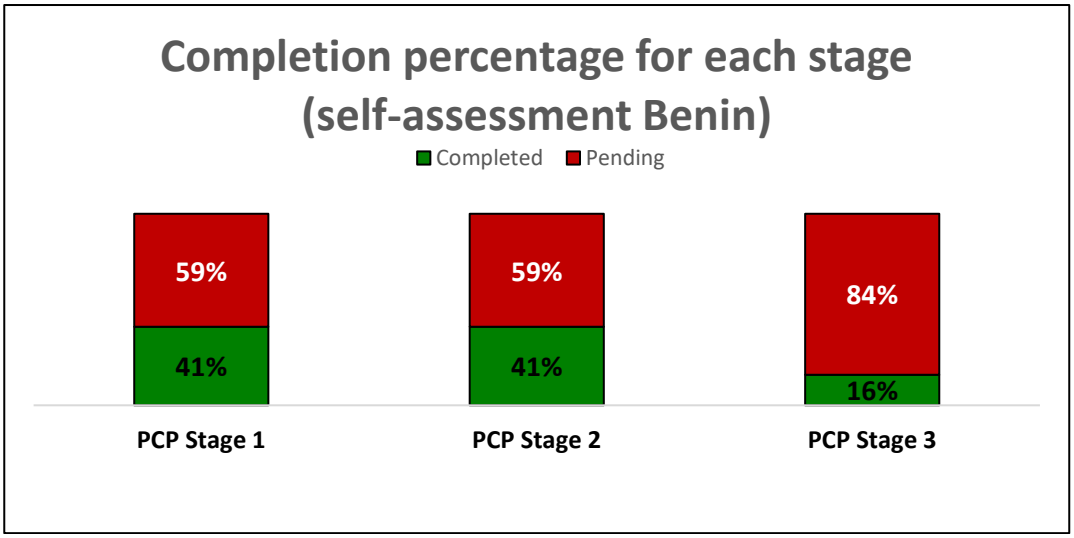


PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2013

Provisional Roadmap 2019										
	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Benin	1*	1*	1*	1*	1	1	2	2	2	3

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
33	60	93



FMD outbreaks & surveillance

- FMD endemic (65 outbreaks 2016, 42 in 2017, 91 in 2018)
- Isolation and characterization of FMD virus since 2010 (serotypes O and A)

FMD Control measures

- Passive surveillance from the field
- Border inspection posts at official gateways of transhumant herds
- Restriction of animal movements to South part of the country

Other notes and priorities for the future

- No sample sent to reference laboratories since 2016
- No socio-economic study done
- A retrospective study on spatio-temporal analysis of FMD in cattle in Benin from 2005 to 2014 identified national parks, classified forests and the Parakou cattle market, all in the North, as risk hotspots
- Communication strategy to be developed on information transmission and dissemination to the surveillance network and stakeholders

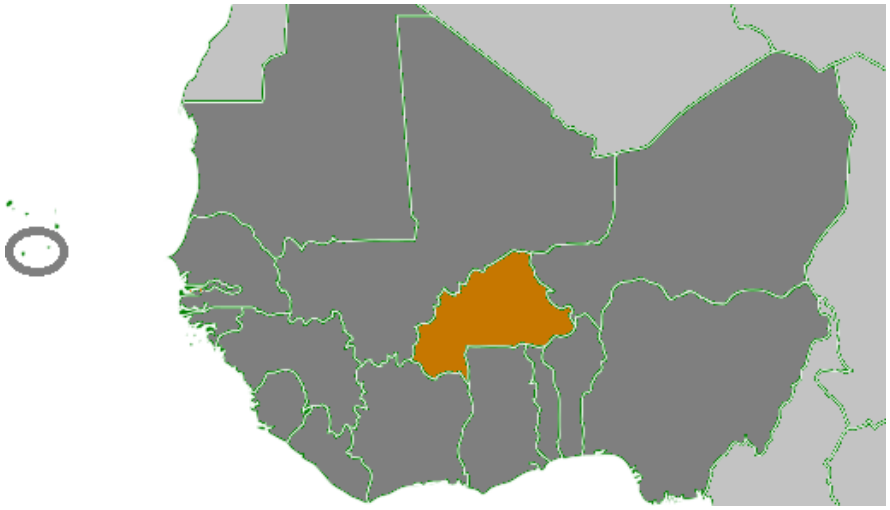
National shortcomings

- Epidemiological surveillance network
- Monitoring plan to update
- Human resources
- Collaboration between veterinary services and research

Support needed

- Training on FMD epidemiology, risk analysis, diagnostic, drafting of a surveillance system and a vaccination strategy (drafting of FMD control plan initiated)
- Animal movements at national and regional levels
- FMD vaccines at reduced cost
- Support cross-border coordination activities for surveillance and management of related risks

Burkina Faso



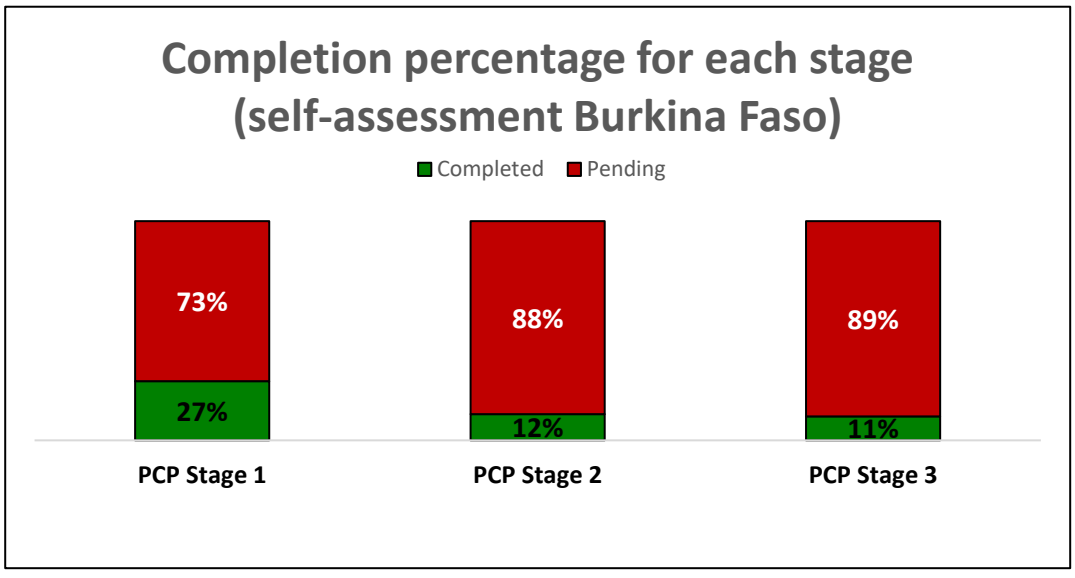
PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2008

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Burkina Faso	1*	1*	1*	1*	1	1	1	2	2	3

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
18	75	93



FMD outbreaks & surveillance

- Cattle outbreaks identified in June-July 2018 in Central-East and Central regions of the country (Serotype O, Topotype EA-3), Lineage non identified.
- No NSP serosurveillance conducted in the last years.

FMD Control measures

- Cases investigation for serotyping.
- Synergy in animal disease control: surveillance, training/workshops and technical competences

Other notes and priorities for the future

- Socio-economic impact estimated to 55,600 Million XOF in 2017-2018.
- Risk hotspots identified along transhumance paths, pastures and livestock markets.
- Stakeholder information for other TADs control: information notes, awareness campaigns for breeders, training for VS staff.

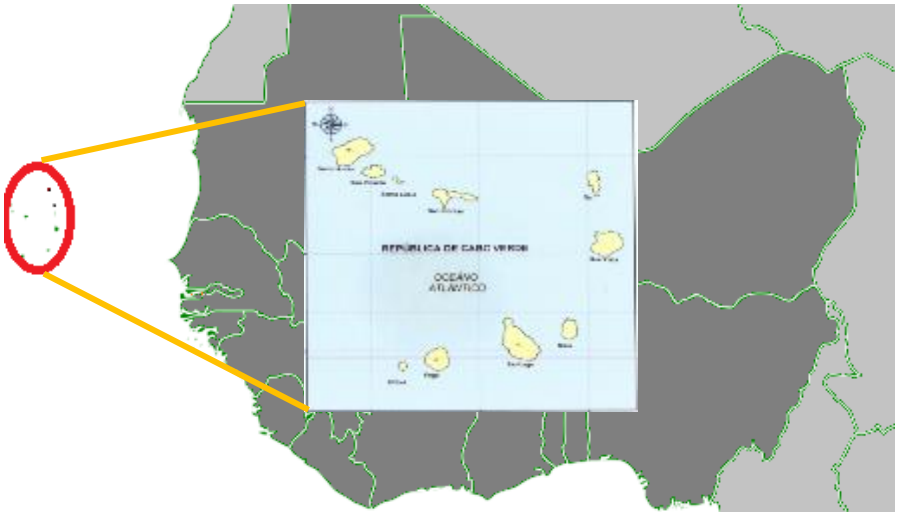
National shortcomings

- FMD control plan.
- Active surveillance and laboratory diagnostic.
- Evaluation of socio-economic losses linked to FMD.

Support needed

- Support in control plan drafting.
- Reagents and lab consumables.
- Budget support for monitoring activities (RESUREP).

Cabo Verde

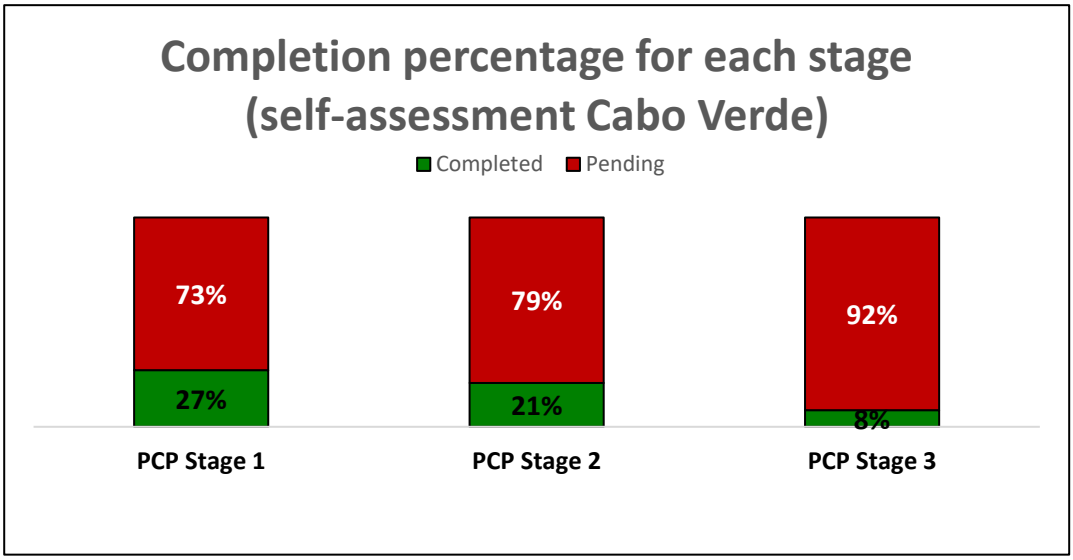


PCP-FMD Stage	
2016	0
2019	0
OIE PVS evaluation	2014

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cabo Verde	0	0	0	0	0	0	4	4	OIE	OIE

Statements answered	Statements missing	Total statements
16	77	93



FMD outbreaks & surveillance

- FMD never reported.

FMD Control measures

- No control plan.
- Border control measures in ports and airports.

