



Food and Agriculture
Organization of the
United Nations



World Organisation
for Animal Health
Founded as OIE



GF-TADs for Africa
Contagious bovine pleuropneumonia (CBPP)
Standing Group of Experts (SGE)
for Africa
Inaugural meeting
6 – 15 June 2023



June 2023





Table of contents

Table of contents.....	3
Introduction and background to the meeting.....	5
Objectives and narrative report of the meeting	5
Sessions 1 and 2. Governance issues and general information sharing	12
Sessions 3 and 4. Focus on technology (surveillance, diagnosis, vaccines, vaccination, prophylaxis, antibiotic treatment, research)	14
Sessions 5 and 6. Focus on policy (willingness to pay, public-private partnerships, vaccination, compensation, trade implications,...).....	16
General considerations and work programme for the SGE (2023 - 2024).....	18
Annex 1. Terms of reference of the CBPP SGE for Africa	23
Annex 2. List of participants	27



Recommended Citation

WOAH and FAO. 2023. *First / inaugural GF-TADs for Africa meeting of the Standing Group of Experts (SGE) for Contagious bovine pleuropneumonia. Report of the online event, 6 – 15 June 2023 Nairobi.*

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) or the World Organisation for Animal Health (WOAH) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO or the WOAHA in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO or WOAHA.

© WOAHA and FAO, 2023



Some rights reserved. This work is made available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo/legalcode>).

Under the terms of this licence, this work may be copied, redistributed and adapted for non-commercial purposes, provided that the work is appropriately cited. In any use of this work, there should be no suggestion that FAO or WOAHA endorses any specific organization, products or services. The use of the FAO or WOAHA logo is not permitted. If the work is adapted, then it must be licensed under the same or equivalent Creative Commons licence. If a translation of this work is created, it must include the following disclaimer along with the required citation: "This translation was not created by the Food and Agriculture Organization of the United Nations (FAO) or the World Organisation for Animal Health (WOAHA). FAO and WOAHA are not responsible for the content or accuracy of this translation. The original English edition shall be the authoritative edition."

Disputes arising under the licence that cannot be settled amicably will be resolved by mediation and arbitration as described in Article 8 of the licence except as otherwise provided herein. The applicable mediation rules will be the mediation rules of the World Intellectual Property Organization (<http://www.wipo.int/amc/en/mediation/rules>) and any arbitration will be conducted in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL).

Third-party materials. Users wishing to reuse material from this work that is attributed to a third party, such as tables, figures or images, are responsible for determining whether permission is needed for that reuse and for obtaining permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

Sales, rights and licensing. FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org. Requests for commercial use should be submitted via: www.fao.org/contact-us/licence-request. Queries regarding rights and licensing should be submitted to: copyright@fao.org.

Publications of the World Organisation for Animal Health are available either on the WOAHA website (www.woah.org) or can be purchased through the WOAHA online bookshop (www.woah.org/en/ebookshop/).



Introduction and background to the meeting

Contagious bovine pleuro-pneumonia (CBPP) or lung sickness in cattle, caused by *Mycoplasma mycoides subsp. mycoides* (Mmm) is truly an African disease, long eradicated from the rest of the world, with few exceptions. The disease represents a considerable burden for cattle owners in many parts of Africa (EMPRES-AH, FAO, 2013), from Senegal and the Gambia in the west through Somalia in the east, and as far south as Namibia and Tanzania.

In October 2021, the [10th Regional Steering Committee \(RSC\)](#) for Africa of the *Global Framework for the progressive control of Transboundary Animal Diseases* (GF-TADs for Africa) endorsed the [2021 – 2025 Strategic Plan](#), which targets five TADs, i.e. *African swine fever* (ASF), *Foot-and-mouth disease* (FMD), *Peste des petits ruminants* (PPR), *Rift valley fever* (RVF) and indeed *Contagious bovine pleuro-pneumonia* (CBPP), in addition to the overall strengthening of veterinary services.

The GF-TADs' *Standing Group of Experts* (SGE) format allows countries with similar socio-economic and epidemiological situations to share information, challenges and best practices, and to discuss regional solutions and approaches to enhancing control. The *Terms of reference* (ToR) of the SGE CBPP for Africa were adopted during the [11th Regional Steering Committee \(RSC\)](#) meeting for Africa, held in June 2022. The ToR of the SGE are presented as **annex 1**.

Objectives and narrative report of the meeting

The establishment and launch of SGE CBPP for Africa was undertaken by the WOAHA Regional Representation for Africa, in its capacity as the Secretariat of the GF-TADs for Africa RSC, with the support of the Food and Agriculture Organization of the United Nations (FAO) and the African Union (AU-IBAR and AU-PANVAC).

The meeting was held via video conference (Zoom platform, in 6 sessions) from 6 – 15 June 2023.

The launch meeting was attended by all 4 founding member countries (Chad, Nigeria, Somalia and Zambia) that have extensive experience in controlling CBPP and responded to a public call for expression of interest (December 2021 - January 2022) to join the SGE as Member country. The call also invited expressions of interest from institutions and individuals. Also present at the launch were the African Union *Interafrican Bureau for Animal Resources*, the *Regional Animal Health Centre for the Economic Community of West African States* (RAHC for ECOWAS), the Secretariat of the *Common Market for Eastern and Southern Africa* (COMESA), FAO and WOAHA



Regional Representations, WOAHA and FAO Reference Laboratories as well as selected national / regional laboratories : *Pan African Veterinary Vaccine Centre* of the African Union (AU—PANVAC); the *National Veterinary Research Institute* (NVRI), Vom, Nigeria; the *Animal Health Institute* (AHI), Sebeta – Ethiopia; the *Botswana National Veterinary Laboratory* (BNVL) Sebele, Gaborone – Botswana; and the *Laboratoire Central Vétérinaire* (LCV) Sotuba, Bamako - Mali.




Overall the meeting was attended by a cumulative total of 45 participants over the 6 daily meetings (up to 33 participants per day). Forty per-cent (40%) of participants was French-speaking, while 23% were women. The list of participants is presented as **annex 2**.


Based on the expected outcomes of this meeting and follow-up activities, being:

1. The SGE - CBPP for Africa is established and launched to guide on technical aspects of CBPP control at the national and (sub) regional levels;
2. The SGE - CBPP for Africa Terms of Reference are shared ;
3. The topics to be covered by SGE - CBPP for Africa are identified and validated;
4. The support of FAO and WOAHA to the Member Countries is strengthened.

...the following agenda was prepared, fostering as much exchange of information and discussion between participants as possible (agenda as delivered, including ~~deletions~~ and additions).