Other notes and priorities for the future

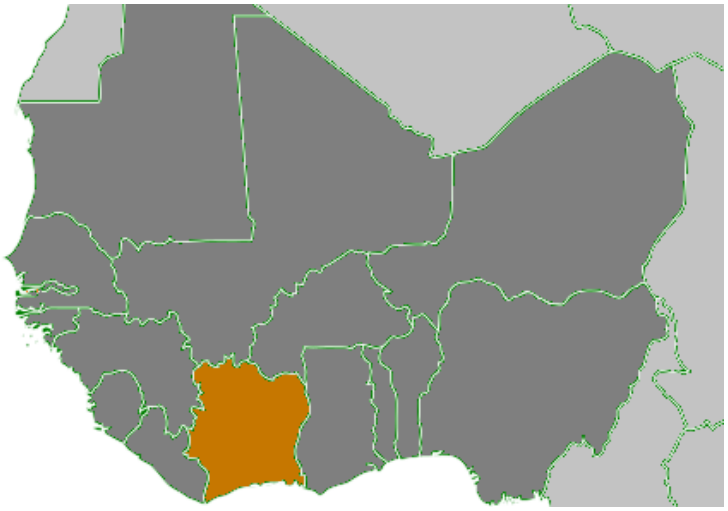
- Small scale farms.
- Extensive farming in pasture zones (big herds), with transfers to other pastures during rainy seasons.
- Semi-intensive breeding characteristic of wet and irrigated agricultural areas, where animals are in confined or semi-confined conditions.

National shortcomings

- Weakness in monitoring system information circuit.
- Insufficient resources (financial, human and material).
- Lack of training for technicians (at central and field levels).

Support needed

Côte d'Ivoire



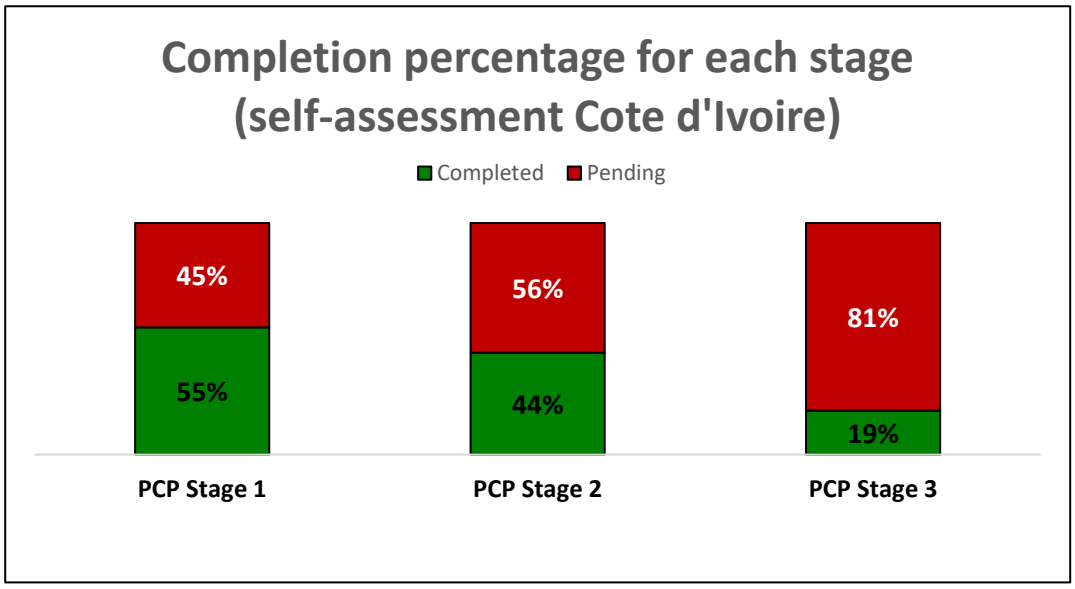
PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2011

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Côte d'Ivoire	1*	1*	1*	1*	1	1	2	2	2	3

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
34	59	93



FMD outbreaks & surveillance

- FMD endemic.
- Serotype O in 2018, close to Guinea serotype.
- Samples sent to ANSES and Pirbright.
- No case confirmed in 2019.

FMD Control measures

- Mainly passive surveillance.
- Active surveillance in case of outbreaks.

Other notes and priorities for the future

- No specific FMD plan.
- Socio-economic impact on pigs (10,000 to 15,000 dead), animal-drawn cultivation losses in cotton production area, disturbance at the Tabaski Festival (mortality and loss of sheep values, conflicts between traders and customers), 35% drop of animals slaughtered in the Ivorian Slaughterhouse and Delicatessen Company (SIVAC).
- Risk hotspots: cattle markets, drinking spots, transhumance routes, zones of high breeding density.
- Setting up of rapid detection capacity with GDS in the various sensitive animal sectors (cattle, pigs)
- Programme of reinforcement of biosecurity in pig farms.

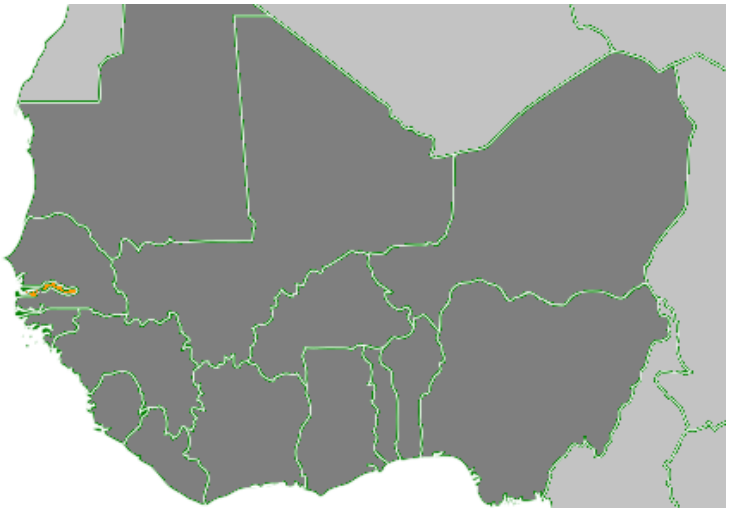
National shortcomings

- Transborder cooperation.
- Community monitoring.
- Collection and transport of samples.
- Animal Risk and Mobility Assessment.
- National control programme.
- Laboratory capacity.

Support needed

- Capacity building (risk assessment and mobility).
- Equipment (laboratory and veterinary services).
- Provision of polyvalent vaccine.

Gambia

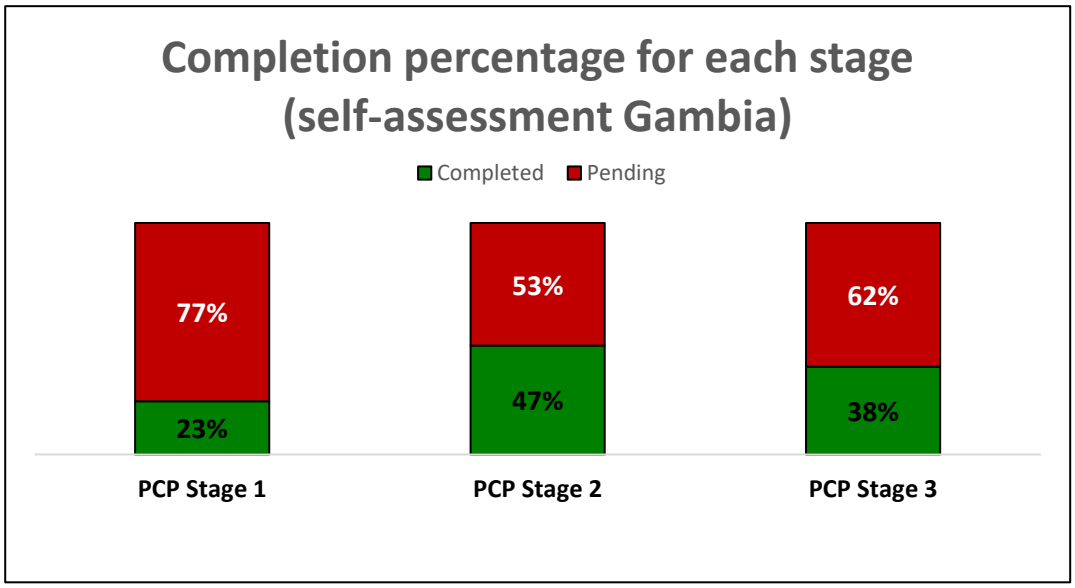


PCP-FMD Stage	
2016	1
2019	1*
OIE PVS evaluation	2009

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Gambia	1	1	1	1*	1	1	2	2	2	3

Statements answered	Statements missing	Total statements
39	54	93



FMD outbreaks & surveillance

- Regular outbreaks since 1998 (A, O, SAT1 and O-EA3): serotyping by Pirbright, then Dakar LNERV since 2013).
- No NSP serosurveillance in the last 2-3 years.

FMD Control measures

- Mainly passive surveillance.
- Control on border posts, transhumance, sentinel herds.
- Early detection.

Other notes and priorities for the future

- Mainly extensive system of production.
- Risk hotspots: weekly markets in all the six agricultural regions (4/region on average), transhumance (cattle and sheep) in the central and Upper River Regions, importation).
- Periodic mass incursion of small ruminants ("Tabaski").
- No value chain analysis carried out.
- Activities contributing to other TADs' control: passive surveillance, trainings, movements control, vaccination campaigns, awareness.
- Awareness developed among farmers.

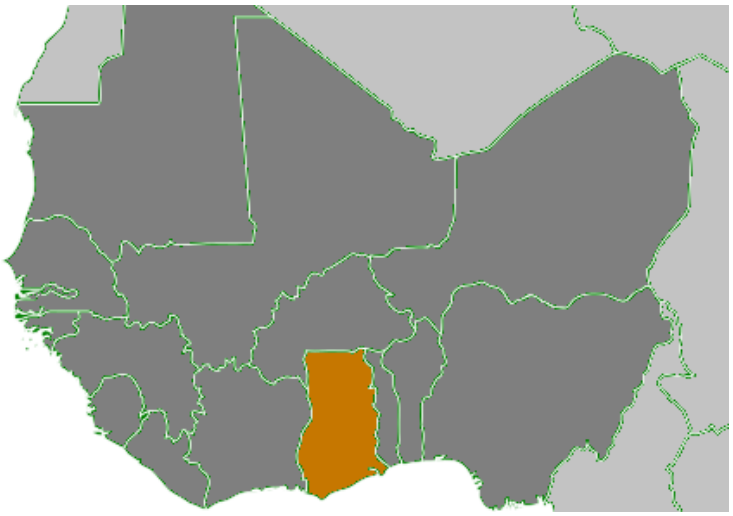
National shortcomings

- Implementation of control measures (quarantine and biosecurity not applied, except in pigs).
- Shortage of veterinarians.
- Inadequate diagnostic capacity, data management capacity and funding.
- Weak surveillance system.

Support needed

- Capacity development (diagnostic, epidemiology, lab activities).
- Vaccines acquisition and vaccination strategy.
- Animal identification system.

Ghana

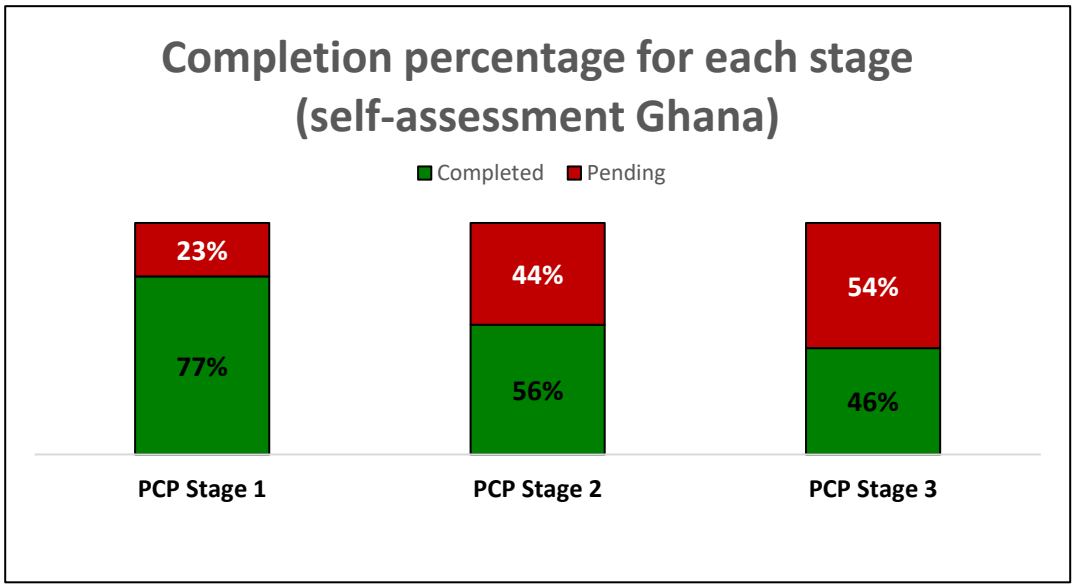


PCP-FMD Stage	
2016	0
2019	1*
OIE PVS evaluation	2016

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Ghana	0	0	0	1*	1	1	2	2	2	3

Statements answered	Statements missing	Total statements
53	40	93



FMD outbreaks & surveillance

- Strains identified: O, A, SAT1, SAT2.
- No NSP surveillance.

FMD Control measures

- Movement control of approved routes.

Other notes and priorities for the future

- High risk: region identified in the Northern and Eastern parts of the country, livestock movement from Sahelian zones during dry season, high cattle density, cross border transhumance, watering points along Volta River.
- Collaboration of Accra veterinary lab with BVI on serotyping and vaccine strains.
- No socio-economic study.
- Contribution to other TADs control: movement control, surveillance, farm biosecurity, community engagement, regulatory framework, laboratories.

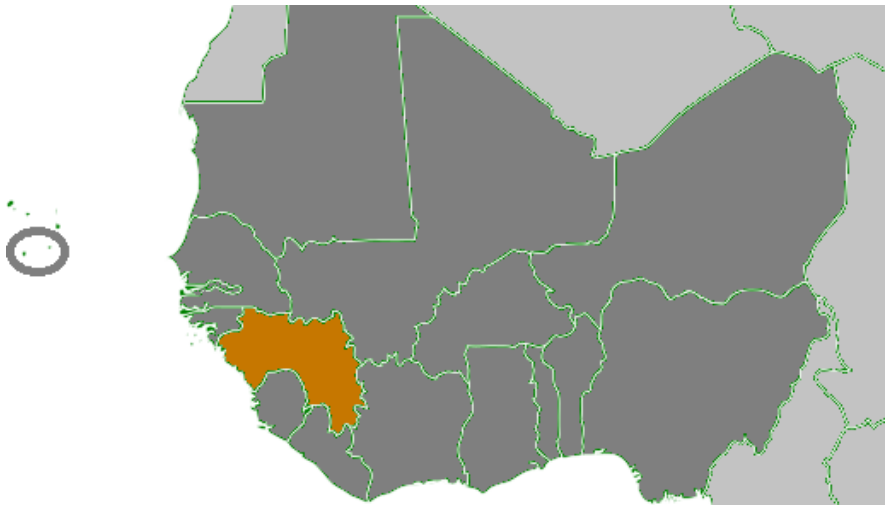
National shortcomings

- Low reporting of FMD suspected cases.
- Legislative support for national strategy.
- Low sampling in the field.
- Limited laboratory diagnostic capacities.
- Funding.

Support needed

- To fill the gaps.

Guinea



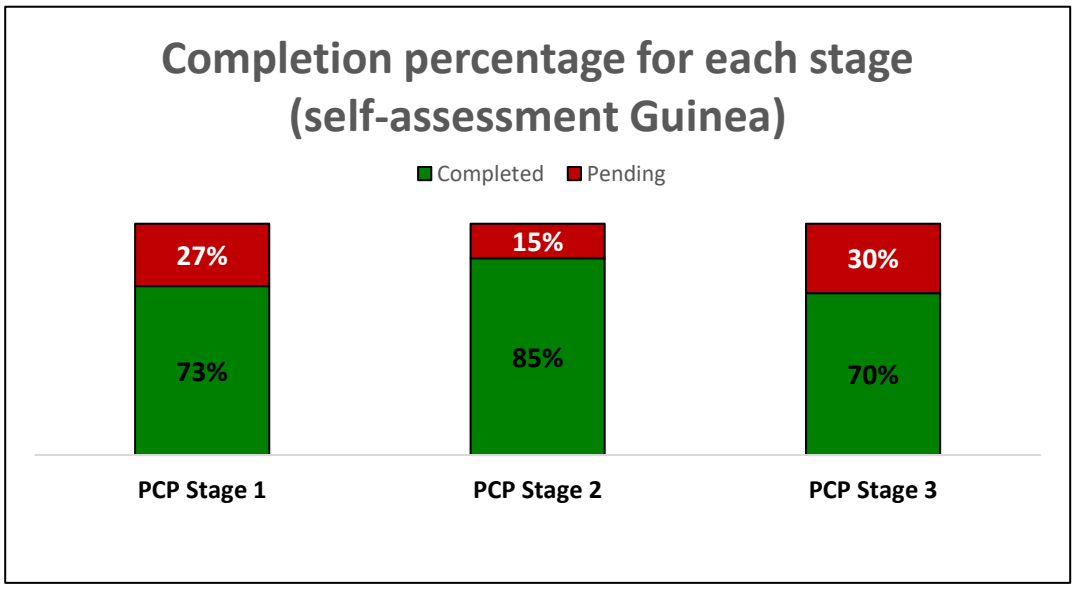
PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2007 Planned 11/2019

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Guinea	1*	1*	1*	1*	1	1	2	2	2	3

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
71	22	93



FMD outbreaks & surveillance

- FMD outbreaks since May 2018 in Kankan, Siguiri, Kouroussa, Mandiana and Kerouané Préfectures.
- End of April 2019: 28 regions touched upon the 33 of the country.
- Serotype O, topotype EA-3.
- NSP serosurveillance planned in September on vaccinated animals.

FMD Control measures

- Passive surveillance: border inspection posts, veterinary clinics, sanitary technicians.
- Active surveillance based on a risk analysis.
- Information campaigns.
- Epidemiological surveillance reinforced with REMAGUI (to detect all cases, determine serotype and mapping the disease to adapt control measures).
- Alert system.

Other notes and priorities for the future

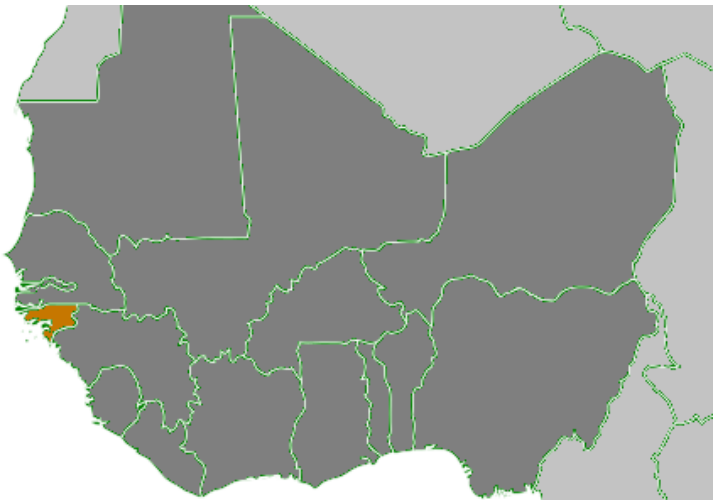
- Livestock markets gathering animals from various origins.
- FMD endemic in neighboring countries.
- Lack of regional plan to control the disease.
- International transhumance from Mali and Ivory Coast.
- Socioeconomic impact: rising in animal prices, reduction of attendance in cattle market by 75%, with price increasing, animal-drawn cultivation losses, milk and meat production losses.
- Risk hotspots: borders, shared pastures, along cattle markets.
- Alert system, vaccination campaigns.
- Diagnostic laboratories renewed and equipped (1 central laboratory and 3 regional laboratories being renewed).
- Control plans updated for FMD, CBPP, AI, etc.
- Drafting of plans for other diseases (PPR, rabies, brucellosis, anthrax, …).
- Equipment of 4 mobile units for emergency intervention.

National shortcomings

- Intervention staff.
- FMD vaccine production in the sub-region and high cost of available vaccines.
- Low level of control of transhumance herds.
- Low level of collaboration with veterinary services of bordering countries.

Support needed

Guinea Bissau



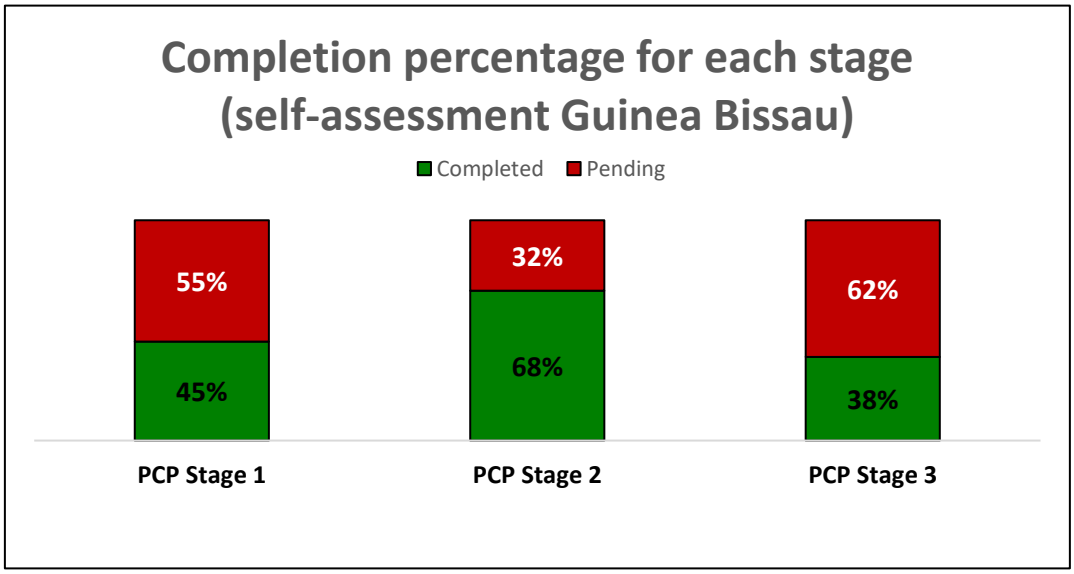
PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2015

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Guinea Bissau	1*	1*	1*	1*	1	1	2	2	2	2

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
47	46	93



FMD outbreaks & surveillance

- 64 outbreaks since 2016, great majority in cattle (reference laboratories referred to in only 4 cases).
- 92 samples sent to Dakar laboratory in 2016, 93 in 2018.
- 1 sample sent to ANSES reference laboratory in 2017.
- No NSP survey (lack of funding).

FMD Control measures

- After FMD confirmation in 2016: breeder awareness campaign, vaccination with trivalent vaccine (A, O, ST2) in affected zones.

Other notes and priorities for the future

- Mainly extensive breeding, with high mobility and transhumance in dry season.
- Socio-economic impact: 12 to 54 % lethality in the 3 last years (2016: 32 / 2017: 54 / 2018: 12).
- Risk hotspots are known as those with high animal concentration (water sources, pastures, important cattle markets and border zones), transhumance and commercial transactions within the country and with neighboring countries.
- Within a project on FMD control: technician training on informing on FMD clinical signs, training on investigation method on animal mobility on borders, awareness campaign for farmers to recognize FMD and know its impact on animal production (posters and radio spots).
- Plans for 2020-2023: passive surveillance, active surveillance with vaccination on FMD in high risk zones, more specifically cattle.
- Plans for 2024-2025: passive surveillance and active surveillance without vaccination to progress, if possible, to the recognition of the country with an FMD status without vaccination.