Time (GMT) Date >	Tuesday 6 June 2023	
08:30 – 09:00	Zoom room opens, interpreters check-in, troubleshooting, house-keeping rules.	
09:00 – 09:30	Opening session : <ul style="list-style-type: none"> • FAO RAF • WOAHA RRAF • AU-IBAR 	Moh. Shamsuddin Karim Tounkara Nick Nwankpa
09:30 – 09:40	Objectives and expected outputs of the meeting	Akiko Kamata (NSAH, FAO, Rome)
09:40 – 09:50	Election of the chair and rapporteur (if not the RSC Secretariat) of the meeting. Suggestion : Delegate / CVO of Zambia	Karim Tounkara (Regional Secretariat, GF-TADs for Africa)
09:50 – 10:00	Group photograph (Zoom, webcams)	
10:00 – 10:20	Presentation of the terms of reference of the SGE, adopted in June 2022	P. Bastiaensen (SRR EA, WOAHA, Nairobi)
10:20 – 10:40	Current status of CBPP and CCPP worldwide, with specific reference to Africa (based on WAHIS reporting)	<u>Lina Awada</u> (DID, WOAHA, Paris)
10:40 – 11:00	Overview of past strategic and policy documents, available on the GF-TADs for Africa website	P. Bastiaensen (SRR EA, WOAHA, Nairobi)
11:00 – 11:20	African Union continental approaches and strategies on CBPP	<u>Cheick Kounta Sidibe</u> (AU-IBAR, Nairobi)



Time (GMT) Date >	Wednesday 7 June 2023	
08:30 – 09:00	Zoom room opens, interpreters check-in, troubleshooting, house-keeping rules.	
09:00 – 09:30	Updates on the CBPP situation in the four SGE CBPP founding member countries : <ul style="list-style-type: none"> • Chad • Nigeria 	<ul style="list-style-type: none"> • Mahamat N.M. Abakar • Ayuba Nduva Philip
09:30 – 09.50	Discussion Facilitation by	Mamadou Niang (FAO-ECTAD, RAF, Accra)
09.50 - 10:20	Updates on the CBPP situation in the four SGE CBPP founding member countries : <ul style="list-style-type: none"> • Somalia • Zambia 	<ul style="list-style-type: none"> • Abdirahman N. Queliye • Geoffrey Muuka
10:20 – 10:40	Discussion Facilitation by MentiMeter or Zoom poll	Lina Awada (DID, WOA, Paris) P. Bastiaensen (SRR EA, WOA, Nairobi)
10:40 – 11:00	WOAH Code standards (CBPP Chapter).	Karim Tounkara (RR AF, WOA, Bamako)
11:00 – 11:20	Official endorsement by WOA of disease control programmes and official WOA disease freedom status (national, zonal). Countries and zones currently recognised as free from CBPP.	Min Park (Status Department, WOA, Paris)
11:20 – 11:30	Discussion, led by the chair. Facilitation by	Min Park (Status Department, WOA, Paris)




Time (GMT) Date >	Thursday 8 June 2023	
08:30 – 09:00	Zoom room opens, interpreters check-in, troubleshooting, house-keeping rules.	
09:00 – 09:20	Brief presentation of the rapporteur on the recurring themes and challenges mentioned by the member countries and experts, in order to guide the development of a draft work plan with priority topics to address.	Viola Chemis (Regional Activities Department, WOAHA, Nairobi)
Session :	Focus on technology	
09:20 – 09:35	Diagnostic challenges with regards to CBPP and what the reference laboratories can do to help	Chandipiwa Marobela-Raborokgwe (BNVL, Sebele)
09:35 – 09:50	Diagnostic capacities and challenges with regards to CBPP and what national laboratories can do to help as regional service laboratories	<u>Anyika Kingsley</u> (NVRI, Vom)
09:50 – 10:05	Diagnostic capacities and challenges with regards to CBPP and what national laboratories can do to help as regional service laboratories	Rufael Tesfaye (AHI, Sebeta)
10:05 – 10:20	Diagnostic capacities and challenges with regards to CBPP and what national laboratories can do to help as regional service laboratories	<u>Amadou Sery</u> (LCV, Sotuba)
10:20 – 10:35	WOAHA Twinning on CBPP with IZS Teramo : first impressions	Rufael Tesfaye (AHI, Sebeta)
10:35 – 10:50	Support provided by the FAO – IAEA Joint Division in the area of CBPP and CCPP	Gerrit Viljoen (FAO-IAEA NAFA-APH, Vienna)
10:50 – 11:05	Presentation of the regional network of CBPP laboratories	Massimo Scacchia (ERFAN, IZS Teramo)
11:05 – 11:30	Discussion, led by the chair. Facilitation by	Charles Bodjo (AU-PANVAC, Debre-Zeit)



Time (GMT) Date >	Tuesday 13 June 2023	
08:30 – 09:00	Zoom room opens, interpreters check-in, troubleshooting, house-keeping rules.	
09:00 – 09:20	Brief presentation of the rapporteur on the recurring themes and challenges mentioned by the member countries and experts, in order to guide the development of a draft work plan with priority topics to address.	Viola Chemis (Regional Activities Department, WOA, Nairobi)
Session :	Focus on technology (continued)	
09:20 – 09:35	Challenges and aspirations in the control of CBPP : <u>vaccines</u>	Charles Bodjo (AU-PANVAC, Debre-Zeit)
09:35 – 09:50	Challenges and aspirations in the control of CBPP : <u>vaccines</u>	Hezron Wesonga (KALRO, Muguga)
09:50 – 10:05	Challenges and aspirations in the control of CBPP : <u>vaccines (including combos)</u>	Musa Mulongo (TAHSSL, GALVmed – ILRI, Kabete)
10:05 – 10:20	Challenges and aspirations in the control of CBPP : <u>vaccines (including combos)</u>	Mehdi El-Harrak (MCI Santé Animale, Mohammedia)
10:20 – 10:35	Challenges and aspirations in the control of CBPP : <u>antibiotics</u>	Mamadou Niang (FAO-ECTAD, RAF, Accra)
10:35 – 10:50	Challenges and aspirations in the control of CBPP : <u>antimicrobial resistance</u>	Emile Singano (ERFAN, TVLA, Arusha)
10:50 – 11:05	Challenges and aspirations in the control of CBPP : <u>abattoir surveillance</u>	Massimo Scacchia (ERFAN, IZS Teramo)
11:05 – 11:30	Discussion, led by the chair. Facilitated by	<u>Nick Nwankpa (AU-IBAR)</u>



Time (GMT) Date >	Wednesday 14 June 2023 	
08:30 – 09:00	Zoom room opens, interpreters check-in, troubleshooting, house-keeping rules.	
09:00 – 09:15	Brief presentation of the rapporteur on the recurring themes and challenges mentioned by the member countries and experts, in order to guide the development of a draft work plan with priority topics to address.	Viola Chemis (Regional Activities Department, WOAAH, Nairobi)
Session :	Focus on policy	
09:15 – 09:30	Value chains for dairy, beef and hides/skins in Zambia, viewed through the CBPP lens	Geoffrey Muuka (WOAH Delegate and DVS, Lusaka)
09:30 – 09:45	Data reported on CBPP official vaccination through WAHIS (2005 – 2022)	<u>Paolo Tizzani</u> (DID, WOAAH, Paris)
09:45 – 10:00	Current estimates of vaccine coverage using conventional, certified vaccines (in part based on a PANVAC survey and on IBAR Annual Reports)	<u>Hassen Gelaw</u> (AU-PANVAC, Debre-Zeit)
10:00 – 10:15	Discussion	Akiko Kamata (NSAH, FAO, Rome)
10:15 – 10:30	CBPP as an impediment to trade	Yoseph Shiferaw Mamo (COMESA Secretariat, Lusaka)
10:30 – 10:45	CBPP as an impediment to trade	Vivian Iwar (RAHG-WA, ECOWAS Secretariat, Bamako)
10:45 – 11:00	One Health and the case for CBPP	Akiko Kamata (NSAH, FAO, Rome)
11:00 – 11:30	Discussion, led by the chair. Facilitated by	<u>Karim Tounkara</u> (RR AF, WOAAH, Bamako)