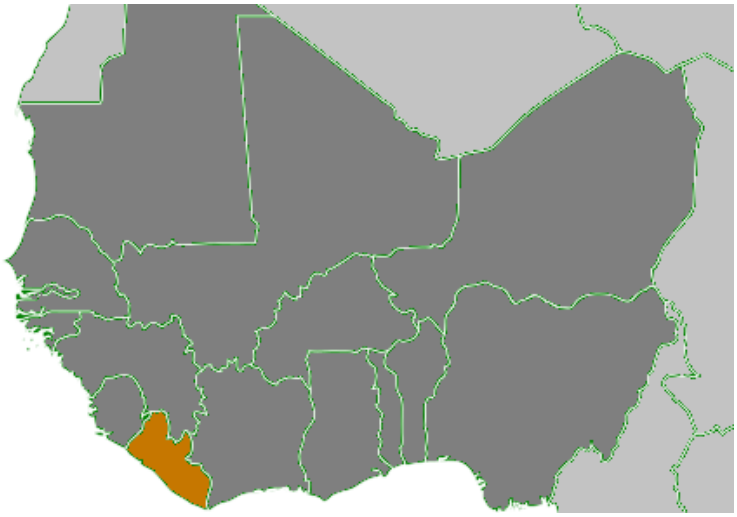
National shortcomings

- Lack of specialized technicians.
- Limited capacity of the National Veterinary laboratory.
- Epidemiological national network.

Support needed

- Training on diagnostic and animal disease investigation.
- Socio-economic impact of FMD.
- Drafting of a surveillance program for animal diseases.
- Capacity building for national laboratory and epidemiological national network.

Liberia

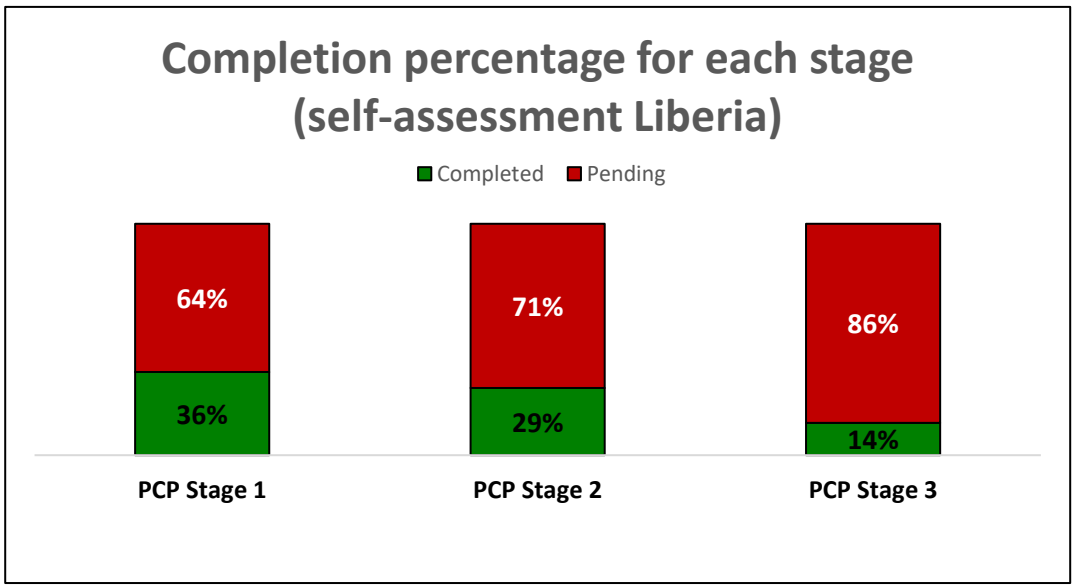


PCP-FMD Stage	
2016	0
2019	1*
OIE PVS evaluation	2019

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Liberia	0	0	0	1*	1	2	2	3	3	3

Statements answered	Statements missing	Total statements
23	70	93



FMD outbreaks & surveillance

- No FMD outbreak reported.
- Suspicion of outbreaks around community bordering Sierra Leone.

FMD Control measures

- Diseases surveillance and response plan validated in January 2019
  - Routine reporting since March 2018.
  - Active surveillance in points of entry, animal congregation areas has been initiated since March 2018.
- No FMD serosurveillance or seroprevalence study.

Other notes and priorities for the future

- Around 345 field crossing points.
- Transhumance and import of animals.
- No export.
- Existing SOPs for field sample collection but submission plans have not been fully developed for stakeholder participation.
- No socio-economic study done so far.
- No risk analysis done but porous borders (no quarantine) and wildlife are known as at risk.
- Active surveillance.
- Biosecurity, biosafety, awareness campaigns through trainings and stakeholder meetings have been initiated.
- No response to any suspected FMD outbreaks has been done but response to PPR, suspected anthrax and other conditions are ongoing.

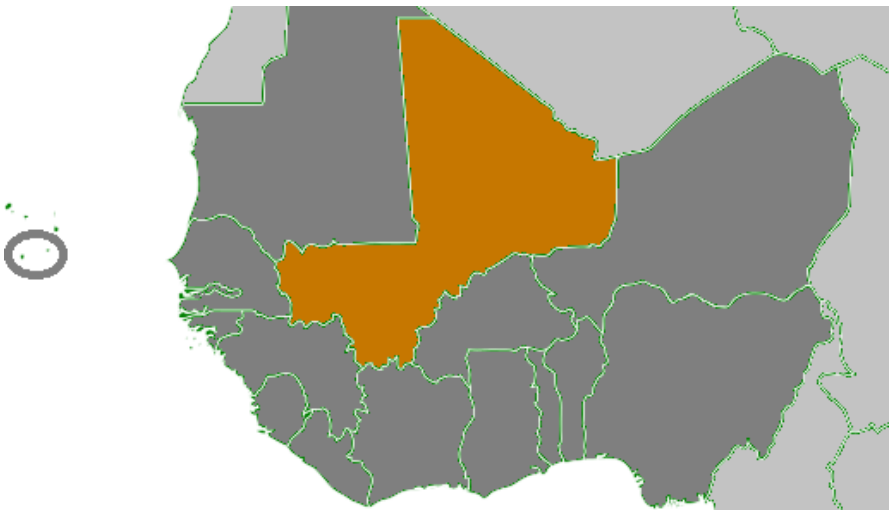
National shortcomings

- No FMD plan.
- Limited number of trained staff.
- Diagnostic procedures for Ag and Ab detection.
- Refresher trainings on risk assessment, surveillance, diagnostic, epidemiology, design on surveillance, vaccination strategy, animal movement control.
- No vaccination control.
- Absence of exchange of information on animal health with neighboring countries.

Support needed

- Refreshers trainings county staff on samples collection, packaging and submission.
- Training on diagnostic, epidemiology, workshop to design surveillance and vaccination strategy, animal movement at national/regional level.
- Establish ELISA diagnostic procedures for antigen and antibody detection and train laboratory staff to its implementation.
- Developing a RAP for FMD.

Mali

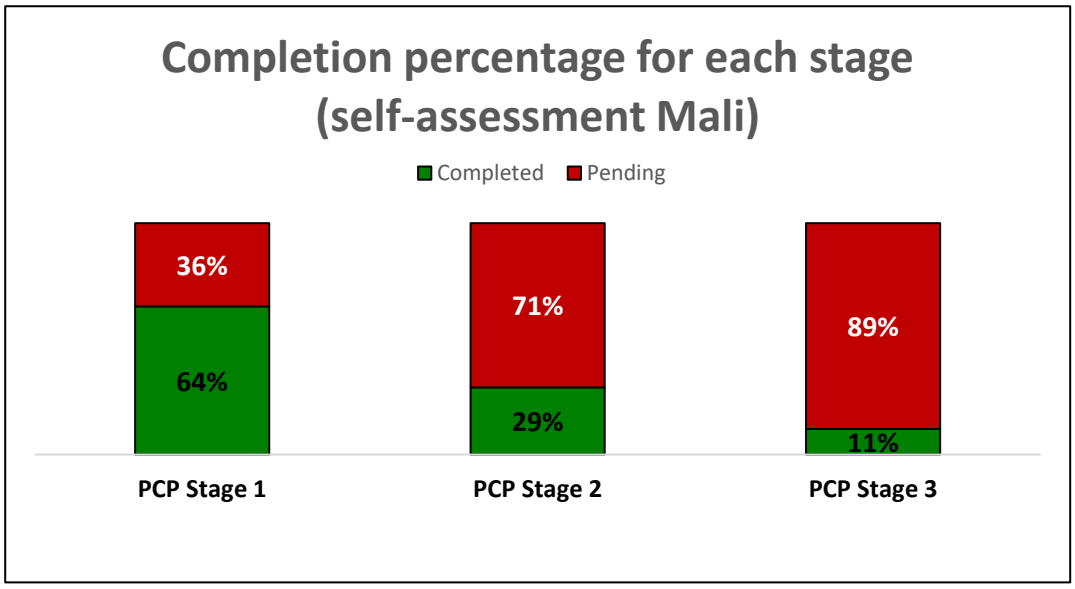


PCP-FMD Stage	
2016	1
2019	1*
OIE PVS evaluation	2017

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Mali	1	1	1	1*	1	1	2	2	2	3

Statements answered	Statements missing	Total statements
30	63	93



FMD outbreaks & surveillance

- 36 cattle outbreaks, 2 sheep outbreaks in 2018
- 70 samples tested in the field (rapid test) and sent to ANSES.
- Serotype O, topotype EA-3.
- No NSP serosurveillance the last 2-3 years.

FMD Control measures

- Passive surveillance.
- No active surveillance.
- Targeted vaccination.
- Animal movement control on transhumance tracks.
- National and regional information sharing reinforcement of farmers awareness on movement control.
- Biosecurity and biosafety awareness campaigns.

Other notes and priorities for the future

- Cattle mainly in the Southern part of the country.
- Pastoral breeding system (transhumance and nomadism in North-East of the country).
- Surveillance plan drafted but not validated: includes epidemiology of circulating strains.
- Risk hotspots identified: entry point (inter-state transhumance, trade), loading ramps, cattle trade markets, pastures, water spots.
- Wild animals are not seen as risk hot spot for FMD.
- Disease surveillance synergy within the national epidemiological surveillance network (EPIVET-Mali).

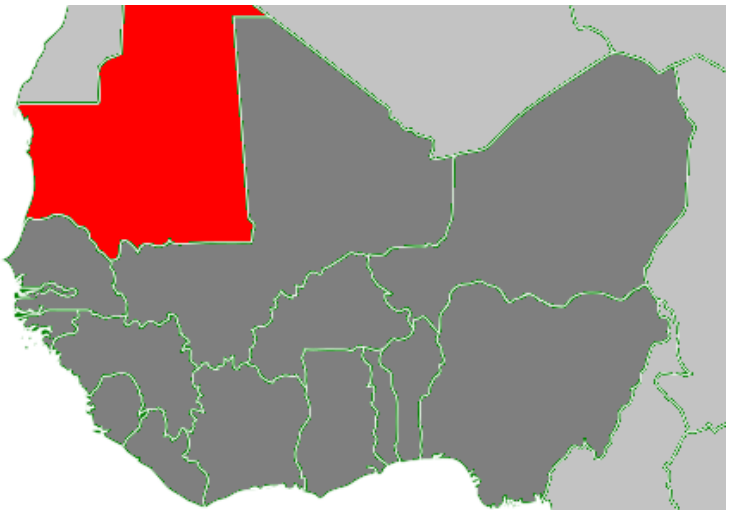
National shortcomings

- Low human resources, mainly in epidemiology, risk analysis, GIS.
- Lack of laboratory equipment, sampling and sample shipment material.
- Lengthy procedures to import FMD vaccines.
- Little financial resources for FMD control.

Support needed

- Training in epidemiology, risk analysis, GIS.
- Capacity building for laboratories (diagnostic and serotyping).
- Field sapling material and shipping.
- Support for plans drafting (risk assessment and surveillance, vaccination strategy) and financial resources for their implementation.

Mauritania

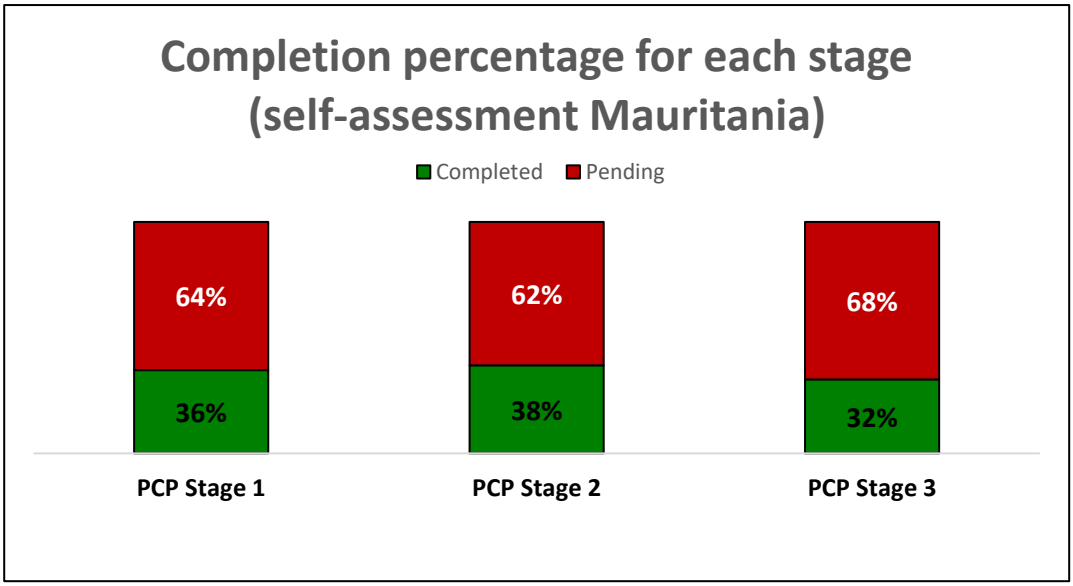


PCP-FMD Stage	
2016	-
2019	0
OIE PVS evaluation	2019

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Mauritania	-	-	-	0	0	1	1	1	1	2

Statements answered	Statements missing	Total statements
38	55	93



FMD outbreaks & surveillance

- FMD outbreaks in 2018 in South part of the country.
- A, O, SAT2 identified (20 samples sent to ANSES Lyon in 2018: Serotype O).
- FMD notified to OIE.
- Regional teams involved but with lack of tools.
- Rapid kits provided by FAO.

FMD Control measures

- Passive surveillance, syndromic surveillance.
- Participative surveillance, using the REMEMA (Réseau mauritanien d'épidémio-surveillance des maladies animales).
- Seroprevalences in 2012 survey:
  - 60%seroprevalence in cattle,
  - 35% seroprevalence in small ruminants.
- Breeders awareness, reinforcement of animal imports controls, animal identification and movement control, training of field stakeholders, reinforcement of vigilance on South and South-East borders, drafting of surveys on animal movements.

Other notes and priorities for the future

- Mainly extensive system of production (cattle, sheep, goats, wild boars, gazelles, …).
- Semi-intensive cattle production systems.
- Transhumance with Senegal, Mali and to Ivory Coast).
- Imports: cattle and goats (European breeds).
- Import of sheep for meat production (Balibali).
- Risk hotspots: Border inspection posts, transhumance, weekly cattle markets, high commercial exchanges with neighboring countries, wild fauna national parks.
- FMD control measures: reinforcement of laboratory diagnostic capacity and epidemiological and clinical monitoring, regional harmonization of animal movement control, strict enforcement of biosecurity measures at farm level and training on biosecurity.
- Synergy in disease control:
  - awareness campaigns on CBPP and PPR also cover other diseases, such as FMD
  - regular training of staff in charge of epidemio-surveillance
  - awareness campaigns of breeders
  - reinforcement of diagnostic capacities (kits, human resources, material, training, EIL
  - PPR-FMD vaccines.

National shortcomings

- Insufficient staff, breeding infrastructures to rehabilitate, REMEMA to reactivate.
- National and international transhumance roads to identify.
- No vaccination strategy, Lack in laboratory diagnostic.
- No socio-economic study conducted but losses due to FMD known: milk production, high mortality in young animals (cattle and small ruminants), high level of morbidity.

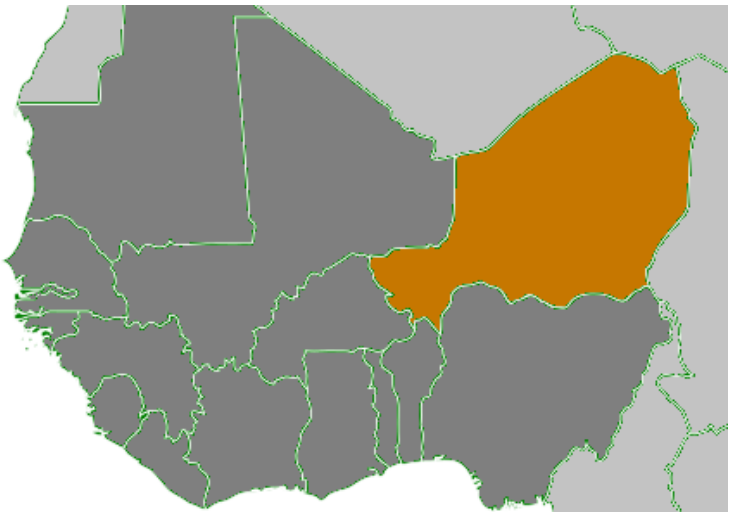
Support needed

- Training on diagnostic and epidemiology, Workshops to build surveillance system and vaccination strategy, Livestock census.

Recommendations

- Support of vaccination, specifically in dairy production areas.
- Reinforcement of laboratory diagnostic capacities, Livestock census.

Niger



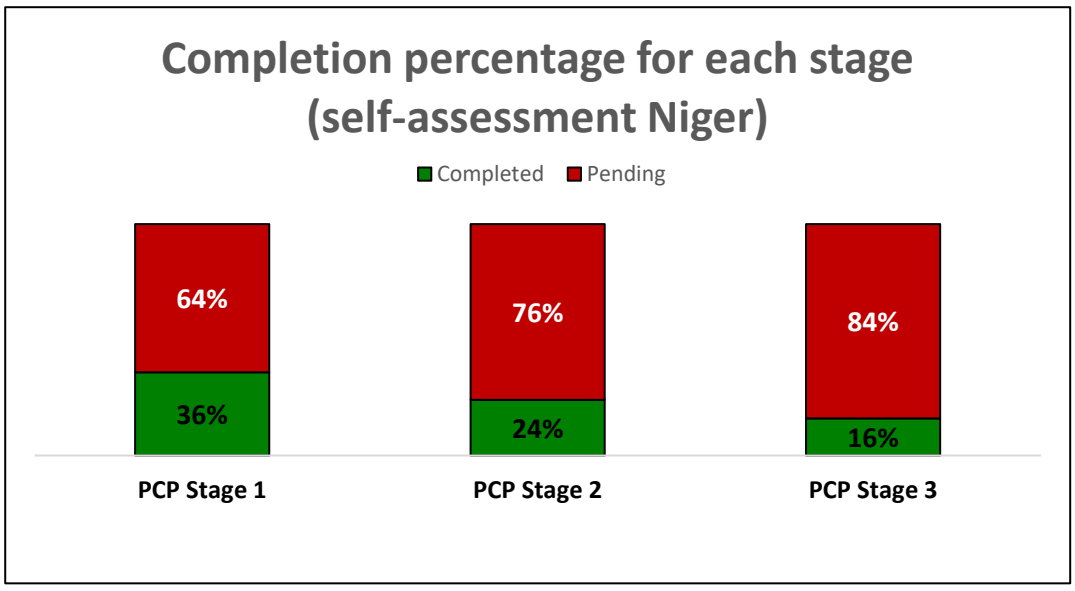
PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2019

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Niger	1*	1*	1*	1*	1	1	1	2	2	3

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
27	66	93



FMD outbreaks & surveillance

- FMD endemic.
- FMD outbreaks increasing: 2016: 161 / 2017: 187 / 2018: 679.
- Serotypes:
  - O (2014)
  - A, O SAT1, SAT2 (2015).
- No NSP surveillance done.

FMD Control measures

- Passive surveillance.
- Active surveillance in high risk zones.
- No FMD vaccination.

Other notes and priorities for the future

- No socio-economic study but FMD impact known.
- Risk hotspots identified: cattle markets, water spots.
- Labocel Niamey: molecular biology, serology (ELISA).
- Three regional laboratories.

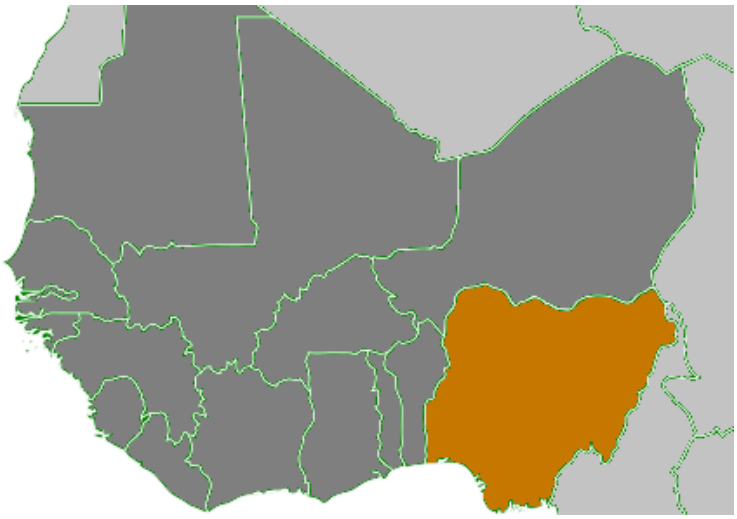
National shortcomings

- No FMD control plan.
- Means of communication with farmers and reporting incentives.
- Insufficient sanitary data on FMD.
- No clear information on economic losses of the disease.

Support needed

- Drafting of a control plan.
- Reinforcement of capacity buildings and laboratory diagnostic.
- Socio-economic impact study of FMD.

Nigeria

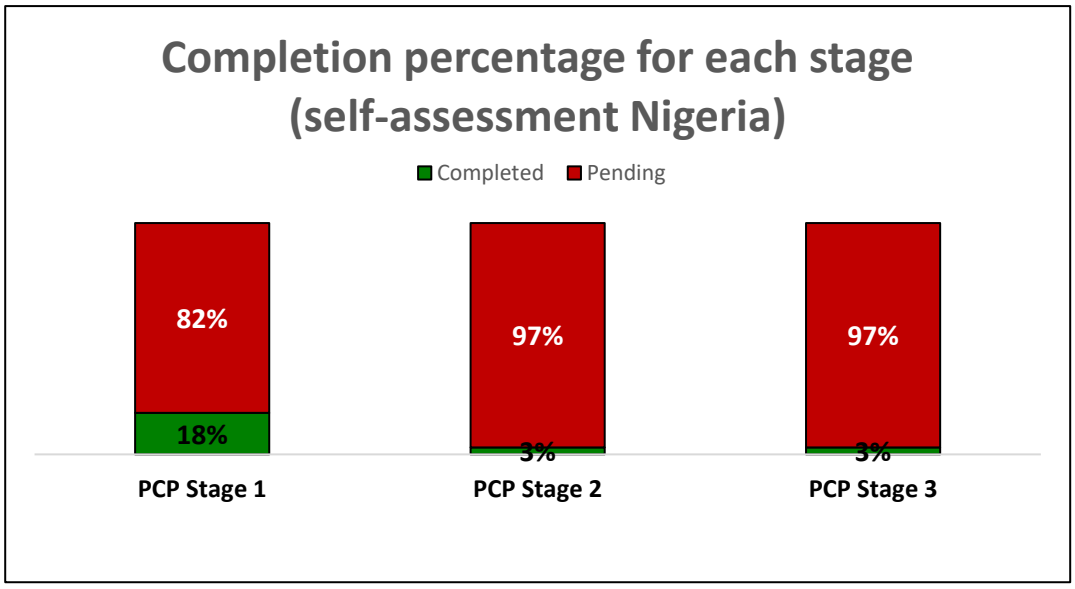


PCP-FMD Stage	
2016	1
2019	1*
OIE PVS evaluation	2019

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Nigeria	1	1	1	1*	1	1	2	2	2	3

Statements answered	Statements missing	Total statements
0	93	93



FMD outbreaks & surveillance

- FMD endemic (A, O, SAT1, SAT2.)
- Serotype O West African topotype, O East African-3 topotype, SAT 1 topotype X, SAT 2 topotype VII.
- NSP sero-surveillance in 2016-2018.