Time (GMT) Date >	Thursday 15 June 2023	
08:30 – 09:00	Zoom room opens, interpreters check-in, troubleshooting, house-keeping rules.	
09:00 – 09:15	Brief presentation of the rapporteur on the recurring themes and challenges mentioned by the member countries and experts, in order to guide the development of a draft work plan with priority topics to address.	Viola Chemis (Regional Activities Department, WOA, Nairobi)
Session :	Focus on policy (continued)	
09:15 – 10:15	Open discussion in three groups (one French and two English), ranking of priorities for the SGE <ul style="list-style-type: none"> • Is stamping out or test and cull still an option ? • Compensation of farmers • Willingness to pay • PPP • Reporting aversion • Identification and movement controls • Zoning and compartmentalisation (with other diseases) • Trade incentives and certification of live animals • Trade incentives and certification of animal products • Vaccines : vaccine production capacity in Africa today • Vaccines : a public good or a private good ? • Any other policy issues 	
10:15 – 11:15	Closed meeting of the chair, facilitators and rapporteurs (joint writing team)	

(break)

Session :	Closing	Meeting resumes
12:00 – 12:15	Presentation of the CBPP pages on the GF-TADs global and regional websites and invitation to contribute. Proposals for sharing of content within the SGE.	
11:15 – 11:45	Presentation of the draft work plan (joint writing team)	Viola Chemis (Regional Activities Department, WOA, Nairobi)
11:45 – 12:15	Discussion, amendment and adoption of the draft work plan	
12:15 – 12:30	Next steps and dates and venue for the second meeting	



Sessions 1 and 2. Governance issues and general information sharing

The current state of play of CBPP in the region is marked by low surveillance, lack of official reporting, under-reporting where it's happening, resulting in a limited reflection of actual field presence of CBPP which portrays CBPP as a neglected disease despite its burden in Africa. In some areas, livestock producers were faced with negative impacts resulting from reporting CBPP leading to associated stigma resulting and fear of reporting. There is variation in surveillance capacity among members, leading to differences in the ability to monitor and report. The current scenario is characterized by undetermined prevalence of CBPP. For example, reports show presence of CBPP in the Sahel and parts of Africa and yet there are no reports in North Africa. As of last year, there were reports of an outbreak in Senegal, this coming after 20 years of no reports. The World bank funded *Regional Sahel Pastoralism Support Project* report¹ (PRAPS, World Bank, 2019) indicated CBPP herd prevalence ranging from 37% (Mali), 46% (Niger), 63% (Mauritania), 73% (Chad) to 75% (Senegal). The meeting identified the need for trainings, support to surveillance activities including in North Africa, development of online courses, promote information sharing for members to identify and report the actual situation of CBPP, also among neighbouring countries.



Map 1. Cumulative distribution of CBPP between 2005 – 2022. Countries not declaring the presence of CBPP are Algeria, Botswana, Cabo Verde, Comoros, Djibouti, Egypt, Eswatini, Libya, Madagascar, Malawi, Mauritius, Morocco, Seychelles, Sierra Leone and South Africa. Only Botswana, Eswatini and South Africa, respectively Namibia, are recognised for nationwide, respectively zonal, official freedom of disease. Source : WAHIS (woah) 2023

The meeting identified the need for trainings, support to surveillance activities including in North Africa, development of online courses, promote information sharing for members to identify and report the actual situation of CBPP, also among neighbouring countries.

With regards to feedback provided on the complexity of official reporting, WOAHP clarified the available support offered to Members, for example through trainings of National Focal Points. The minimal level of information required for disease notification are: presence, absence or suspicion of the disease. Provision of additional valuable information such as data on vaccination is encouraged. WOAHP also conducts epidemic intelligence activities such as rumour tracking through experts, (news)papers, online pages, to systematically gather information which is brought to the attention of authorities to deny or confirm the rumours. Data shared by WOAHP shows inconsistency and high variability in reporting qualitative data to WAHIS. Only about half of the Members declaring official vaccination, also provide figures, without which it is difficult to assess vaccination efficacy. The meeting recommended the need for support to members to ensure data collected is transmitted to WAHIS,

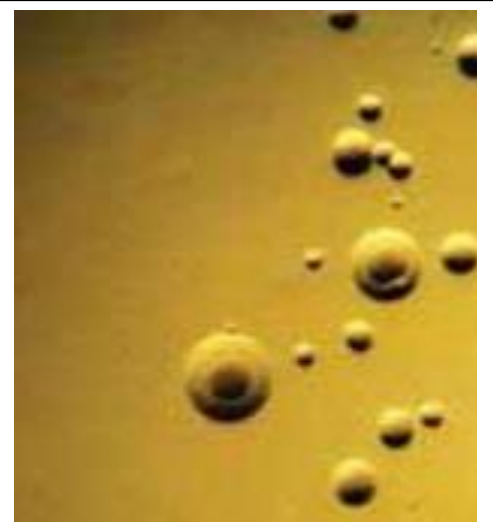
¹ <https://documents1.worldbank.org/curated/en/519791555625275805/pdf/Disclosable-Version-of-the-ISR-Regional-Sahel-Pastoralism-Support-Project-P147674-Sequence-No-09.pdf>



including qualitative data on vaccinations, need to adopt electronic (e-Health) tools for disease reporting and use of standardized procedures for abattoir surveillance to enable early detection of CBPP. Abattoir surveillance is considered efficient as it is relatively inexpensive and decreases data collection costs while covering different locations. It will also allow for continuity in data collection.

There is currently one WOA Reference Laboratory for CBPP in Africa, which is the *Botswana National Veterinary Laboratory* (BNVL), Sebele, Botswana.

The meeting was informed of existence of a continental strategy for CBPP which was developed with the support of AU-IBAR. The strategy will need to be reviewed and updated with incorporation of lessons learnt from other regions and reports from previous regional efforts including from rinderpest eradication programmes.