FMD Control measures

- Limited control strategy: quarantine for nomads, vaccination and strict biosecurity in dairy farms).
- Trivalent vaccines with indigenous strains based on Ag vaccine matching results.

Other notes and priorities for the future

- Livestock production mainly nomadic.
- No quantitative data on socioeconomic analysis of FMD but losses known (low reproduction and productivity, weight loss, reduced meat, milk and hides and skins production, reduced farmers' income.
- Risk hotspots: farms, communal grazing, live animal markets, abattoirs,).

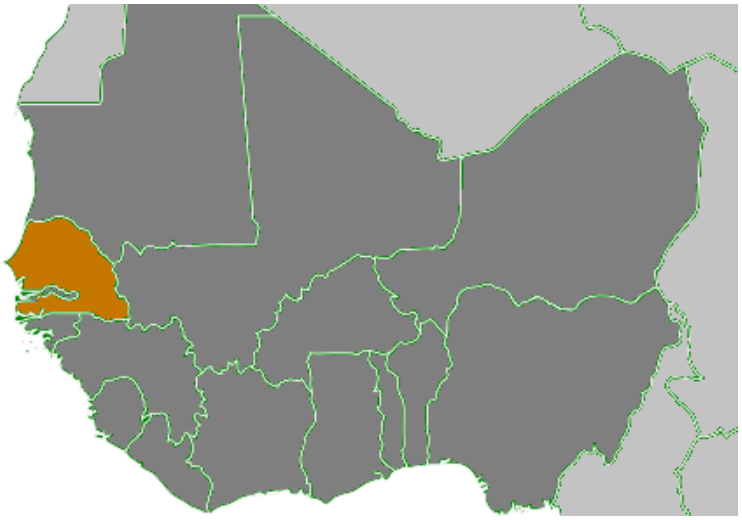
National shortcomings

- Poor surveillance system.
- Porous border and unrestricted animal movements (certification of vaccinated animals).
- Lack of FMD vaccination programme.

Support needed

- Continuous training on diagnostic capacity.
- Surveillance design and animal movement control at national/regional levels.
- Vaccination and post-vaccination strategy.

Senegal

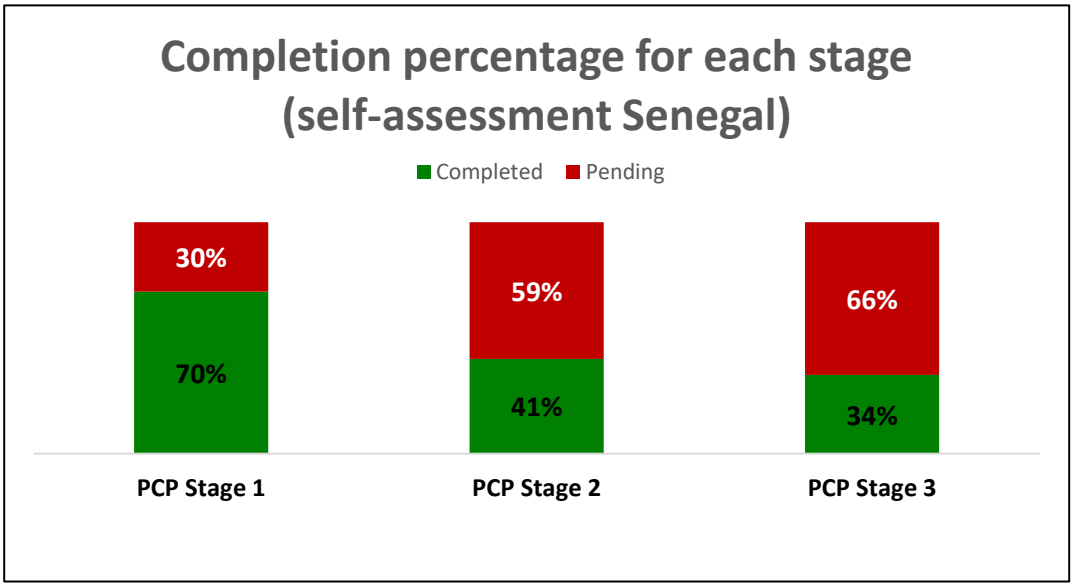


PCP-FMD Stage	
2016	1
2019	1*
OIE PVS evaluation	2016

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Senegal	1	1	1	1*	1	1	2	2	2	3

Statements answered	Statements missing	Total statements
88	5	93



FMD outbreaks & surveillance

- FMD endemic.
- FMD prevalence survey with FAO support in 2015 (A, O, SAT2), with 29% co-infection (2 to 3 serotypes).

FMD Control measures

- FMD control plan in development.
- Annual vaccination of exotic animals in dairy production areas from 2008 to 2017 (A, O, SAT2).
- Control reinforcement on border inspection posts.
- Awareness/communication reinforcement.
- No emergency plan, no risk assessment plan developed.

Other notes and priorities for the future

- No socio-economic study.
- Serotyping for vaccine matching done by national laboratory.
- Data on animal mobility available.

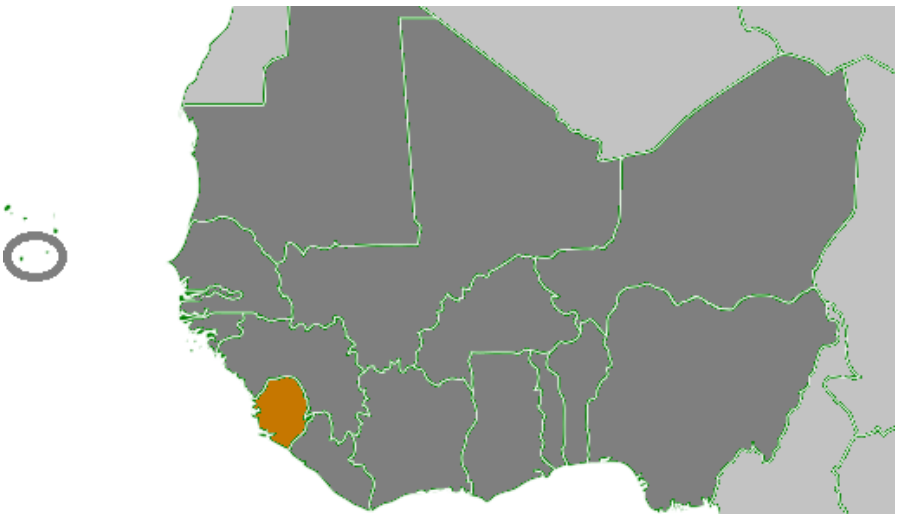
National shortcomings

- Under reporting of FMD outbreaks.
- Reinforcement of veterinary services capacity building.
- Update of circulating serotypes and topotypes.

Support needed

- Vaccine bank.
- Assistance for drafting control plan.
- Laboratories kits and reagent.

Sierra Leone

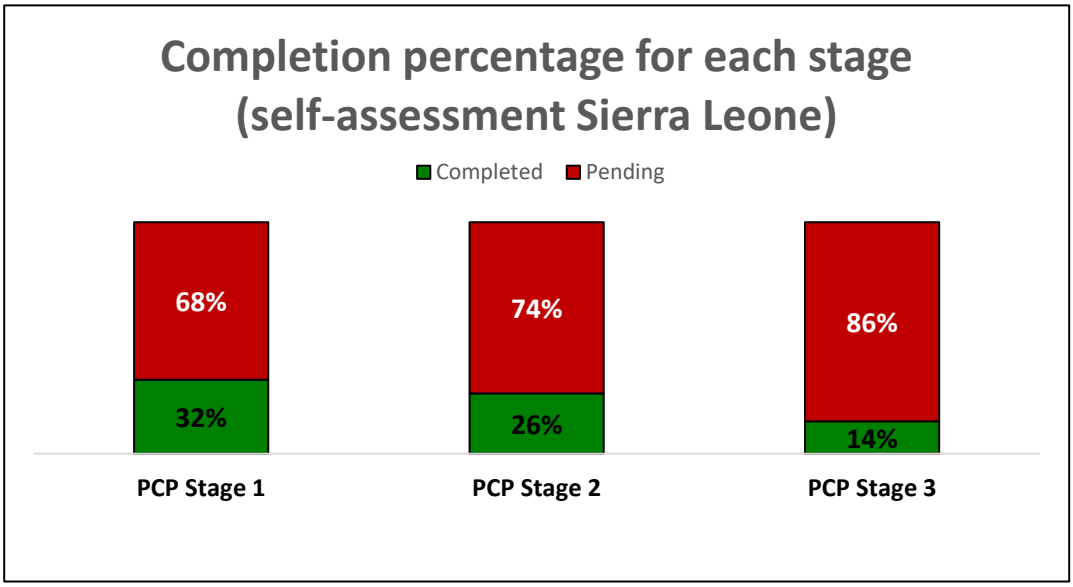


PCP-FMD Stage	
2016	0
2019	1*
OIE PVS evaluation	2010

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sierra Leone	0	0	0	1*	1	1	2	2	2	3

Statements answered	Statements missing	Total statements
22	71	93



FMD outbreaks & surveillance

- Previous FMD outbreak reported in 1958.
- New outbreaks in 2018 (5 outbreaks, serotype O) and 2019 (3 outbreaks, not typed).
- Serotyping in Pirbright.
- No NSP sero-surveillance undertaken-

FMD Control measures

- Weekly reports on priority animal disease outbreaks including FMD are compiled and submitted by the Districts to EpiUnit MAF-
- Quarantine restriction and market closure.
- Awareness of value chain actors on FMD impact and need for urgent reporting.
- Messages on risk pathways sent in districts.
- Training on syndromic surveillance of TADs.
- No FMD vaccination to date.
- Passive surveillance.

Other notes and priorities for the future

- No socio-economic study but losses known (mortality, morbidity, income, production and productivity losses).
- All districts bordering Guinea are considered as FMD high risk districts, due to rampant and uncontrolled movement of livestock across borders.

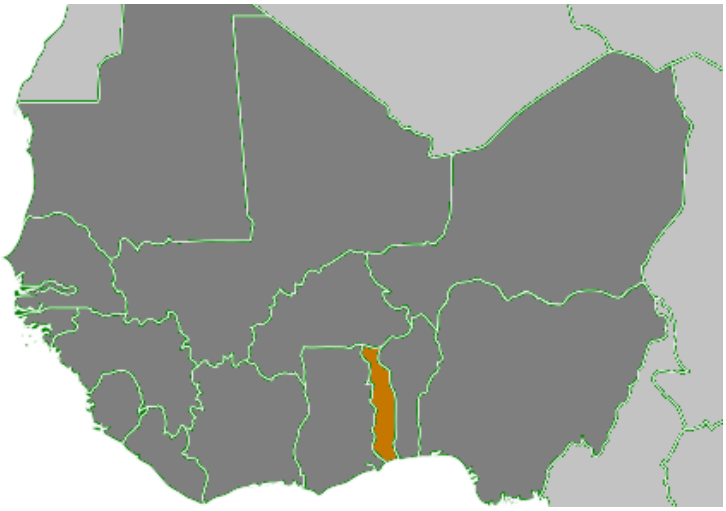
National shortcomings

- Central veterinary laboratory not yet operational but with capacities to diagnose TADs.
- Inadequate logistical capacity to control FMD.
- Human resources.
- No diagnostic capacity for FMD.
- No FMD control strategy, nor surveillance plan.

Support needed

- Training of field staff on diagnostics and investigation.
- Capacity for FMD diagnosis in the country.
- Training in diagnostic techniques.
- Development of an FMD RBSP and control plan.
- Socio-economic impact assessment.
- Participation of the country in international meetings.

Togo



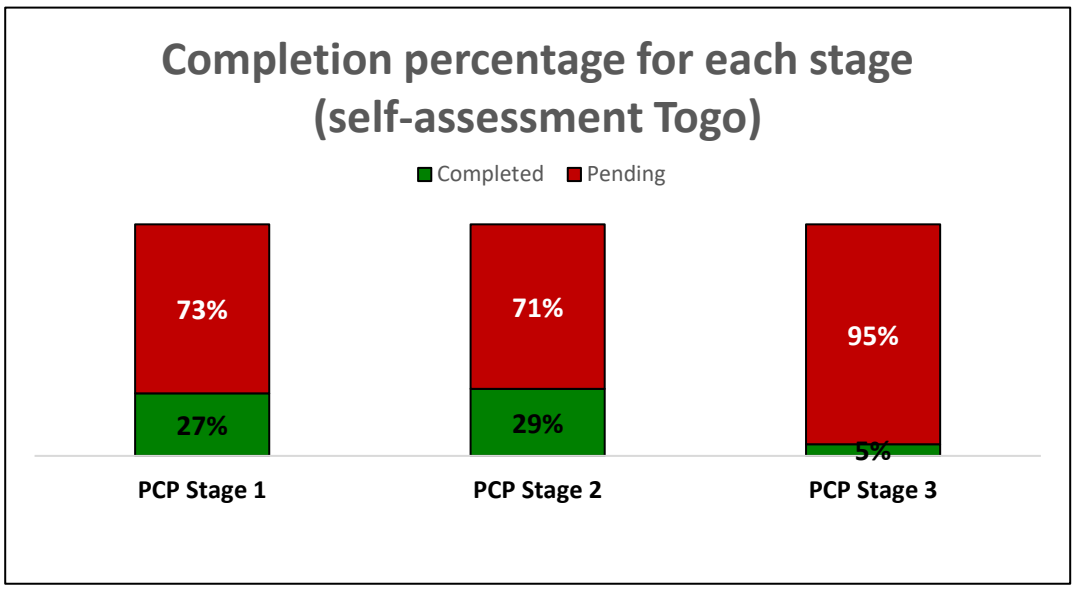
PCP-FMD Stage	
2016	1*
2019	1*
OIE PVS evaluation	2019

Provisional Roadmap 2019

	Validated Stages				Provisional Stages (not validated)					
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Togo	1*	1*	1*	1*	1	1	2	2	2	3

* indicates a provisional status given to the countries (countries had 6 months to provide additional information including a Risk Assessment Plan - if not, they will be downgraded to the previous stage)

Statements answered	Statements missing	Total statements
23	70	93



FMD outbreaks & surveillance

- FMD outbreaks in cattle and small ruminants.
- No serotype identified these last three years.
- Serotyping 2007 by Pirbright: O, A and SAT1.
- Symptomatic treatment for FMD.

FMD Control measures

- Only passive surveillance last two years.
- No specific FMD.
- FMD awareness developed together with other diseases awareness campaigns.

Other notes and priorities for the future

- Cartography of value chain drafted.
- National epidemiological surveillance network (REMATO).
- No NSP sero-surveillance.
- No specific study on FMD impact.
- Risk hotspots along animal movement from bordering countries.

National shortcomings

- No FMD control plan.
- Non updated serotyping for vaccine matching.
- No animal identification.
- Lack of communication.
- No compensation.

Support needed

- Evaluation of epidemiologic situation with risk analysis.
- Laboratory support for serotyping.
- Drafting and implementation of an FMD control plan.

Annex 5 - Detailed FMD-PCP stages evaluation - West Africa

Country	RAG Proposal		Comments
	2016	2019	
Benin	**1***	**1***	• Circulating strains are serotype O and A and no serotyping done in last 3 years due to lack of resources. • PVS mission was in 2014 and 8 of the 13 critical competencies were under scored but has improved since. • PVS recommendation developed into activities and under implementation. • Ongoing FAO TCP on strengthening the VS implementing PVS mission findings, training of HR, improvement of lab diagnostic capacity. • Training VS on sample collection and shipment planned for September 2019 under the FAO TCP. • Recruitment of vets and VPP done. • Receive vaccines but costs are high and a challenge to Benin. • FMD control plan/strategy being drafted and with an initiative of cost recovery (nominal costs to farmers) on vaccination. Plan can be shared by June 2020 if PSO support is provided. • Awareness of famers to improve diseases reporting ongoing. • <u>Shortcomings and support needed</u> ✓ Epidemiological surveillance network. ✓ Human resources shortage. ✓ Training needs on epidemiology and diagnosis of FMD, study and mapping of animal movements. ✓ Laboratory diagnostics capacity improvement. **<u>Recommendations</u>** → To request for PSO support to complete the draft FMD control strategy. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the FMD working group by March 2020**

Country	RAG Proposal		Comments
	2016	2019	
Burkina Faso	**1***	**1***	• FMD endemic but current FMD situation unknown. • No active surveillance and diagnostic capacity in the country (all information based on passive surveillance). • Sero-typing of the virus conducted in 2018 (cattle, small ruminants and pigs), but not at the lineage level. • Livestock national and cross-border mobility is common for both pastoral and trade-related movements, but lack of understanding. • No socio-economic impact study and no characterization of the livestock value chains conducted. • Risk analysis (Risk Assessment Plan) is previewed to be conducted by 2020. • There are less than 30 official veterinarians in the country and VPPs are key actors involved in surveillance and control of livestock diseases in the country. **Output 1**: 27% of completed activities for stage 1. **Output 2**: Livestock sector (2 completed/9 pending); Surveillance and Diagnostics (5 completed/17 pending); Veterinary Services (20 completed/14 pending); Control, Prevention and Evaluation (2 completed/24 pending). • <u>Shortcomings and support needed</u> ✓ Identification of the risks for FMD circulation. ✓ FMD surveillance and control plans. ✓ Active surveillance and laboratory diagnostics. ✓ Characterization of the livestock value chains and evaluation of socio-economic impacts of FMD. **<u>Recommendations</u>** → Demonstrate good understanding of disease in the entire country and clear identification of risk hotspots. → Continue to work closely with the assigned PSO to develop the Risk Assessment Plan in order to progress to Stage 1. → Request a new PVS mission. → **PCP-FMD Stage 1 Provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Cabo Verde	**0**	**0**	• Carbo Verde is an island located west of Senegal. FMD never been reported in the country for many decades. • The country is importing is limited to meat from Brazil, Argentina and Portugal. • It received a financial support from AU-IBAR for putting together an application to OIE for recognition of freedom of PPR. This would be a model can be applied for declaration of FMD freedom in the country. • <u>Shortcomings and support needed</u> ✓ Inadequate Human and financial Resources. **<u>Recommendations</u>** → Cabo Verde is in Stage 0. The country is encouraged to apply for FMD freedom without vaccination- from historical record. → Cabo Verde should consider conducting sero-surveillance on sample collected during PPR surveillance as baseline. → **PCP-FMD Stage 0** Stage 0: 2019 and 2021. Stage 4: 2022 and 2023 (prepare dossier to submit to OIE). OIE status in 2024.

Country	RAG Proposal		Comments
	2016	2019	
Cote d'Ivoire	**1***	**1***	• FMD is a priority disease with mandatory reporting, but other TADs seemed to be a priority on the national agenda. • Livestock mobility patterns are known and should be tackled with a formal assessment. • Serosurvey was not conducted. • Last typing conducted in 2018 (O, topotype EA-3). • PVS GAP mission in 2016, technical competences and human resources key issues. • Ruminant value chain is not well characterize at the moment, unlike the swine value chain. • Use of vaccines during the 2018 epidemic was considered and evaluated by the VS, but the costs was the main reason for not proceeding. • Capacities of field veterinary and PVVs staff in investigations and diagnostics will be needed. **Output 1**: 45% of completed activities for PCP-FMD stage 1. **Output 2**: Livestock sector (6 completed/5 pending); Surveillance and Diagnostics (7 completed/15 pending); Veterinary Services (18 completed/16 pending); Control, Prevention and Evaluation (3 completed/23 pending). • <u>Shortcomings and support needed</u> ✓ Identification of the risks for FMD circulation. ✓ Characterization of the livestock value chains and evaluation of socio-economic impacts of FMD. ✓ FMD surveillance and control plans. ✓ Active surveillance and laboratory diagnostics. **<u>Recommendations</u>** → Demonstrate good understanding of disease in the entire country and clear identification of risk hotspots. → Require for the assistance of a PSO to develop the Risk Assessment Plan in order to progress to Stage 1. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020.**

Country	RAG Proposal		Comments
	2016	2019	
Gambia	**1**	**1***	• During the last FMD outbreak the country undertook a small impact study considering the number of cases and deaths, the fluctuation of affected species' market values, the cost of treatments and affected farmers' psychological trauma. The study came up with high amount of lost money. • SAT Output 1: 23% of completed activities for PCP-FMD stage 1. • FMD Awareness campaign conducted and communication materials provided to farmers. • Socio economic study conducted. • Animal mobility survey and the study to identify risk hotspot are ongoing. • <u>Shortcomings and support needed</u> ✓ Faced problems to navigate within the Self-Assessment Tool (SAT). It took some time to fill it in. ✓ Use of antibiotics to treat the secondary infections due to FMD. Difficulty in vaccine procurement due to the established threshold for procurement. No laboratory diagnosis capacity. Only sampling using OIE manual as reference and send to Dakar. ✓ No document produced to move through the PCP-FMD stages. **<u>Recommendations</u>** → **PCP-FMD Stage 1 provisional** Stage 1: 2020 - 2021 Stage 2: 2022 - 2023 Stage 3: 2024 - 2025 → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by February 2020**