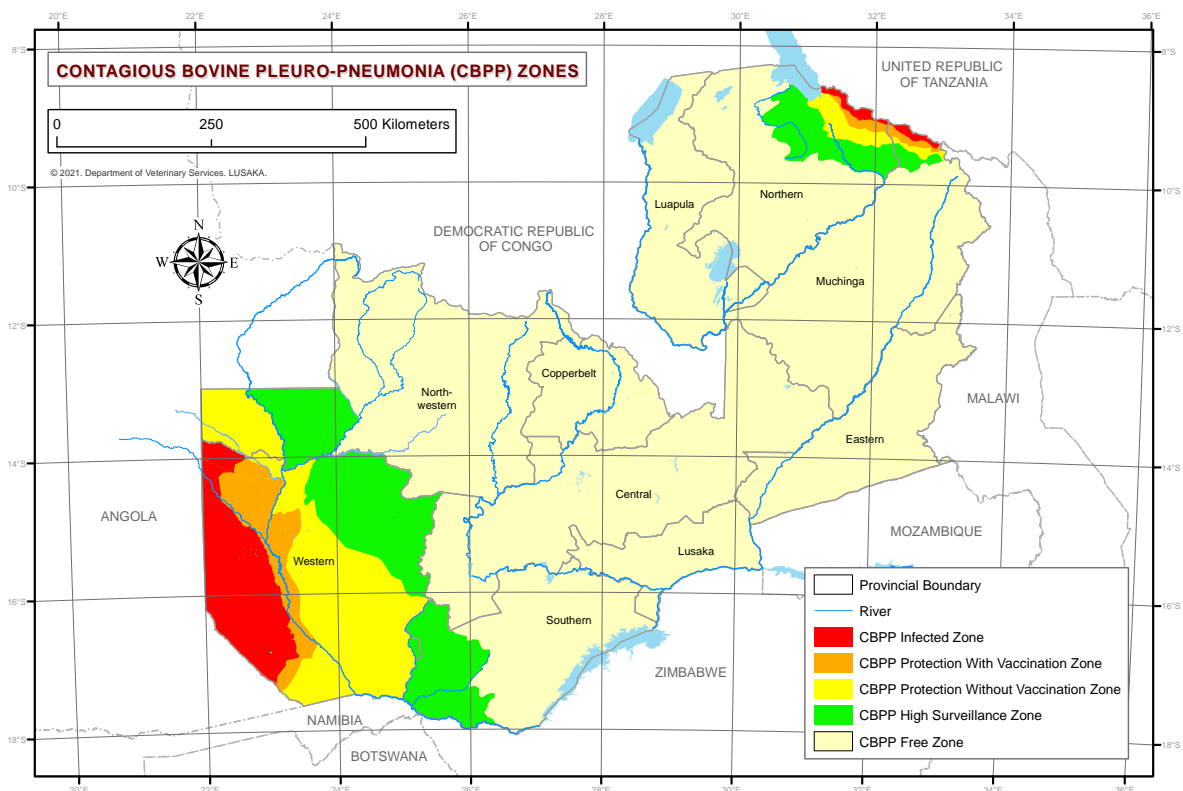


Picture 1. Mmm culture.

Picture © Francois Thiaucourt :

https://microbewiki.kenyon.edu/index.php/My_coplasma_mycooides

At national level, some countries have *National Control Plans* (NCP) for CBPP in place (e.g. Chad) whereas others like Zambia and Namibia have sought WOA endorsement of their official control programmes.



Map 2. CBPP zoning approach in Zambia. Map courtesy of the Department of Veterinary Services, Ministry of Fisheries and Livestock (Zambia)



The meeting encouraged countries to develop and implement realistic strategies ensuring their integration into national strategic documents, in order to unlock national resources for CBPP control activities. However, the meeting also noted the need for technical guidance to Members as they develop their strategies, to enable them to elaborate specific decisions such as :

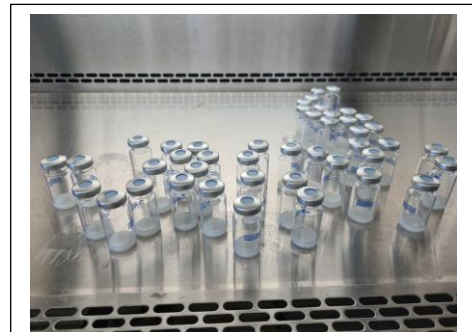
- whether to control or eradicate CBPP,
- whether to include the use of antibiotics in the control strategy in light of concerns of antimicrobial resistance and antimicrobial use (AMR/AMU) and comparative analysis for anti-biotherapy versus vaccination strategies or a combination.

Sessions 3 and 4. Focus on technology (surveillance, diagnosis, vaccines, vaccination, prophylaxis, antibiotic treatment, research)

The current status with regards to CBPP diagnosis was summarised as:

- limited infrastructure for CBPP diagnosis;
- limited ability for sampling with country presentations indicating a decline in the number of samples submitted during the occurrence of COVID-19 pandemic;
- difficulty to access critical reagents and proficiency testing, including ELISA kits, *complement fixation test* (CFT) antigens, positive/negative controls;
- participation in proficiency testing is expensive;
- lack of commercially available pen side tests despite these being mentioned in the WOAHA Terrestrial Manual;
- challenges with transportation of material across countries considering Nagoya protocols and
- lack of standardised procedures and tools for abattoir surveillance and information sharing.

The meeting was informed that a latex agglutination test (BoviLat) was discontinued, since it was too expensive, eliciting discussion on reliance of private sector to invest in commercialisation of such kits.



Picture 2. Production of complement fixation test antigen at the BNVL in Sebele, Botswana. Picture © BNVL (MoA) 2023.

The meeting highlighted the importance of strengthening the networking activities of the regional CBPP laboratory network (CBPP working group) and the need to increase the number of WOAHA accredited Reference Laboratories in Africa. The *Animal Health Institute* (AHI), in Ethiopia is currently undergoing a twinning programme with the IZS Teramo, in Italy, and is encouraged to apply for accreditation once well-advanced in the twinning programme. Aspiring Reference Laboratories were encouraged to prepare for the process to meet accreditation requirements. Building diverse competencies in different laboratories across the continent was considered a possible approach to improve capacity within the region. For example, one laboratory could specialise in CFT antigen production, another in serology, etc... Likewise, over and above the few Reference Laboratories, satellite or regional service laboratories should be encouraged to support



diagnostic activities at regional level or within a cluster of countries. The meeting also encouraged partners to support training courses that improve the capacities of national reference laboratories for CBPP diagnosis, including the capacity for field surveillance, sampling and sample submission to national and regional laboratories. The meeting underscored the need for technical guidance on field surveillance e.g., establishing the sampling strategy and laboratory tests required to help create understanding of the CBPP situation in the field.

From the country presentations, there seems to be lack of clarity on vaccination coverage, post-vaccination sero-monitoring and vaccine quality control systems in place to determine the immunity response rate or vaccine efficacy. There were varying reports by countries about T1-based vaccine choices and animal reactors (adverse reactions at the vaccination site) with T1/44 vaccines. Technical experts demonstrated through their presentations that the protection level increases with subsequent vaccinations. Protection after the first vaccine administration is 30-60% while a second dose after a year could boost immunity to up to 80%. In addition, by targeting a vaccination coverage of 80-90% over 2 years of subsequent vaccination there is the potential to reduce CBPP outbreaks by 99% (Bamhare C., 2001).

Members were informed of the importance to ensure vaccine packaging, including the diluent as the latter has a direct impact on vaccine efficacy. The clarity of the manufacturer's instructions is critical, where e.g. *time limit for use* (TLU) after reconstitution should be indicated.

AU-PANVAC confirmed that low numbers of vaccine batches were submitted for quality control and very often without accompanying diluent. On average, the CBPP vaccine pass rate in the region is 75.3% and the QC failure is mainly due to low titres.

Considering that vaccination is the main tool currently available for the control of CBPP in the region, the meeting considered vaccines and vaccination with respect to vaccine access, vaccine cold chain, vaccine efficacy, vaccine choices vis-a vis frequency of vaccination against desired protection levels, population targeting, vaccination coverage, sero-monitoring, quality control and integrating these into other animal health activities, as important topics to be taken up by the SGE. The concern of access encompasses realistic strategies to streamline the supply chain for delivery from manufacturers to member countries and encourage strategic partnership and at community level, as well as adaptation of vials (doses) to average herd sizes within a region.

Members were reminded that AU-PANVAC is presently the only organisation mandated by the AU to provide International Independent Quality Control of all vaccines used in Africa and in addition, has the mandate to produce and distribute essential biological reagents for the surveillance and diagnosis of animal diseases. AU-PANVAC reiterated its support to vaccine quality control and encouraged laboratories to submit vaccine batches and their diluent for QC including re-submission while used in the field (to check cold chain management). Capacity building needs identified include support to vaccine producing laboratories to ensure the vaccines they produce meet the required standards, to ensure that vaccine production capacity is enhanced, the development of protocols to guide field level monitoring of cold chain and vaccine efficacy, as well as in-country training of vaccinators (to minimise T1/44 adverse reactions).

The use of antibiotics for CBPP control was elaboratively discussed as an option, though there is a general recognition that more effective antibiotics are costly and may not easily be available. The most



accessible antibiotics in most countries are still the oxytetracyclines. Others in use are tylosin and 2nd generation macrolides such as tulathromycin and gamithromycin.

The topic on anti-biotherapy elicited prolonged discussions on the misuse or uncontrolled use leading the conversation to aspects of policy, i.e. enforcement of legislation with regards to regulations for monitoring the utilisation of antibiotics agreed for animal use, and to ensure appropriate use and observation of withdrawal periods.

Abattoir surveillance was also recognised as an opportunity to check for antibiotic residues in milk and meat. The meeting also recognised the topic on antimicrobial resistance and antimicrobial use as a wider, multi-stakeholder and multi-sectoral conversation, clearly not limited to the CBPP SGE network alone. To demonstrate an even wider picture through connection with other topics, a presentation on the linkages of CBPP with the One Health approach with respect to livestock productivity, food nutrition and security was made.

Sessions 5 and 6. Focus on policy (willingness to pay, public-private partnerships, vaccination, compensation, trade implications,...)

Many policy issues came up during the different sessions and were further elaborated during the group discussion on the final day.

The challenge of limited information sharing and harmonisation of approaches amongst neighbouring countries led to a discussion around promoting and implementing bilateral agreements or *Memorandum of Understanding* (MoU) to support cross-border harmonisation and coordination of control activities. This is also closely linked to informal trade along major trade corridors. Informal trade is of particular concern during disease outbreaks when there is a need to enforce livestock movement restrictions. Livestock movement control is generally considered difficult to implement in extensive (pastoral) production systems and in some cases not culturally acceptable. The Members were inclined to promote mechanisms for animal identification and tracking, as opposed to controlling movement.

The meeting also discussed legislative gaps that could arise with the implementation of harmonised procedures for abattoir surveillance and its enforcement to ensure deployment of appropriately skilled staff.

The argument for promoting CBPP vaccination as a private good was advanced. It was argued that this would allow liberalisation of vaccine supply through PPP arrangements and could strengthen community-driven policies for resource mobilisation for CBPP activities.

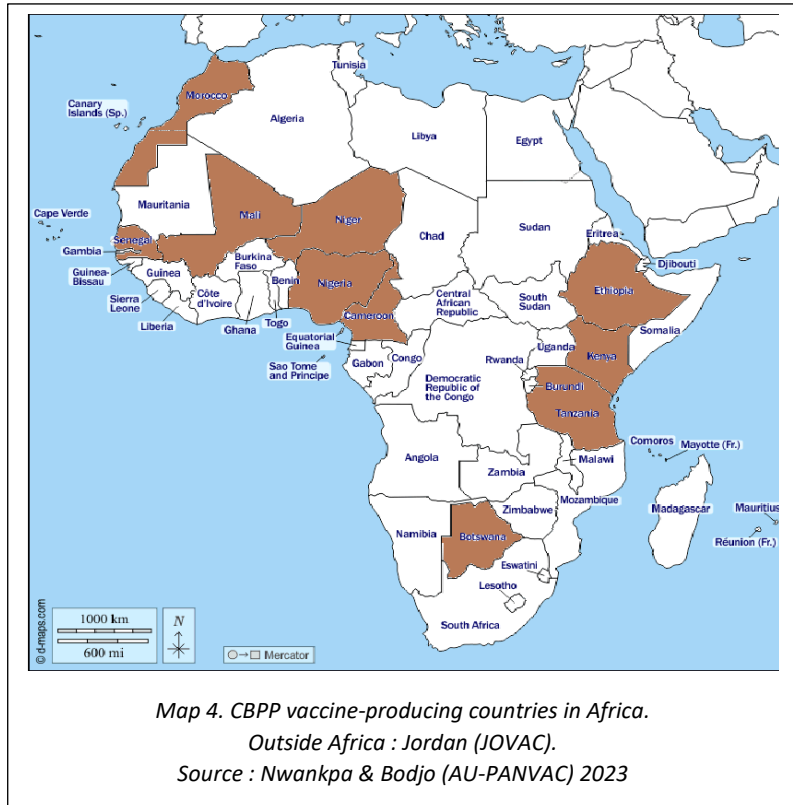
To increase access to vaccines even further, other policy decisions considered are to adapt vaccine packaging doses to average herd size in the region, to align vaccine production and/or vaccine procurement with national vaccination plans (target population, vaccination coverage, protection levels envisaged), to leverage resources allocated to other animal health interventions through combined vaccinations / field activities and to rigidly enforce the procurement of only certified vaccines at national level. Implementing sporadic vaccination with low coverage remains a concern.



There is a need for countries to review and implement viable vaccination strategies with suitable mechanism in place to monitor cold chain and the results in terms of vaccine-induced immunity.

Public-Private-Partnerships (PPPs) were discussed in the context of promoting sustainable programmes within resource-constrained settings. An example was shared by Zambia, informing the Members of an ongoing PPP for slaughter off-take, in place of stamping-out and compensation.

The meeting also expressed the need for PPPs in order to encourage commercial production of diagnostic kits and vaccines.





General considerations and work programme for the SGE (2023 - 2024)

Resulting from the various presentations made during the 6 sessions, the last part of session 6 (on 15 June) was dedicated to the preparation of the following considerations, and the following technical items or topics identified, to guide the work of the SGE over the next 12 – 24 months, depending on the frequency of meetings ---

Considering:

1. The absence of a global framework for the control and eradication of CBPP;
2. The absence of a continental framework for the control and eradication of CBPP from Africa;
3. The absence of a global or continental CBPP research alliance;
4. The absence of a pipeline of new vaccines (alone or in combo) in the foreseeable future;
5. The general unsatisfactory features of the existing T1-based live attenuated vaccines (including issues surrounding vial size, diluents, storage);
6. The widespread use of (over-the counter) antibiotics in the self-medication of the disease by farmers;
7. The general requirements (for these and other vaccines, targeting other TADs) of cold chain management;
8. The perceived threats to hitherto disease-free countries in North Africa, e.g. Algeria, Egypt, Libya, Morocco and Tunisia;

...the following **technical items or topics** were identified (in order of priority and logic/sequence of implementation) with comments (where appropriate) on possible secondary items or topics, some of which apply to several identified topics:

- | | | |
|--------------------|--|---|
| 1. Strategy | Development and validation of strategic plans at various levels of governance (national, clusters of neighbouring countries, sub-regions, the continent and/or the international community, for higher prioritisation of the disease (technically and financially). | <ul style="list-style-type: none">• Global strategy (limited to Africa, but enabling all countries worldwide to aim for freedom of disease status);• Continental strategy (custodian: AU);• Sub-regional strategies (custodian: REC);• National strategies (clustering with neighbouring countries, shared borders). |
|--------------------|--|---|