Country	RAG Proposal		Comments
	2016	2019	
Ghana	**0**	**1***	• High population of small ruminants followed by large ruminants and less than one million pigs. • SAT Output 1: 75% of completed activities for PCP-FMD stage 1. • The northern and eastern parts of Ghana are identified as high-risk areas and central part of the country is considered as medium risk. • Serotypes A, O, SAT1 and SAT2 have been identified in the country. • Response to FMD outbreaks includes animal movement controls, surveillance (passive-slaughter houses). • Veterinary Service provides regulatory framework, legislation (Animal Disease Act 1961), personnel, expertise, training and funding. • NSP sero-surveillance has not been conducted to help understanding the FMD distribution in the country. • Socio-economic study has not been carried out. • <u>Shortcomings and support needed</u> ✓ Low reporting of FMD cases – need to increase awareness among livestock keepers and veterinarians. ✓ Field investigation and sample collection need to be heightened. ✓ Limited capacity and capability to conduct diagnostic analysis. **<u>Recommendations</u>** → Ghana has the required capabilities to advance in FMD control. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Guinea	**1***	**1***	• SAT Output 1: 73% of completed activities for PCP-FMD stage 1. • FMD is cyclical in Guinea, 1st outbreak reported in 1998, 2nd in 2006, 3rd 2014 and 4th in 2018. • A response plan has been developed and 175,000 animals are vaccinated with the identified strain (O, A, SAT1, SAT2). • Socio-economic studies has been conducted to estimate the impact of the disease. • Value chain studies including animal movement for small and large ruminant and swine has been conducted. • World Bank (REDISSE), ECOWAS, Swiss Cooperation and the Government of Guinea support the implementation of FMD and other transboundary animal diseases (PPR). • An animal and Public health Bulletin has been implemented in the country and shared with FAO ECTAD every week. • Risk assessment is conducted and FMD risk hotspot for FMD identified. • <u>Shortcomings and support needed</u> ✓ Developed comprehensive socio-economic studies and the RBSP. ✓ Strengthened the national lab capacity for serotyping. **<u>Recommendations</u>** → Guinea has the required capabilities to advance in FMD control and should consider advancing to PCP-FMD stage 2 before 2021 and stage 3 before 2025. → Share with Guinea the RBSP template and organize a backstopping for support. → Guinea needs to finalize the Risk Assessment Plan by 2020 and move to the stage 1 before advancing to PCP-FMD stage 2 by 2021 and stage 3 by 2025. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Guinea Bissau	**1***	**1***	• The first outbreak was recorded in 2016. The serotypes identified were A and O. • The samples (sera, swabs) were sent within the framework of RESOLAB to LNERV for serotyping and shipment to ANSES for molecular characterization. • The National veterinary laboratory is under renovation through REDISSE and 3 regional laboratories will be also renovated. • Polyvalent laboratory for diagnosis of animal diseases and human diseases is being constructed. • Management of FMD outbreak: Movement control. • Awareness communication materials were produced, funded by FAO. • <u>Shortcomings and support needed</u> ✓ No Laboratory diagnosis capacity. ✓ Use of antibiotics for threat secondary infections due to FMD. ✓ The socio-economic impact study was not undertaken. ✓ No serological survey. ✓ No Risk assessment. **<u>Recommendations</u>** → Consider antimicrobial resistance when using antibiotics for the treatment of secondary infection. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by March 2020**

Country	RAG Proposal		Comments
	2016	2019	
Liberia	**0**	**1***	• Support for lobbying for political support to increase resources to the VS is required. • Current work is focusing on training and setting up systems. • Livestock/Meat Value Chain outlined and a net importer of animals • No FMD outbreak reported but suspected to occur. • Recent PVS Follow up Mission with PPR component in August 2019 • Risk mapping not done but risk hotspot/high risk areas known to VS • Held cross border meeting on animal movement and surveillance. • Laboratory well equipped and with technical support and samples obtained but not tested. • <u>Shortcomings and support needed</u> ✓ No National FMD Plan or Risk Assessment Plan and Animal Diseases Surveillance and Response plan validate in 2019. ✓ Limited number of trained staff for diagnostic testing including establishing ELISA (Ag/Ab detection). ✓ Conduct refreshers trainings county staff (County Surveillance and Livestock officers, CAHWs) on samples collection and submission. ✓ Training on epidemiology, surveillance design, vaccination strategy and mapping animal movements. **<u>Recommendations</u>** → Efforts to develop Risk Assessment Plan should be increased with PSO support and, benefiting from recent PVS mission outcomes/findings, to have a guiding national plan and to advance to PCP-FMD Stage 1 by 2020, as desired. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by March 2020**

Country	RAG Proposal		Comments
	2016	2019	
Mali	**1**	**1***	• Serotype O, Topotype EA-3. • Submission of samples to FMD Ref Lab (ANSES). • NSP studies not carried out during last three years. • Passive surveillance predominant and no active surveillance. • PVS FU mission conducted in 2017 and identified gaps in legislation, lab diagnostics capacity. Mali requested for a Gap analysis mission. • SAT Output 1: 64% of completed activities for PCP-FMD stage 1. • <u>Shortcomings and support needed</u> ✓ Lack of surveillance capacity. ✓ Risk assessment studies with identification of risk hotspot are not completed but under development in order to finalize the Risk Assessment Plan. ✓ Lack of engagement with farmers and stakeholders. ✓ Human resources in the VS are at low level. ✓ Obsolete laboratory equipment and requires assistance to build FMD serotyping diagnostic capacity. ✓ Vaccine procurement process is slow. ✓ Sample collection and shipment is a challenge. ✓ Request training of VS personnel on Risk Analysis. **<u>Recommendations</u>** → Conduct a needs assessment of the laboratory, based on 2017 PVS follow-up mission report findings, FAO laboratory mapping tool for immediate action. → Consider OIE PVS sustainable laboratory support mission in longer term. → **PCP-FMD Stage 1 provisional** → **Complete and submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Mauritania		**0**	• FMD endemic but current FMD situation unknown. • Very limited human resources in the VS at all levels. • An epidemiological network already in place (REMEMA created in 1998) but currently weak. • Collection of animal mobility data at the Southern border and existing training on risk mapping (CIRAD) but no integration in sero-prevalence study design. • LFDs to support identification of FMDV circulating strains were delivered 2018 (FAO, ANSES mission). • No socio-economic impact assessment of FMD. • No National Control Plan for FMD. • Last PVS mission in July 2019 – preliminary results highlighted the weaknesses of the VS. • Good command of the PPR GEP approach. **SAT Output 1**: 36% of completed activities for PCP-FMD Stage 1. **SAT Output 2**: Livestock sector (4 completed/7 pending); Surveillance and Diagnostics (4 completed/18 pending); Veterinary Services (16 completed/18 pending); Control, Prevention and Evaluation (9 completed/17 pending). • <u>Shortcomings and support needed</u> ✓ Planning of sero-prevalence study. ✓ Training in socio-economic impact assessment. ✓ Support in collecting data on national mobility. ✓ Laboratory training on PCR. **<u>Recommendations</u>** → Use of the remaining Lateral Flow Devices kits (<10) by field personnel in high risk zones. → Optimization of surveillance protocols with knowledge gained from CIRAD training on qualitative risk analysis and risk-based approach. → Revitalization of the REMEMA and development of a Risk Assessment Plan, with proposed PSO support. → **PCP-FMD Stage 0**

Country	RAG Proposal		Comments
	2016	2019	
Niger	**1***	**1***	• Systems and procedures being set up but challenges due to resources for implementation. • Early warning systems can be improved and establishing incentives for disease reporting (679 FMD suspicions in 2018). • PVS Mission February 2019. • Surveillance system needs strengthening - 19/23 pending activities under surveillance component of the SAT (Output 2). • Niger forecast PCP-FMD stage 1 by 2021. • <u>Shortcomings and support needed</u> ✓ Lack of a plan to control the disease. ✓ Insufficient reliable health data on FMD. ✓ The lack of evaluation of losses due to FMD obscures its importance. ✓ Strengthening laboratory surveillance and diagnostic capacities. ✓ A study of the socio-economic impact of the disease. ✓ Awareness for farmers on FMD. ✓ Means of access to fresh clinical cases by technicians. ✓ The lack of capacity to respond to outbreaks and related lack of incentives for passive surveillance. **<u>Recommendations</u>** → Strengthen surveillance and diagnostic systems. → Develop a Risk Assessment Plan to guide implementation of activities. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Nigeria	**1**	**1***	✓ FMD is a priority disease and is highly under reported with fewer cases reported between 2012 to-date. ✓ Serotype O had the highest incidence followed by Serotypes A. ✓ No National quantitative data on socioeconomic analysis of FMD. ✓ Prototype FMD vaccine has been developed using indigenous isolates selected based on the antigenic vaccine matching results. ✓ Vaccination of commercial dairy farms. ✓ Transparency in disease reporting at international level is good. ✓ PVS mission was conducted in 2019 and generally showed improvements. ✓ Using PVS report to leverage for political and financial support. ✓ <u>Shortcomings and support needed</u> ✓ Strengthening and expansion of disease surveillance network. ✓ Provision of logistics and vaccines for adequate vaccination campaign coverage for TADs. ✓ Provision laboratory equipment, reagents and consumables. ✓ Support for the development of legal frame work, national policy and EPP on TADs. ✓ Support for capacity building, advocacy and awareness creation on TADs. ✓ Identification of circulating serotypes of FMD and mapping of their distribution. ✓ Facilitation of cross border meetings and collaboration. ✓ Strengthen collaboration between public and private sectors including veterinarians. ✓ SAT Output 1: only 18% of completed activities for PCP-FMD stage 1. **<u>Recommendations</u>** ✓ Big potential for achievement of the progress along PCP stages reaching stage 2. Need socioeconomic impact study and support of international organization to assist with advocacy for national funded control programme. ✓ **PCP-FMD Stage 1 provisional** ✓ **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Senegal	**1**	**1***	• National Surveillance System of animal diseases in place in Senegal including FMD and for each disease the "Case Definition" was agreed on. • If there is a suspected case then the available protocol for the way forward is activated: fill in the available forms, report to the hierarchy, and implement sanitary measures, collection of samples. • In 2018 each of the 14 regions undertook investigation at the field level. At central level two investigations were conducted in two district. • In the lab, two diagnostic methods: molecular diagnostic for A, O, SAT 1 and SAT 2 and antigen serological assays. • LNERV is one of two ECOWAS regional laboratory for FMD having the capacity to ship samples to Reference Lab. • High risk areas were identified. • <u>Shortcomings and support needed</u> ✓ No capacity for virus isolation and molecular characterization. ✓ The country is using antibiotics and local medicines to treat secondary infections following FMD. **<u>Recommendations</u>** → Consider antimicrobial resistance when using antibiotics. → Contact the WG to assign PS0 for Senegal. → **PCP-FMD Stage 1 provisional** Stage 2: 2022 to 2024 Stage 3: 2025 → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Sierra Leone	**0**	**1***	• Very limited human resources but willingness to implement FMD control. • Serotype 'O' typed in 2018 but no resources in 2019. • Animal Disease Surveillance and Reporting System (IADSR) established. • PVS mission carried out more than five years ago. • Legislation support and capacity of VS to develop and enforce limited. • MoUs with neighbors on cross-border coordination. • <u>Shortcomings and support needed</u> ✓ Acute shortage of Veterinarians and VPP - training support needed. ✓ Build capacity to support control FMD. ✓ Value chain analysis. ✓ Socio-economic impact studies. **<u>Recommendations</u>** → Continue process to train veterinary para professionals and veterinarians with international org and donor support. → Request for OIE PVS Mission to provide guidance on strengthening VS as this will advance this component and be progressive. → Develop a Risk Assessment Plan to guide to implementation of activities and justification of investments in FMD control using FAO ECTAD International Epidemiologist/PSO risk-based surveillance, sampling identifying risk hotspots, lab diagnostic. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by June 2020**

Country	RAG Proposal		Comments
	2016	2019	
Togo	**1***	**1***	• Last PVS mission in January 2019. • No participation to the FAO regional workshop on FMD in 2019 in Abidjan. • Yearly patterns of FMD outbreaks peak during the rainy season (July – September), however no work has been done to investigate risk factors and relation to animal mobility issues. • No FMDV typing since 2012. • Only passive surveillance. • Regional study on risk hotspots for FMD in 2006. • No socio-economic impact assessment on TADs. • FMD vaccination not supervised by the Veterinary Services. • No control measure in place for FMD, to this regards, no progress since the 1st Roadmap meeting. • No national control plan for FMD nor specific SOPs for the Veterinary Services. • Existing report on value chain analysis (ovine), main stakeholders identified, but no awareness campaigns nor livestock mobility study. **SAT Output 1**: 27% of completed activities for PCP-FMD stage 1. **SAT Output 2**: Livestock sector (3 completed/8 pending); Surveillance and Diagnostics (2 completed/20 pending); Veterinary Services (11 completed/23 pending); Control, Prevention and Evaluation (2 completed/24 pending). • <u>Shortcomings and support needed</u> ✓ Development of a Risk Assessment Plan and proposed support from regional PSO. ✓ Support sample submission through the provision of LFDs. ✓ Capacitation on risk analysis methods. **<u>Recommendations</u>** → Work on the development of a risk assessment plan, with the support of a PSO. → Improve surveillance capacity, with the support of reference laboratories and supporting organisations. → **PCP-FMD Stage 1 provisional** → **Submit the Risk Assessment Plan to the GF-TADs FMD working group by November 2020**