2. Surveillance	Enhanced surveillance leading to improved disease intelligence for better and more reliable reporting of the disease.	<ul style="list-style-type: none">• Renewed efforts to focus on the cheap and effective abattoir surveillance as the tool of choice (including in free countries in Southern and North Africa);• Developing standardised reporting templates and harmonised procedures for abattoir surveillance;• Developing guidelines and delivery of training on abattoir surveillance (including in free countries in Southern and North Africa);• Promoting novel tools for events-based surveillance, e-reporting and tele-health or tele-diagnosis;• Upgrading infrastructures to support abattoir surveillance;• Promoting networking and information sharing at (sub)regional level(s), including in free countries in Southern and North Africa and leveraging existing platforms where possible;• Promoting the transparent reporting of cases and vaccination numbers (and fighting reporting aversion);• Promoting countries to engage in official pathways (dossier preparation, submission): status recognition (in particular for disease-free countries) or endorsement of official control programmes.
3. Diagnosis	Enhance networking between national reference laboratories, national reference laboratories offering regional services and international reference laboratories, and, in time, increase the number of WOAH/FAO Reference Laboratories in Africa.	<ul style="list-style-type: none">• Strengthening, expansion and consolidation of the ERFAN-led network of CBPP laboratories (currently 12 African countries);• Supporting WOAHA Twinning Agreements, fostering the capabilities for CBPP (and CCPP) advanced diagnosis;• Encouraging one laboratory in West/Central Africa and one laboratory in Eastern Africa to apply for Reference Laboratory status.• Supporting local production of CBPP diagnostic kits



4. Vaccines

Availability of good quality **vaccines** and **vaccination approaches** to increase vaccination coverage and efficacy.

- Promote systematic quality control through AU-PANVAC;
- Understanding the reasons for low production capacity (planning, supply vs. demand);
- Support vaccine manufacturers to meet the required CBPP vaccine potency
- Review vaccination strategies, in terms of:
 - Increasing efficiency for vaccine distribution (supply chain and cold chain management up to community level);
 - Improving vaccine coverage (better targeting and quality data collection);
 - Better planning and synchronisation of vaccinations with stakeholders and farming communities (linked with strain used, antibiotic stewardship and desired protection levels);
 - Understanding the causes of adverse reactions in vaccination;
 - Opportunities to synchronise vaccinations with other vaccinations, in the same or other species or in other field activities.

5. Policy

Policy issues pertaining to the continuum between private good, public good and the development of PPPs, for improved supply and demand of inputs, enhanced (movement) control, cross-border cooperation and export-trade facilitation.

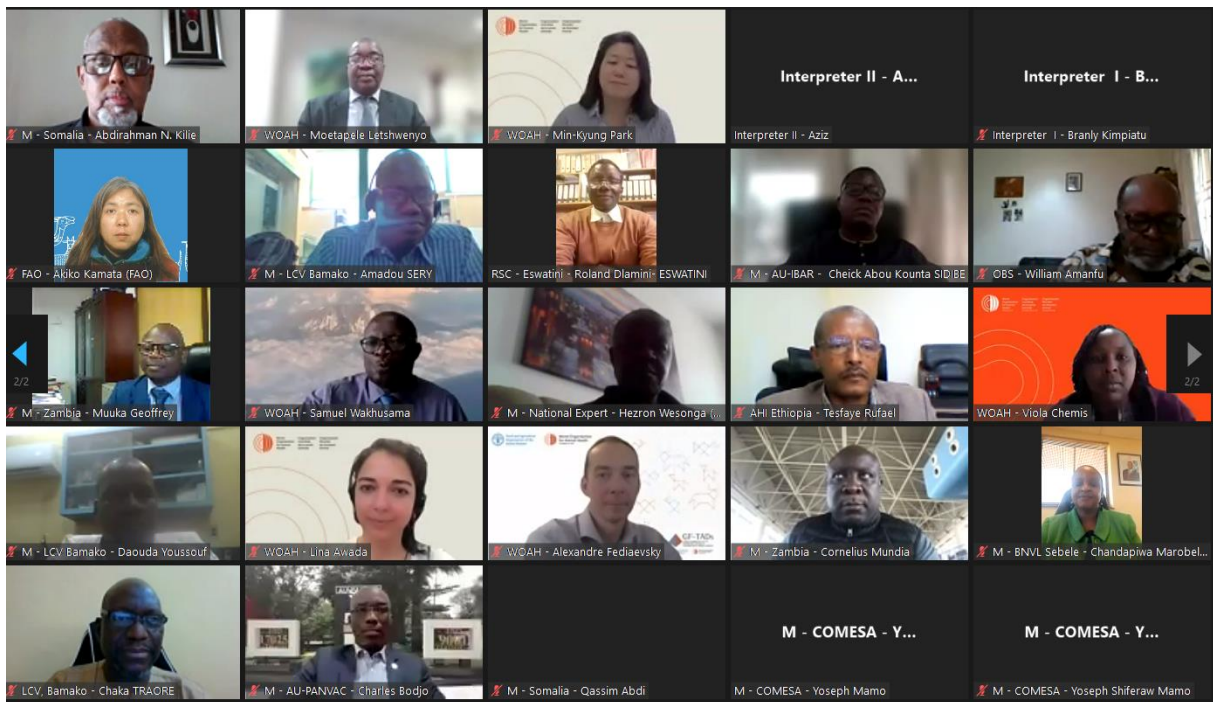
- Promoting the transparent reporting of cases (and fight reporting aversion);
 - Understanding the reasons for low production capacity (planning, supply vs demand)
 - Promoting increased CBPP vaccination through community-centered policies, focusing on increasing access to vaccines;
 - Regulating and monitoring antibiotic use as access to vaccines increases;
 - Apply simple herd-based livestock identification and traceability systems;
 - Promote zoning and compartmentalisation;
 - Private sector incentives and opportunities for PPPs in the areas of vaccines and diagnostics;
 - Promoting collaboration such as MoUs to support cross-border coordination.
-



6. Research

Collaboration with **research** institutions and researchers to generate evidence on:

- Understanding the socio-economic burden of CBPP;
- Understanding the drivers in farmers' risk-avoidance behaviour and decision-making with regards to antibiotics;
- The effect of antibiotics on sequestra;
- The effect of antibiotics on live attenuated vaccines (LAV);
- The most effective and prudent protocols to combine antibiotic treatment and vaccination;
- Vaccine candidates (other than the T1 based strains).



Screen capture of some of the participants



Regarding the scope, frequency, membership and hosting of upcoming meetings, it was clarified that:

1. The SGE format offers the possibility for the sharing or pooling of technical expertise, but is not a funding mechanism;
2. Every upcoming meeting will only deal with one of the 6 above-mentioned topics;
3. Subject to availability of funds, face to face meetings will be privileged;
4. Founding Member Countries will be invited to host on a rotational basis (and chair the meeting). The representative of the COMESA Secretariat will enquire whether it is feasible to host the first face-to-face session of the SGE in 2023 or 2024 in Lusaka, Zambia;
5. That the next *Regional Steering Committee* (RSC) endorses the enlargement of the membership to the *Animal Health Institute* (AHI), the national reference laboratory of Ethiopia, based in Sebeta, as a regional service laboratory;
6. That the next RSC endorses the enlargement of the membership to one Member country in the North Africa region (Maghreb) to underscore the importance of surveillance and diagnostic capacity in free countries to avoid the further spread of the disease from sub-Saharan Africa, including Mauritania;
7. The frequency of SGE CBPP meetings hasn't been detailed, but 6 topics to be addressed in the next 18 months at most, represents a frequency of 3 months between sessions.

Furthermore, a dedicated SGE page has been opened of the GF-TADs for Africa website in order to facilitate the sharing of information amongst members of the SGE (click the link) :

[Contagious Bovine Pleuropneumonia - Standing Group of Experts \(SGE\) - Africa](#)



Annex 1. Terms of reference of the CBPP SGE for Africa

Standing Group of Experts on Contagious bovine pleuro-pneumonia for Africa

Introduction

Contagious bovine pleuro-pneumonia (CBPP) or lung sickness in cattle, caused by *Mycoplasma mycoides subsp. mycoides* (Mmm) is truly an African disease, long eradicated from the developed world, which represents a considerable burden for cattle owners in many parts of Africa (EMPRES-AH, FAO, 2013), from Senegal and the Gambia in the west through Somalia in the east, and as far south as Namibia and Tanzania.

In recent years, the disease has seen its area of spread increase in Africa (e.g. Senegal in West Africa, Gabon in Central Africa) and the number of outbreaks increase in areas where it was already present. It is currently being reported as present by around 18 countries (WAHIS, Jan – Jun 2019) with the latest outbreaks having been reported from Namibia (2021, 2020, 2019), Niger (2020) and the Gambia (2018).

As one of the listed diseases, subject to the procedure for official recognition of animal health status by the *World Organisation for Animal Health* (WOAH, founded as OIE), only four countries in Africa are currently officially free from CBPP, i.e. Botswana, Eswatini, South Africa (country-wide) and Namibia (zone located south of the *Veterinary Cordon Fence*, VCF). Namibia and Zambia are also the only countries having a WOAH endorsed official control programme for CBPP.

Several factors compound the control of CBPP: the fact that the disease is seen as a production disease, chronic and with rather limited mortality, that meat and meat products (excluding lungs) are regarded by WOAH as safe commodities according to the *Terrestrial Animal Health Code* (TAHC), irrespective of the disease status of the country or zone, that the disease is widely treated with antibiotics, mitigating the symptoms, but at the same time propagating the infection through carriers and -most importantly- the limited efficacy of the available vaccines, mainly based on the attenuated strains T1/44 and T1sr.

Though live attenuated vaccines (T1/44 and T1sr) are available, their protection is limited to maximum of 12 months, hence requiring considerable logistical efforts to attain protection at population level. An additional constraint to attain demonstrated absence of infection or disease is the need for animal identification and traceability systems to be in place.

As a result, CBPP can only realistically be controlled through a series of measures, one which is movement control, making it a truly transboundary animal disease. In a paper released in 1987, in the *Rev. sci. tech. Off. int. Epiz.*, Provost et al. affirmed that the eradication of CBPP was possible on the condition that all cattle are vaccinated for several years in a row and that all clinically affected animals need to be emergency slaughtered. The latest guidance on CBPP dates back to 2003 (the FAO – OIE - AU/IBAR - IAEA Consultative Group on Contagious Bovine Pleuropneumonia, Third meeting “Towards Sustainable CBPP Control Programmes For Africa”, Rome, 12–14 November 2003 - <http://www.fao.org/3/a-y5510e.pdf>), demonstrating that CBPP control has become a neglected public good.



More information: [Contagious Bovine Pleuropneumonia - Africa \(woah.org\)](https://www.woah.org/en/diseases/contagious-bovine-pleuropneumonia/)
and [Contagious bovine pleuropneumonia - World Organisation for Animal Health](https://www.woah.org/en/diseases/contagious-bovine-pleuropneumonia/)

The *Standing Group of Experts* on CBPP (SGE-CBPP) for Africa is set up within the Food and Agriculture Organization of the United Nations / WOAHP GF-TADs to promote regular exchange of information and best practices among concerned national veterinary authorities, international and national experts, and the private sector. The disease was identified as one of the 5 priority diseases under the GF-TADs Regional Strategy 2021 – 2025, adopted in October 2021.

The SGE-CBPP for Africa will start with a core group of 4 founding Members Countries drawn from Central (Chad), Eastern (Somalia), Southern (Zambia) and Western Africa (Nigeria), with the aim to progressively extend to more countries.

Objectives - *Strengthening Africa regional cooperation and dialogue on CBPP control through:*

- Regular information exchange on CBPP situation preparedness and control measures applied,
- Technical support for regular review of national and regional CBPP control strategies by experts, based on experiences and best-practices, with a view to provide scientific and technical advice,
- Technical formulation of disease control policies and scientific guidance to aid in the coordination of CBPP prevention and control efforts, integrated into other bovine disease control efforts, where applicable,
- Enhance / foster / promote regional collaboration on;
 - laboratory diagnosis by exchange of best practices and support capacity building,
 - applied research or adaptation of existing tools, including CBPP epidemiology, biosecurity, socioeconomics and vaccine upgrading,
 - technical support and guidance on awareness raising campaigns by exchange of best practices and tools to improve *risk communication, and community and stakeholders' engagement* (RCCE) and drive behaviour change,
 - technical support and guidance on cross-border surveillance and concerted risk management measures along the beef and dairy value chains, among countries in the Africa region;
- Regular communication/information exchange/sharing on the outcomes of the group discussions to other Member Countries and all stakeholders,
- Coordination on technical support and guidance on identification of priorities for the development and adaptation of existing tools, training needs, and CBPP control projects relevant for the region,



Composition

The composition should be diversified in origin, with experts drawn from veterinary services, the dairy and beef industry, academia, research institutions, NGOs acting on CBPP or bovine production development, private sector along the value chain.

- The founding Member Countries (**Chad, Nigeria, Somalia** and **Zambia**) will establish the SGE CBPP for Africa. Experts from other countries in the region will be included in SGE CBPP when relevant according to the extension of the engagement of more countries to active CBPP control strategies.
- AU-IBAR, Regional Economic Communities (COMESA Secretariat, ECCAS-RAHC, ECOWAS-RAHC, IGAD-ICPALD, and SADC-LTC), FAO and WOAHA regional representations, ILRI, the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture and other regional organizations active in the field of animal disease control strategies.
- Regionally and internationally recognized CBPP experts with experience working in Africa will be included in the group on an ad hoc basis.
- Experts from WOAHA and FAO reference laboratories and collaborating centers, as well as selected national/regional laboratories: the *Pan-African Veterinary Vaccine Centre* of the African Union (AU-PANVAC) Debre-Zeit - Ethiopia, the *National Veterinary Research Institute* (NVRI), Vom - Nigeria, the *Botswana National Veterinary Laboratory* (BNVL) Gaborone - Botswana and the *Laboratoire Central Vétérinaire* (LCV) Bamako – Mali.
- Additional international recognized experts drawn from universities/academia, partners and donors on CBPP or other technical topics to be invited by the group to support the SGE-CBPP on an ad hoc basis.

Governance

The SGE-CBPP will be established under the umbrella of the GF-TADs for Africa. It will report to the GF-TADs *Regional Steering Committee* (RSC) for Africa and will liaise with other GF-TADs regional platforms working on CBPP, where relevant.

Chair: The meetings will be rotational hosted by founding Member Countries of the SGE- CBPP with host to chair the meeting upon agreement of SGE- CBPP.

The *World Organisation for Animal Health* (WOAH) Regional Representation for Africa, based in Bamako, Mali (RR AF) will act as Technical Secretariat in coordination with the *Food and Agriculture Organization* of the United Nations (FAO) Regional Office for Africa (RAF).

Funding mechanism

- Meeting costs of representatives from African Member Countries and costs for the logistical organization of meetings will be covered by the three organizations (FAO, WOAHA and AU-IBAR). Other members are expected to cover their own expenses or seek funding from partner organizations.
- The costs of the operation of the Technical Secretariat will be covered by WOAHA.



Meeting mechanism

- The meetings will take place in the SGE-CBPP Member Countries, on a rotating basis and will be called by the GF-TADs Regional Secretariat;
- The SGE-CBPP will meet in person at least once a year, electronic consultations and online meetings may be organised between meetings;
- Language: English and French with simultaneous interpretations;
- Host country to assist technical Secretariat in identification of appropriate meeting venue / hotel and provide logistical support, including transfer from the hotel and, if possible, either welcome dinner or social evening;
- Summary minutes of the meeting to be prepared by the SGE-CBPP Technical Secretariat, circulated to participants by email and published on the website of the WOAHA Regional Representation for Africa.

Meeting attendees

- **Founding Member Countries:**
 - WOAHA Delegate (CVO or appointed representative of CVO),
 - National CBPP technical experts in the topic being covered.
 - Total number from each founding member country should not exceed two persons (with exception of host when hosting physical meetings)
- **Subject-matter experts** selected from recognized international and regional CBPP and/or cattle disease experts.
- **Representatives of AU-IBAR, FAO and WOAHA**
- **Representatives of partner organizations:** upon agreement of the members of the group.
- **Meeting observers:** upon agreement of the hosting member.



Annex 2. List of participants

Country	Position in the SGE	SURNAME	First name	Department	Institution
Chad	Founding country representative, WOAHA Delegate	ABAKAR	Mahamat Nour Mallaye	Direction des Services Vétérinaires	Ministère de l'élevage et des productions animales
Mali	Regional Animal Health Centre (RAHC)	ADAKAL	Hassane	Regional Animal Health Centre for West Africa	Economic Community of West African States (ECOWAS)
Ghana	Observer	AMANFU	William	.	.
France	Expert (WOAH)	AWADA	Lina	Data Integration Department	WOAH
Kenya	Host, facilitator, moderator	BASTIAENSEN	Patrick	Sub-Regional Representation	for Eastern Africa WOAHA
Ethiopia	WOAH Collaborating Centre	BODJO	Charles	Pan-African Veterinary	Vaccines Centre AU-PANVAC
Kenya	Regional Economic Community	BOUSSINI	Hiver	Inter-African Bureau for	Animal Resources AU-IBAR
Kenya	Host (co-), facilitator, moderator	CHEMIS	Viola	Regional Activities Department	WOAH
eSwatini	Vice-President of the GF-TADs for Africa RSC	DLAMINI	Roland Xolani	Veterinary and Livestock	Services Ministry of Agriculture
France	Observer (GF-TADs)	FEDIAEVSKY	Alexandre	Global GF-TADs Secretariat /	Regional Activities Depart. WOAHA
Ethiopia	WOAH Collaborating Centre	GELAW	Hassen	Pan-African Veterinary	Vaccines Centre AU-PANVAC
Chad	Founding country representative	IZZEDINE	Abdel-Aziz Arada	Institut de Recherche en Elevage pour le Développement (IRED)	Ministère de l'élevage et des productions animales
Italy	Expert (FAO)	KAMATA	Akiko	EMPRES	FAO



Nigeria	National Reference Laboratory	KINGSLEY	Anyika	National Veterinary Research Institute	NVRI
Botswana	Observer (WOAH)	LETSHWENYO	Moetapele	Sub-Regional Representation for Southern Africa	WOAH
France	WOAH Reference Laboratory	MANSO - SILVAN	Lucia	Département BIOS, UMR CIRAD-INRAe ASTRE	Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)
Mali	National Reference Laboratory	MARIKO	Ibrahima		Laboratoire Central Vétérinaire
Botswana	WOAH Reference Laboratory	MAROBELA	Chandapiwa	Botswana National Veterinary Laboratory	BNVL
Kenya	Observer (LVIF)	MBAO	Victor	Livestock Vaccines	Innovation Fund (Canada) IDRC
Somalia	Founding country representative	MOHAMED	Qassim	Boyoole Project (World Bank)	Ministry of Livestock, Forestry and Range
Zambia	Founding country representative	MUNDIA	Cornelius	Department of Veterinary Services	Ministry of Fisheries and Livestock
Zambia	Founding country representative, WOAHA Delegate	MUUKA	Geoffrey	Department of Veterinary Services	Ministry of Fisheries and Livestock
Ghana	Expert (FAO)	NIANG	Mamadou	ECTAD	FAO
Kenya	President of the GF-TADs for Africa RSC	NWANKPA	Nick	Inter-African Bureau for	Animal Resources AU-IBAR
Nigeria	National Reference Laboratory	OCHOLI	Reuben	National Veterinary Research Institute	NVRI
France	Expert (WOAH)	PARK	Min	Status Department	WOAH
Nigeria	Founding country representative	PHILIP	Ayuba Nduva	Veterinary and Pest Control Services,	Federal Ministry of Agriculture and Rural Development
Portugal	WOAH Reference Laboratory	POMBO BOTELHO	Ana Rosa	Instituto Nacional de Investigação Agrária e Veterinária	INIAV - IP



Somalia	Founding country representative, WOAHA Delegate	QUELIYE	Abdirahman Nur	Director of Animal Health / Chief Veterinary Officer	Ministry of Livestock, Forestry and Range
Italy	WOAH Reference Laboratory	SCACCHIA	Massimo	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise	'G. Caporale'
Mali	National Reference Laboratory	SERY	Amadou	Chef du programme maladies infectieuses (PMI)	Laboratoire Central Vétérinaire
Ghana	Vice-President of the GF-TADs for Africa RSC	SHAMSUDDIN	Mohammed	RAF	FAO
Zambia	Regional Economic Community	SHIFERAW	MAMO Yoseph	Secretariat Common Market	for Eastern and Southern Africa
Kenya	Regional Economic Community	SIDIBE	Cheikh Abou Kounta	Inter-African Bureau for	Animal Resources AU-IBAR
Tanzania	Expert (ERFAN)	SINGANO	Emile Peter	Tanzania Veterinary	Laboratories Agency TVLA
Botswana	Observer (WOAH)	TENZIN	Tenzin	Sub-Regional Representation	for Southern Africa WOAHA
Ethiopia	National Reference Laboratory	TESFAYE	Rufael	Animal Health Institute	AHI
France	Expert (WOAH)	TIZZANI	Paolo	Data Integration Department	WOAH
Mali	Secretary of the GF-TADs for Africa RSC	TOUNKARA	Karim	Regional Representation for	Africa (RR/AF) WOAHA
Mali	National Reference Laboratory	TRAORE	Chaka		Laboratoire Central Vétérinaire
Nigeria	Founding country representative, WOAHA Delegate	VAKURU	Columba	Veterinary and Pest Control Services,	Federal Ministry of Agriculture and Rural Development
Kenya	Observer (WOAH)	WAKHUSAMA	Samuel	Sub-Regional Representation	for Eastern Africa WOAHA
Kenya	Expert (national)	WESONGA	Hezron	Kenya Agricultural and Livestock	Research Organization KALRO



This event was organised under the auspices of



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
Founded as OIE